Land in Transition: Repurposing Water-Constrained Farmland for Sustainable Solar Development in the San Joaquin Valley

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I. Introduction

Mining groundwater for agriculture has made the Central Valley of California one of the most productive agricultural regions in the world while also representing one of the most significant alterations of Earth's land surface attributable to humankind.[1] Today, as the severity and intensity of droughts increase, depleting aquifers throughout the Central Valley and particularly in the San Joaquin Valley, farmers face a new decision—which parts of their land will go dry. These choices, and the strategic policies implemented to inform them, will define the future of the San Joaquin Valley.

Long ago, snowmelt from the Sierra Nevada mountain range swelled the valley resulting in one immense wetland—connecting present-day Bakersfield to the San Francisco Bay.[2] Tulare Lake, sitting at the confluence of the Kings, Tule, Kaweah, and Kern Rivers in the San Joaquin Valley, was once the largest body of freshwater west of the Mississippi, spanning 800 square miles.[3] Over time, billions of dollars were directed towards damming the rivers, drying the lakes, and developing an intricate web of canals, dikes, and levees in the Central Valley for agriculture. Today, the Kings River irrigates more than one million acres of vast farmland,[4] but the Tulare Lake has all but disappeared.[5]

California's Central Valley, which includes the San Joaquin Valley, the Sacramento Valley, and the Sacramento-San Joaquin Delta, is now the backbone of the agricultural industry in California, producing around a quarter of our nation's food using fewer than one percent of our farmland.[6] In particular, California's fruit and nut production is concentrated in the San Joaquin Valley. The San Joaquin Valley produces more than half of California's agricultural output.[7] Agriculture is critical

1. Devin Galloway & F.S. Riley, *San Joaquin Valley, California: Largest Human Alteration of the Earth's Surface*, U.S. Geological Surv. Circular 1182, 23 (1999) https://pubs.usgs.gov/circ/circ1182/pdf/06SanJoaquinValley.pdf [https://perma.cc/45KY-ARZ2].

2. In the 1800's, a steamship could carry agricultural supplies from Bakersfield up to Fresno and then to San Francisco, nearly 300 miles on lakes and connecting waterways. *See* Noah Lloyd, *The Largest Body of Water West of the Mississippi Disappeared 130 Years Ago—Now It's Back*, Ne. Glob. News (Feb. 5, 2024), https://news.northeastern.edu/2024/02/05/tulare-lake-reappearance [https://perma.cc/A7VJ-LA73].

3. Daniel G. Cooper & Nina Kruglikova, *The Reemergence of Tulare Lake in California*, Weather Matters, https://www.weathermatters.net/the-reemergence-of-tulare-lake-in-california [https://perma.cc/4ZZ3-N2DU].

4. Kings River Conservation District. *Kings River Conservation District - Reliable Resources for the Valley.* Kings River Conservation District, https://krcd.org/.

5. Record rainfall in California in 2023, resulted in 100,000 acres of Tulare lake reemerging for the first time in 40 years. However, the lake has since subsided. The lake has reappeared a few times over the last century, during particularly wet winters. *See* Noah Lloyd, *The Largest Body of Water West of the Mississippi Disappeared 130 Years Ago—Now It's Back*, Ne. Glob. News (Feb. 5, 2024), https://news.northeastern.edu/2024/02/05/tulare-lake-reappearance [https://perma.cc/A7VJ-LA73].

6. *California's Central Valley*, U.S. Geological Surv. Cal. Water Sci. Ctr., https://ca.water.usgs.gov/projects/central-valley/about-central-valley.html [https://perma.cc/9D4S-ABYF].

7. Alvar Escriva-Bou et al., *The Future of Agriculture in the San Joaquin Valley*, Pub. Pol'y Inst. of Cal. (2023) https://www.ppic.org/wp-content/uploads/policy-brief-the-future-of-agriculture-in-the-san-joaquin-valley.pdf [https://perma.cc/R2BT-P6Z5].

to the San Joaquin Valley's economy, accounting for fourteen percent of GDP and employing around 340,000 people—around seventeen percent of the workforce—to produce more than $24 billion in crop revenues.[8]

For decades, water scarcity has challenged agriculture in California, a threat multiplied by climate change. Climate change is inducing more frequent and intense drought periods, both increasing agricultural water demand, while reducing the reliability and availability of surface water sources. To make up for the shortfall, many farmers must resort to pumping groundwater.[9] In a "normal" year, approximately 40 percent of irrigation water comes from groundwater sources, but as the frequency and severity of droughts increases, that figure is often greater than 60 percent.[10] This chronic overpumping of groundwater is resulting in catastrophic degradation to groundwater storage and water quality, forcing wells to go dry and depleting interconnected surface waters.[11] Overpumping is also causing the floor of the valley to sink (or "subside") as underground aquifers are depleted.[12] In areas of the Central Valley, the land has sunk by around twenty-eight feet compared to 1920 levels, causing widespread damage to infrastructure and reducing the carrying capacity of critical aqueducts and canals.[13] The San Joaquin Valley depends on water for communities and agriculture, making the region's economic and environmental sustainability immensely vulnerable as climate change shifts precipitation patterns and increases crop water demands.[14]

Public policy also has a significant impact on the area. In particular, the 2014 Sustainable Groundwater Management Act (SGMA) will be critical to protecting the San Joaquin Valley's future as an agricultural region. SGMA mandates sustainable groundwater use by 2040 for the most critically overdrafted basins. However, achieving sustainable groundwater use in the valley will almost certainly mean that much of land currently in production will not be able to sustain agriculture into the future.[15]

For California regions including San Joaquin Valley, sustainable use of groundwater will mean shifting from irrigated cropland to less water-intensive agriculture or taking land out of production.[16] Current estimates show that converging impacts

8. *Id.* at 1.

