

The New Agriculture: From Food Farms to Solar Farms

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Across the United States, government agencies and energy developers are looking to agricultural land for development of renewable energy. One attraction of agricultural lands is that they are already relatively ecologically impaired compared with the previous solar development sites in the California and Arizona desert that have been a major source of concern for many environmental groups—and subject to expensive mitigation requirements under the Endangered Species Act. Renewable energy development pressures are accelerating the existing loss of agricultural land, heightening concerns about food security and the economic viability of agricultural communities. California farmland is at the center of this conflict. Suburban sprawl in California already leads to conversion of nearly 40,000 acres of agricultural land a year.

Now, a new competitor has entered the scene: solar energy facilities. Both users compete for water, which is only becoming scarcer in the face of climate change and periodic drought. The pressures on California's agricultural land have long inspired the state legislature and local governments to enact various measures to protect farmland and promote the business of agriculture. We examine the ways California's Williamson Act (which provides tax benefits for agricultural land) and the California Environmental Quality Act (the state's environmental review statute) have proven and not proven to be obstacles to taking agricultural land out of crop production and putting it into solar energy production. We demonstrate that current laws are neither protecting prime agricultural lands nor adequately creating conditions for evaluating the tradeoffs and alternatives when farmland—or ecologically sensitive habitat—is used for large-scale renewable energy development.

INTRODUCTION

There is widespread scientific consensus that accelerating, human-induced climate change is a critical global problem already responsible for rising temperatures, sea-level rise, and catastrophic extreme weather events.¹ Because a large portion of the greenhouse gases in our atmosphere comes from burning fossil fuels,² governments (and nongovernmental organizations, or NGOs) are pushing for a transition to cleaner renewable energy sources.³ One particularly attractive energy source is solar energy.

While transitioning from fossil fuels to solar energy will help address climate change, solar energy development has its own concerns.⁴ Across the United States, government agencies and energy developers are looking to agricultural land for development of renewable energy resources like wind and solar. They do so in part because agricultural lands are environmentally impaired compared with more ecologically pristine desert sites that had been a previous focus of solar developers and a major source of concern for environmental groups (and subject to expensive mitigation requirements under the Endangered Species Act).⁵ These new energy development pressures are accelerating the existing loss of agricultural land, heightening concerns about food security and the economic viability of agricultural communities. California farmland is at the center of this conflict. A 2009 report documented farmland loss to suburban sprawl as nearly 40,000

1. See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (“IPCC”), SUMMARY FOR POLICYMAKERS: GLOBAL WARMING OF 1.5°C (Valérie Masson-Delmotte et al. eds., 2018).

2. *Id.*

3. See, e.g., Lauren M. MacLeana et al., *Democracy and the Distribution of NGOs Promoting Renewable Energy in Africa*, 51 J. DEV. STUD. 725, 725–27 (2015) (describing NGOs promoting distributed generation of electricity); William White et al., *The Role of Governments in Renewable Energy: The Importance of Policy Consistency*, 57 BIOMASS & BIOENERGY 97, 98–100 (2013) (describing government roles in promotion of renewable energy).

4. See, e.g., Theocharis Tsoutsos, Niki Frantzeskaki & Vassilis Gekas, *Environmental Impacts from the Solar Energy Technologies*, 33 ENERGY POL’Y 289, 295 (2005) (suggesting that most negative environmental impacts for solar energy development can be mitigated, but some of the mitigation techniques offered are more easily said than done); R.R. Hernandez et al., *Environmental Impacts of Utility-Scale Solar Energy*, 29 RENEWABLE & SUSTAINABLE ENERGY REVS. 766, 768–73 (2014) (discussing impacts on things like biodiversity, water, soils, air, and land use).

5. See Amy Morris & Jessica Owley, *Mitigating the Impacts of the Renewable Energy Gold Rush*, 15 MINN. J. L. SCI. & TECH. 293 (2014).

acres a year.⁶ Now, a new competitor has entered the scene: solar energy facilities. Both compete for water, which is only becoming scarcer due to climate change and periodic drought.⁷

Loss of agricultural land can have significant effects on the economy, the environment, and the social fabric of a community.⁸ The pressures on California's agricultural land, along with sophisticated and high-powered lobbying from agricultural businesses and interest groups, pushed the state legislature and local governments to enact measures to protect farmland and promote the business of agriculture.⁹ Protective legislation in California includes favorable tax benefits through farmland preservation contracts under the Williamson Act¹⁰ and the required consideration of impacts on agriculture through the California Environmental Quality Act.¹¹ As developers seek to take portions of agricultural land out of crop production and put them into energy production, such laws can become an obstacle, or at least a

6. CAL. DEP'T OF FOOD & AGRIC., BENEFITS OF FARMLAND CONSERVATION IN CALIFORNIA 5 (2015) [hereinafter CDFFA BENEFITS]. More recent reports from the California Department of Conservation suggest that the conversion rate slowed down with the recession, but as the most recent report only covers data through 2012, it is hard to determine current rates of farmland conversion. CAL. DEP'T OF CONSERVATION, CALIFORNIA FARMLAND CONVERSION REPORT (2015) [hereinafter 2015 FARMLAND CONVERSION REPORT].

7. Zak Guzman, *The California Drought Is Even Worse Than You Think*, CNBC (July 16, 2015), <http://www.cnbc.com/2015/07/16/the-california-drought-is-even-worse-than-you-think.html>; [<https://perma.cc/GYF9-UJER>]; Noah S. Diffenbaugh et al., *Anthropogenic Warming Has Increased Drought Risk in California*, 112 PROCEEDINGS NAT'L ACAD. SCI. 3931 (2015); Press Release, Cal. Drought, Statewide Water Savings Exceed 25 Percent in February; Conservation to Remain a California Way of Life (April 7, 2017), <http://www.drought.ca.gov/topstory/top-story-72.html> [<https://perma.cc/3P7P-UBQ4>] (announcing the end of the drought emergency in 2017 and explaining that the damage from the drought is likely to last for years into the future). A severe drought hit California from 2011 through 2017 and droughts look likely to continue, at least in some of the major agricultural regions of the state. Dale Yurong & Brandon Johansen, *First California Snow Survey of 2019 Shows Snowpack is Below Average for This Time of Year*, ABC30.COM (Jan. 3, 2019), <https://abc30.com/weather/snow-survey-shows-water-content-is-below-average/5010528/> [<https://perma.cc/8TQ7-T425>]. Drought also decreases energy available from hydroelectrical sources, which had previously been a reliable source—making solar even more attractive. Interview with California State Government Employee (Aug. 25, 2015) [hereinafter Interview #9] (on file with authors); Interview with California State Government Employee (Aug. 25, 2015) [hereinafter Interview #10] (on file with authors).

8. See, e.g., Jeanne S. White, *Beating Plowshares into Townhomes: The Loss of Farmland and Strategies for Slowing Its Conversion to Nonagricultural Uses*, 28 ENVTL. L. 113 (1998).

9. Interview with Solar Energy Company Employee (June 16, 2015) [hereinafter Interview #2] (on file with authors).

10. CAL. GOV'T CODE § 51243 (West 2018).

11. CAL. PUB. RES. CODE §§ 21000–21177 (West 2018).

complication. The California state legislature has responded by creating avenues for landowners to leave Williamson Act contracts and developing an alternative route for renewable energy facilities. Yet for reasons discussed below, the state-established program is not being used. Solar developers find themselves facing different legal regimes and political climates in each county in which they work.

This Article examines the push for solar development in California, where a desire to develop solar energy facilities has sometimes created major conflicts with farmland, wildlife habitat, and other environmental amenities. Solar development is valuable and needs to proceed in order to reduce the impacts of fossil fuel burning. However, siting solar facilities, which have major long-term impacts on the landscape, needs to be done deliberately. Most experts agree renewable energy goals are unlikely to be met through distributed generation (such as rooftop solar) alone.¹² Outside of using rooftops or brownfields, almost all renewable energy development requires tradeoffs in land use. Often to be economically viable, solar energy facilities need to cover relatively large areas of land. While renewable energy may be compatible with other land uses, including some kinds of agriculture, the current structure of renewable energy development has not generally looked for ways of incorporating dual-use. Our earlier research examined how large-scale solar development conflicted with endangered species protection¹³ and where distributed generation and use of disturbed sites might be attractive.¹⁴ In this earlier research, the increasing tension between renewable energy development and agriculture became clear. This Article delves into that issue.

12. *But see* Madison K. Hoffacker, Michael F. Allen & Rebecca R. Hernandez, *Land-Sparing Opportunities for Solar Energy Development in Agricultural Landscapes: A Case Study of the Great Central Valley, CA, United States*, 51 ENVTL. SCI. & TECH. 14472 (2017) (asserting that there is enough space for solar energy development without using prime agricultural land, if development occurs on built land, contaminated land, reservoirs (floating solar panels), and salt-affected agricultural land); K. Calvert & W. Mabee, *More Solar Farms or More Bioenergy Crops? Mapping and Assessing Potential Land-Use Conflicts Among Renewable Energy Technologies in Eastern Ontario, Canada*, 56 APPLIED GEOGRAPHY 209 (2015) (demonstrating that in some areas—eastern Ontario, Canada—solar needs can be met with distributed generation).

13. Morris & Owley, *supra* note 5, at 293–388 (2014).

14. Amy Morris, Jessica Owley & Emily Capello, *Green Siting for Green Energy*, 5 J. ENERGY & ENVTL. L. 17, 17–29 (2014).

California serves as a helpful example in exploring the tradeoffs between agriculture and renewable energy development. Pressure to develop renewable energy in California and elsewhere has energy companies and public officials aggressively searching for viable sites. Projects in the California desert have already converted thousands of acres of natural habitat to bare, graded land and industrial facilities, which has triggered widespread disruption of desert ecosystems.¹⁵ Opposition to projects in more pristine areas has led developers to consider using sites that are already somewhat developed and disturbed from their natural state.¹⁶ Agricultural land is generally flat and closer to transportation networks, transmission lines, and energy users, making it attractive for solar energy development.¹⁷ Proximity to transmission lines in particular is often the dominant factor in siting solar facilities because building new transmission infrastructure to connect to renewable energy plants is legally complex and prohibitively expensive.¹⁸ Additionally, agriculture landholdings tend to be large, enabling solar developers to engage with fewer landowners instead of requiring the assemblage of multiple parcels to obtain adequate space for their projects.

The situation in California brings these issues to the fore in a part of the country vital for our nation's food supply.¹⁹ The state's \$55 billion agricultural sector supplies over one-third of the nation's vegetables and two-thirds of its fruit and nuts.²⁰ California lost over three million acres of agricultural land between 1997 and

15. Morris & Owley, *supra* note 5.

16. Hernandez et al., *supra* note 4, at 774. Many bristle at labeling farmland as disturbed. Interview with NGO Official/Employee (Aug. 26, 2015) [hereinafter Interview #13] (on file with authors); Interview with Agricultural NGO Official/Employee (Aug. 26, 2015) [hereinafter Interview #14] (on file with authors).

17. Hernandez et al., *supra* note 4, at 774.

18. Adriaan Hendrik van der Weijde & Benjamin F. Hobbs, *The Economics of Planning Electricity Transmission to Accommodate Renewables: Using Two-Stage Optimisation to Evaluate Flexibility and the Cost of Disregarding Uncertainty*, 34 ENERGY ECON. 2089 (2012).

19. Russ Parsons, *California Farmers: How the State Feeds a Nation*, L.A. TIMES (Mar. 12, 2014, 7:18 PM), <http://www.latimes.com/food/dailydish/la-dd-calcook-california-its-whats-for-dinner-20140312-story.html> [<https://perma.cc/UPF5-ARN4>]; Brian Palmer, *The C-Free Diet: If We Didn't Have California, What Would We Eat?*, SLATE: EXPLAINER (July 10, 2013, 2:31 PM), http://www.slate.com/articles/health_and_science/explainer/2013/07/california_grows_all_of_our_fruits_and_vegetables_what_would_we_eat_without.html [<https://perma.cc/ZZ55-3C83>].

20. CAL. DEP'T OF FOOD & AGRIC., CALIFORNIA AGRICULTURAL STATISTICS REVIEW 2017–2018 at 2 (2018) [hereinafter CDFA 2018 REPORT] (explaining that cash receipts for farms in 2017 were over \$55 billion with \$20.56 billion exported outside the state).

2012—11 percent of the state’s farmland.²¹ At the same time, California has been at the forefront of expanding renewable energy and promoting policies for climate change adaptation and mitigation.²² In 2017, the state’s over 700 solar power plants generated over 24,000 gigawatt-hours of energy—nearly 12 percent of the state’s total production of electricity.²³ In 2018, the state passed a law requiring solar panels on new homes, but critics point out that residential rooftop solar power costs between 12.7 and 16.7 cents per kilowatt-hour, while utility-scale systems cost only 4.4 to 6.6 cents.²⁴

While California serves as a prime example, disputes over renewable energy and agricultural land are international.²⁵ The simultaneous importance of energy, food, and environmental amenities leads to contentious debates that sometimes place renewable energy proponents, food security advocates, and environmental groups on opposite lines of the battle.²⁶ This competition for land is accompanied by competition for water, and as both get scarcer, tensions rise and increased conflicts occur.²⁷

21. *State Fact Sheets: California*, ECON. RES. SERV., U.S. DEP’T OF AGRIC., <https://data.ers.usda.gov/reports.aspx?StateFIPS=06&StateName=California&ID=17854> [<https://perma.cc/5W6U-V825>] (last visited May 11, 2019) (select “California” in the state field; then “submit”); U.S. DEP’T OF AGRIC., AC-12-A-5, 2012 CENSUS OF AGRICULTURE, CALIFORNIA-STATE AND COUNTY DATA 7 tbl.1 (2014), https://www.nass.usda.gov/Publications/AgCensus/2012/Full_Report/Volume_1,_Chapter_1_State_Level/California/cav1.pdf [<https://perma.cc/EBQ4-82UC>].

22. *California Climate Strategy*, CAL. CLIMATE CHANGE, <https://www.climatechange.ca.gov/> [<https://perma.cc/2U9B-X3ZL>] (last visited May 11, 2019) (detailing the State’s Integrated Plan for addressing Climate Change).

23. *California Solar Energy Statistics & Data*, CAL. ENERGY COMMISSION, https://www.energy.ca.gov/almanac/renewables_data/solar/ [<https://perma.cc/MY8E-NUYN>] (last visited May 11, 2019).

24. *News Release: NREL Report Shows Utility-Scale Solar PV System Cost Fell Nearly 30% Last Year*, NAT’L RENEWABLE ENERGY LABS. (Sept. 12, 2017), <https://www.nrel.gov/news/press/2017/nrel-report-utility-scale-solar-pv-system-cost-fell-last-year.html> [<https://perma.cc/G2S5-7YD3>].

25. See Sanderine Nonhebel, *Renewable Energy and Food Supply: Will There be Enough Land?*, 9 RENEWABLE & SUSTAINABLE ENERGY REVS. 191, 197 (2005); Bert J.M. de Vries, Detlef P. van Vuuren & Monique M. Hoogwijk, *Renewable Energy Sources: Their Global Potential for the First-Half of the 21st Century at a Global Level: An Integrated Approach*, 35 ENERGY POL’Y 2590, 2596 (2007).

26. Douglas J. Arent, Alison Wise & Rachel Gelman, *The Status and Prospects of Renewable Energy for Combating Global Warming*, 33 ENERGY ECON. 584 (2011) (acknowledging the land use tradeoffs in development of renewable energy sources).

27. RABIA FERROUKHI ET AL., INT’L RENEWABLE ENERGY AGENCY, RENEWABLE ENERGY IN THE WATER, ENERGY & FOOD NEXUS 17 (2015), http://www.irena.org/documentdownloads/publications/irena_water_energy_food_nexus_2015.pdf [<https://perma.cc/ZB7Z-AKVT>].

These discussions are continually shifting and evolving. Our analysis here reflects the California situation in 2014 to 2018, but we acknowledge the efforts and politics are ongoing and dynamic. This research thus provides a snapshot of the controversies and legal conundrums that often arise in the solar context.

Part I examines the need for solar development by highlighting the dire consequences of climate change, while also introducing the idea that we have to be deliberate in our use of solar energy to minimize the harm caused when converting land to solar energy production. We acknowledge that this is a tricky argument to make with some environmentalists.²⁸ Because climate change is such a serious problem, many feel we need to be willing to sacrifice much at its altar, including endangered species, social amenities, and economic development.²⁹ We suggest a gentler path that emphasizes developing solar energy in the right places, while acknowledging that not all land is created equal. We endorse policies and programs that seek to focus solar development on land with the fewest possible environmental and social impacts. In particular, we encourage planning processes that enable parties to weigh the various tradeoffs involved.

Part II describes the current farmland protection laws in California and explains how solar developers must navigate these laws. We spend substantial time discussing the Williamson Act, California's main agricultural protection mechanism, and describe the legislative change made to the Williamson Act to facilitate solar development. We also examine California's Environmental Quality

28. See, e.g., Michael Gerrard, Columbia Law School, Keynote Address at Legal and Policy Pathways for Energy Innovation Symposium at the University of Minnesota Law School: Confronting the Tradeoffs in the Energy Transition (Apr. 24, 2013), <https://mediamill.cla.umn.edu/mediamill/display/195744> [<https://perma.cc/T7X5-RFCA>] (asserting that the need to battle climate change is so urgent some negative environmental or cultural impacts may be necessary prices to pay); Jeffrey Thaler, *Fiddling as the World Floods and Burns: How Climate Change Urgently Requires a Paradigm Shift in the Permitting of Renewable Energy Projects*, 42 ENVTL. L. 1101, 1103 (2012) (arguing that compliance with current environmental laws unnecessarily slows the more pressing goal of conversion to renewable energy in light of concerns about climate change).

29. See Noah M. Sachs, *Climate Change Triage*, 44 ENVTL. L. 993 (2014); Ayana Elizabeth Johnson, *The Key to Halting Climate Change: Admit We Can't Save Everything*, THE GUARDIAN (Feb. 17, 2016, 6:30 AM), <https://www.theguardian.com/commentisfree/2016/feb/17/climate-change-admit-we-cant-save-everything> [<https://perma.cc/US8M-WEQS>]; Sharon Oosthoek, *Climate Change Turns Conservationists Into Triage Doctors*, CBC NEWS (Nov. 30, 2009, 3:51 PM), <http://www.cbc.ca/news/technology/climate-change-turns-conservationists-into-triage-doctors-1.847983> [<https://perma.cc/SS3T-DE33>].

Act and the unique role it plays in protecting agricultural land. Part III then explores the intricacies of solar development by describing the experiences of solar developers, farmers, and local officials in California's dominant agricultural areas. This discussion highlights the differences emerging by local jurisdiction and lays the groundwork for our recommendations, which follow in Part IV.³⁰ We endorse the idea of bringing together different stakeholders to do regional and landscape level analyses to identify the best lands for solar development. This approach is embodied by least conflict assessments. First conducted by environmental NGOs with the mantle then taken up by the state, least conflict assessments use geographic information system ("GIS")-based analysis to target the lands where conversion to solar will do the least harm. We describe these efforts and discuss how they can be built upon by incorporating additional factors into the analysis, yet we acknowledge that the outcomes of these analyses are driven more by transmission capacity than environmental conditions. In this way, such analyses can serve as prods to the energy agencies to urge development of transmission lines and capacity in new areas to help increase solar development in the right places.

I. THE PUSH FOR SOLAR AND THE NEED FOR RENEWABLES

Global climate change is proceeding at an unprecedented rate. Its impacts will be far-reaching and severe. The Intergovernmental Panel on Climate Change ("IPCC") has concluded that the impacts of climate change, resulting from anthropogenic greenhouse gases, include sea-level rise, droughts, increased extreme weather events, disease and pest outbreaks, and many other widespread

30. While this project examines solar energy, the questions are broader than simply the tradeoff between a single farm and some solar panels. Renewable energy policies are being created at the federal and state levels. Renewable energy policies include federal tax breaks and state renewable portfolio standards that encourage solar development in California. Yet, the final approval for siting of solar facilities and farmland protection policies occurs at the local (county) level. Assessing how these levels of government work together (or don't) could help us examine issues of federalism and localism at a scale largely ignored in the literature. Laws and policies also inform how a community views the role of agriculture within its borders. Local governments use laws to define themselves and as a signaling function to others. Some communities make it challenging for solar developers to convert farmland. Some facilitate it. Some require substantial compensatory mitigation for any loss of agricultural land. Some only require mitigation for the loss of environmental amenities like habitat and open space. These variations convey a community ethos and can help us understand how local governments use laws to establish a sense of place.

environmental and social impacts.³¹ Fossil fuel emissions are the most significant contributor to climate change and have been characterized as “a runaway train, hurtling the world’s citizens toward a stone wall.”³² The IPCC reports, with high confidence, that emissions from fossil fuel combustion and industrial uses compose approximately 78 percent of the reported increase in greenhouse gases, with 47 percent of emissions coming from energy production.³³

Renewable energy development is critical to reducing greenhouse gas emissions.³⁴ Due to concern about the potentially devastating impacts of climate change, most major environmental groups have expressed general support for the expansion of renewable energy.³⁵ Solar energy is a particularly attractive source, because it is abundantly available and has no emissions after the manufacture of initial materials. Although it comprises just 1.3 percent of the electric power generated in the United States,³⁶ it has enormous potential to expand.³⁷

31. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2013: THE PHYSICAL SCIENCE BASIS 3–29 (T.F. Stocker et al. eds., 2013).

32. Justin Gillis, *A Scientist, His Work and a Climate Reckoning*, N.Y. TIMES (Dec. 21, 2010), <https://www.nytimes.com/2010/12/22/science/earth/22carbon.html> [<https://perma.cc/8ZYK-Y92W>].

33. INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2014: MITIGATION OF CLIMATE CHANGE 6–8 (Otmar Edenhofer et al. eds, 2014).

34. N.L. Panwara, S.C. Kaushik & Surendra Kotharia, *Role of Renewable Energy Sources in Environmental Protection: A Review*, 15 RENEWABLE & SUSTAINABLE ENERGY REVS. 1513, 1514 (2011); Nancy Rader & Michael B. Gerrard, *LA Supervisors Should Heed Climate Imperative, Reverse Course on Proposed Wind Energy Ban*, SABIN CTR. FOR CLIMATE CHANGE L.: CLIMATE L. BLOG (July 31, 2015), <http://blogs.law.columbia.edu/climatechange/2015/07/31/la-supervisors-should-heed-climate-imperative-reverse-course-on-proposed-wind-energy-ban/#sthash.DQuFIYju.dpuf> [<https://perma.cc/892K-CDH9>] (protesting Los Angeles County’s ban of utility-scale wind power because of the dire need for renewable energy development to address climate change concerns). *But see* Martin I. Hoffert et al., *Advanced Technology Paths to Global Climate Stability: Energy for a Greenhouse Planet*, 298 SCI. 981, 985 (2002) (asserting that even with full deployment of renewable energy facilities, nations will be unable to meet greenhouse gas reduction goals).

35. Felicity Barringer, *A Soft Spot of Public Lands*, N.Y. TIMES: GREEN BLOG (Oct. 6, 2010, 4:21 PM), <http://green.blogs.nytimes.com/2010/10/06/a-soft-spot-for-public-lands> [<https://perma.cc/WLW7-KKWR>]. While environmental groups generally support renewable energy, both national and local organizations have challenged the siting of renewable energy projects. *See* John Copeland Nagle, *Green Harms of Green Projects*, 27 NOTRE DAME J.L. ETHICS & PUB. POL’Y 59, 74–86 (2013) (describing challenges to the siting of solar and wind facilities).

36. *Frequently Asked Questions: What is the U.S. Electricity Generation by Energy Source?*, U.S. ENERGY INFO. ADMIN., <https://www.eia.gov/tools/faqs/faq.php?id=427&t=3> [<https://perma.cc/T6C8-7R6E>] (last visited May 11, 2019). The National Renewable Energy Laboratories

Utility-scale solar projects (those large enough to sell electricity to utilities) are growing at an impressive rate, increasing from 892,000 MW hours in 2009 to 66,604,000 MW hours in 2018—an increase of 7,367 percent.³⁸ From 2015 to 2016 alone, it increased over 50 percent.³⁹ In 2015, utility-scale photovoltaic solar was the fastest growing energy source in the United States according to the U.S. Department of Energy.⁴⁰ California has the highest percentage of renewable energy facilities and capacity overall and continues to install the most solar PV (photovoltaic) capacity.⁴¹

Solar energy development was previously limited by several factors, including available technology and an entrenched, heavily subsidized fossil fuel industry.⁴² Improved technologies and increased fossil fuel costs now make solar power more attractive than it had been.⁴³ But renewables aren't worry-free. Solar energy projects may replace polluting fossil fuels, but solar projects have environmental costs of their own. For example, current solar technologies require approximately seven acres of land per

(“NREL”) peg this number as even higher, stating that it is 1.7 percent. NAT'L RENEWABLE ENERGY LABS., 2016 RENEWABLE ENERGY DATA BOOK 28 (2017).

37. ANTHONY LOPEZ ET AL., NAT'L RENEWABLE ENERGY LABS., U.S. RENEWABLE ENERGY TECHNICAL POTENTIALS: A GIS-BASED ANALYSIS 8 (2012).

38. U.S. ENERGY INFO. ADMIN, ELECTRIC POWER MONTHLY WITH DATA FROM MARCH 2019 18 tbl.1.1.A (2019), https://www.eia.gov/electricity/monthly/current_month/epm.pdf [<https://perma.cc/V9Y3-8TTM>].

39. NAT'L RENEWABLE ENERGY LABS., *supra* note 36, at 62.

40. *See* U.S. DEP'T OF ENERGY, LOAN PROGRAMS OFFICE, POWERING NEW MARKETS: UTILITY-SCALE PHOTOVOLTAIC SOLAR 1 (2015), https://www.energy.gov/sites/prod/files/2015/02/f19/DOE_LPO_Utility-Scale_PV_Solar_Markets_February2015.pdf [<https://perma.cc/H34E-FLFV>].

41. NAT'L RENEWABLE ENERGY LABS., *supra* note 36, at 30.

42. *See* HERMANN SCHEER, THE SOLAR ECONOMY: RENEWABLE ENERGY FOR A SUSTAINABLE GLOBAL FUTURE 28 (2002) (“[T]here is one notorious clinching argument which is always raised against the comprehensive and thoroughgoing realization of [large-scale introduction of solar energy]: conventional energy sources are assumed to have an economic advantage . . .”).

43. *See generally* Diane Cardwell, *Solar and Wind Energy Start to Win on Price vs. Conventional Fuels*, N.Y. TIMES (Nov. 23, 2014), http://www.nytimes.com/2014/11/24/business/energy-environment/solar-and-wind-energy-start-to-win-on-price-vs-conventional-fuels.html?_r=0 [<https://perma.cc/PDE8-C9JR>]; Hernandez et al., *supra* note 4, at 767; Nick Cunningham, *Energy Costs: Renewables Close in on Fossil Fuels, Challenging on Price*, USA TODAY (Apr. 4, 2018), <https://www.usatoday.com/story/money/energy/2018/04/04/energy-costs-renewables-close-fossil-fuels-challenging-price/485210002/> [<https://perma.cc/E4XL-N7GD>] (coal and oil in particular have risen in price, while hydrofracking technologies have made natural gas cheaper).

megawatt of energy generated.⁴⁴ Thus, while large solar projects have the potential to provide hundreds of megawatts of electricity, they could also disrupt huge expanses of undeveloped land. Arrays of solar panels on commercial rooftops or landfills are attractive alternatives to putting solar on open land as they allow beneficial reuse of developed sites, but such distributed generation projects are generally quite small and typically produce less than 1 MW.⁴⁵ The tension between renewable energy development and protection of important landscapes poses a conundrum for environmentalists.

Federal and state laws promote solar development. The federal American Recovery and Reinvestment Act of 2009 (“ARRA”) supplied billions of dollars to developers of renewable energy projects.⁴⁶ ARRA funded renewable energy projects through cash grants,⁴⁷ loan guarantees,⁴⁸ and tax credits.⁴⁹ Initially, ARRA funds

44. SEAN ONG ET AL., NAT’L RENEWABLE ENERGY LABS., LAND-USE REQUIREMENTS FOR SOLAR POWER PLANTS IN THE UNITED STATES v (2013).

45. Morris, Owley & Capello, *supra* note 14. But the number of projects and MW generated is steadily growing. See, e.g., SOLAR ENERGY INDUS. ASS’N, SOLAR MEANS BUSINESS 2017: TRACKING CORPORATE SOLAR ADOPTION IN THE U.S. 4 (2018).

46. American Recovery and Reinvestment Act of 2009, Pub. L. No. 111-5, 123 Stat. 115 (codified as amended at scattered portions of 1, 12, 15, 19, 26, 42 U.S.C.).

47. *1603 Program: Payments for Specified Energy Property in Lieu of Tax Credits*, U.S. DEP’T OF THE TREASURY, <https://home.treasury.gov/policy-issues/financial-markets-financial-institutions-and-fiscal-service/1603-program-payments-for> [<https://perma.cc/BD6P-XVZY>] (last visited May 11, 2019) [hereinafter TREASURY, *1603 Program*]. The guidelines include a “safe harbor” provision that sets the beginning of construction at the point where the applicant has incurred or paid at least 5 percent of the total cost of the property, excluding land and certain preliminary planning activities. U.S. TREASURY DEP’T, PAYMENTS FOR SPECIFIED ENERGY PROPERTY IN LIEU OF TAX CREDITS UNDER THE AMERICAN RECOVERY AND REINVESTMENT ACT OF 2009 7 (2011) [hereinafter 1603 GUIDANCE]; Lindsay Morris, *Is 2011 Solar’s Peak Year?*, RENEWABLE ENERGY WORLD (Oct. 19, 2011), <http://www.renewableenergyworld.com/rea/news/article/2011/10/is-2011-solars-peak-year> [<https://perma.cc/42EH-ATJT>] (explaining that to “qualify as a project that has commenced construction, a developer could do something as simple as putting a single foundation in place” as long as construction activity was continuous).

48. See Marc Lifsher, *Unlike Solyndra, Other California Projects Appear on Track*, L.A. TIMES (Oct. 15, 2011), <http://articles.latimes.com/2011/oct/15/business/la-fi-1015-solar-loans-20111015> [<https://perma.cc/UBY8-UUFV>] (detailing how loan guarantees have been used for many different California solar energy projects).

49. Jenna Goodward & Mariana Gonzalez, *Renewable Energy Tax Credits*, WORLD RES. INST., Oct. 2010, at 1; Kate Galbraith, *Future of Solar and Wind Power May Hinge on Federal Aid*, N.Y. TIMES (Oct. 25, 2011), <http://www.nytimes.com/2011/10/26/business/energy-environment/future-of-solar-and-wind-power-may-hinge-on-federal-aid.html?pagewanted=all> [<https://perma.cc/F39U-QTKQ>]; Peter Lynch, *Feed-in Tariffs: The Proven Road NOT Taken...Why?*, RENEWABLE ENERGY WORLD (Nov. 23, 2011), <http://www.renewableenergyworld.com/rea/news/article/2011/11/feed-in-tariffs-the-proven-road-not-takenwhy?>

were available to projects that were “shovel-ready” by the end of 2010, but the Tax Relief, Unemployment Reauthorization, and Job Creation Act of 2010 extended the funding to projects that began construction by the end of 2011.⁵⁰ As of June 2016, cash grant funding for solar projects totaled almost \$10 billion (\$9.3 billion if you do not include solar thermal projects), and California solar projects represented \$4.77 billion (\$4.23 billion if you do not include solar thermal) of that total.⁵¹ Department of Energy loans for solar energy projects totaled \$10.6 billion in 2017.⁵² Some of the growth in solar development can be attributed to the availability of favorable tax incentives. For example, a 30 percent solar investment tax credit was implemented in 2006.⁵³ It was set to expire at the end of 2008 but was extended until the end of 2016,⁵⁴ and then again to the end of 2023.⁵⁵

Some states, particularly California, have been even more aggressive in their promotion of renewables. In 2002, the California legislature passed a Renewable Portfolio Standard (“RPS”), requiring utilities to steadily increase the percentage of energy they obtain from renewable energy sources.⁵⁶ Many

cmpid=WNL-Friday-November25-2011 [https://perma.cc/9FRT-ZL3R]; Morris, Owley & Capello, *supra* note 14.

50. Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010, Pub. L. No. 111-312, § 707, 124 Stat. 3312.

51. Calculated based on spreadsheets updated on June 20, 2016. See TREASURY, *1603 Program*, *supra* note 47 (follow link for “List of Awards”).

52. *Portfolio Projects by Technology*, U.S. DEP’T OF ENERGY, <https://energy.gov/lpo/portfolio/portfolio-projects-technology> [https://perma.cc/8WGG-8UEG] (last visited May 11, 2019) (showing \$5.86 billion for concentrated solar projects and \$4.74 billion for photovoltaic projects).

53. Energy Policy Act of 2005, Pub. L. No. 109-58, 119 Stat. 594; SOLAR ENERGY INDUS. ASS’N, SOLAR INVESTMENT TAX CREDIT (ITC) (2018), <https://www.seia.org/sites/default/files/inline-files/SEIA-ITC-101-Factsheet-2018-June.pdf> [https://perma.cc/Z7H3-SP8W].

54. Emergency Economic Stabilization Act of 2008, Pub. L. No. 110-343, 122 Stat. 3765.

55. Consolidated Appropriations Act of 2015, Pub. L. No. 114-113, 129 Stat. 2242.

56. CAL. LEGIS. SERV. Ch. 516 (S.B. 1078) (2002); *Renewables Portfolio Standard*, CAL. ENERGY COMMISSION, <http://www.energy.ca.gov/portfolio/> [https://perma.cc/TE9B-BQGS] (last visited May 11, 2019). The 2002 law required electricity providers to increase the renewable percentage of their portfolio by 1 percent a year until they reached 20 percent. In 2006, the state legislature amended the standard to say that all providers must reach 20 percent by 2010. CAL. LEGIS. SERV. Ch. 464 (S.B. 107) (2006). In 2008, Governor Arnold Schwarzenegger issued an executive order requiring 33 percent by 2020. Cal. Exec. Order S-14-08 (Nov. 17, 2008), https://www.drecp.org/documents/docs/2008-11-17_Exec_Order_S-14-08.pdf [https://perma.cc/HV99-RAEQ]. This same level was set by the legislature in 2011. CAL. LEGIS. SERV. Ch. 1 (S.B. X 1-2) (2011); JENNIE JORGENSON, PAUL DENHOLM & MARK MEHOS, NAT’L RENEWABLE ENERGY LAB., NO. NREL/TP-6A20-61685,

credited the ARRA funding combined with the RPS with creating a renewable energy “gold rush.”⁵⁷ After nearly meeting the 33 percent target, in 2015 the state increased the goal to 50 percent by 2030.⁵⁸ Governor Jerry Brown then issued an executive order in 2018 declaring a goal of carbon neutrality for the state by 2045, which would mean 100 percent renewable energy.⁵⁹ California’s Global Warming Solutions Act of 2006 (often referred to as AB 32) has also played a role in promotion of solar energy.⁶⁰ While the RPS sets a goal for renewable energy production as part of the electricity mix, AB 32 established target emissions for greenhouse gases.⁶¹ Switching to non-fossil fuel sources is one of the fastest ways to reduce greenhouse gas emissions.⁶²

Through these laws and the state’s response to the election of President Donald Trump, California has gained and maintained a reputation as being at the forefront of environmental protection. This occurs in the state that grows much of the nation’s food and that houses many of the nation’s most unique natural resources. These features are both attractive in and challenging for determining the best path forward for solar energy development. The following section examines threats to agriculture protection in California, demonstrating that alongside development of advanced

ESTIMATING THE VALUE OF UTILITY-SCALE SOLAR TECHNOLOGIES IN CALIFORNIA UNDER A 40% RENEWABLE PORTFOLIO STANDARD (2014).

57. Dana Hull, *Clean Energy ‘Gold Rush’ in Mojave Spurs Backlash*, CHRISTIAN SCI. MONITOR (Oct. 31, 2011), <https://www.csmonitor.com/Technology/2011/1031/Clean-energy-gold-rush-in-Mojave-spurs-backlash> [<https://perma.cc/VM6V-AB8W>]; Eric Lipton & Clifford Krauss, *A Gold Rush of Subsidies in Clean Energy Search*, N.Y. TIMES (Nov. 11, 2011), <https://www.nytimes.com/2011/11/12/business/energy-environment/a-cornucopia-of-help-for-renewable-energy.html> [<https://perma.cc/657S-SMW5>]; Morris & Owley, *supra* note 5, at 297.

58. CAL. LEGIS. SERV. Ch. 547 (S.B. 350) (2015).

59. Ida Mojadad, *Governor Puts California on Path to 100 Percent Renewable Energy*, SF WEEKLY (Sept. 10, 2018), <http://www.sfweekly.com/news/governor-puts-california-on-path-to-100-percent-renewable-energy/> [<https://perma.cc/TUC3-K3SB>].

60. *Assembly Bill 32 Overview*, CAL. AIR RESOURCES BOARD., <https://www.arb.ca.gov/cc/ab32/ab32.htm> [<https://perma.cc/4FDS-MDWG>] (last visited May 11, 2019); W. MICHAEL HANEMANN, *HOW CALIFORNIA CAME TO PASS AB 32, THE GLOBAL WARMING SOLUTIONS ACT OF 2006* (2007), <https://ageconsearch.umn.edu/bitstream/7190/2/wp071040.pdf> [<https://perma.cc/8U6Y-37W7>]; Henry Stern, *A Necessary Collision: Climate Change, Land Use, and the Limits of AB 32*, 35 ECOLOGY L. Q. 611 (2008).

61. *Assembly Bill 32 Overview*, CAL. AIR RESOURCES BOARD, *supra* note 60.

62. David Biello, *10 Solutions for Climate Change*, SCI. AM. (Nov. 26, 2007), <https://www.scientificamerican.com/article/10-solutions-for-climate-change> [<https://perma.cc/9TZR-BLP7>]; see also Gert Jan Kramer & Martin Haigh, *No Quick Switch to Low-Carbon Energy*, 462 NATURE 568 (2009).

renewable energy policies, the state has also worked to protect and promote agriculture.

II. FARMLAND PROTECTION IN CALIFORNIA

California is the nation's top-producing agricultural state.⁶³ It is comprised of approximately one hundred million acres of land, with forty-three million acres dedicated to agriculture.⁶⁴ Sixteen million acres serve as grazing land and twenty-seven million acres as cropland.⁶⁵ All fifty-eight of California's counties have agricultural production at some level (even urban San Francisco County).⁶⁶ Fourteen counties produce at least \$1 billion of agricultural products annually.⁶⁷

Many of California's rural communities are urbanizing, which puts pressure on this farmland. The state's tracking of farmland conversion showed a decrease in over 58,000 acres of irrigated farmland between 2010 and 2012 (the most recent published years).⁶⁸ Most of the farmland lost was land with prime soils (81 percent from 2010 to 2012), those classified as the best for agricultural production.⁶⁹ The causes of farmland loss are rapid population growth and inefficient use of land (i.e., sprawling development patterns).⁷⁰ Some land has been taken out of agricultural production for environmental reasons, usually the creation or enlargement of wildlife refuges.⁷¹ Additionally, some agricultural production has been halted due to water unavailability (some of the water going to protect wildlife and environmental

63. *Cash Receipts by Commodity State Ranking*, U.S. DEP'T OF AGRIC., <https://data.ers.usda.gov/reports.aspx?ID=17844> [<https://perma.cc/9CNM-BWDV>] (last visited May 11, 2019) (with total cash receipts at \$50.2 billion). Iowa is far behind in second place with \$26.6 billion. *Id.*

64. EDWARD THOMPSON, JR., AM. FARMLAND TRUST, CALIFORNIA AGRICULTURAL LAND LOSS & CONSERVATION: THE BASIC FACTS (2009).

65. *Id.*

66. Cdfa 2018 REPORT, *supra* note 20, at 21.

67. *Id.*

68. 2015 FARMLAND CONVERSION REPORT, *supra* note 6.

69. *Id.* Although some question whether these classifications are really that well done, suggesting that some farmland designated as prime soil may not really merit that label. Interview with Senior Attorney with Environmental NGO (Aug. 24, 2015) [hereinafter Interview #8] (on file with authors).