9. *Advancing Strategic Land Repurposing and Groundwater Sustainability in California: A guide for developing regional strategies to create multiple benefits*, Env't Def. Fund (2021), https://www.edf.org/sites/default/files/documents/EDF_AdvancingLandRepurposing_March2021_0.pdf [https://perma.cc/A8ZL-VYM3].

10. *Groundwater Issue: Supply*, Cal. State Water Res. Control Bd. (2025), https://www.waterboards.ca.gov/water_issues/programs/groundwater/issue_supply.html [https://perma.cc/RL4W-6YDT].

11. Environmental Defense Fund, *supra* note 9.

12. Matthew Lees, et al., *Development and Application of a 1D Compaction Model to Understand 65 Years of Subsidence in the San Joaquin Valley*, 58 Water Resources Research e2021WR031390 (2022) https://doi.org/10.1029/2021WR031390.

13. *San Joaquin Valley is Still Sinking*, NASA Earth Observatory (2017), https://earthobservatory.nasa.gov/images/89761/san-joaquin-valley-is-still-sinking [https://perma.cc/EXR7-VKES].

14. Alvar Escriva-Bou et al., *supra* note 7, at 1.

15. Environmental Defense Fund, *supra* note 9, at 4.

16. *Id.*

of SGMA implementation, climate change, and other critical environmental regulations could cause a 20 percent reduction in water availability for San Joaquin Valley agriculture by 2040, resulting in the necessary fallowing of 500,000 to 900,000 acres of farmland.[17]

The San Joaquin Valley is at a critical inflection point. As land is forced out of production, these decisions will determine if the San Joaquin Valley becomes a patchwork of barren, dusty fields where invasive weeds and pests grow, worsening already poor air quality as farmers and farmworkers are pushed out of work. However, this crisis also presents an immense opportunity. This paper will illustrate how proactive policies that strategically repurpose previously irrigated land into solar development and viable habitats can ensure a future for the San Joaquin Valley with a thriving agriculture economy, sustainable groundwater supplies, renewable energy, vibrant ecosystems, and healthy air and soil for all.

Part II of this paper will address the looming threat of water scarcity induced by climate change in the San Joaquin Valley and its disproportionate impact on low-income and marginalized communities. Part II will also illustrate how the vital implementation of SGMA to address water scarcity in the San Joaquin Valley will necessitate that agricultural land be taken out of production, which could result in environmental, public health, and economic impacts across the region. Part III will advance critical opportunities for an equitable and sustainable transition for agricultural land coming out of production, including solar development and habitat conservation. Part III will also propose necessary reform to state and local regulations to allow agricultural land without sufficient water reserves to be utilized for solar production. In particular, Part III will suggest important updates that should be made to a piece of California legislation, the Williamson Act, that currently serves as a barrier to various aspects of strategic land repurposing. Part IV will conclude with a vision for sustainable multi-benefit land repurposing in the San Joaquin Valley, where solar development on water-constrained farmland safeguards farmers' livelihoods, protects communities and preserves valuable habitats.

II. Impact of Climate Change in the San Joaquin Valley

In the San Joaquin Valley, climate change is heavily impacting both water availability and demand.[18] The region withstood two severe multi-year droughts in the past decade, exacerbated by record-breaking high temperatures and evaporative demand.[19] Groundwater levels in the southern portion of the San Joaquin Valley have been declining for more than a century, but the pace of decline has accelerated in the past two decades, coinciding with extreme multi-year to multi-decadal droughts.[20]

17. Alvar Escriva-Bou et al., *supra* note 7, at 2.

18. Kelley Moyers et al., *An Invisible Water Surcharge: Climate Warming Increases Crop Water Demand in the San Joaquin Valley's Groundwater-Dependent Irrigated Agriculture*, 3 PLOS Water e0000184 (2024) https://doi.org/10.1371/journal.pwat.0000184 [https://perma.cc/89R8-E6XP].

19. *Id.* at 2.

20. Pang-Wei Liu et al., *Groundwater Depletion in California's Central Valley Accelerates*

Further, weather patterns that induce prolonged droughts have become more common in California due to climate change.[21]

California relies on groundwater for roughly two–thirds of its water supply during droughts, compared to one-third in non-drought conditions.[22] As droughts significantly limit the availability of renewable freshwater, farmers are resorting to overpumping groundwater to meet crop demands.[23] Further, during times of drought, groundwater depletion increases alongside agricultural groundwater use. Thus, this creates a concerning positive feedback loop that significantly exacerbates the decline of water availability, making drought impacts even worse.[24] Ultimately, the San Joaquin Valley is highly vulnerable to the impacts of climate change, and the threat is expected to worsen over the coming decades.

A. Climate Change Disproportionately Impacts Disadvantaged Communities in the San Joaquin Valley

In the San Joaquin Valley, low-income and marginalized communities[25] experience severe water insecurity, extremely poor air quality[26] and lack of fundamental infrastructure, which makes them less resilient to the impacts of climate change.[27] Further, farmworkers across the region are extremely vulnerable to the heat related effects of climate change, with an estimated eighty-three workers dying in California between 2018 and 2022 when temperatures soared beyond the threshold that triggers California's OSHA heat safety requirements (80˚F). The danger presented by these excessive heat events is exacerbated by chronically unsafe air quality.[28] The threat

during Megadrought, 13 Nature Commc'ns 7825 (2022) https://doi.org/10.1038/s41467–022–35582-x [https://perma.cc/Z487-QLKC].

21. Daniel L. Swain et al., *Increasing Precipitation Volatility in Twenty-First-Century California*, 8 Nature Climate Change 427 (2018) https://doi.org/10.1038/s41558–018–0140-y [https://perma.cc/7RXW-FWWX].