70. 2015 FARMLAND CONVERSION REPORT, *supra* note 6 (labeling "urbanization" as the greatest cause of farmland conversion followed by "low density rural residences, mining, and ecological restoration projects").

71. *Id.*

amenities and other water going to more senior water interests).⁷² Many parcels saw multiple years with zero water allocation.⁷³ If current development trends continue, 2.5 million acres of farmland will be developed by 2040.⁷⁴

American Farmland Trust, an agricultural nonprofit organization that works to protect agricultural land and communities nationwide, argues that once farmland is converted to another use, it is gone forever.⁷⁵ Before now, fighting against farmland

72. Brett Walton, *California Drought Cuts Farm Water Allocation to Zero for Second Consecutive Year*, CIRCLE OF BLUE (Feb. 27, 2015), <http://www.circleofblue.org/waternews/2015/world/california-drought-cuts-farm-water-allocation-zero-second-consecutive-year> [<https://perma.cc/XUG6-H9XU>]; George Skelton, *In California, Rights to Water Exceed the Supply*, L.A. TIMES (Apr. 12, 2015), <http://www.latimes.com/local/politics/la-me-cap-drought-water-20150413-column.html> [<https://perma.cc/S855-F8Z6>].

73. Interview with County Farm Bureau (June 17, 2015) [hereinafter Interview #3] (on file with authors); Bettina Boxall, *Gov. Brown Declares California Drought Emergency is Over*, L.A. TIMES (Apr. 7, 2017), <https://www.latimes.com/local/lanow/la-me-brown-drought-20170407-story.html> [<https://perma.cc/QT4T-V4GP>] (quoting Governor Jerry Brown as saying, “This drought emergency is over, but the next drought could be around the corner.”); Elijah Wolfson, *Drying Up: The Race to Save California from Drought*, NEWSWEEK (Apr. 23, 2015), <https://www.newsweek.com/2015/05/01/can-science-save-california-drought-324087.html> [<https://perma.cc/6Z5Y-8M7B>] (interviewing a Fresno farming family trying to operate a farm with zero water allocation and planning to convert their almond orchard to a solar field).

74. CDFA BENEFITS, *supra* note 6, at 3. A 2009 report from the American Farmland Trust put the estimated loss of farmland by 2050 at 1.3 million acres with 670,000 acres composed of “prime, unique and statewide important farmland.” THOMPSON, JR., *supra* note 64.

75. *Farmland*, AM. FARMLAND TRUST, <https://www.farmland.org/our-work/areas-of-focus/farmland> [<https://perma.cc/R6SK-WXLG>] (last visited May 11, 2019). *See also* Interview with Agricultural NGO Official (Aug. 25, 2015) [hereinafter Interview #12] (on file with authors) (asserting it is “ridiculous” to call solar panels temporary). Not everyone agrees with this. The developers, solar companies, and planning officials in California believe that the solar land can (and will) easily return to agricultural land. Interview #2; Interview #3; Interview with Solar Planning Consultant (June 18, 2015) [hereinafter Interview #4] (on file with authors); Interview with County Planning Office (June 17, 2015) [hereinafter Interview #5] (on file with authors); Interview with County Planning Office (June 17, 2015) [hereinafter Interview #6] (on file with authors); Interview with Energy Policy Researcher (Aug. 27, 2015) [hereinafter Interview #16] (on file with authors). Placing solar panels on the land is not the same as building a suburban housing development. Solar projects are required to restore the land to its former state once the solar facility shuts down. At this time, none of the solar projects is old enough for us to know how true this is although one interviewee described a previous non-agricultural land solar site where panels had been removed, explaining “you can’t tell it was there anymore.” Interview #2. Generally, we do not know how long the solar facilities will remain in operation although initial conditional use permits range from twenty to forty years. *Id.*; Interview #4. We do not know whether there will be water to farm the land once the solar facilities decide to move on. The only agricultural land we know of where the solar facility has been removed is a PG&E-owned site in Fresno County where there no requirement of a reclamation plan. It took years for the

conversion has generally meant fighting against suburban sprawl, lobbying for increasing urban densities, and protecting water rights. The issues related to solar development differ somewhat from conversion for urban development. Conversion for solar development may occur farther from urban areas although conversion rates for both urban and solar development are highest in the San Joaquin Valley, albeit in different areas of the valley. As the area with the highest levels of agricultural land, it may be unsurprising that San Joaquin Valley also has the highest number of acres converted to other uses. In its 2015 Report, the California Department of Conservation identified solar development as a major driver of farmland conversion, and projected that 205,000 acres would be converted to solar production over the next few years based on pending applications at that time.⁷⁶

Some argue that conversion for solar use, unlike urban development, is not permanent.⁷⁷ Agricultural land is often attractive to solar developers.⁷⁸ Viewed as open land, it seems easy to build on and perhaps (but not always) purchase at lower prices than land open for housing development.⁷⁹ Development on farmland may require fewer permitting hurdles and may lead to fewer conflicts with endangered species than the conservation lands that had been the previous focus of solar development.⁸⁰ As

community to get PG&E to remove the old panels and the land now remains a vacant site. Interview #3; Interview #4; Interview #5.

76. FARMLAND CONVERSION REPORT 2015, *supra* note 6, at 2.

77. *See supra* note 75. The permanence conversation can get very tricky. Solar developers tell agricultural interests that mitigation for farmland loss should not be required because you can easily return to farming after twenty to thirty years. Interview #13; Interview #14. However, they also tell the farmers that the projects are going to remain viable long into the future, explaining “no one has ever walked away from a power plant before” and therefore there shouldn’t be bond requirements to cover the cost of converting back to agriculture at the end. Interview #13.

78. *See, e.g.*, Interview #3; Interview #4; Interview #12.

79. *See* Interview with Land Conservation Consultant (Aug. 27, 2015) [hereinafter Interview #15] (on file with authors) (explaining that solar developers often view agricultural land as “industrialized waste land, no different from an office park” and ideal for energy development).

80. Some agricultural land also has endangered species, and their presence has been a challenge for developers. *See, e.g.*, Dale Kasler, Carolyn Wilke & Ryan Sabalow, *1.8 Million California Acres Were Set Aside for Frogs. Ranchers Say Decision Ignores Them*, SACRAMENTO BEE (Aug. 1, 2017); *see also* *Giant Garter Snake*, CENT. VALLEY HABITAT EXCHANGE, <http://cvhe.org/species/giant-garter-snake> [<https://perma.cc/69R6-G26T>] (last visited May 11, 2019) (explaining that rice fields are particularly important for snake habitat). Some developers assert that the presence of a listed species will veto use of a site for them while others suggest that the ability to find a site well connected to the grid will trump all other

one California agency explained, “Agricultural land is of interest to PV solar developers due to its level terrain, existing land disturbance, decreased likelihood of hosting species of concern, and proximity to transmission lines or substations.”⁸¹ Additionally, farmland is attractive to solar developers because they can deal with private landowners instead of negotiating with the federal government and do not need to secure several different federal permits. As multiple interviewees explained, it is easier to lobby a county board of supervisors for a land use change than deal with federal permitting and environmental review processes.⁸²

For years, the state of California, alongside many local governments, has instituted several protections for farmland. There is a complicated structure of rating farmland, supporting farmers, and implementing tax breaks. Increased interest in solar production, however, has shifted attitudes regarding farmland. There is now a tension between protecting farmland (along with farming communities and the rural character) and promoting renewable energy. Add to this mix periodic drought, and it is a pretty complicated picture. The pressures on California’s agricultural land have inspired the state legislature and local governments to enact various measures to protect agricultural land and promote the business of agriculture. This includes creating favorable tax benefits through mechanisms like the Williamson Act and requiring consideration of impacts on agriculture through California’s environmental review statute (the California Environmental Quality Act, or “CEQA”). As developers seek to take portions of agricultural land out of crop production and put it into energy production, such laws can become an obstacle. Notably, while laws promote solar development, the favoring of the agricultural industry is still palpable with agricultural land receiving exemptions from environmental laws and other requirements that solar producers simply do not enjoy.⁸³ This section outlines the

considerations and make investment in the site attractive despite (what they view as minimal) investment in the endangered species permitting process. Interview #2; Interview #4; Interview with Biologist for Environmental Consulting Firm [hereinafter Interview #19] (on file with authors); Interview with Land Developer [hereinafter Interview #20] (on file with authors).

81. CAL. DEP’T OF CONSERVATION, THE CALIFORNIA LAND CONSERVATION ACT OF 1965 2016 STATUS REPORT 9 (2016) [hereinafter 2016 REPORT].

82. Interview #2; Interview #14.

83. Interview #2. See also J.B. Ruhl, *Farms, Their Environmental Harms, and Environmental Law*, 27 *ECOLOGY L. Q.* 263, 293–315 (2000) (describing exceptions or “safe harbors” for the

main agricultural conservation laws at play in California, starting with a brief outline of some soil classifications. The section then details the Williamson Act and CEQA, the two laws that solar developers and local planners spend the most time grappling with.

A. Farmland Mapping and Monitoring Program (FMMP)

In 1982, the California legislature established the Farmland Mapping and Monitoring Program (“FMMP”) based on a concern that valuable farmlands were being converted to other land uses.⁸⁴ The state felt it was important to understand where farmland, especially the highest quality farmland, was located. The program combines U.S. Department of Agriculture (“USDA”) soil classifications and current land uses to map important farmland.⁸⁵

California has several categories of farmland: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land.⁸⁶ Prime Farmland is the best quality farmland as determined by assessing its physical and chemical features. The land has the soil quality, growing season, and moisture supply needed to produce sustained high yields.⁸⁷ To be classified as Prime Farmland, the land must have been recently used for irrigated agriculture.⁸⁸ Farmland of Statewide Importance is similar to Prime Farmland, but with small differences (changes in slope or soil, for example) that make it not quite as valuable.⁸⁹

agricultural industry); Margot J. Pollans, *Drinking Water Protection and Agricultural Exceptionalism*, 77 OHIO ST. L.J. 1195, 1208–18 (2016) (describing elements of the Safe Drinking Water Act that preference farmers).

84. CAL. GOV'T CODE § 65570 (West 2018); *Farmland Mapping & Monitoring Program*, CAL. DEP'T OF CONSERVATION, <https://www.conservation.ca.gov/dlrp/fmmp> [https://perma.cc/N3Q6-ATF7] (last visited Feb. 8, 2019). The bill was signed by Jerry Brown in his first stint as governor. The first maps were produced in 1984. *Program Overview*, CAL. DEP'T OF CONSERVATION, <https://www.conservation.ca.gov/dlrp/fmmp/Pages/ProgramOverview.aspx> [https://perma.cc/9HHW-YY5A] (last visited May 11, 2019) [hereinafter CAL. DEP'T OF CONSERVATION, *Farmland Mapping Program Overview*].

85. CAL. DEP'T OF CONSERVATION, IMPORTANT FARMLAND MAPPING CATEGORIES AND SOIL TAXONOMY TERMS (2019), https://www.conservation.ca.gov/dlrp/fmmp/Documents/soil_criteria.pdf [https://perma.cc/AUN4-XBZG] [hereinafter CAL. DEP'T OF CONSERVATION, IMPORTANT FARMLAND].

86. CAL. PUB. RES. CODE § 21060.1 (West 2017).

87. 7 C.F.R. § 675.5(a) (2018).

88. *Prime Farmland and Farmland of Statewide Importance*, CAL. DEP'T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/fmmp/Pages/prime_farmland_fmmp.aspx [https://perma.cc/2JHF-6CN4] (last visited May 11, 2019).

89. CAL. DEP'T OF CONSERVATION, IMPORTANT FARMLAND, *supra* note 85.

Unique Farmland remains important for production, but the soils are of lesser quality, and there is no requirement that the land be used for irrigated agriculture.⁹⁰ Farmland of Local Importance is designated by each county's Board of Supervisors, along with a local advisory committee.⁹¹ Nine million acres (or one-third) of the state's irrigated cropland is classified as Prime, Unique, or of Statewide Importance.⁹² Additionally, local governments have designated a little over three million acres as Farmland of Local Importance.⁹³ Although the FMMP does not specifically track grazing land, the California Cattleman's Association worked with the University of California Extension Program to map grazing land throughout the state.⁹⁴ These categories inform the ratings of farmland that accompany protection mechanisms described below.

B. Williamson Act of 1965

1. Williamson Act Basics

The California Land Conservation Act, commonly known as the Williamson Act, seeks to protect agricultural land.⁹⁵ Passed in 1965, the statute's stated purpose is "the discouragement of premature and unnecessary conversion of agriculture to urban uses."⁹⁶ Originally envisioned as a program to prevent suburban sprawl, the Williamson Act provides tax incentives for owners of agricultural land.

90. *Id.*

91. *Id.*

92. THOMPSON, JR., *supra* note 64, at 19.

93. See K. KISKO, CAL. DEP'T OF CONSERVATION, FARMLAND OF LOCAL IMPORTANCE (2017), https://www.conservation.ca.gov/dlrp/fmmp/Documents/Farmland_of_Local_Importance_2016.pdf [<https://perma.cc/5NWE-2SVS>] (describing the county standards for farmlands of local importance).

94. *Id.*; *CA Farmland Mapping and Monitoring Program*, ARCGIS, <https://www.arcgis.com/home/item.html?id=6586b7d276d84581adf921de7452f765> [<https://perma.cc/B3C7-ER8G>] (last visited May 11, 2019) (providing geographical information system ("GIS") mapping of California farmland and describing the source of the data).

95. The Act (AB 2117) was authored by Assemblyman John Williamson of Yolo County. 2016 REPORT, *supra* note 81, at 5; *Williamson Act Program Overview*, CAL. DEP'T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/wa/Pages/wa_overview.aspx [<https://perma.cc/T5Q6-PV72>] (last visited May 11, 2019).

96. CAL. GOV'T CODE § 51220(c) (West 2018).

State legislators passed the Williamson Act to take development pressure off of farmland by reducing property taxes.⁹⁷ Generally, land in California is taxed based on the highest and best use of the land.⁹⁸ In many circumstances, particularly where development pressure is highest, agricultural use is not considered the highest and best use of the land, which is based on fair market value.⁹⁹ Such tax patterns incentivize landowners to convert their land to other uses. The Williamson Act enables owners of agricultural land to have reduced property taxes in exchange for voluntarily entering into ten- or twenty-year agreements to maintain their property as agricultural land (or qualifying open space). During the time that land is under contract, the property is taxed at a lower rate.¹⁰⁰

The state Department of Conservation oversees the act, and implementation occurs at the local level. First, counties and municipalities must elect to operate a Williamson Act program.¹⁰¹ When they do, the localities establish their own programs for approving and entering into Williamson contracts following the state guidelines.¹⁰² They begin by establishing agricultural preserve

97. Dallas Holmes, *Assessment of Farmland Under the California Land Conservation Act and the Breathing Space Amendment*, 55 CALIF. L. REV. 273, 274–75 (1967).

98. *The Income Approach to Value*, CAL. ST. BOARD OF EQUALIZATION, <https://www.boe.ca.gov/info/iav/lesson2.htm> [<https://perma.cc/5ZPX-TWXS>] (last visited May 11, 2019).

99. Holmes, *supra* note 97.

100. In some cases, agriculture may be the highest and best use of the land. There remains an incentive to enter into Williamson Act contracts though. The landowners get whichever characterization gets them the lowest tax assessment: the current fair market value of the land, the Williamson Act amount (the market value of agricultural land), or the amount of assessable taxes based upon California's Proposition 13. According to the California Department of Conservation, 71 percent of ranchers with land enrolled in Williamson Act contracts have annual profits that are less than or equal to their savings under the Williamson Act. *Land Conservation (Williamson) Act Questions & Answers*, CAL. DEP'T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/wa/Pages/LCA_QandA.aspx#what%20benefits%20do%20williamson%20act%20contracts%20offer%20to%20landowners [<https://perma.cc/SX9T-7NKC>] (last visited, May 11, 2019) [hereinafter CAL. DEP'T OF CONSERVATION, *Land Conservation*]. California voters passed Proposition 13 in June 1978, restricting property tax value at the 1976 level with only limited allowed increases each year. Kenneth T. Rosen, *The Impact of Proposition 13 on House Prices in Northern California: A Test of the Interjurisdictional Capitalization Hypothesis*, 90 J. POL. ECON. 191, 191–92 (1982). It is akin to rent control for property taxes, putting strict controls on annual increases with some bigger increases available when a property changes hands. *See id.*

101. Michael Patrick Durkee, David H. Blackwell & Thomas P. Tunny, *A Modern Perspective on the Williamson Act: Conservation, Confusion, and Controversy*, 22 CAL. REAL PROP. J. 1 (2004).

102. 2016 REPORT, *supra* note 81, at 6.

areas.¹⁰³ An agriculture preserve is “devoted to either agricultural, recreational, or open-space use, or some combination of those uses.”¹⁰⁴ Only land within the preserves is eligible for program participation.¹⁰⁵ Landowners with parcels inside these designated preserves can then voluntarily enter into contracts with local governments with established Williamson Act programs.¹⁰⁶ The local governments set their own parameters with respect to these preserves with some guidance from the Act itself.¹⁰⁷ Not all counties or municipalities participate in the program.¹⁰⁸ Where a local government does participate, though, it must agree to enter into contracts with any eligible landowner.¹⁰⁹

Similar to agricultural easements or conservation easements enabled under other laws, Williamson Act contracts restrict a landowner’s ability to convert land to other uses.¹¹⁰ When agreeing to be bound by the Williamson Act, landowners agree not to convert farmland to other uses, but there is no requirement that landowners actively farm the land. Additionally, the Williamson Act does not have any provisions for environmental protection, other than a need for the use to be either agricultural or related open space uses. An agricultural use is defined broadly as the “use of land, including but not limited to greenhouses, for the purpose of producing an agricultural commodity for commercial purposes.”¹¹¹ Open space uses are more broadly defined and include lands with scenic and recreational values.¹¹²

103. CAL. DEP’T OF CONSERVATION, *Land Conservation*, *supra* note 100.

104. CAL. GOV’T CODE §§ 51021(d), 51205 (West 2018); 2016 REPORT, *supra* note 81, at i.

105. 2016 REPORT, *supra* note 81, at 6.

106. CAL. GOV’T CODE §§ 51201(d), 51205, 51220–51223 (West 2018).

107. 2016 REPORT, *supra* note 81, at 6; CAL. GOV’T CODE §§ 51238, 51238.1–51238.3 (West 2018).

108. As of 2015, fifty-two of California’s fifty-eight counties had executed Williamson Act contracts. 2016 REPORT, *supra* note 81, at 1.

109. *Id.* at 6.

110. *Id.*

111. CAL. GOV’T CODE § 51201(b) (West 2018).

112. *Id.* § 16143. Article 13, section 8 of the California Constitution declares it state policy “to promote the conservation, preservation and continued existence of open space lands.” The Constitution allows alternative valuation of open space lands for property tax purposes because they provide recreation, scenic values, conservation of natural resources, and places for “production of food and fiber.” CAL. CONST. art. 13, § 8. California state law defines open space lands as:

[A]ny parcel or area of land or water that is devoted to an open-space use as defined in this section, and that is designated on a local, regional, or state open-space plan as any of the following:

Williamson Act contracts are binding on successors. That is, although they are termed contracts, they run with the land and are more akin to servitudes or term conservation easements.¹¹³ Williamson Act contracts must be for a minimum of ten years but can last up to twenty years.¹¹⁴ Referred to as annually renewable contracts (sometimes called self-renewing or rolling contracts), each year the ten-year time frame is extended by another year unless one of the parties to the agreement (the county or the landowner) decides otherwise.¹¹⁵ That is, under normal operations, the contract always lasts ten years. Once one or both parties decides to end the contract, it is no longer automatically extended, and the parties must wait ten years for it to expire.

(1) Open space for the preservation of natural resources, including, but not limited to, areas required for the preservation of plant and animal life, including habitat for fish and wildlife species; areas required for ecologic and other scientific study purposes; rivers, streams, bays, and estuaries; and coastal beaches, lakeshores, banks of rivers and streams, and watershed lands.

(2) Open space used for the managed production of resources, including, but not limited to, forest lands, rangeland, agricultural lands, and areas of economic importance for the production of food or fiber; areas required for recharge of groundwater basins; bays, estuaries, marshes, rivers, and streams that are important for the management of commercial fisheries; and areas containing major mineral deposits, including those in short supply.

(3) Open space for outdoor recreation, including, but not limited to, areas of outstanding scenic, historic, and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and areas that serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors.

(4) Open space for public health and safety, including, but not limited to, areas that require special management or regulation because of hazardous or special conditions such as earthquake fault zones, unstable soil areas, flood plains, watersheds, areas presenting high fire risks, areas required for the protection of water quality and water reservoirs, and areas required for the protection and enhancement of air quality.

(5) Open space in support of the mission of military installations that comprises areas adjacent to military installations, military training routes, and underlying restricted airspace that can provide additional buffer zones to military activities and complement the resource values of the military lands.

(6) Open space for the protection of places, features, and objects described in Sections 5097.9 and 5097.997 of the Public Resources Code.

CAL. GOV'T CODE § 65560 (West 2018).

113. Term conservation easements are not allowed in California where the state conservation easements statute requires perpetuity. CAL. CIV. CODE § 815.2(b) (West 2018).

114. CAL. DEP'T OF CONSERVATION, *Land Conservation*, *supra* note 100.

115. 2016 REPORT, *supra* note 81, at II. As explained below, there are also a few other routes to end Williamson Act conflicts other than nonrenewal, with cancellation being the most common. *See infra* Sections III.B–C.

There are some exceptions enabling contracts to end earlier, as outlined below.

Many types of agricultural land can be enrolled in a Williamson Act contract. Indeed, the law enables protection of land that is neither designated as prime agricultural land nor even classified as agricultural land under state law.¹¹⁶ There are two enrollment categories: prime and nonprime. The designation of land as prime agricultural land is based on soil quality, forage production, and/or income criteria.¹¹⁷ This differs from the Prime Farmland designation under the FMMP (which requires irrigation).¹¹⁸ Nonprime land can be enrolled under the program if it is devoted to open space use of statewide significance under the California Open Space Subvention Act.¹¹⁹ Nonprime land in agricultural use usually means grazing or non-irrigated crops, but it could also include other types of open space like parks and recreation areas consistent with local general plans and compatible with agriculture.¹²⁰ About 31 percent of Williamson Act contracts are on prime land with 63 percent on nonprime land (and a remaining 6 percent in Farmland Security Zones, described below).¹²¹

116. CAL. GOV'T CODE §§ 51238.1, 16143 (West 2018); CAL. PUB. RES. CODE § 21060.1 (West 2018).

117. To qualify as primary, land must meet one or more of the following criteria under state law:

- (1) Land that qualifies for rating as class I or class II in the NRCS (Natural Resources Conservation Service—part of the United States Department of Agriculture) land capability classification system. Note, it just has to qualify, it doesn't actually have to be rated as such.
- (2) Land that qualifies for rating 80 to 100 in the Storie Index Rating system (a classification system used by the University Extension office).
- (3) Land that supports livestock used for production of food and fiber that has an annual carrying capacity equivalent to at least one animal unit per acre as defined by the USDA.
- (4) Land planted with fruit or nut-bearing trees, vines, bushes, or crops that have a nonbearing period of less than five years and that will normally return during the commercial bearing period more than \$200 per acre.
- (5) Land that has returned from the production of unprocessed agricultural plan production with an annual gross revenue of more than \$200 per acre for three of the previous five years.

CAL. GOV'T CODE § 51201(c) (West 2018).

118. *Id.* § 65570.

119. *Id.* §§ 16140–16154.

120. 2016 REPORT, *supra* note 81, at 7.

121. *Id.* at 12.

In 1998, the California Legislature added the Farmland Security Zone (“FSZ”) provision to the Williamson Act.¹²² If landowners want even greater savings than the standard Williamson Act contract provides, they may be able to enter into Farmland Security Contracts, which impose greater restrictions in exchange for an additional 35 percent reduction in valuation.¹²³ FSZs are areas of particularly valuable farmland in which landowners can enter into contracts for longer durations (minimum of twenty years) and receive a larger tax benefit for making this increased commitment.¹²⁴ Certain qualitative thresholds must be met. Cities and special districts that provide non-agricultural services are generally prohibited from annexing land enrolled under an FSZ contract, and school districts cannot use eminent domain to take such land for school facilities.¹²⁵ Twenty-five counties have FSZ programs, but not all twenty-five have executed FSZ contracts.¹²⁶

Participation in the Williamson Act programs is voluntary both on the part of the local government and the landowners. Both the landowner and the local government accept losses for the mutual goal of farmland protection. Landowners lose freedom of action on their land and potentially hamper their ability to sell the land, while local governments forgo property tax payments. Local governments did not immediately embrace the Williamson Act program. In its first two years “only 200,000 acres were enrolled under contract in six counties.”¹²⁷ Things changed dramatically once the state started the subvention program, where the state reimbursed a portion of the local government’s lost property tax revenue. The Open Space Subvention Act of 1971 provided local governments an annual subvention of forgone property tax revenues through 2009. That is, the state partially compensated the counties for their loss of tax revenues.

122. *Id.* at 8.

123. Land under FSZ contract is valued at 65 percent of its Williamson Act valuation or 65 percent of its Proposition 13 valuation, whichever is lower. CAL. GOV’T CODE § 51296.2 (West 2018).

124. *Id.* §§ 51296, 51296.1, 51296.8. As originally enacted, only lands already enrolled as Williamson Act lands could become FSZ contracts. However, the state changed that rule and beginning in 2000, non-contracted lands could go straight into FSZ contracts without first needing to be Williamson Act contracts.

125. 2016 REPORT, *supra* note 81, at 8.

126. *Id.* at 2.

127. *Williamson Act Program Overview*, CAL. DEP’T OF CONSERVATION, *supra* note 95.

Subvention payments were calculated based on the number of acres, quality of the farmland (soil type and agricultural productivity), whether under a FSZ contract, and the proximity of the enrolled land to the city.¹²⁸ Through the program, the state paid the local governments an average of \$1.48 per enrolled acre per year.¹²⁹ Overall, the state invested nearly \$1.5 billion in subvention payments to local governments.¹³⁰ In 2012 and 2013, local governments requested over \$70 million in Open Space Subvention Act payments (for lands under Williamson Act contracts and open space easements).¹³¹ These claimed amounts were not paid by the state, however, because subvention payments were eliminated in 2010.

The subvention payments were initially suspended because of budget shortfalls, blamed on the economic recession.¹³² Later, the state legislature sought to lessen the impact of the lost tax revenue by allowing counties to decrease the existing Williamson Act contract periods (so they could limit the amount of time that they would be forgoing taxes without getting subvention payments from the state). The legislature decreased the term for ten-year contracts by one year and for twenty-year contracts by two years. As of 2016, eleven counties had elected to participate in the reduced contract terms.¹³³ Legislation in August 2015 (SB 1353 Nielsen) “repeal[ed] the sunset date in statutes which allowed for decreased contract periods in return for the recapture of a portion of the lost property tax revenue, making those statutes effective indefinitely.” This enables local governments to take a year or two off Williamson Act contracts indefinitely.

Without subvention payments coming their way, Imperial County has exited the program and other counties have halted new enrollments.¹³⁴ Even without the subvention payments, however,

128. *Open Space Subvention Payments—Frequently Asked Questions*, CAL. DEP’T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/wa/Pages/questions_answers.aspx [<https://perma.cc/34PT-DB7M>] (last visited May 28, 2019).

129. *See* 2016 REPORT, *supra* note 81, at 8.

130. *Id.*

131. CAL. DEP’T OF CONSERVATION, *THE CALIFORNIA LAND CONSERVATION ACT 2014 STATUS REPORT 29* (2015) [hereinafter 2014 REPORT].

132. 2016 REPORT, *supra* note 81, at 8.

133. *Id.* at 2, 9 (Butte, Kings, Lassen, Madera, Mendocino, Merced, Shasta, Stanislaus, Sutter, Tulare, and Yolo Counties). Previous reports of Fresno County’s participation were inaccurate. *Id.* at 2 n.5.

134. *Id.* at 2, 8.

many counties are continuing to enroll lands in Williamson Act contracts.¹³⁵ In 2014, sixteen counties entered into new contracts (covering 14,277 acres, increasing to 18,072 acres in 2015) even with full knowledge that the counties would not receive subvention payments.¹³⁶ They do so because the farmers in their community want the program and because the local governments want to promote and protect open space and agricultural land within their boundaries.

While the state no longer provides subvention payments, it still provides technical support and helps with implementation, contract enforcement, policy research, and statutory interpretation, and it also prepares a biannual report on the status of the Williamson Act.¹³⁷ The Department of Conservation's 2016 Williamson Act Status Report¹³⁸ stated that 14.8 million acres were reported as being enrolled (a decrease from 15.4 million acres in the 2014 report).¹³⁹ Since the total size of California is 101 million acres, this means 15 percent of the land in the state is encumbered with Williamson Act contracts.¹⁴⁰ This is over 30 percent of the private land in the state (and roughly 47 percent of California farmland).¹⁴¹

State legislators likely saw the Williamson Act as operating in the more limited role of preserving lands where conversion to residential developments was likely, but counties and municipalities enrolled land in the program regardless of threat of conversion. In many agricultural regions, the majority of Prime Farmland is enrolled in Williamson contracts. At the same time, some of the

135. *Id.* at 15 (San Luis Obispo and Kern are leading counties in both increasing enrollments overall and increasing new enrollments. The number of new enrollments per year is decreasing, however).

136. *See* 2016 REPORT, *supra* note 81, at 15–16.

137. *Id.* at 6.

138. Government Code Section 51207 requires annual reporting of information about Williamson Act lands. The reports are produced biannually. *See* CAL. GOV'T CODE § 51207 (West 2018).

139. *See* 2016 REPORT, *supra* note 81, at 1. The decrease may be due to decreased reporting instead of decreased land under enrollment. The 14.8 million figure is likely an undercount due to inconsistent county reporting since 2010. *Id.* The estimate is 16.1 million. *Id.* at 2.

140. *See Inventoried Roadless Acreage*, U.S. FOREST SERV., https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm8_037652.htm [<https://perma.cc/3ZSL-BDYH>] (last visited May 28, 2019) (indicating that, in total, California covers over 101 million acres of land); 2016 REPORT, *supra* note 81, at 2.

141. 2016 REPORT, *supra* note 81, at 1.

most valuable soils may not be protected. Thus, while much land is protected from conversion by the Williamson Act, it is hard to say that the Williamson Act has met its goals of preventing suburban sprawl. Many of the acres under contract were not in much danger of conversion, being located in remote areas unsuitable for major urban development.¹⁴² Where land remains valuable for development, farmers want to leave open the possibility of selling it and are hesitant to put it under ten or twenty-year constraints. Because of this, enrollment tends to be spotty in areas where protection is most needed, calling into question the efficacy of the law as a development deterrent.

Because the Williamson Act applies equally to all farmland across the state, the program does not target the most valuable agricultural soils nor the land most at risk of conversion.¹⁴³ The American Farmland Trust asserts that urban conversion still poses a significant threat to farmland in California and the Williamson Act has not done much to curb that threat (which is why the Trust advocates the use of agricultural conservation easements).¹⁴⁴ Other critics of the Williamson Act say that it subsidizes industrial agriculture without truly impacting patterns of development.¹⁴⁵ The California Department of Conservation and others contend that the Williamson Act has in fact protected farmland and helped support an industry that faces many threats, including the vagaries of weather, pest outbreaks, and markets.¹⁴⁶

2. The Williamson Act and Solar Development

The California legislature did not contemplate renewable energy development when it passed the Williamson Act (or during subsequent amendments to the Act until SB 618 in 2011, as discussed below). The Williamson Act does have a provision allowing for conversion to other land uses, but it requires

142. Alvin D. Sokolow, *Outlook: Budget Cuts Threaten the Williamson Act, California's Longstanding Farmland Protection Program*, 64 CAL. AGRIC. 118, 120 (2010).

143. See Interview with State Government Employee (Aug. 25, 2015) [hereinafter Interview #11] (on file with authors).

144. AM. FARMLAND TRUST, AMERICAN FARMLAND TRUST IN CALIFORNIA 21 (2012), http://action.farmland.org/site/DocServer/AFT_California2012_web.pdf?docID=3543 [<https://perma.cc/6MW9-4TSP>]; THOMPSON, JR., *supra* note 64.

145. See, e.g., Interview #8; Interview #11.

146. See *Williamson Act Program Overview*, CAL. DEP'T OF CONSERVATION, *supra* note 95; Interview #4; Interview #16.

substantial penalties for converting land before the enrollment term is over.¹⁴⁷ Some renewable energy advocates feel that renewable energy development should be treated differently than other land uses under this provision because it benefits the public and has less intensive and permanent impacts than urban development.¹⁴⁸

Williamson Act protections for agriculture can be an obstacle for solar development. Where a solar developer wants to convert protected farmland, the developer must first grapple with the Williamson Act contracts encumbering that land. Yet, while the Williamson Act adds complications for those seeking to convert agricultural land to other uses, there are multiple pathways for getting out from under the restrictions of the law. We discuss each pathway below while assessing the pros and cons of each in the context of solar development.

a. Nonrenewal

Unlike most conservation easements, Williamson Act contracts are not automatically perpetual. Williamson Act contracts have a minimum initial term of ten years.¹⁴⁹ FSZ contracts have a minimum initial term of twenty years.¹⁵⁰ Each year, the term is automatically extended by another year unless the landowner or the local government submit a notice of non-renewal.¹⁵¹ Once such a notice is submitted, the parties have to wait for the length of the contract (at least nine more years) before the contract expires.¹⁵² During the nonrenewal process, the property tax assessment gradually increases, returning to full market value at the end of the contract's term.¹⁵³ At that time, all encumbrances on the property are removed.

Although the pace of solar development at times appears slow due to required environmental analyses and other factors, nonrenewal is also too long for most solar developers.¹⁵⁴ Uninterested in waiting nine (or nineteen) years for a contract to

147. CAL. GOV'T CODE § 51281.5 (West 2018).

148. Interview #2.

149. 2016 REPORT, *supra* note 81, at 6.

150. CAL. GOV'T CODE § 51296.1(d) (West 2018).

151. *Id.* § 51244.

152. *Id.*

153. 2016 REPORT, *supra* note 81, at 15.

154. Interview #4.

expire, solar companies and developers usually pursue other routes to enable earlier conversion of agricultural land. Many of the solar projects have been bolstered by short-term tax incentives and other funding mechanisms that are not available to projects where it will take at least nine years just to start construction.¹⁵⁵

With the loss of subvention payments, and with pressures from solar development, in 2016, Imperial County simultaneously issued notices of nonrenewal to all enrollees.¹⁵⁶ The land is still under contract, however, and development will still be restricted for the nine to nineteen years that were remaining in the contracts. Some attribute Imperial County's nonrenewal decision solely to its desire to encourage solar development.¹⁵⁷ While no other jurisdiction has had a wholesale exit from the program, there has been a fluctuation in nonrenewal rates with 3 percent of enrolled lands reporting nonrenewal in 2013, but only 2.2 percent in 2015.¹⁵⁸ There has also been a slowdown in initial enrollment of lands.¹⁵⁹ While we expect nonrenewal in light of the removal of subvention payments, nonrenewal was actually at its peak in 2007, and the 2015 levels were significantly lower than the decade's annual average.¹⁶⁰ In 2014 and 2015, the majority of non-renewals occurred in the San Francisco Bay area, Central Coast, and San Joaquin Valley (Sonoma County and Kern County).¹⁶¹ Thus, as in previous years, non-renewals often occur where urban development pressure is high, but also increasingly in areas of solar development.¹⁶²

b. Compatibility

Another avenue for avoiding the burden of restrictive Williamson Act contracts is to declare solar facilities to be a compatible use. Williamson Act contracts generally limit the use of the land to agricultural and other "compatible" uses. Cities and counties establish their own list of compatible uses, but they must satisfy the

155. See *supra* Part I.

156. Interview #5; 2016 REPORT, *supra* note 81, at 2 (this involved over 138,000 acres of land). As of the 2016 Report, no other county had chosen to exit the program. *Id.*

157. Interview #3; Interview #13.

158. 2016 REPORT, *supra* note 81, at 2. However, because Imperial County did not report in 2014–2015, this number does not include its 138,000 acres and the statewide total is approximately 492,000 acres. *Id.*

159. *Id.* at 15.

160. *Id.* at 18.

161. *Id.*

162. Cf. 2014 REPORT, *supra* note 131, at 16.

principles outlined in the state law.¹⁶³ State law sets forth three criteria for compatible uses. Compatible uses must not (1) “significantly compromise the long-term productive agricultural capability” of the land, nor (2) “significantly displace or impair current or reasonably foreseeable agricultural operations on any land under contract unless it is for a related activity.”¹⁶⁴ Finally, (3) compatible uses “may not result in the significant removal of adjacent contract land.”¹⁶⁵ Compatible uses also vary based on the designation of type of agricultural land and soil quality.

Some solar developers and farmers are questioning the definition of compatible, particularly because the Williamson Act provides that “electrical facilities” are compatible uses as a matter of law.¹⁶⁶ However, “electrical facilities” are not defined by statute or regulation, so it is unclear exactly what this category is intended to include. Some farmers turn a few acres of their land into solar fields to generate electricity for onsite usage. Because this solar power directly supports agricultural operations and only agricultural operations, it generally meets the standard of compatibility. The question gets trickier when the farmers sell excess power to the grid through net metering programs. Whether this is allowed as a compatible use differs by county.¹⁶⁷ Some attorneys have argued that development of solar facilities (and presumably other types of energy facilities) should qualify as a compatible use, as they are “electrical facilities.”¹⁶⁸ Most find such arguments hard to swallow and point to the original focus of the law as being the preservation of agriculture.¹⁶⁹ Indeed, where the electrical facilities preclude agricultural uses, they should not be considered compatible, and most solar facilities allow little, if any, continued agricultural use.

163. CAL. GOV'T CODE §§ 51238, 51238.1–51238.3 (West 2018).

164. *Id.* § 51238.1(1)–(2).

165. *Id.* § 51238.1(3).

166. *Id.* § 51238(a). Some solar companies argue that solar fields should qualify as open space. Interview #2.

167. See Rajinder Singh Sungu, Comment, *Growing Energy: Amending the Williamson Act to Protect Prime Farmland and Support California's Solar Energy Future*, 21 SAN JOAQUIN AGRIC. L. REV. 321, 330–31, 336 (2012) (arguing in favor of allowing solar facilities on land with nonprime soils to qualify as compatible use).

168. Interview with California Land Use Attorney (June 22, 2015) [hereinafter Interview #7] (on file with authors).

169. Interview with Environmental Scientist with Environmental NGO (June 16, 2015) [hereinafter Interview #1] (on file with authors); Interview #3; Interview #4.

Some solar companies and farmers have come up with creative proposals for compatible uses. For example, there are some projects where sheep graze under the solar panels.¹⁷⁰ But it is not clear how much agricultural use makes the solar panels compatible. For example, is intermittent or occasional grazing by sheep enough? One proposal involved alternating rows of solar panels with pomegranate trees.¹⁷¹ This project did not make it to the Board of Supervisors, so we never saw a compatibility determination, but such use would both decrease the efficiency of the solar panels and reduce agricultural production. Local planners and solar developers did not view the project as viable.¹⁷²

Researchers suggest that solar development can occur alongside agricultural uses and argue for an “agrivoltaic” approach, like the pomegranate and sheep proposals above.¹⁷³ Agrivoltaic land use¹⁷⁴ would involve both growing crops and generating electricity. Facilitating both uses requires compromises that would likely reduce both solar and agricultural productivity. The panels may need to be placed higher off the ground to enable shade-tolerant crops underneath, or the panels may need to be placed further apart to enable farming equipment to navigate the rows.¹⁷⁵ Farmers would likely need to change crops and yield expectations.

Such a strategy seems unlikely to develop in California for several reasons. First, farmers generally either sell land or enter into long-term leases with solar companies. If solar companies wanted more intensive continued agricultural use, they would need to lease the

170. Interview #2 (describing a solar site in Kings County with sheep periodically grazing under some of their panels, with a requirement to have high quality foraging plans to meet the county’s requirement of reasonably foreseeable agricultural use). Interview #4 had not heard of any example of this actually happening just knew that people had proposed it.

171. Interviews #3, #4, and #5 all talked about this example, most with a scoffing tone. Interview #5 thought it would be too hard for the farmers to maintain the pomegranate trees. Interview #4 suggested that the trees would reduce the profitability of the solar facility too much.