22. J. S. Famiglietti et al. *Satellite Measures Recent Rates of Groundwater Depletion in California's Central Valley*, 38 Geophysical Rsch. Letters L03403 (2011) https://doi.org/10.1029/2010GL046442.

23. Pang-Wei Liu et al., *supra* note 20.

24. *Id.* at 1.

25. The San Joaquin Valley has a population of 4.2 million, of which 46% are Latino/Hispanic. Many are first generation immigrants from Mexico and elsewhere in Latin America. *See* Ganlin Huang & Jonathan K. London, *Cumulative Environmental Vulnerability and Environmental Justice in California's San Joaquin Valley*, 9 Int'l J. of Env't Rsch. and Pub. Health 1593, 1595 (2012).

26. The San Joaquin Valley is considered to have some of the worst air quality in the United States. Residents suffer from high rates of asthma and other respiratory issues. In particular, Madera, Fresno, and Kings Counties have asthma-related emergency room visits by young children (ages 0–4) rates double that of the state as a whole. *See id.* at 1596.

27. Angel Santiago Fernandez-Bou et al., *Water, Environment, and Socioeconomic Justice in California: A Multi-Benefit Cropland Repurposing Framework*, 858 Sci. of The Total Env't 159963, 4 (2023) https://doi.org/10.1016/j.scitotenv.2022.159963.

28. Liza Gross & Peter Aldhous, *Dying in the Fields as Temperatures Soar*, Inside Climate News, (Dec. 31, 2023), https://insideclimatenews.org/news/31122023/california-farmworkers-dying-in-the-heat/ [https://perma.cc/3PDJ-M7ZT].

is expected to worsen, as research indicates that the San Joaquin Valley could see a sevenfold increase in extreme heat days.[29]

Further, as farmers are resorting to groundwater pumping, the region is experiencing degraded groundwater quality and increased water scarcity. In turn, communities are suffering from drying wells and substandard water quality, as many depend on groundwater as their primary source of drinking water.[30] Studies estimate that without intervention in groundwater level decline, the Central Valley of California could see around six to ten thousand domestic well failures by 2040.[31] The San Joaquin Valley agricultural region also experiences the highest rates of drinking water contamination in California, and over one million people across the state lack access to safe and affordable drinking water due to pollutants leaching from irrigated agriculture and other local sources (i.e., dairy farms and septic tanks) and groundwater overdraft.[32] Many community members are suffering from the impacts of groundwater decline but simultaneously depend financially on agriculture. Thus, as water scarcity and policy changes in California trigger farmland retirement, socioeconomic opportunities are also at risk.[33] These impacts compound environmental injustices and health disparities already experienced by communities in agricultural regions.[34]

B. Addressing Climate Change: The Sustainable Groundwater Management Act (SGMA)

Before 2014, California was the only Western state without comprehensive state laws monitoring and regulating groundwater pumping and use.[35] However, this changed in 2014, as severe and protracted drought resulting in plummeting groundwater levels, dry drinking water wells, and damage to major aqueducts from sinking

29. Angel Santiago Fernandez-Bou et al., California Natural Resources Agency, Regional Report for the San Joaquin Valley Region on Impacts of Climate Change, 21 (2021) https://www.energy.ca.gov/sites/default/files/2022–01/CA4_CCA_SJ_Region_Eng_ada.pdf [https://perma.cc/WT3V-WYLU].

30. R. A. Pauloo et al., *Domestic Well Vulnerability to Drought Duration and Unsustainable Groundwater Management in California's Central Valley*,15 Env't Rsch. Letters 044010 at 1–2, 11 (2020).

31. *Id.* at 12.

32. *See* California State Auditor, State Water Resources Control Board: It Lacks the Urgency Necessary to Ensure That Failing Water Systems Receive Needed Assistance in a Timely Manner (2022) *https://information.auditor.ca.gov/reports/responses/2021–118/all*; *see also* Thomas Harter et al., Cal. Dep't. of Food and Agric. & Univ. of Cal. Davis, Nitrogen Fertilizer Loading to Groundwater in the Central Valley (2017) https://www.cdfa.ca.gov/is/ffldrs/frep/pdfs/CompletedProjects/15–0454_partialFR-Harter.pdf.

33. Angel Santiago Fernandez-Bou et al., *supra* note 28, at 1–2.

34. Jeff Borum, et al., Soil-Water Interface Expert Convening Series, Cover Cropping in the SGMA Era: A Comprehensive Overview of Water Impacts, Policy Implications, and Recommendations for California's Water Managers 13 (2024) https://www.cdfa.ca.gov/oefi/efasap/docs/2024/Sustainable_Conservation-Cover-Crop-SGMA-Report.pdf.

35. Owen Poindexter, *Governor Brown Sign's Historic Groundwater Legislation*, Earth Island Journal (Sept. 17, 2014), https://www.earthisland.org/journal/index.php/articles/entry/governor_brown_signs_historic_groundwater_legislation/## [https://perma.cc/3LMQ-7GHN].

lands finally spurred California legislators into action.[36] To address groundwater overdraft impacts and increase resilience to future droughts, the California legislature enacted the Sustainable Groundwater Management Act (SGMA). The act intends to bring groundwater basins into balance and for groundwater resources to be "managed sustainably for long-term reliability and multiple economic, social, and environmental benefits for current and future beneficial uses."[37]

SGMA creates a "bottom-up" approach to regulate groundwater, where local water districts or communities in each of the state's overdrafted groundwater aquifers are directed to self-organize into "groundwater sustainability agencies" (GSAs).[38] GSAs are obligated to develop and implement groundwater sustainability plans (GSPs) to bring over-drafted aquifers into "sustainability" by 2040.[39] Sustainability is defined in the legislation as avoiding six undesirable results: "lowering groundwater levels, reduction of groundwater storage, land subsidence, seawater intrusion, degradation of water quality, and depletions of interconnected surface waters."[40]

Under SGMA, the state also retains oversight of the GSAs' development and implementation of groundwater sustainability plans, as every GSA must submit for state review and approval of its proposed groundwater sustainability plan before it can take effect. Further, a high or medium-priority groundwater basin may be designated a probationary basin by the California State Water Resources Control Board, where no local agency has decided to form a groundwater sustainability agency and develop a groundwater sustainability plan for the entire basin.[41] Additionally, if the state determines that a submitted GSP is deficient under SGMA, the Board has the authority to develop, adopt, and administer its own GSP instead.[42]

Nearly half of all the groundwater basins in the Central Valley are designated critically overdrafted.[43] The San Joaquin Valley in particular is ground zero for SGMA implementation, with nearly all of its groundwater basins designated as critically overdrafted.[44] Estimates indicate that overdraft in the San Joaquin Valley is nearly two million acre-feet annually (more than 10% of net water use).[45] SGMA implementation has been challenging in the region, with every critically overdrafted basin plan deemed incomplete. After the six months granted to the GSAs to address

36. Ellen Hanak et al., Public Policy Inst, of California, Managing Water and Farmland Transitions in the San Joaquin Valley 3 (2023) https://www.ppic.org/publication/managing-water-and-farmland-transitions-in-the-san-joaquin-valley/.

37. *See* Cal. Water Code §§ 10720–10737.

38. *See id.* §§ 10723, 10723.6, subd. (a), 10727, subd. (a), 10728.4.

39. *See id.* §§ 10723 10727, subd. (a), 10728.4.

40. *See id.* § 10721(v).

41. *See id.* § 10735.2(a).

42. *See id.* § 10735.8.

43. *Groundwater Sustainability Plans*, Cal. Dep't of Water Res. (Feb. 2025), https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management/Groundwater-Sustainability-Plans [https://perma.cc/DW9Z-WGD5].

44. Ellen Hanak et al., *supra* note 37, at 3.

45. Kyle Greenspan, et al., *Groundwater in California*, Pub. Pol'y Inst. of Cal. (2024) https://www.ppic.org/publication/groundwater-in-california/.

deficiencies in the plans, six continued to be considered inadequate and were referred to the State Water Board.

As of September 2024, the Board has deemed the Tule Groundwater Subbasin in San Joaquin County and the Tulare Lake subbasin in Kings County as probationary basins, finding the plans did not go far enough to address subsidence.[46] With probation, water users in the basin face stringent reporting requirements and new fees for water usage.[47] For example, water extractors in the Tulare Lake subbasin now must pay annually $300 per well and $20 per acre-foot pumped, plus a late reporting fee of 25 percent and extractors will also be required to file annual groundwater extraction reports with the State Water Board.[48] The State Water Board will give the basin's GSA a set amount of time, as short as 180 days, to address the deficiencies that warranted the probationary designation before stepping in and issuing an interim plan for the Basin.[49] The interim plan is a mandated temporary measure to protect groundwater until effective local management is in place.[50] The four remaining groundwater subbasins will go before the Board for possible probation in 2025.[51]

C. Implementation of SGMA will Lead to Agricultural Land Fallowing in the San Joaquin Valley

Successful implementation of the 2014 Sustainable Groundwater Management Act (SGMA) is critical to San Joaquin Valley's communities, agriculture, environment, and economy. However, the transition will be challenging, as research shows that even with aggressive efforts to replenish water supplies through activities like groundwater recharge, significant land fallowing will be necessary in the San Joaquin Valley.[52] Land fallowing occurs when land that is ordinarily planted is purposely kept out of production. In the most extreme scenario, nearly 900,000 of the valley's 4.5 million acres of irrigated cropland would be taken out of production to meet the required reductions in water and achieve sustainability for the overdrafted aquifers.[53] The estimated land fallowing would have massive economic impacts as well, with a potential for a loss of at least 50,000 jobs and an associated 2.3 percent decline in total regional gross domestic product.[54]

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46. *Id.*

47. Christine Souza, *Probation under SGMA Will Cost the Region, Farmers Say*, AgAlert (Apr. 24, 2024) https://www.agalert.com/california-ag-news/archives/april-24–2024/probation-under-sgma-will-cost-the-region-farmers-say/ [https://perma.cc/JFX6-CVYK].

48. *See id.* These fees can be significant, especially for larger growers. According to Kings County Farm Bureau Executive Director Dusty Ference, "The average farm size in Kings County is 640 acres, so assuming there is one well per hundred acres, you take 640 acres times 3 acre-feet per acre, times $20, and a farm's pumping fee to the state water board is $38,400." *Id.*

49. *Sustainable Groundwater Management Act: Probationary Designation and Groundwater Regulation by the State Water Board*, Cal. Water Bds. (Nov. 2022) https://www.waterboards.ca.gov/water_issues/programs/sgma/docs/sgma/sgma-prb.pdf [https://perma.cc/RB9A-JUP5].

50. *Id.*

51. Greenspan et al., *supra* note 46.

52. Ellen Hanak et al., *supra* note 37.

53. *Id.*

54. *Id.*

Land fallowing presents a significant challenge to public health in the region. The San Joaquin Valley already faces significant air quality issues, having among the most polluted air in the nation.[55] If land in the valley is left bare, the soil is much more susceptible to wind-driven erosion, and thus, there is a significant risk of environmental impacts, including worsening air quality from windblown dust.[56] Further, both pesticides and Coccidioides, an endemic fungal organism causing Valley fever, are mobilized by wind-blown dust, amplifying dust's health risks.[57] These compounding risks illustrate the urgent necessity of managing the transition of lands out of agriculture sustainability to ensure a healthy future for the people and the environment in the San Joaquin Valley.