172. Interview #4; Interview #5.

173. C. Dupraz et al., *Combining Solar Photovoltaic Panels and Food Crops for Optimising Land Use: Towards New Agrivoltaic Schemes*, 36 RENEWABLE ENERGY 2725 (2011).

174. Some people call it dual-use farming or agrophotovoltaics. Frank Jossi, *Energy and Food Together: Under Solar Panels, Crops Thrive*, PRI (June 8, 2018), <https://www.pri.org/stories/2018-06-08/energy-and-food-together-under-solar-panels-crops-thrive> [<https://perma.cc/6XV7-YT4D>]; Emma Bryce, *Doubling Up Crops With Solar Farms Could Increase Land-Use Efficiency by as Much as 60%*, ANTHROPOCENE MAG. (Dec. 1, 2017), <http://www.anthropocenemagazine.org/2017/12/doubling-up-crops-with-solar-farms-could-increase-land-use-efficiency-by-as-much-as-60/> [<https://perma.cc/7QE8-XYYG>].

175. Interview #2.

land back to farmers who would have to be willing to adapt their practices to the limitations of a solar site—including shading, the need for specialized equipment, and site security requirements.¹⁷⁶ Issues regarding insurance complicate the picture as well.¹⁷⁷ As one advocate admitted, “one bad turn by a farm tractor driver hitting a post could bring down hundreds of thousands of dollars of solar panels.”¹⁷⁸ Solar companies are nervous about the use of farm machinery near the panels.¹⁷⁹ Additionally, to the extent that such operations would require specialized machinery, farmers may be uninterested or unwilling to make a large capital investment for machinery they could only use on a small part of their land.

c. Cancellation

If landowners do not want to wait for the contract term to run out through the nonrenewal process, in “extraordinary circumstances” they can seek to cancel their Williamson Act contracts.¹⁸⁰ Cancellation immediately terminates a contract, but it is not easy to obtain.¹⁸¹ To cancel a contract, the landowner petitions the local government for a waiver of the rest of the contract period.¹⁸² The landowner is the only one who can initiate the process, which requires both (1) a Board of Supervisors (or a City Council) approval based on rigorous findings and (2) payment of a fee.¹⁸³ A local government can agree to cancel a contract only if the cancellation is consistent with the purposes of the Act.¹⁸⁴ The local government must determine that the cancellation is in the public interest.¹⁸⁵

176. Bryce, *supra* note 174.

177. Interview #2; Interview #3.

178. Jossi, *supra* note 174.

179. Interview #2.

180. *Sierra Club v. City of Hayward*, 28 Cal. 3d 840, 853 (1981). Williamson Act contracts can only be canceled by the landowners, not by the local government. CAL. GOV'T CODE § 51281 (West 2018).

181. 2016 REPORT, *supra* note 81, at 21.

182. CAL. GOV'T CODE §§ 51282, 51287, 51297 (West 2018).

183. *Id.* §§ 51280–51287; 2016 REPORT, *supra* note 81, at 21. Some counties seem willing to cancel without requiring payment. Interview #13 (giving the example that Kings County “doesn’t even want to charge landowners to cancel or to rescind and going into a solar easement as they would much prefer to waive their magic wand and call the land compatible.”).

184. CAL. GOV'T CODE § 51282(a)(1) (West 2018).

185. *Id.* § 51282(a)(2).

Based on the statute, cancellation should be hard to obtain and non-renewal is the preferred method of terminating a contract.¹⁸⁶ Cancellation is designed to facilitate an alternative land use that is consistent with the purposes of the Act or to further a public interest that substantially outweighs the objectives of the Act. The Williamson Act allows cancellation where (1) a notice of nonrenewal has already been served on/by the landowner, (2) cancellation is not likely to result in the removal of adjacent lands from agricultural use, (3) it is for a use that is consistent with the jurisdiction's general plan, (4) cancellation will not result in "discontiguous patterns of urban development," and (5) there is no proximate uncontracted land that could be used instead, or if such land exists, development of the land proposed for cancellation would result in more contiguous development pattern than development of the proximate uncontracted land.¹⁸⁷ That is, cancellation is in the public interest where other public concerns substantially outweigh the objectives of the Williamson Act and there is no nearby non-Williamson Act land that would fit the bill.

Even with stringent rules for cancellation, landowners often seem to be able to meet the requirements. For example, in 2012, the Fresno County Board of Supervisors approved partial cancellation of a Williamson Act contract (that is, cancellation of the contract over a portion of the land: 90 of 156 acres) for a solar facility.¹⁸⁸ The landowner, Boyce Land Company, said it would continue citrus production on the remaining sixty-six acres and lease ninety acres to Westlands Solar Farms LLC.¹⁸⁹ Fresno County found the cancellation to be within the public interest because of the pressing need for renewable energy, lack of a sustainable water supply for the agricultural operations, and the fact that some of the acreage would remain under contract.¹⁹⁰

186. *Sierra Club v. City of Hayward*, 28 Cal. 3d 840, 853 (1981).

187. CAL. GOV'T CODE § 51282 (West 2018).

188. Order Denying Petition for Writ of Mandate, *Cal. Farm Bureau Fed'n v. Cty. of Fresno*, No. 11-CE-CG-03780 (Fresno Super. Ct. Dec. 13, 2012).

189. *Id.* The landowner also argued in the alternative that solar development was a compatible use under the Williamson Act. Opening Brief of Plaintiff at 5, *Cal. Farm Bureau Fed'n v. Cty. of Fresno*, Case No. 11-CE-CG-03780 (Fresno Super. Ct. Aug. 31, 2012).

190. Order Denying Petition for Writ of Mandate, *Cal. Farm Bureau Fed'n v. Cty. of Fresno*, No. 11-CE-CG-03780. The court also noted the importance of the proximity of the proposed land to transmission lines compared to alternative sites. *Id.* at 6, 16.

The California Farm Bureau Federation challenged the cancellation, asserting it did not meet the public interest criteria.¹⁹¹ The Farm Bureau Federation argued that the findings for cancellation are supposed to be rigorous (indeed that is the term used throughout the government documents discussing and defining cancellation) and that allowing conversion of prime soils with available water and a history of high-value crop production was against the public interest.¹⁹² Farm Bureau Federation President Paul Wenger stated:

[P]ressure to build utility-scale solar plants has touched off a land rush that threatens thousands of acres of prime farmland. There are millions of acres of marginal land in California. That's where these power plants should go, so we can conserve prime farmland to grow the crops that sustain our state and nation.¹⁹³

The state Department of Conservation also opposed cancellation on this parcel, asserting Westlands had not established that developing renewable energy on this site “substantially outweighs the variety of interests served by the preservation of the maximum amount of the limited supply of agricultural land.”¹⁹⁴ The local Agricultural Land Conservation Committee also opposed cancellation.¹⁹⁵ The Fresno County Superior Court upheld the county’s cancellation of the contracts, holding development of solar energy to be in the public interest and finding that adequate alternative lands not under contract were unavailable.

If a parcel can meet the necessary showing for cancellation, the landowner still must pay a substantial fee before cancellation is allowed.¹⁹⁶ The fee for cancellation is 12.5 percent of the land’s

191. *Id.*

192. Opening Brief of Plaintiff at 1, *Cal. Farm Bureau Fed’n v. Cty. of Fresno*, Case No. 11-CE-CG-03780

193. Steve Adler, *Land Conversion for Solar Plant Leads to Lawsuit*, AGALERT (Nov. 2, 2011), <http://www.agalert.com/story/?id=3530> [<https://perma.cc/6K49-Q527>].

194. *Id.*

195. One interviewee asserted that whatever comes out of the Agricultural Land Conservation Committee is just a recommendation, and the County doesn’t always follow their recommendation. Interview #3. This case supports that statement. Yet, other interviewees said that the Agricultural Land Conservations Committee’s recommendations are strictly adhered to, suggesting that the County never opposes them. Interview #4; Interview #5.

196. There are mechanisms to enable the waiver of cancellation fees if doing so would be consistent with the purposes of the Act. CAL. GOV’T CODE § 51283(c) (West 2018).

fair market value. The criteria for cancelling an FSZ contract are even more stringent, and the fee is double. Once the county approves the cancellation, it goes to the state Department of Conservation for its consideration, but the Department's view is merely a non-binding recommendation. The cancellation fees go to the Department of Conservation and indeed form a significant portion of its budget, calling into question the Department's objectivity in assessing cancellation of Williamson Act contracts. The fees can be quite high. For example, for the Maricopa Sun Solar Complex on 6,047 acres in Kern County, solar developers paid \$800,000 in Williamson Act cancellation fees. The number and amount of fees paid varies year to year. One recent year saw \$20 million in cancellation fees while another saw \$600,000.

Although the Department of Conservation theoretically encourages cancellations to be focused on marginal lands, most cancellations have been on Important Farmland (as designated by the FMMP).¹⁹⁷ The lands are either prime agricultural lands under the Williamson Act or listed as one of the Important Farmland categories under the FMMP (Prime, Unique, and of Statewide Importance), or both.¹⁹⁸ The percentage of canceled Williamson Act contracts on Prime Farmland has varied greatly from year to year: from 23 percent in 2012 all the way up to 95 percent in 2013,¹⁹⁹ then 87 percent in 2014, and back down to 8 percent in 2015.²⁰⁰

Cancellation was at its highest in 1995 (5,694 acres), with another peak in 2007 (1,788 acres).²⁰¹ The highest number of cancellations in recent years has been in Kern County, an area of prime agricultural land that has also been attractive to solar developers.²⁰² Even where a cancellation is tentatively approved, it may take years to actually occur.²⁰³ This means that there may be higher numbers of approved cancellations than we realize. Recordation officially

Environmental NGO Defenders of Wildlife has suggested that such a waiver may be appropriate when "siting renewable energy projects on severely impaired lands within the Westlands Water District that have been, or are slated to be, retired." KATE KELLY & KIM DELFINO, SMART FROM THE START 9 (2012) [hereinafter SMART FROM THE START].

197. 2016 REPORT, *supra* note 81, at 9.

198. *Id.*

199. 2014 REPORT, *supra* note 131, at 18.

200. 2016 REPORT, *supra* note 81, at 22.

201. *Id.* at 2, 21.

202. *Id.*; 2014 REPORT, *supra* note 131, at 18.

203. 2016 REPORT, *supra* note 81, at 21.

cancels the contracts and changes the property's enrollment status.²⁰⁴

Some conservationists worry that cancellation limits the effectiveness of farmland protection. One interviewee asserted that "it has become seemingly way too easy to cancel Williamson Act contracts. It has just been like 'boom' and we're done; on to the next thing."²⁰⁵ A representative from an agricultural group worries that farmland protection laws will "be sacrificed in a rush to expedite the development of large-scale renewable energy projects."²⁰⁶

There has been a rise in the number of cancellation petitions received due to solar development.²⁰⁷ In 2014–2015, the most recent reporting years, 11,705 total acres were canceled throughout the state and over 8,552 acres (73 percent) were canceled for commercial solar projects.²⁰⁸ There were fifty-two cancellation petitions in 2013, and thirty of them were for solar facilities.²⁰⁹ They were all granted and, if the projects are completed, will result in 9,000 acres of Williamson Act contracted land being converted to commercial solar use.²¹⁰ These cancellations are concentrated in the southern San Joaquin Valley, including Fresno, Kern, Kings, and Tulare County.²¹¹ In 2014–2015, there were thirty-four cancellations, fifteen of which were for solar facilities, but the slow process means that not all of these cancellations have been completed. Overall, cancellation is only a small fraction of the land removed from contracts compared to nonrenewal.

d. Eminent Domain

Solar developers may also seek to remove the obstacle of Williamson Act contracts through condemnation. Every year, some Williamson Act contracts end via eminent domain.²¹² Indeed, more land is removed from Williamson Act contracts via public

204. *Id.*

205. Interview #1.

206. Interview #12.

207. 2016 REPORT, *supra* note 81, at 10.

208. *Id.* at 2, 21 n.34.

209. 2014 REPORT, *supra* note 131, at 10.

210. *Id.*

211. *Id.*

212. CAL. GOV'T CODE §§ 51290.5, 51291 (West 2018).

acquisition than through cancellation.²¹³ Public acquisition of property burdened by Williamson Act contracts is permissible for public improvement purposes. Agencies have to follow site selection and notification processes.²¹⁴ Much of the Williamson Act contract land taken via eminent domain (or in lieu of it) is for transportation improvements, schools, public parks, and conservation needs.²¹⁵ For example, the majority of the Williamson Act land taken via eminent domain in 2014 was publicly acquired by the California Department of Fish and Game to mitigate for the Topaz Solar Farm Project in San Luis Obispo County.²¹⁶ Although the land was not the actual site of solar facilities, acquisition of the land facilitated the development of solar facilities. In 2015, the largest number of acres taken were to expand the Deer Valley Regional Park in Contra Costa County.²¹⁷

Although the law advises against public improvements²¹⁸ or public utilities on agricultural preserves, the Williamson Act provides a route for doing so where it is “necessary.”²¹⁹ There appears to be a lot of leeway for local governments to determine what is necessary. Thus, a county could end a Williamson Act contract and convey the land to a solar developer to promote economic development of the area. Public utilities also have the power of eminent domain in California. This means that Pacific Gas and Electric (“PG&E”), for example, can condemn land it wants to use as a solar site regardless of the presence of Williamson Act contracts.

While there is no record of any public utility exercising its eminent domain power in this way, farmers and solar developers see it as a possibility. In Fresno County, the Boyce Land Company was able to get Williamson Act contracts over Prime Farmland canceled because solar development was in the public interest. At the cancellation hearing before the board of supervisors, there appeared to be a belief that failing to cancel the contract for this

213. 2016 REPORT, *supra* note 81, at 30.

214. CAL. GOV'T CODE §§ 51290.5, 51291 (West 2018).

215. 2016 REPORT, *supra* note 81, at 22.

216. *Id.*

217. *Id.*

218. CAL. GOV'T CODE § 51290.5 (West 2018) (“‘[P]ublic improvement’ means facilities or interests in real property, including easements, rights-of-way, and interests in fee title, owned by a public agency or person[.]”).

219. *Id.* §§ 51290, 51291.

private solar company would just lead to PG&E coming in and using eminent domain to take land for solar projects.²²⁰

e. Land Swaps

Calling them easement exchanges, the Williamson Act allows cities or counties to enter into agreements with landowners to swap land under contract.²²¹ The parties rescind the Williamson Act contract on one parcel while simultaneously placing other comparable or better land under a permanent agricultural conservation easement.²²² Thus, the Williamson Act land is unencumbered, but the new land has even stricter limits on it because the agricultural conservation easements are perpetual, without a mechanism for cancellation. First available in 1998, this method has rarely been used.²²³ However, it is possible that this could be a tool for solar developers. For example, a particular plot of farmland may be attractive because of its proximity to transmission lines. If there is other Prime Farmland not under contract, a solar company might consider acquiring it and trying to facilitate a swap. This will only work in circumstances where such land is available, however. As of 2015, only six exchanges had taken place, with the most recent one in 2007.²²⁴ None of these swaps involved solar facilities.

f. City Annexations

A potential but unlikely avenue for solar developers to remove the constraints of Williamson Act contracts is through city annexation. Cities can immediately terminate Williamson Act contracts when annexing new land.²²⁵ For this to be an option, the desired land must not currently be part of a city and there must be a city willing to annex it. This route of termination is not an easy process. The city must make specific findings regarding the value

220. Opening Brief of Plaintiff at 15, *Cal. Farm Bureau Fed'n v. Cty. of Fresno*, Case No. 11-CE-CG-03780.

221. CAL. GOV'T CODE § 51256 (West 2018)

222. *Id.*

223. 2016 REPORT, *supra* note 81, at 31.

224. *Id.*

225. *Id.* at 23. "For this termination to occur, the Local Agency Formation Commission (LAFCO) for the area must determine that the city protested placement of the original [Williamson] Act contract in a valid manner." *Id.* There is no record of how many Williamson Act acres faced city protests when established. *Id.*

of the land and the contract. Then the city chooses whether to keep the contract in place.²²⁶ Thus, annexation of an area by a city does not necessarily terminate a contract. Additionally, FSZ lands may not be terminated by annexation.²²⁷ This acreage has not been well tracked, but it appears that the greatest amount of annexation occurred in 2000.²²⁸ No annexations were included in the latest report (2014–2015) and there were only 562 acres annexed statewide from 2006 to 2015.²²⁹ None of the annexations appear to be related to solar facilities.

g. Solar Use Easements (SB618)

In 2011, the California legislature responded to interest in developing more solar power by creating a mechanism to remove impaired land from the protections of the Williamson Act and place it under a solar use easement.²³⁰ Senate Bill 618 (“SB 618”), which created “solar use easements,” was widely supported after being proposed by State Senator Lois Wolk.²³¹ The bill was approved 77 to 0 in the Assembly and 35 to 1 in the Senate; there was no opposition in four policy committees and two fiscal committees that reviewed the bill before its final approval.²³² Groups supporting SB 618 included the California Farm Bureau Federation, The Nature Conservancy, The Trust for Public Land, and Westlands Solar Park.²³³ Governor Jerry Brown signed SB 618

226. CAL. GOV'T. CODE § 51243.5(d) (West 2018); 2016 REPORT, *supra* note 81, at 31 n.44.

227. 2016 REPORT, *supra* note 81, at 8.

228. *Id.* at 23.

229. *Id.* at 31.

230. CAL. GOV'T CODE § 51191 (West 2018). Solar use easements are not conservation easements because “there is no loss or transfer of any of the existing property rights in perpetuity. Because no party or governmental entity receives any of the proverbial sticks in the bundle of property-right sticks associated with the land, this land-use restriction is more like a solar land-use contract than an easement.” CAL. FARM BUREAU FED’N, REPLACING A WILLIAMSON ACT CONTRACT WITH A SOLAR-USE EASEMENT 2, <http://www.cfbf.com/storage/app/media/documents/Issues/SolarUseEasement.pdf> [<https://perma.cc/57U2-VX65>].

231. Senator Wolk represented the Third Senate District, which includes all of Napa and Solano Counties, most of Yolo County, several cities in Sonoma and Contra Costa Counties, and a portion of Sacramento County from 2008 to 2016. *Lois Wolk (D)—District 3*, CAL. ST. SENATE: ARCHIVES, <https://archive.senate.ca.gov/member-archives/2013-14/lois-wolk-d-district-3> [<https://perma.cc/CN2K-T7MJ>] (last visited May 15, 2019).

232. CAL. FARM BUREAU FED’N, *supra* note 230.

233. CAL. SENATE GOVERNANCE & FIN. COMM., BILL ANALYSIS: WILLIAMSON ACT & PHOTOVOLTAIC SOLAR FACILITIES, S.B. 618 (2011), <http://www.leginfo.ca.gov/pub/11->

into law in November of 2011. Regulations to implement SB 618 became effective February 1, 2014.²³⁴

SB 618 came out of a desire to funnel solar development away from Prime Farmland and toward impaired areas where soils are not agriculturally productive.²³⁵ As State Senator Wolk argued:

The state has invested for decades in protecting important farmland through subvention payments under the Williamson Act. Now, some counties are cancelling those contracts to allow for large-scale solar facilities to be built on this land. Solar developers have little certainty, county to county, whether or not a proposed development can move forward on Williamson Act lands and what that cost will be. My legislation strives to address all these issues, while protecting the integrity of the Williamson Act.²³⁶

Wolk believed that the bill would “encourage job creation, help the state reach its energy and environmental goals and help ensure that California continues to feed the nation by protecting our most valuable agricultural lands.”²³⁷ She called it “a win-win-win scenario.”²³⁸

If there is mutual agreement of both parties to the Williamson Act contract (between the landowner and the local government) and approval by the Department of Conservation, an eligible Williamson Act contract can be replaced with a solar use easement that has a minimum initial term of ten years (although the general requirement is for at least twenty years).²³⁹ Solar use easements are contracts running with the land akin to Williamson Act contracts. They are not easements in the traditional sense of either right-of-way easements or negative easements in gross, like conservation

12/bill/sen/sb_0601-0650/sb_618_cfa_20110421_154831_sen_comm.html [https://perma.cc/B4MQ-RXUS]; Interview #13; Interview #14.

234. 2016 REPORT, *supra* note 81, at 3; CAL. CODE REGS. tit. 14, §§ 3100–3117 (2018).