III. Solutions: Equitable and Sustainable Land Transition in the San Joaquin Valley

To ensure a sustainable and equitable future for the San Joaquin Valley, previously irrigated land taken out of agriculture will need to be given new use and value. There is opportunity for this to be done strategically, capturing multi-benefit opportunities that increase environmental health while minimizing the economic impacts of the land transition and remedying inequities to vulnerable communities. Studies define "land repurposing" in the San Joaquin Valley as any activity that is "undertaken by a public or private entity that converts previously irrigated agricultural land to new uses that both 1) reduce groundwater demand or use, and 2) provide some other measurable benefits to the environment or broader San Joaquin Valley community."[58]

The most effective land repurposing strategy will be consistent with SGMA's goals, regionally coordinated, and will include opportunities for farmers to capture economic value from their transitioning lands. Further, land repurposing must also prioritize the health and resiliency of communities and habitats in the San Joaquin Valley. There are a multitude of land repurposing options that can help ensure groundwater savings while providing benefits for farmers and communities, as well as land conservation.

This paper will address two key opportunities—developing solar and conserving land as wildlife habitat—while describing current barriers and recommendations

55. EPA, San Joaquin Valley: EPA Activities for Cleaner Air (2024) https://www.epa.gov/sanjoaquinvalley/epa-activities-cleaner-air.

56. *See* Jeff Borum et al., Cover Cropping in the SGMA Era: A Comprehensive Overview of Water Impacts, Policy Implications and Recommendations for California's Water Managers (2024) https://www.cdfa.ca.gov/oefi/efasap/docs/2024/Sustainable_Conservation-Cover-Crop-SGMA-Report.pdf; *see also* Andrew Ayres et al., Land Transitions and Dust in the San Joaquin Valley: How Proactive Management Can Support Air Quality Improvements (2022) https://www.ppic.org/publication/land-transitions-and-dust-in-the-san-joaquin-valley/.

57. Andrew Ayres et al., *supra* note 57.

58. Env't Def. Fund, Advancing Strategic Land Repurposing and Groundwater Sustainability in California: A Guide for Developing Regional Strategies to Create Multiple Benefits 5 (2021 https://www.edf.org/sites/default/files/documents/EDF_AdvancingLandRepurposing_March2021_0.pdf.

for their efficient and equitable implementation. Pragmatic habitat conservation alongside responsible renewable energy development represents a crucial path forward for the San Joaquin Valley. Focusing renewable energy on degraded agricultural land, while conserving habitat where it is most beneficial allows for the minimization of adverse impacts to wildlife, high-value habitat, and the most productive agricultural lands.[59] For instance, low-conflict solar siting on degraded agricultural land will reduce unnecessary conflicts with community and environmental interests. Therefore, in conjunction, the San Joaquin Valley can protect critical natural resources and vital habitats while streamlining the clean energy transition.

While considering approaches for land repurposing, regulators must ensure local community priorities and regional context are considered. Local communities, especially historically underrepresented community members and small farmers, must be included in the development of strategies for land repurposing to avoid unintended and adverse consequences of land use decisions.[60] The most effective strategy for land repurposing will holistically ensure high-quality habitat, support the state's renewable energy goals, minimize the threats associated with land fallowing, and create new opportunities for historically underserved communities and small growers who are likely to be the most impacted under SGMA.[61]

A. Developing Solar Energy on Water-Constrained Agricultural Lands in the San Joaquin Valley

California Senate Bill 100[62] requires that 100 percent of electricity sales in California be renewable or zero-carbon by 2045, making the development of solar energy on land transitioning out of agriculture an important opportunity to achieve state renewable energy goals and simultaneously support economic stability in a region uniquely challenged by SGMA's implementation. Meeting the ambitious goals of SB 100 will require an unprecedented increase in electricity generation capacity. The land availability and high solar resource potential in the San Joaquin Valley makes it a critical area to support the clean energy transition in California.[63] There is potential for the San Joaquin Valley to generate at least 30 GW of solar capacity, roughly 10 times the amount it currently generates.[64] Further, for farmers struggling to grow with increasing water constraints, solar energy can represent a lucrative[65]

59. *See* Kate Kelly & Kim Delfino, Smart From the Start: Responsible Renewable Energy Development in the Southern San Joaquin Valley 2 (2012) https://defenders.org/sites/default/files/publications/smartfromthestartreport12_print.pdf

60. Env't Def. Fund, *supra* note 59, at 8.

61. *See id.*

62. S. Res. 100, 2017–18 Leg. (Cal. 2018).

63. *See* Andrew Ayres et al., Solar Energy and Groundwater in the San Joaquin Valley: How Policy Alignment Can Support the Regional Economy 3 (2022) https://www.ppic.org/publication/solar-energy-and-groundwater-in-the-san-joaquin-valley/

64. *See* 2024 20-Year Transmission Outlook, Cal. Indep. Sys. Operator 63 (2024) https://www.caiso.com/documents/2024–20-year-transmission-outlook-jul-31–2024.pdf

65. Landowners can earn anywhere from two to seven times as much annual revenue renting land to solar companies as they do from farming it. *See* Andrew Ayres et al., *supra* note 64, at 6.

alternative land use and can allow them to channel limited water resources from the fallowed land leased for solar farming to land they can still use for growing crops.[66]

Encouraging solar development on land without sufficient water reserves can also ensure both productive farmland and vulnerable species' habitats are protected.[67] The California Department of Conservation has emphasized that "agricultural land is of interest to photovoltaic solar developers due to its level terrain, existing land disturbance, decreased likelihood of hosting species of concern, and proximity to transmission lines or substations."[68] Additionally, a recent study by the Nature Conservancy emphasizes that the San Joaquin Valley is a crucial area of solar development with minimal habitat risk in California.[69] To ensure solar development is equitable and sustainable, solar projects must be sited and designed to protect high-value conservation areas, improve soil health, reduce local impacts like dust emissions, and deliberately provide opportunities for local employment.[70]