235. Interview #13.

236. *Renewable Energy Bill Earns Bipartisan Support*, WOODLAND DAILY DEMOCRAT (June 24, 2011), <https://www.dailydemocrat.com/2011/06/24/renewable-energy-bill-earns-bipartisan-support/> [https://perma.cc/2B3K-YHY6].

237. Lois Wolk, *Commentary: Two Bills Help Farmers Address Renewable Energy Goals*, AGALERT (Sept. 28, 2011), <http://agalert.com/story/?id=3430> [https://perma.cc/B6TV-9VZQ].

238. *Id.* See also Jessica Owley, *Zero-Sum Land Conservation*, in BEYOND ZERO-SUM ENVIRONMENTALISM 173 (Sarah Krakoff, Melissa Powers & Jonathan Rosenbloom eds., forthcoming 2019) (critiquing the use of win-win framing for environmental issues).

239. 2016 REPORT, *supra* note 81, at 9.

easements. Solar use easements can be extinguished by nonrenewal, petition, or by returning the land to a Williamson Act contract.²⁴⁰ Solar use easements can be term contracts, automatically expiring when the ten- or twenty-year term is up, or they can be self-renewing with the initial term recommencing akin to a lease.²⁴¹ Solar use easements can also be have no expiration date, presumably remaining on the land until terminated by petition or being returned to agricultural use.²⁴² Terms may be added to solar use easement agreements so that they are only created if a solar project receives a power purchase agreement (“PPA”), and if not the land will remain in agricultural use.

Not all Williamson Act land can be converted under SB 618. To qualify for a solar use easement, the land must be in a jurisdiction that has affirmatively adopted the program. Few have. Additionally, the land itself must meet certain characteristics. First, the land must be under a Williamson Act contract. Second, the property must not be designated as important farmland.²⁴³ Third, the soil must either (1) have significantly reduced productivity for agricultural activities due to chemical or physical limitations, topography, drainage, flooding or other adverse soil or physical conditions, or (2) have adverse soil conditions detrimental to agricultural production including salt, selenium, or other contaminants.²⁴⁴ Additionally, there must be substantial evidence

240. CAL. FARM BUREAU FED’N, *supra* note 230, at 3.

Nonrenewal of a Solar-Use Easement is also similar to that of a Williamson Act contract, although the length of the nonrenewal period can be as short as one year. For example, an easement with a 20-year term could be nonrenewed in year 19 of the agreement. A 20-year-term easement could also be converted to a self-renewing agreement in year 19 and allowed to run several more years before later nonrenewal. In both of these examples, the nonrenewal period would be for only one year.

Id.

241. CAL. GOV’T CODE § 51191.2 (West 2018).

242. For term easements and self-renewing easements (limited term), landowners must post a restoration security instrument. It is the discretion of the city or county whether a restoration security shall be required for a perpetual solar-use easement. *Id.* § 51191.3(c).

243. *Id.* § 51191(a)(2) (Parcels must not be “designated as prime farmland, unique farmland, or farmland of statewide importance” by the Farmland Mapping and Monitoring Program—except when circumstances exist that limit the land’s use for agriculture (as determined by the California Department of Conservation and the California Department of Food and Agriculture.)).

244. *Id.* § 51191(a)(1) (Land must either: (1) “consist[] predominantly of soils with significantly reduced agricultural productivity” due to physical or chemical limitations; or (2) have “severely adverse soil conditions that are detrimental to continued agriculture” (e.g., high levels of salts or selenium)). *See also* 2016 REPORT, *supra* note 81, at 9.

that circumstances limit agricultural use of the land.²⁴⁵ This determination cannot be based solely on irrigation status.²⁴⁶

Applications for solar use easements go to the city or county that holds the Williamson Act or FSZ contract.²⁴⁷ If the local government wants to proceed with the request, it forwards the application and supporting documents to the Department of Conservation for review.²⁴⁸ The application must include a variety of details about the project size and location, a written narrative describing soil limitations, soil testing report, water availability analysis, water quality analysis, and crop/yield information.²⁴⁹ The landowner must demonstrate that even under the best currently available management practices, the level of soil impairment will limit agricultural use.²⁵⁰

If the Department of Conservation and Department of Food and Agriculture determine that land is eligible for a solar use easement, the landowner must provide the city or county with a Soil Management and Site Reclamation Plan to be forwarded to the Department of Conservation for review.²⁵¹ The Soil Management and Site Reclamation Plan must address how soil will be managed during the life of the solar use easement, how impacts on adjacent agriculture will be minimized, and how the land will be restored to pre-project conditions after the solar use easement is terminated.²⁵²

Creation of solar use easements requires payment of rescission fees for cancellation of the Williamson Act or FSZ contracts (alongside a \$7,100 application fee). The cancellation fees are 6.25 percent of the property's fair market value for Williamson Act lands converted to solar use easements and 12.5 percent of the property's fair market value for FSZ lands (half the fees for the standard

245. The landowner must demonstrate the agricultural limitations of the land by submitting soil test results and technical reports. Landowner must be able to demonstrate that agricultural activities would be limited by soil conditions even under best available management practices. This is demonstrated though (1) a recent soils test; (2) an analysis of water availability/insufficiency; (3) an analysis of water quality; and (4) crop and yield date for the past six years. CAL. GOV'T CODE § 51191(b) (West 2018).

246. *Id.* § 51191(a)(2).

247. The application is not subject to environmental review under the California Environmental Quality Act. CAL. FARM BUREAU FED'N, *supra* note 230, at 2.

248. CAL. CODE REGS. tit. 14, § 3102(a) (2018).

249. CAL. FARM BUREAU FED'N, *supra* note 230, at 2; *see., e.g.*, VINTNER SOLAR PROJECT REPORT (Nov. 14, 2012) (on file with authors).

250. CAL. CODE REGS. tit. 14, § 3104 (2019)

251. *Id.* § 3108.

252. *Id.*

cancellation process).²⁵³ Initially, these fees went entirely to the state, leaving counties with reduced incentive to either adopt the solar use easement program in the first place, or to approve solar use easement applications. Assembly Bill 2241, which took effect in January 2015, changed the rescission fee formula.²⁵⁴ Under this new policy, the rescission fee is 10 percent of the property's fair market value for both Williamson Act and FSZ lands, and 50 percent of the fee goes to the local jurisdiction.²⁵⁵

Few have taken advantage of SB 618, and few attorneys, counties, and developers find the program attractive.²⁵⁶ While there have been multiple applications for solar use easements, few have been completed and no applications have been submitted since 2013.²⁵⁷ As of 2016, only three solar use easements had been completed: one in Tuolumne County,²⁵⁸ one in San Joaquin, and one in San Luis Obispo County.²⁵⁹ Fresno County received an application, but

253. CAL. GOV'T CODE § 51255.1(c) (West 2018). *Contract Cancellation*, CAL. DEP'T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/wa/Pages/removing_contracts_cancellations.aspx [https://perma.cc/JU78-LR7S] (last visited May 15, 2019).

254. CAL. LEGIS. SERV. Ch. 582 (A.B. 2241) (2014). *Solar Use Easements*, CAL. DEP'T OF CONSERVATION, https://www.conservation.ca.gov/dlrp/wa/Pages/removing_contracts_solar_easement.aspx [https://perma.cc/M2UX-EGW9] (last visited May 15, 2019).

255. CAL. LEGIS. SERV. Ch. 582 (A.B. 2241) (2014).

256. Interview #3; Interview #4 (describing them as a "pain in the ass and not worth the effort"); Interview #7.

257. 2016 REPORT, *supra* note 81, at 10.

258. *Id.* The project in Tuolumne County is the "T-Five Ranches and Ecoplexus" project. T-Five Ranches is a solar project on 14.6 acres of an 887-acre parcel. Board of Supervisors, County of Tuolumne, Meeting Agenda 4 (Nov. 6, 2012), <https://www.tuolumnecounty.ca.gov/ArchiveCenter/ViewFile/Item/133> [https://perma.cc/RP7Y-F92N]. See also B.J. Hansen, *First of Its Kind Solar Project*, MYMOTHERLODE.COM (Aug. 3, 2012), <https://www.mymotherlode.com/news/local/65556/first-of-its-kind-solar-project.html> [https://perma.cc/9LJ3-BEAC] (mistakenly describing the project as 12.6 acres). In 2013, the Board of Supervisors unanimously agreed to rescind the original Williamson Act Contract. Board of Supervisors, County of Tuolumne, Meeting Minutes 100 (June 4, 2013), https://tuolumneco.granicus.com/DocumentViewer.php?file=tuolumneco_e3a68cce-102d-4918-8b99-322faac70257.pdf&view=1 [https://perma.cc/VS59-QHW8]; Sabrina Ambler, *Solar Project Permit Conditions*, MYMOTHERLODE.COM (June 4, 2013), <https://www.mymotherlode.com/news/local/61956/solar-project-permit-conditions.html> [https://perma.cc/D5CN-KQFR].

259. 2016 REPORT, *supra* note 81. The Vintner Solar Project in San Luis Obispo County is 1.5 miles northeast of the community of Templeton, California. VINTNER SOLAR PROJECT, SB 618 SOLAR-USE EASEMENT APPLICATION (2012), <http://fliphtml5.com/clbo/ioep/basic/51-81> [https://perma.cc/36VS-K6UC]. It involves a solar use easement on 14.8 acres of a 97.21-acre parcel for a 1.5 MW solar project. See *Notice of Determination: Vintner Solar LLC*, CEQA (Sept. 11, 2013), <https://ceqanet.opr.ca.gov/2013071051/2> [https://perma.cc/JPZ8-JM4Q]. The remaining 82.41 acres were enrolled in a new Williamson Act contract. The San Luis Obispo County Board of Supervisors approved a Negative Declaration under

decided not to participate in the program. Another project, in San Joaquin County, is on hold (by request of the County Planner).

While the sponsor of SB 618 was excited about the ability of the program to focus solar development on marginal agricultural land, it has not been widely adopted or endorsed. Solar developers suggest that it isn't attractive because cancellation is actually a relatively easy process with fewer requirements than the solar use easements.²⁶⁰ Counties may not have initially embraced the program because the fees went to the state, but others assert that counties avoid the program simply because they don't want the state to tell them how to make land use decisions.²⁶¹ One attorney explained that it is just "too high a bar for developers."²⁶² Additionally, the most attractive sites for solar development may not be covered by SB 618. Again, an attorney working in this area explained that "the bill has a relatively narrow focus, making it applicable to only a fraction of potential Williamson Act disputes."²⁶³

h. Summary: How to Get Out of Your Williamson Act Contracts

In short, this Section demonstrated that there are several routes for pursuing solar development on agricultural land in California where the land is under a Williamson Act contract. First, through the nonrenewal process you could simply wait for Williamson Act contracts to expire, but the wait will be at least nine years. Second, you could try to establish that solar development is a compatible use and can occur alongside agricultural activities, but that showing is hard to make. Third, you can pursue contract cancellation, going through a lengthy process that can take over a year and still requires paying substantial fees. Fourth, you can try to swap lands, but this will be limited by the availability of valuable agricultural lands not already under contract. Fifth, a public utility can

CEQA, concluding that the project would have no significant environmental impacts. The landowner paid a rescission fee of \$18,750 (6.5 percent of the fair market value of the 14.8-acre property). *Id.*

260. Interview #3.

261. *Id.* (expressing this opinion); Interview #13 (explaining this attitude).

262. Interview #7.

263. Kelly Rizzetta, *Williamson Act to Face Scrutiny in Solar Land Use Suit*, LAW360 (July 10, 2012), <http://www.law360.com/articles/358056/williamson-act-to-face-scrutiny-in-solar-land-use-suit> [<https://perma.cc/CT37-QLEA>].

condemn the land and circumvent Williamson Act requirements, but this has not been used. Sixth, you could work with a nearby city and urge them to annex the land and cancel any contracts thereon, but it is not clear that attractive solar sites would meet the requirements. Finally, you can try to convert the land using a solar use easement, but this won't help you on prime agricultural land. Despite what appears to be a wide variety of choices, solar developers rely almost exclusively on cancellation of Williamson Act contracts or, if possible, simply avoiding land under contract.

C. California Environmental Quality Act

Solar developers in California also need to grapple with environmental laws that complicate the development process. The California Environmental Quality Act of 1970 ("CEQA") is the state's environmental review statute. Similar to the National Environmental Policy Act ("NEPA"),²⁶⁴ CEQA requires environmental review of projects that (1) may have a "significant effect on the environment" and (2) require discretionary approvals from governmental agencies.²⁶⁵ Unlike NEPA, CEQA actually has some teeth because it requires environmental protection measures as a mandate of implementing reviewed projects.²⁶⁶

CEQA generally prohibits agencies²⁶⁷ from approving projects²⁶⁸ if there are feasible alternatives or feasible unadopted mitigation

264. The NEPA framework specifically requires agencies to conduct an environmental assessment and/or prepare an environmental impact statement prior to undertaking "major federal actions significantly affecting the environment" and includes the approval of permitting private actions. National Environmental Policy Act of 1969, § 102(2)(C), 42 U.S.C. § 4331 (2008).

265. See CAL. PUB. RES. CODE § 21002 (West 2018); CAL. CODE REGS. tit. 14, §§ 15354, 15378(c)-(d) (2018).

266. See generally RONALD E. BASS ET AL., CEQA DESKBOOK 198 (3d ed. 2012) (providing that public agencies may have authority under state or local law to ensure compliance, including "stop work" orders, revocation of project approvals, and criminal sanctions).

267. CEQA applies to public and local agencies and include any state agency, board, or commission, any county, city, or regional agency, public district, redevelopment agency, or other political subdivision. CAL. PUB. RES. CODE § 21063 (West 2018).

268. Project refers to any activity that may cause either a direct physical change in the environment or a reasonably foreseeable indirect change is undertaken by a person which is supported, in whole, or in part through contracts, subsidies, loans, or other forms of assistance from one or more public agencies; or one that involves the issuance of a lease, permit, license, certificate, or other entitlement for use by one or more public agencies. Examples of projects include the issuing of permits for the erection of buildings and structures, including both thermal and solar power plants. *Id.* § 21065

measures that would substantially lessen the potentially significant environmental effects of the projects (or certain findings are made that the measures are infeasible or would be ineffective).²⁶⁹ CEQA analysis and mitigation must cover the impacts on the natural or physical environment, including social, cultural, and economic impacts. The analysis must also cover both the direct and cumulative impacts of a project. Similar to the requirement that agencies complete an environmental impact statement (“EIS”) as part of their review under NEPA, CEQA requires that public agencies complete an environmental impact report (“EIR”), identifying significant effects on the environment, how these significant effects can be mitigated or avoided, and alternatives to the project.²⁷⁰

The EIR is the crux of an agency’s decision to approve a project. If the completed EIR indicates that a project would have at least one significant environmental impact, the project may not proceed unless the agency determines that either (1) the project incorporates adequate mitigation measures to counteract the environmental effects, or (2) specific factors make mitigation infeasible and the benefits of the project outweigh the environmental harm.²⁷¹ If the agency approves a project that includes significant environmental impacts that are not mitigated, it must prepare a statement of overriding considerations explaining its decision.²⁷²

Under CEQA guidelines, mitigation can be achieved by (1) avoiding the impact altogether; (2) minimizing the impact by limiting the scope of the project; (3) rectifying the impact by rehabilitating or restoring the impacted environment; (4) reducing or eliminating the impact over time through preservation and maintenance operations during the life of the project; or (5) compensating for the impact by replacing or providing substitute resources or lands.²⁷³ This sequencing approach is common across

269. 40 C.F.R. §§ 1508.8, 1508.14 (2018).

270. If economic, social, or other conditions make it infeasible to mitigate one or more significant effects of a project on the environment, the project may nonetheless be carried out or approved at the discretion of a public agency if the project is otherwise permissible under applicable laws and regulations. CAL. PUB. RES. CODE § 21002.1(a)–(b) (West 2018).

271. To assess if mitigation is infeasible, the agency can consider “economic, legal, social, technological, or other factors.” *Id.* § 21081.

272. CAL. CODE REGS. tit. 14, § 15093 (2019).

273. *Id.* § 15370 [hereinafter CEQA Mitigation Guidelines].

federal and state environmental protection regimes.²⁷⁴ While some environmental laws do not prioritize strategies on this list, CEQA clarifies that certain methods are superior, and the above list is presented in preferred order.²⁷⁵

Because the state legislature has recognized the value of agricultural land²⁷⁶ and the role of agriculture in the state's economy,²⁷⁷ agencies must engage in a CEQA review process for projects that will significantly impact agricultural lands.²⁷⁸ That is, CEQA includes farmland loss as a significant impact that must be

274. See, e.g., U.S. ENVTL. PROT. AGENCY, EPA-843-F-08-002, WETLANDS COMPENSATORY MITIGATION, https://www.epa.gov/sites/production/files/2015-08/documents/compensatory_mitigation_factsheet.pdf [<https://perma.cc/G2SM-CPUB>] (describing the use of a similar mitigation sequence for wetland protection under the Clean Water Act). But see Endangered and Threatened Wildlife and Plants; Endangered Species Act Compensatory Mitigation Policy, 83 Fed. Reg. 36,469 (July 30, 2018) (announcing withdrawal of the compensatory mitigation policy to the extent that it required net conservation gains).

275. CEQA Mitigation Guidelines, *supra* note 273.

276. As defined in the Act:

(a) "Agricultural land" means prime farmland, farmland of statewide importance, or unique farmland, as defined by the United States Department of Agriculture land inventory and monitoring criteria, as modified for California. (b) In those areas of the state where lands have not been surveyed for these classifications, "agricultural land" means land that meets the requirements of "prime agricultural land" as defined in paragraph (1), (2), (3), or (4) of subdivision (c) of Section 51201 of the Government Code.

CAL. PUB. RES. CODE § 21060.1 (West 2018).

277. See, e.g., BASS ET AL., *supra* note 266, at 151; OSHA R. MESERVE, OVERVIEW OF LEGAL RESTRAINTS ON AGRICULTURAL LAND MITIGATION PROGRAMS 1 (2011), <http://caff.org/wp-content/uploads/2010/07/Ag-Mitigation-Handout-2-16-111.pdf> [<https://perma.cc/ZC3E-UFGD>].

278. CEQA requires agencies to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process. As Appendix G to the CEQA Mitigation Guidelines explains:

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the project:

(A) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?
(B) Conflict with existing zoning for agricultural use, or a Williamson Act contract?
(C) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?

California Environmental Quality Act, Appendix G, Environmental Checklist Form, CA.GOV, http://resources.ca.gov/ceqa/guidelines/Appendix_G.html [<https://perma.cc/SVC2-WDQ6>] (last visited May 13, 2019).

avoided or mitigated.²⁷⁹ There is no other industry called out for special consideration or protection under CEQA, and it is unclear why agriculture is given special treatment.²⁸⁰ Although agricultural land can provide aesthetic, ecological, and open space benefits, those concerns are addressed by other elements of CEQA (land use, visual impacts, biological resources, etc.). Therefore, it is unclear whether CEQA is primarily concerned with preserving farmland for its economic productivity or for indirect preservation of environmental amenities. Perhaps CEQA is protecting the natural resource that is “prime soils.” Again, it is unusual under CEQA to identify one specific natural resource as meriting greater scrutiny or consideration than others. State policies on protection of agricultural land emphasize the protection of an important economic sector in the state and the need to promote food security.

Mitigation of farmland loss under CEQA happens in different ways. A common approach is to require developers to pay mitigation fees. Energy producers may pay agricultural mitigation fees for the land taken out of production in some areas. Often these fees go to the purchase of agricultural conservation easements,²⁸¹ placing conservation easements over already existing agricultural land in exchange for allowing the loss of farmland. This does not lead to a net increase in agricultural land, but it does provide stronger protection for existing farmland.²⁸²

There is an underlying question of whether we can ever truly mitigate the loss of agricultural land. Several courts have noted that one cannot create new farmland and therefore no mitigation measures will affect the general amount of farmland.²⁸³ When

279. CEQA requires consideration of agricultural interests, but courts have not been clear on whether it requires mitigation for loss of agricultural land. David C. Levy & Jessica Owley, *Preservation as Mitigation Under CEQA: Ho-hum or Uh-oh?* 14 ENVTL. L. NEWS 18 (2005). Court decisions get even more complicated when assessing how we can mitigate for farmland loss. Mitigation requirements vary by county. Some have set mitigation ratios (but these are generally low at a 1:1 or 2:1 mitigation requirement). See MESERVE, *supra* note 277, at 3. Some counties mitigate by investing in other agricultural programs. Some counties (like Fresno) don't require mitigation at all. Interview #2.