The expansion of solar in the San Joaquin Valley will depend on state and local energy and land use planning that incorporates information about where land is likely to come out of production. GSAs and local regulators must also work with a variety of stakeholders (e.g., agricultural groups, transmission groups, conservation organizations, developers, environmental justice groups, and tribes) to inclusively and proactively determine priority areas that are suitable for solar while having the least amount of conflict with species habitat, agricultural viability, and community vitality.[71]

1. Transmission Constraints

A major constraint for solar development on fallowing lands in the San Joaquin Valley is limitations on transmission. Project developers are already facing difficulties accessing transmission capacity in the San Joaquin Valley, which will only increase with the large-scale expansion of solar development if transmission infrastructure development does not keep pace with development of clean energy

66. Nancy Price. *Inside Look at Fresno County Westside Solar Plan to Power 9 Million Homes*, GV Wire (2024) https://gvwire.com/2024/07/01/inside-look-at-fresno-county-westside-solar-plan-to-power-9-million-homes/ [https://perma.cc/3JM9-VVYB].

67. *See* Samantha Levy & Ethan Winter, *Recommendations for State and Local Governments to Advance Smart Solar Policy*, Am. Farmland Tr. (2024), https://farmland.org/wp-content/uploads/2023/12/AFT-Recommendations_for_State_and_Local_Governments_to_Advance_Smart_Solar_Policy.pdf [https://perma.cc/N54Q-WAKJ].

68. Jessica Owley & Amy Wilson Morris, *The New Agriculture: From Food Farms to Solar Farms*, 44 Colum. J. Env't. L. 409, 426 (2019).

69. *See* Grace C. Wu et al., Power of Place: Land Conservation and Clean Energy Pathways for California 11–12 (2019) https://www.scienceforconservation.org/assets/downloads/Technical_Report_Power_of_Place.pdf

70. *Id.*

71. Dustin Pearce et al., Berkeley L. Ctr. for L., Energy, & ENV'T, A Path Forward: Identifying Least-Conflict Solar PV Development in California's San Joaquin Valley. (2016) https://www.law.berkeley.edu/wp-content/uploads/2016/05/A-PATH-FORWARD-May-2016.pdf [https://perma.cc/5J4J-KV9F].

projects.[72] Central California, where the infrastructure of Pacific Gas and Electric and Southern California Edison meet, is home to the most congested and constrained transmission paths in the entire western U.S.[73]

Utility-scale solar projects that can't access the grid cost-effectively cannot proceed. Indeed, solar project development is currently concentrated on the west side of the San Joaquin Valley where transmission capacity exists.[74] However, this does not always align with where farmland is or will be coming out of production due to emerging water constraints. Both transmission planners and GSAs could benefit from information sharing regarding where exceptional resource potential or other factors justify transmission expansion where marginal land will be exiting agricultural production. Many intricacies will impact the rollout of transmission in the San Joaquin Valley, which is beyond the scope of this paper.

2. Tension with Farmland Protection Policy: The Williamson Act

a. Williamson Act Overview

Another significant barrier to transitioning water-constrained agricultural land to solar development is an important agricultural conservation policy, the Williamson Act. First enacted in 1965, the Williamson Act establishes a mechanism for conserving agricultural land by allowing counties to contract with landowners to restrict the use of their land to agricultural or related open space use.[75] As a result, the property's tax assessments are reduced by 20 to 75 percent.[76] Williamson Act contracts are binding on successors and are thus more akin to servitudes or term conservation easements.[77]

The Act's purpose is to ensure sufficient food supplies, discourage the premature and unnecessary conversion of agricultural lands, disincentivize discontinuous urban development patterns, and preserve open space.[78] For the past sixty years, the Williamson Act has been a key conservation tool protecting nearly sixteen million acres, roughly half of the state's crop and rangelands, from development.[79] In the San Joaquin Valley, Williamson Act contracts currently cover 75 percent of irrigated lands and 46 percent of non-irrigated lands.[80] Further, a significant portion of the farmland deemed to be suitable for solar development is subject to Williamson Act

72. *See* Ayres et al., *supra* note 64.

73. Price, *supra* note 67.

74. *See* Ayres et al., *supra* note 64, at 7.

75. Cal. Gov't Code §§ 51200–51297.

76. Annabele Rosser, *Is SGMA Compatible with Farmland Preservation?*, Pub. Pol'y Inst. Cal. (Aug. 15, 2022) https://www.ppic.org/blog/is-sgma-compatible-with-farmland-preservation/.

77. Term conservation easements are not allowed in California where the state conservation easements statute requires perpetuity. *See* Cal. Civ. Code § 815.2.

78. Div. of Land Res. Prot., Cal. Dep't. Conservation, Solar Power and the Williamson Act, https://www.conservation.ca.gov/dlrp/wa/Documents/lrcc/WA%20Solar%20Power%202023.pdf [https://perma.cc/DQG8-LPDN].

79. Rosser, *supra* note 76.

80. *Id.*

contracts, including roughly 70 percent of suitable land in the San Joaquin Valley.[81] However, for farms that lose water access under SGMA, the Williamson Act can act as an unanticipated barrier to a sustainable transition to other uses, as undergoing solar development on Williamson Act lands may violate the contract's requirements. This is problematic, as conserving land for agricultural activities may no longer make sense on parcels that can no longer produce crops due to inadequate water.

Williamson Act contracts require landowners to maintain the contracted land as agricultural land for ten or more years.[82] Absent contrary action, each year, the contract renews for an additional year.[83] Another contract option under the Williamson Act is a Farmland Security Zone (FSZ) contract. Also voluntary, enrollment in an FSZ is for a twenty year automatically renewed contract, providing greater protection from urbanization pressure. FSZs also provide landowners with greater property tax reductions than traditional Williamson Act contracts.[84]

Contracts are overwhelmingly with counties, although a few cities are participating in the program.[85] The Act grants counties and cities broad discretion to adopt local rules defining allowable (compatible) uses on Williamson Act lands and to draft the terms of individual Williamson Act contracts.[86] Local rules (and the language contained in any specific contract at issue) thus play an important role in determining what is allowed under the local Williamson Act program.[87] This has major implications for solar projects, as counties in the San Joaquin Valley have varying interpretations on whether solar development can be considered a compatible use of agricultural land. Some counties, such as Kern and Fresno, do not consider utility-scale solar as compatible with the Williamson Act, while Kings, Tulare and Stanislaus among others allow it under some circumstances.[88]

Ultimately, the Williamson Act was enacted to discourage premature and unnecessary conversion to urban uses. This is unlikely to be the result of conversion of water-constrained fallowed land to solar. For agricultural lands forced out of production by water scarcity, conversion that protects farmers' livelihoods, local habitats, and communities is becoming increasingly necessary . Thus, tailored reforms to the Williamson Act can ensure the protection of the best agricultural lands while ensuring equitable and sustainable transition for lands no longer suitable for growing. This section will proceed by first addressing the current pathways to developing solar on land subject to Williamson Act contracts. It will then propose a promising reform to the Williamson Act which will help guide solar development towards lands coming out of production due to emerging water constraints.

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81. *Id.*
82. Cal. Gov't Code §§ 51240–51244.
83. *Id.* § 51244.
84. Div. of Land Res. Prot., Cal. Dep't. Conservation, *supra* note 78 at 1.
85. *Id.*
86. *Id.* at 2.
87. *Id.*
88. Rosser, *supra* note 76.

b. Navigating Solar Development Under the Williamson Act

When the Williamson Act was passed in 1965, legislators did not anticipate the immense water constraints in the San Joaquin Valley that would challenge agricultural production, nor did they contemplate renewable energy development on agricultural land. Williamson Act contracts require landowners to agree not to convert agricultural land for other uses, but they do not require farmers to actively farm their land.[89] Thus, the Williamson Act contracts continue, even if the landowner cannot keep growing because of water constraints. In this way, Williamson Act contracts can present a significant obstacle to solar development on farmland coming out of production. In a sense, the Act keeps land in limbo, where crops can't be grown because of insufficient water, but alternative uses are also constrained because of the contract.

Yet, while the Williamson Act complicates incorporating solar in marginal growing lands for developers and landowners, there are still some pathways for solar power generation facilities to be located on land subject to the Williamson Act: namely non-renewal, eminent domain, cancellation, solar use easements, and compatible use designation.[90] This section will address each of these pathways while evaluating their efficacy to support sustainable solar development on farmland in transition in the San Joaquin Valley. Further, this section will illustrate that each of these pathways is currently insufficient and argue that the most promising approach will be to make strategic amendments to the Williamson Act compatible use designation that will reflect the urgent necessity of renewable energy development and the reality of emerging water constraints.

i. Non-Renewal

One way to get out of a Williamson Act contract is to choose not to renew it. However, this approach is likely ineffective given the length of the Williamson Act contracts and the speed required of the clean energy transition. Unlike traditional conservation easements, Williamson Act contracts are not automatically perpetual—the contracts have a minimum initial term of 10 years and 20 years for FSZ contracts.[91] Each year, the contract automatically extends by another year unless one of the parties submits notice of non-renewal.[92] Non-renewal can occur when the landowner, city, or county decline to renew a contract.[93] The party seeking non-renewal of the contract must notify the other party, which the other party may then oppose. Otherwise, automatic renewal of the contract will expire at the end of the term.[94]

A non-renewal notice will start a nine-year countdown to the expiration of the contract for standard contracts or a nineteen-year countdown for Farmland Security

89. Jessica Owley & Amy Wilson Morris, *The New Agriculture: From Food Farms to Solar Farms*, 44 Colum. J. Env't L. 409, 430 (2019).

90. Div. of Land Res. Prot., Cal. Dep't Conservation, *supra* note 78.

91. Cal. Gov't Code § 51244, 51296.1(d).

92. *Id.* § 51244.

93. *Id.* § 51245.

94. *Id.* §§ 51245, 51246.

Zone contracts, and during this time, the land use restrictions are still applicable.[95] Because of the extended time frame of non-renewal and the rapid pace of renewable energy development necessary to meet California's renewable energy goals, non-renewal is not an adequate pathway for solar energy project developers.[96] Short-term tax incentives and other funding mechanisms bolstering solar projects also make waiting nine (or nineteen) years for a contract to expire untenable.[97]

ii. Eminent Domain

Eminent Domain can provide another path to remove restrictions of the Williamson Act. Public acquisition of property with Williamson Act contracts is permissible for public improvement purposes, and agencies must follow site selection and notification processes.[98] The majority of Williamson Act contract land taken by eminent domain has been for transportation improvements, schools, public parks, and conservation needs.[99] Thus, local governments have a route for undergoing public improvements on Williamson Act lands where it is "necessary."[100] In the solar context, this could look like a county ending a Williamson Act contract and conveying the land to a solar developer to promote economic development.[101] Public utilities in California also have the power of eminent domain and may condemn any property necessary to construct or maintain electric plants.[102] Thus, a utility could condemn the land it wants to use for a solar project despite the existence of Williamson Act contracts. However, this route is not always locally popular and unavailable for many solar projects.

iii. Cancellation and AB 2528

Alternatively, if landowners do not want to wait for the contract term to expire through non-renewal, they can attempt to cancel the contract in "extraordinary circumstances."[103] The landowner must petition the local government, and a board or council may only approve a cancellation if they find that the cancellation is consistent with the purpose of the Williamson Act or that the cancellation is in the public interest.[104]

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95. *Williamson Act Contract Removal*, Cal. Dep't Conservation, https://www.conservation.ca.gov/dlrp/wa/Pages/removing_contracts.aspx [https://perma.cc/FBZ3-SV39].