280. Interviews #2 and #8 expressed great frustration with this example of agricultural exceptionalism.

281. See MESERVE, *supra* note 277, at 3.

282. Levy & Owley, *supra* note 279, at 18.

283. While protecting existing farmland does not replace converted farmland, restricting the ability to develop existing farmland through conservation easements and Williamson Act contracts does indeed slow the overall problem of farmland loss.

considering a jail expansion project in Orange County, the California Court of Appeal in *City of Irvine v. County of Orange* concluded that conservation projects cannot mitigate for farmland loss, particularly in the City of Irvine where the cost of conservation easements is incredibly high.²⁸⁴ This echoes the holding in *Defend the Bay v. City of Irvine*, where the court found that Orange County was no longer a viable place for industrial agriculture and held that for that reason mitigation for agricultural impacts was unnecessary.²⁸⁵

By contrast, in the unpublished case *South County Citizens for Responsible Growth v. City of Elk Grove*, the court held that preservation of existing agricultural land can compensate for the conversion of Farmland of Statewide Importance to urban uses.²⁸⁶ The City of Elk Grove argued that while preservation of existing farmland or payments of fees for the purchase of conservation easements limits future losses, it does not reduce the specific loss of farmland converted to urban use.²⁸⁷ In compiling its environmental review documents, Elk Grove concluded that there was simply no feasible mitigation measure that could offset the loss of farmland.²⁸⁸ In the local government's view, one cannot manufacture agricultural land. While the court agreed that one could never fully compensate for the lost farmland, preservation of other farmland could mitigate the harmful effects of conversion to other uses.²⁸⁹

Some jurisdictions (including Fresno County) present a different view of farmland mitigation in the context of solar development. They do not view solar projects as requiring any mitigation. The loss of farmland, they argue, is temporary, and the farmland can be restored to agricultural land once the project is decommissioned.²⁹⁰

284. Land prices and development pressures are high in Irvine. With no zoning restrictions limiting land to agricultural use, the value of development rights is high and close to the purchase price of property. The court agreed that it was not economically feasible to either purchase property to convert to farmland or to purchase conservation easements to protect farmland. *City of Irvine v. Cty. of Orange*, 238 Cal. App. 4th 526, 545 (Cal. Ct. App. 2015).

285. *Defend the Bay v. City of Irvine*, 119 Cal. App. 4th 1261 (Cal. Ct. App. 2004).

286. *South Cty. Citizens for Responsible Growth v. City of Elk Grove*, No. C042302, 2004 WL 219789 (Cal. App. 3d Dist. Feb. 5, 2004).

287. *Id.* at *3–5.

288. *Id.* at *3.

289. *Id.* at *5.

290. Interview #4; Interview #5; Interview #6.

While solar panels may be less permanent than conversion for housing, they still involve extensive installation of equipment and affect soil through compaction and other impacts; we have no record of old solar facilities being converted back to agricultural production, so we don't actually know how feasible this is. Some agricultural interests are skeptical of the idea that at the end of a twenty-year conditional use permit over hundreds of acres that a solar company would just pull up and leave.²⁹¹ Generally, however, solar developers do pledge to return land to its previous agricultural use at the end of the solar facility's life.²⁹²

When environmental NGO Defenders of Wildlife examined environmental review processes for solar projects in the San Joaquin Valley, it noted that counties take different approaches to CEQA review, with some counties having the project proponents draft the CEQA documents (often an initial study followed by a mitigated negative declaration). Some counties draft the documents themselves, and others hire consultants.²⁹³ Some counties conduct full EIRs while others rely on the shorter mitigated negative declaration option. This inconsistency in approach is concerning to Defenders of Wildlife who asserted that it creates "an inconsistent permitting environment . . . [and] hampers the ability to establish consistent, reliable smart-from-the-start renewable energy-siting standards."²⁹⁴ Defenders of Wildlife's 2012 study also identified problems with CEQA compliance with respect to solar projects through the San Joaquin Valley.²⁹⁵

291. Interview #13 (explaining the view that the solar companies will likely just keep replacing the panels and maintaining the sites well into the future suggesting that these conversions should be considered permanent farmland lost); Interview #14 (stating "everyone on our side of the equation sees these [as permanent]"). While housing development may feel more permanent, it has the benefit of often requiring farmland mitigation. *Id.* (describing the 3:1 mitigation requirement for new development in Yolo County).

292. *See, e.g., Save Panoche Valley v. San Benito Cty.*, 217 Cal. App. 4th 503, 518 (Cal. Ct. App. 2013) ("Solargen also accepted full responsibility for removing the panels after the termination of the project, and is tasked with restoration and ensuring that the land returns to its original use after the end date of the solar project.").

293. SMART FROM THE START, *supra* note 196, at 10.

294. *Id.*

295. *Id.*

III. EXAMPLE SOLAR PROJECTS AND CONTROVERSIES²⁹⁶

Our project examines the development of laws that favor renewable energy development over agriculture. Specifically, we explore the policy shift from protecting farmland to promoting renewable energy over other uses.

A. Living with Solar

Although agricultural land is less pristine than some of the areas used for early utility-scale solar projects, farmland and the farming communities that depend on it are important economically and culturally. Farmers and farmland advocates strongly object to converting land from agricultural use.²⁹⁷ In 2013, residents of Fresno, Kern, and San Joaquin counties were resistant to the growth of renewable energy projects occurring around them. Most seemed worried about a potential decrease in land value. But they also worried about the aesthetics, thinking it would be unpleasant to live next door to unsightly solar panels. Some folks worried that light reflected off the panels would be distracting to drivers, harmful to airplanes, and deadly to birds.²⁹⁸ Some landowners worried that the solar facility operators would be poor land stewards, not controlling invasive species or pests that entered the land. There was also a fear that traditional farming operations could be limited by concerns from solar facilities. For example, would tilling operations lead to dust interfering with solar panel efficacy? Would solar operators complain about the height of orchards? The farmer's fears on this score may not have been well-founded. Where solar projects have gone in, we have not (yet)

296. There is a debate over the correct terminology here. While some call these projects solar farms, some agricultural interests cringe at the name, indicating that solar farms are not agriculture and do not merit the term farms. Interview #13. Others suggest that farmers who have been harvesting crops are now harvesting the sun. Other have a few acres of solar panels in the midst of their other fields; they suggest "solar farm" is the perfect phrase. One developer we spoke with now terms them "solar facilities" just to avoid any contention. Interview #4. The Westlands solar facility is a "solar park" to avoid the term solar farm and to invoke the idea of an industrial park or a natural area. Interview #13.

297. Interview #3; Interview #13.

298. See Judith Lewis Mernit, *Green Energy's Dirty Secret*, HIGH COUNTRY NEWS (Oct. 26, 2015), <https://www.hcn.org/issues/47.18/green-energys-dirty-secret> [<https://perma.cc/4JZ2-FEFD>] (describing reported bird deaths at Ivanpah, Genesis, and Desert Sunlight projects where sometimes birds are killed by solar flux and sometimes by crashing into panels that they see as waterbodies).

seen any complaints from neighbors about the solar panels nor complaints about neighboring agricultural interests from the solar facilities. Many of the people involved are neighbors, and social capital may be resolving conflicts before they start. For example, in Fresno County, all permitted solar facilities have been on family-owned farms.

A significant community concern has been what will happen to the projects once they are no longer economically viable. In Fresno County, the poster child for this issue was a former PG&E development that had been abandoned and allowed to fall into disrepair.²⁹⁹ The community saw this project as an eyesore and worried that new solar developments would meet a similar fate.³⁰⁰ Part of the process of getting new solar projects built in Fresno then rested on first getting that PG&E site rehabilitated to demonstrate to residents what a post-solar landscape could look like.³⁰¹ Although this land has been remediated and solar panels removed, it has not been converted to agriculture. It remains owned by PG&E, which doesn't have any current plans for this site.³⁰²

Beyond concerns related to aesthetics and community relationships, farmers are worried about jobs. Counties find solar development attractive where it appears to bring more jobs to the community. However, the solar industry jobs created may not be offsetting the loss of agricultural jobs.³⁰³ USDA figures show that one agricultural-related job is lost for every nine acres taken out of production, but the solar facilities are not yielding an equal number of jobs created. The counties see solar facilities as a job generator because they bring in construction jobs and a quick influx of skilled workers and taxes.³⁰⁴ Most of these jobs, however, are short-term.³⁰⁵ Overall, land in active agricultural production probably yields more jobs in the long term as it represents continual employment (not just during a construction phase) and

299. Interviews #3; Interview #4; Interview #5; Interview #6.

300. *Id.*

301. *Id.*

302. Interview #4.

303. Interview with Scientist with Environmental NGO (Sept. 5, 2015) [hereinafter Interview #17] (on file with authors) (suggesting that many of the energy companies bringing in employees from outside the county and therefore the projects create few local jobs); Interview #13 (same).

304. Interview #3.

305. Interview #14.

supports other local industries.³⁰⁶ But where the land in question is not actually under current production (fallow lands as we see in Fresno County), the conversion to solar will be a job gain.

Some farmers were eager to see solar development on other farms in their areas because they believed that it would leave more water for them. However, this is usually wrong, for two reasons. First, solar facilities may not save water. Solar facilities can be water intensive, particularly in drought conditions when the need to wash dust off the panels and cool the equipment intensifies. Second, the nature of water rights in California means that any unused water goes to the person with the next in line rights.³⁰⁷ The rights are not connected to the land and do not necessarily go to neighboring users. Our interviews revealed stark opinions about the role the drought is playing in conversion of agricultural land to solar fields. One representative of an environmental NGO insisted that drought was not changing the dynamic or debate, mostly because farmers with water rights (even paper water rights) are not likely to convert to solar at any time.³⁰⁸ Solar generation facilities, especially utility-scale concentrated solar power facilities not only consume agricultural lands but they may compete with remaining lands for water use. However, it is not clear how much water they really need.

B. The Fresno Experience

The two top-producing agricultural counties (Fresno and Kern) in California are also the counties with the most proposed solar facilities on private land. There is some logic here, as big, flat, and sunny places are attractive for both agriculture and solar energy. Fresno County has been a particular site of interest for solar developers. It also has the second highest amount of land under Williamson Act contract with 1.5 million acres reported in 2013.³⁰⁹ Much of Fresno County is agricultural land with prime soils, but during drought farmers suffer. Some farmers have been through

306. Interview #17.

307. Groundwater follows slightly different rules recognizing a superior interest for those using water on “land that is over the groundwater basin.” *Water Rights*, CAL. WATER BOARDS (Mar. 25, 2019), https://www.waterboards.ca.gov/waterrights/board_info/faqs.html [<https://perma.cc/PDX3-Z58C>].

308. Interview #1 (suggesting that the real concern from the drought is the heightened problems for endangered species which may lead to pressures to the system).

309. 2014 REPORT, *supra* note 131, at 3.

multiple years with little or no water allocation.³¹⁰ Having made investments in farm equipment and supplies, farmers are then faced with the prospect of not being able to pay off their loans and selling part of their land to solar companies appears attractive.³¹¹ Indeed, some of the land being purchased or leased by solar developers is already fallow because the owners cannot muster the finances for active cultivation.

With the effects of long-standing drought, Fresno is anticipating high levels of loss of agricultural land. A 2019 report suggests that San Joaquin Valley as a whole will need to reduce irrigated acreage by 500,000 acres by 2040 due to reduced water availability.³¹² For this reason, Fresno is trying to concentrate its farmland conversion and solar development in the western part of the county where there is less water.

Development consultants in Fresno suggest that the Williamson Act is one of the chief obstacles to siting a solar facility, suggesting that they will not even seek approval for sites with prime soils under Williamson Act contracts.³¹³ Energy companies, however, do not view Williamson Act contracts to be as much of an obstacle as the need for access to transmission lines and obtaining a PPA.³¹⁴ To the solar companies, the cost they are paying for the permitting process is small compared to their overall budget for the process.³¹⁵ For the local developers shepherding the solar developments through contract cancellation and obtaining conditional use permits, the choice of site is paramount.³¹⁶ One energy company employee stated that the distance to a substation was the most important factor, explaining “spec work is coming in all over Fresno but will only work where they can get close to an intertie.”³¹⁷

310. Interview #3.

311. *Id.*

312. ELLEN HANAK ET AL., PUB. POLICY INST. OF CAL., WATER AND THE FUTURE OF SAN JOAQUIN VALLEY 57 (2019), <https://www.ppic.org/wp-content/uploads/water-and-the-future-of-the-san-joaquin-valley-february-2019.pdf> [<https://perma.cc/22BN-HT27>].

313. Interview #4.

314. Interview #2.

315. *Id.*

316. Interview #4.

317. Interview #2.

C. Panoche Valley Controversy

One case in San Benito County, *Save Panoche Valley vs. San Benito County*, has garnered particular attention. Panoche Valley Solar Farm is in the San Joaquin Valley, two miles from the Fresno County line. Energy developer Solargen³¹⁸ applied to retire thousands of acres of Williamson Act contracts covering high quality grazing land. The project faced heavy opposition from all quarters. According to one interviewee, “Not many projects are sited in areas that everyone is happy with, but this is a particularly awful one.”³¹⁹ There was consensus around environmental groups and agricultural groups that it just wasn’t the right place.³²⁰ The agricultural land on which the project was proposed contained habitat for several endangered species, including the blunt-nosed leopard lizard and the giant kangaroo rat.³²¹ The CEQA review process resulted in the company reducing the size of its facility, changing some of its characteristics (e.g., solar panel height), and implementing various mitigation measures to address habitat and farmland loss.³²²

Initially the solar developers argued that the placement of solar panels on the land was a compatible use, but the County Agricultural Preserve Advisory Committee denied that request.³²³ The developers then sought cancellation of Williamson Act contracts over 6,953 acres of land.³²⁴ The County Agricultural Preserve Advisory Committee recommended denial of the cancellation request, stating “while the State’s or applicant’s interest in renewable energy or the county’s interest in short term jobs are vital and legitimate, the project’s costs are not worth the limited gains to the County.”³²⁵ The state Department of Fish and

318. The project is now owned by Con Edison. Paul Rogers, *Giant California Solar Project Cut Back After Environmentalists Oppose It*, MERCURY NEWS (San Jose, CA) (July 21, 2017), <https://www.mercurynews.com/2017/07/21/giant-solar-project-reduced-due-to-environmentalists-opposition/> [<https://perma.cc/CE6H-EL5Q>].

319. Interview #1.

320. *Id.*

321. *Save Panoche Valley v. San Benito Cty.*, 217 Cal. App. 4th 503, 510 (Cal. Ct. App. 2013).

322. *Id.* at 512–13. *See also* Rogers, *supra* note 318.

323. *Save Panoche Valley*, 217 Cal. App. 4th at 510.

324. *Id.* at 511. The cancellation acreage is greater than the project acreage (4,563) because the developers sought full cancellation (over entire parcels) instead of only those exact acres that would be in use.

325. *Id.*

Game also voiced concerns about the site and cited a potential violation of endangered species laws.³²⁶ Despite these concerns, the County approved the CEQA review process and issued the appropriate permits.

Environmental groups challenged both the decision to cancel the Williamson Act contracts and the adequacy of planned mitigation measures. The court found in favor of the County (and thus the solar developers), finding sufficient evidence in the record to support the County's statement that it was in the public interest to cancel the contracts and that similar quality uncontracted land was unavailable.³²⁷ As a result of the findings in the project's EIR, the developer of the Panoche Valley Solar Farm project was required to mitigate for loss of habitat at a five to one ratio. The developer's proposed mitigation, however, took the form of protecting habitat that was threatened by development without any requirements of enhancing habitat. This is a net loss of habitat for a species already operating at just 1 percent of its original habitat.³²⁸ Additionally, in contrast to the discussion of adequate farmland mitigation above, in this case it was the environmental interest groups that argued one could not mitigate for farmland loss by establishing conservation easements.

While the court's decision is logical, many are still surprised that this project went through. Appeals and additional lawsuits continued until there was an out-of-court settlement in 2017.³²⁹ Originally, solar project developers pressured San Benito County along with state and federal environmental agencies for approval because they needed to start construction by fall 2015 to get their tax rebate (50 percent of project cost). One NGO employee suggested that the county was only in favor of the project because of local jobs in the renewable energy sector, stating that for farmland loss, "nobody cares about the loss of farm jobs."³³⁰ Several interviewees expressed dismay at the project's success. One person stated, "This has been a crazy project in that every hurdle where you think it is going to end, they just keep going."³³¹

326. *Id.* at 512.

327. *Id.* at 515.

328. Interview #1.

329. Rogers, *supra* note 318.

330. Interview #1.

331. *Id.*

In July 2017, eight years after the initial application for a conditional use permit, environmental groups and current project owner Con Edison reached a compromise that dramatically reduced the size to about one-third of the original plan (reducing the environmental impact of the site as well).³³² The County, which had approved the site in hopes of obtaining tax payments and creating jobs, was upset about the compromise, with which they had not been involved. Indeed, County Supervisor Anthony Botelho was livid: “I can barely speak because I’m so angry. This would have generated much-needed revenue. This was going to be a big thing, but the rug was pulled out from under us. And it was all done in secret.”³³³

IV. EFFORTS AT IMPROVED PLANNING PROCESSES

Solar development continues to expand. Neither the Williamson Act nor CEQA seem to hamper the creation of solar power plants on agricultural land. It is not clear how much they even shape the placement of solar facilities. While some people we spoke with felt that cancellation was happening everywhere, others talked about solar projects working hard to avoid land under contract to avoid the hassle. Some solar companies, however, pay little attention to the ecological or agricultural status of the land, viewing such obstacles as minor issues when compared with the other steps in developing a new solar facility.³³⁴ The real lesson seems to be that transmission trumps all.³³⁵ The cost and ease of transmission is what really seems to drive location. According to the Solar Energy Industry Association, “lack of transmission capacity serving areas of

332. Rogers, *supra* note 318.

333. *Id.* Upset about the way the solar company dealt with sales taxes (buying their solar panels elsewhere) and property taxes (by reducing the footprint of the facility), one Supervisor had even harsher language, asserting that Con Edison had “basically raped and pillaged” the county. *Id.* In 2018, however, the county began to receive millions of dollars in tax payments, but the county asserts that it was only around 30 percent of what it should have received and the project is generating only 200 jobs, not the 1,000 jobs that were originally claimed. John Chadwell, *Panoche Valley Solar Project Money Begins to Reach County*, BENITOLINK (April 15, 2018), <https://benitolink.com/news/panoche-valley-solar-project-money-begins-reach-county> [<https://perma.cc/FP5V-XAZX>].

334. Interview #2; Interview #7; Interview #18; Interview #20.

335. Interview #2; Interview #7; Interview #13; Interview #18.

quality solar resource” is one of the biggest barriers to solar energy development.³³⁶

A. The DRECP: An Attempt at Coordinated Planning

The development of the Desert Renewable Energy Conservation Plan (“DRECP”) is an attempt to coordinate local, state, and federal renewable energy planning in the California desert. The DRECP is intended to allow “appropriate development of renewable energy projects,” while protecting desert ecosystems at the landscape scale.³³⁷ As it was first conceived, the DRECP would have combined a federal General Conservation Plan (under the federal Endangered Species Act), a California Natural Communities Conservation Plan (under California’s Natural Communities Conservation Plan Act), and a Land Use Plan Amendment (under the Federal Land Policy and Management Act). The planning process also anticipated changes to county General Plans.³³⁸

The full DRECP planning area covers 22.5 million acres (which is approximately the size of Indiana) throughout portions of seven counties in California: Imperial, Inyo, Kern, Los Angeles, Riverside, San Bernardino, and San Diego.³³⁹ Creating the DRECP involved collaboration between the California Energy Commission, California Department of Fish and Wildlife, the U.S. Bureau of Land Management (“BLM”), and the U.S. Fish and Wildlife Service—collectively referred to as the Renewable Energy Action Team (“REAT”).³⁴⁰

The path to developing the DRECP began with the establishment of the REAT in 2008.³⁴¹ Independent Science Advisory Panels were

336. *Transmission*, SOLAR ENERGY INDUSTRY ASS’N, <https://www.seia.org/initiatives/transmission> [<https://perma.cc/S8G8-RYV3>] (last visited May 15, 2019).

337. *What Is the DRECP?*, DESERT RENEWABLE ENERGY CONSERVATION PLAN, <https://www.drecp.org/> [<https://perma.cc/SN82-FAUZ>] (last visited May 21, 2019).

338. *The Desert Renewable Energy Conservation Plan*, CTR. FOR BIOLOGICAL DIVERSITY, <https://www.biologicaldiversity.org/campaigns/drecp/index.html> [<https://perma.cc/N3WE-Y9GS>] (last visited May 21, 2019).

339. *What Is the DRECP?*, DESERT RENEWABLE ENERGY CONSERVATION PLAN, *supra* note 337.

340. *Id.*

341. *See* DESERT RENEWABLE ENERGY CONSERVATION PLAN, DRAFT DRECP AND EIR/EIS—APPENDIX A2: TIMELINE OF MEMORANDA OF UNDERSTANDING (MOUS) AND AGREEMENTS RELATED TO THE DRECP (2014), <https://www.fws.gov/carlsbad/PalmSprings/DRECP/>

convened to evaluate the planning approach in 2010 and 2012.³⁴² Throughout the process of developing the DRECP, environmental groups were both critical of elements of its analysis and mitigation requirements yet hopeful that some future version of the DRECP would be the best way to balance energy and conservation goals.³⁴³

Originally, the DRECP was poised to be finalized by January 2013.³⁴⁴ A Draft EIS/EIR for the DRECP was finally published in September 2014. The EIR/EIS for the DRECP addresses impacts on agricultural resources from power plant and transmission development, construction, operations and maintenance, decommissioning, and the design of reserves to protect wildlife habitat.³⁴⁵ Mitigation measures for the DRECP would require permanent preservation of off-site farmlands if Important Farmland is converted to nonagricultural use and there is no required acquisition of conservation land for agriculture-dependent species.³⁴⁶

Because of the challenges of reaching consensus on the nonfederal portions of the plan,³⁴⁷ in 2016, BLM signed a Record of Decision adopting a Land Use Plan Amendment covering only the ten million acres of federally managed BLM land in the DRECP area.³⁴⁸ BLM's Land Use Plan Amendment does not specifically

Appendix%20A_DRECP%20Stakeholders%20and%20Memoranda%20of%20Understanding%20Timeline/Appendix%20A2_MOU%20Chronology.pdf [https://perma.cc/4XJN-PCJ7].

342. *Independent Scientific Review of DRECP Species Profiles*, DESERT RENEWABLE ENERGY CONSERVATION PLAN, <https://www.drecp.org/whatisdrecp/science.html> [https://perma.cc/BB6Q-88DX] (last visited May 21, 2019).

343. Morris & Owley, *supra* note 5, at 347–48; Interview #17.

344. DESERT RENEWABLE ENERGY CONSERVATION PLAN, PROPOSED PROCESS, SCHEDULE, AND KEY DECISION POINTS FOR THE DESERT RENEWABLE ENERGY CONSERVATION PLAN NCCP/HCP AND EIR/EIS (2011), https://www.drecp.org/meetings/2010-09-08_meeting/DRECP_Proposed_Process_Schedule_and_Key_Decision_Points.pdf [https://perma.cc/7LCS-7EA7]. *See also* Morris & Owley, *supra* note 5, at 344.

345. DESERT RENEWABLE ENERGY CONSERVATION PLAN, DRAFT DRECP AND EIR/EIS—CHAPTER IV.12. AGRICULTURAL LAND AND PRODUCTION (2014), https://www.drecp.org/draftdrecp/files/e_Volume_IV/IV.12_Agricultural_Land_and_Production.pdf [https://perma.cc/94YQ-BBPS].

346. *Id.* at IV.12–18.

347. DESERT RENEWABLE ENERGY CONSERVATION PLAN, PATH FORWARD—FREQUENTLY ASKED QUESTIONS (2015), https://www.drecp.org/faqs/faqs_archive/2015-06-15_faq_Path_Forward.pdf [https://perma.cc/W3NA-8L2J].

348. U.S. BUREAU OF LAND MGMT., RECORD OF DECISION: DESERT RENEWABLE ENERGY CONSERVATION PLAN (2016), https://www.drecp.org/finaldrecp/rod/DRECP_BLM_LUPA_ROD.pdf [https://perma.cc/WD5M-MUCH]; *What Is the DRECP?*, DESERT RENEWABLE ENERGY CONSERVATION PLAN, *supra* note 337.

address impacts to farmland.³⁴⁹ In February 2018, BLM announced that it would consider amending the DRECP based on President Trump's order to "review regulations that unnecessarily impede energy development."³⁵⁰ This leaves even the portions of the DRECP that have actually been adopted in doubt.

B. Least Conflict Assessments

One important endeavor in seeking to change the pattern of which lands become solar facilities are the least conflict assessments. Defenders of Wildlife was one of the first groups to bring together stakeholders in an effort to take a collaborative approach to solar facility planning in California. Their 2012 Report, *Smart from the Start*, seeks to focus and incentivize renewable energy development projects on degraded agricultural lands.³⁵¹ Much like the DRECP, the efforts represented a landscape level approach, hoping to move solar decision making from individual site decisions to a broader planning approach.³⁵² The authors described the effort as attempting to "strike a balance between addressing new-term impact of industrial-scale renewable energy development on wildlife and wild lands and the long-term impacts of climate change on biological diversity, fish and wildlife habitat and prime agricultural lands."³⁵³ The study focused on the five southern San Joaquin Valley counties (Fresno, Kern, Kings, Madera, and Tulare).³⁵⁴

Smart from the Start identified some of the same concerns that arose when we examined the situation several years later: (1) inadequate planning for energy projects and transmission needs, (2) lack of regional coordination, (3) inadequate focus on impaired lands, and (4) insufficient environmental review and permitting processes.³⁵⁵ The report noted the development on

349. U.S. BUREAU OF LAND MGMT., LAND USE PLAN AMENDMENT: DESERT RENEWABLE ENERGY CONSERVATION PLAN (2018), https://www.drecp.org/finaldrecp/lupa/DRECP_BLM_LUPA.pdf [<https://perma.cc/VF3X-C3V3>].

350. *BLM to Consider Changes to Desert Renewable Energy Conservation Plan*, U.S. BUREAU OF LAND MGMT. (Feb. 1, 2018), <https://www.blm.gov/california/BLM-to-consider-changes-desert-renewable-energy-conservation-plan> [<https://perma.cc/H67Z-A7BW>].

351. SMART FROM THE START, *supra* note 196.

352. Interview #17.

353. SMART FROM THE START, *supra* note 196, at 2.

354. *Id.* at 5.

355. *Id.* at 2–4.

agricultural lands and suggestions from stakeholders that solar development focus on “lands with low agricultural value due to chemical impairment, lack of water or physical degradation.”³⁵⁶ The authors acknowledged that the agricultural community seemed to have good information about which lands qualify as impaired but noted a lack of systematic mapping of such areas.³⁵⁷

In 2013, The Nature Conservancy (“TNC”) engaged in an effort that brought in the mapping missing in *Smart from the Start* and used a spatial approach to study solar development in the Western San Joaquin Valley.³⁵⁸ Labelling the process a least conflict assessment, TNC used a GIS analysis to assess which lands within the designated area would be best for solar development. TNC’s chief concern was biodiversity protection³⁵⁹ and therefore labeled the lands of greatest biodiversity value to be the most conflicted lands. The report then recommended working to avoid all solar development in those areas.³⁶⁰ The goal of the report was not to stop solar development but to help define the most desirable areas for solar development from a biodiversity viewpoint. By looking at different demands on the land and the ecosystem services the land could provide, TNC was able to identify lands that it believed to be the best sites for solar development. As the name implies, these were not perfect locations but instead the spots with the “least conflicts.”

TNC limited its analysis to the western part of the San Joaquin Valley because it wanted to target areas of proposed solar development and produce a report within a short time frame (four to five months).³⁶¹ At the time of the TNC analysis, 64,000 acres of solar projects were sited in the western San Joaquin Valley.³⁶²

356. *Id.* at 8 (calling out the Westlands Water District as meeting the criteria).

357. *Id.* at 8.

358. H. SCOTT BUTTERFIELD ET AL., THE NATURE CONSERVANCY, WESTERN SAN JOAQUIN VALLEY LEAST CONFLICT SOLAR ENERGY ASSESSMENT (2013), <https://www.scienceforconservation.org/products/western-san-joaquin-valley-assessment> [<https://perma.cc/T8K4-VL62>].

359. The Western San Joaquin Valley’s ecosystems have suffered from land development, chiefly agriculture and urban land uses. *Id.* at 2. Yet, it is still home to several endangered species including the San Joaquin kit fox, giant kangaroo rat, and blunt-nosed leopard lizard. *Id.*

360. The report places large areas of land in categories of desirability, acknowledging that in many cases on-the-ground site-specific analysis will be needed.

361. Interview #1.

362. BUTTERFIELD ET AL., *supra* note 358, at 4.

While sited, construction had not yet begun on many projects and TNC hoped its analysis would affect the planned projects as well as potential future projects. Its study revealed that 48,478 acres of solar projects were already located (some under construction and some in the environmental review process) in areas that the analysis identified as highest environmental conflict.³⁶³ Overall, the analysis showed that as the environmental conflicts lessened there were fewer solar projects: 8,191 acres in moderate conservation value zones and 6,036 in low conservation value zones. Thus, from a biodiversity and agricultural conservation standpoint, things are going in exactly the wrong direction.

The beauty of a GIS analysis is that one can continue to add layers to the study. GIS involves mapping characteristics on the landscape. By mapping various categories, we can see patterns emerge. For example, one could map habitat for or known occurrences of kit foxes on top of proposed solar facility sites. The overlap of these areas presents conflicts and opportunities in a visual form. As you identify additional interests or factors, you can add to the overlays (e.g., next we overlap a map of prime agricultural lands). In this way, a GIS analysis can be built upon as more information is collected or as we seek to ask additional questions. For example, one might want to add to the TNC's working maps overlays of drought areas, maps representing water rights, etc.³⁶⁴

In the process of this analysis, TNC also considered agricultural lands, mapping both different soil classifications and the presence of Williamson Act contracts. Although TNC's priority was biodiversity protection, it included agricultural lands in its analysis, noting "prime farmland is a key resource in California and by virtue of its productivity and historical loss and degradation is itself a high conservation priority."³⁶⁵ Almost one million acres of Prime Farmland, over 100,000 acres of Unique Farmland, and nearly 800,000 acres of Farmland of Statewide Importance were present in the study area.³⁶⁶ Maps revealed, however, that many of these acres (particularly in the category of Farmland of Statewide Importance)

363. *Id.* at 11.

364. As TNC notes, the area is also of increasing interest for hydraulic fracturing of oil, something not included in their least conflict analysis. *Id.* at 2.

365. *Id.* at 9.

366. *Id.* at 4.

were actually salt-affected lands, suggesting that the agricultural use of such lands may be more limited than indicated by their soil designation.³⁶⁷ Additionally, the number of acres of land under Williamson Act contracts exceeds the sum of all of these farmland types with 2,896,698 acres under contract, a significant portion of the 5.7 million acre study area.³⁶⁸

Beyond agricultural analysis, TNC also recognized the importance of assessing transmission availability and capacity. All those who examine solar development in California acknowledge the importance of transmission access. As TNC notes, one must consider not just the presence of transmission lines but also the capacity of the lines.³⁶⁹ Transmission capacity can be harder to assess than mere presence of interties or distance to substations. TNC found that existing transmission lines in the western San Joaquin Valley are congested, suggesting that upgrades would be necessary.³⁷⁰ Transmission capacity is generally low in areas of least conflict because they are sparsely populated areas. The California Independent System Operator has the task of transmission planning in the state and it creates an annual report prioritizing transmission areas. Recently its focus has been on meeting the needs of the renewable portfolio standard.³⁷¹

TNC's report proved useful for several reasons. First, after TNC made this analysis available to the public, solar companies immediately began using it for making siting determinations or at least making themselves aware of what complaints they would receive regarding their selected sites.³⁷² One energy company acknowledged that it uses TNC's assessment, explaining that "if the NGOs that comment on our projects develop tools, we use them because we want to know what they are going to say, whether it is

367. *Id.* at 24–25.

368. *Id.* at 4. It would have been interesting to know which of the designated lands were actively in agricultural use as opposed to just being designated as farmland by various land use laws. Unfortunately, TNC did not have the capacity to make such an assessment, as it might have required on-the-ground visits to all the sites.

369. *Id.* at 10.

370. *Id.* at 12.

371. DUSTIN PEARCE ET AL., A PATH FORWARD: IDENTIFYING LEAST-CONFLICT SOLAR PV DEVELOPMENT IN CALIFORNIA'S SAN JOAQUIN VALLEY (2016) [hereinafter A PATH FORWARD].

372. Interview #2.

good or bad.”³⁷³ But they do not use them “to the exclusion of anything else.”³⁷⁴

Second, policymakers saw the value of a least conflict analysis for making decisions on solar siting. The TNC’s analysis was an internal process to TNC with a report written by staff after conducting their own studies and working with many people involved in the area. However, it was not a stakeholder process in the sense that the entities consulted had a say in the components or outcome of the report. TNC chose an internal process because of their desire to get things done quickly and to have an analysis available for projects already on the table.³⁷⁵ The governor’s office³⁷⁶ and others were inspired to engage in a similar process, but this time it was a longer stakeholder-driven version of a least conflict analysis, expanded to include the entire San Joaquin Valley.

The State of California took up this mantle in June 2015 and brought together a bigger stakeholder group to engage in a similar process, led by people from the Conservation Biology Institute, Berkeley Law’s Center for Law, Energy and the Environment, and Terrell Watt Planning Associates.³⁷⁷ The people we spoke with viewed this process as not substantively different in form from what TNC did, but having more buy-in because it was now a public process with more people at the table and covering a larger geographical area.³⁷⁸ That analysis took one year and covered the entire San Joaquin Valley. Stakeholders seemed to have liked what TNC had done, but felt that it lacked legitimacy because it was not a stakeholder process.³⁷⁹

The stakeholder-led process identified 5 percent of the study area (or 470,000 acres) as least-conflict land, suggesting that solar development in those areas would avoid lands of highest environmental or agricultural value.³⁸⁰ By the time of the publication of this stakeholder process report in May 2016, 120

373. *Id.*

374. *Id.*

375. Interview #1

376. It may be that people liked what the TNC had done but didn’t want it to appear that they were just taking the TNC’s conclusions without doing a full assessment that avoided any semblance of bias in favor of environmental groups.

377. A PATH FORWARD, *supra* note 371, at 54–56.

378. Interview #1; Interview #17.

379. Interview #1.

380. A PATH FORWARD, *supra* note 371, at 2.

solar facilities were in operation or planning stages throughout the San Joaquin Valley, with the facilities averaging 500 acres and 67 MW of generation.³⁸¹

The organizers also brought in representatives from tribes and the military. While they did not offer as much detail for mapping lands, they were still able to find agreement that the least conflict lands for solar development centered around the Westlands Water District area of the Valley where soils are of poorer quality.³⁸² Unsurprisingly perhaps, these are the same areas identified by TNC in its least conflict analysis and recommended generally (but with little precision and no maps) by Defenders of Wildlife in the *Smart from the Start* report. In fact, participants and observers we interviewed stated that “the majority of participants generally knew where the least conflict lands” were from the first day they entered the conference room, but there was a need to have a process to formalize the consensus areas.”³⁸³

These least conflict analyses are not binding on solar developers or local counties. Indeed, the stakeholder-led report specifically noted “identification of least-conflict lands via this process does not preclude development of solar PV where local and county governments find them to be suitable.”³⁸⁴ Solar developers may have been particularly interested in taking part in this process and having a stakeholder-led outcome document not because they were uncertain as to what the maps would reveal, but because they knew that the maps would indicate areas lacking transmission capacity. In this way, the report serves as fodder to push the Independent System Operator to prioritize expanding transmission to those areas.³⁸⁵ Indeed, that may be exactly what is happening as attention is now on transmission with an effort to push for transmission development in the San Joaquin Valley.³⁸⁶

So far, the least conflict assessments do not consider variations in county laws, policies, and procedures, which may pose hurdles or provide incentives for siting solar power plants. Additionally, while

381. *Id.* at 1.

382. *Id.* at 44, 50.

383. Interview #17.

384. A PATH FORWARD, *supra* note 371, at 6.

385. Interview #17.

386. ARNE OLSON, DOUG ALLEN & VIVIAN LI, PLANNING TRANSMISSION FOR RENEWABLES (2017), <https://www.scienceforconservation.org/assets/downloads/OptimizingCA-Transmission-Full.pdf> [https://perma.cc/JW68-YDYU].

the analysis maps wetlands and groundwater recharge areas, it does not address water rights or allocation levels tied to parcels.³⁸⁷ Analysis that includes more of this context could help inform both solar siting and possible changes where existing policies provide roadblocks to better siting. For example, the *Smart from the Start* report identified lack of local planning and permitting experience (for solar facilities) as a challenge for more sensible siting decisions.³⁸⁸ Older zoning laws and general plans did not account for energy development of this type and communities needed to create new permitting approaches. Understanding spatially where such challenges exist through using GIS-based modeling could help identify opportunity spots and assist in policy formation.

CONCLUSION

The heart of the issue is that there is not currently a good process for efficiently directing solar development to lands where it will have the fewest negative impacts. What everyone is really calling for is better planning. “Let’s figure out where transmission lines should go. Let’s work regionally to make it happen. Let’s figure out which lands to avoid. Let’s think about alternative locations.” Yet sometimes financial and legal incentives push solar companies to act quickly. Permitting decisions happen at a local level with counties fighting over who is going to get the jobs and tax dollars, with conservation values sometimes playing second fiddle to what feel like more pressing needs. And when big, ambitious efforts to coordinate planning, like the DRECP, are undertaken, they face major challenges and may not succeed.

Many of our interviewees said that developers and regulators all know where solar plants will have the greatest and the most minimal impacts on threatened and endangered species and on prime farmland, but that the process is not set up to direct development to the best sites. There are a lot of reasons for this. The least conflict analyses revealed this tension, as those involved

387. One interviewee pointed out that agricultural landowners do not like to make such information public and worry about the stigma of their land being labeled as lacking water or lying fallow. Interview #17.

388. SMART FROM THE START, *supra* note 196, at 8. The report also noted a lack of funding for all levels of government agencies involved in the process, suggesting that there may be ways to improve and facilitate thoughtful solar development by increasing the capacity of government agencies. *Id.*

all understood where the best sites would be but were not quite as clear on how to push solar development to those areas.

Despite recognition and efforts to incorporate multiple interest groups, at the end of the day, stakeholders all acknowledge that transmission is often the key consideration. Even the best locations for solar development will be hampered without access to transmission resources. Indeed, even if the site of the solar panels is on disturbed land, transmission lines may still need to journey through sensitive lands. There is a need to proactively plan for transmission and get projects in the pipeline that are in the right places. If transmission and grid access drive the location of solar development, we may end up in less desirable sites from the standpoint of either environmental conservation or agricultural impacts. This demonstrates why getting the governor's office involved in the transmission process is critical. If transmission access negatively impacts environmental and cultural values, we don't want transmission location to be solely driven by the market. If transmission is driving siting, the state should get involved in transmission and help direct the development of energy facilities by establishing transmission lines in the places that would help facilitate solar development on marginal lands. Hoping to go beyond the state level, the renewable energy industry wants transmission planning on a regional scale because power often moves across state lines.

Involved jurisdictions and agencies may have very different calculations of tradeoffs. To date, efforts to streamline permitting for solar development while providing adequate and consistent mitigation for impacts have been challenging and cumbersome. Although many land use decisions are fundamentally local, state and national policy direction is urgently needed to guide reasonable assessment of the tradeoffs inherent in developing solar power plants.

We agree that solar development should be deployed widely and quickly, but the structure of the current decision-making process is not conducive to placing the facilities on impaired lands. It may indeed be that energy needs trump agriculture needs, but there seems little justification for building on habitat and prime soils while degraded areas remain bare. We need a swift transition to renewable energy, and it may well be worth sacrificing prime

farmland or wildlife habitat. Still, there has to be a better system for weighing and mitigating the damage that is going to be done.