96. Div. of Land Res. Prot., Cal. Dep't of Conservation, *supra* note 78, at 4.

97. Owley & Morris, *supra* note 89, at 438.

98. Cal. Gov't Code §§ 51290.5, 51291.

99. Div. of Land Res. Prot., Cal. Dep't. Of Conservation, The Williamson Act Status Report 2016–17, at 9 (2019), https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2018%20WA%20Status%20Report.pdf [https://perma.cc/X3GZ-XYWT].

100. Cal. Gov't Code §§ 51290, 51291.

101. Owley & Morris, *supra* note 89, at 446.

102. *See* Cal. Pub. Util. Code § 103243.

103. Sierra Club v. City of Hayward, 623 P.2d 180, 186 (Cal. 1981) (holding that Williamson Act contracts may be canceled only by the landowners, not by the local government); Cal Gov't Code § 51281 (West 2025).

104. Cal. Gov't Code § 51282(a)(1)–(2).

Cancellation is consistent with the purposes of the Williamson Act when a landowner can show to the satisfaction of the city or county that (1) notice of non-renewal has been served; (2) cancellation would not likely result in the removal of adjacent lands from agricultural use; (3) cancellation is for an alternative use which is consistent with the applicable provisions of the city or county general plan; (4) cancellation would 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.[105]

Alternatively, a landowner can try to show that the cancellation is in the public interest. Cancellation is in the public interest if the city or county finds (1) that other public concerns substantially outweigh the objectives of the Williamson Act and (2) that there is no proximate non-contracted land that is both available and suitable for the proposed use, or that development of the contracted land would provide more contiguous patterns of urban development than development of proximate non-contracted land.[106]

Landowners can thus pursue cancellation, but without a waiver,[107] the fees can be significant, as cancellation requires landowners to pay a fee of 12.5 percent of the unrestricted value of the property to the State.[108] For example, cancellation fees for a 6,047-acre solar project in Kern County, the Maricopa Sun Solar Complex, cost solar developers $800,000.[109] Canceling an FSZ contract is even more difficult due to more stringent requirements, and cancellation fees double that of traditional Williamson Act contracts.[110]

Beyond the high expenses of Williamson Act contract cancellation, cancellation prevents strategic county-level oversight over which lands are transitioned out of agricultural production, which limits the extent to which the county can encourage mitigation measures to protect agricultural and environmental benefits. Although the purpose of the Williamson Act would be best served by constraining cancellations to marginal lands, most cancellations have actually occurred on Important Farmland (as designated by the Farmland Mapping and Monitoring Program).[111] In some years, the percentage of prime farmland[112] of the total land with canceled Williamson

105. *Id.* § 51282.

106. *Id.* § 51282(c).

107. In certain narrowly defined circumstances, the Williamson Act allows for waiver of cancellation fees. To grant a waiver, the county or city and the Secretary of the California Natural Resources Agency must find that: (1) the cancellation is caused by an involuntary transfer or change in the use which may be made of the land; and (2) the land is not suitable for a purpose which produces a greater economic return to the owner. *See id.* § 51283(c)(1).

108. Div. of Land Res. Prot., Cal. Dep't of Conservation, *supra* note 78, at 4.

109. Owley & Morris, *supra* note 89, at 444.

110. *Id.*

111. *Id.* 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, which does not allow solar as a compatible use. *See id.*

112. *Id.* Prime Farmland is the best quality farmland as determined by assessing its physical

Act contracts has been very high, for example, 95 percent in 2013. Notably, prime farmlands, by definition, have an "adequate and dependable water supply from precipitation or irrigation," illustrating the reality that current Williamson Act cancellations are not always well aligned with emerging water constraints.[113]

The California Farm Bureau Federation has been a vocal advocate of avoiding Williamson Act cancellations on prime farmland. In response to a 2012 cancellation[114] of Williamson Act contract lands for a solar facility in Fresno County, the group emphasized that:

> "[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."[115]

However, despite this opposition, the Fresno County Board of Supervisors still found the solar development cancellation within the public interest because of the critical need for renewable energy, emerging lack of sustainable water availability, reality that some of the land within the parcel would remain under contract, and proximity of the proposed land to transmission lines.[116]

Thus, while cancellation can be a successful approach for solar developers, it still comes with high costs and the potential for local controversy and litigation. Further, if cancellation is the primary method for solar development on Williamson Act lands, there is less guarantee that solar development will be constrained to the agricultural lands that are coming out of production from water constraints in the San Joaquin Valley. Instead of approving cancellations on an ad hoc basis, agricultural groups and solar developers alike would benefit from a straightforward approach where the most valuable farmland with sufficient water is protected and making solar available on degraded farmlands or farmland that does not or will not have sufficient water supply.

However, despite these drawbacks, the Williamson Act cancellation avenue remains popular. This spring, AB 2528 was introduced by Assemblymember Joaquin Arambula (representing California's 31st Assembly District, western Fresno County). AB 2528 aims to "provide an avenue for cancellation of Williamson Act contracts on agricultural land to be used for specified energy infrastructure."[117] Land eligible

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and chemical features. 7 C.F.R. § 657.5(a)(1) (2024). The land has the soil quality, growing season, and moisture supply needed to produce sustained high yields when treated and managed, including water management, according to acceptable farming methods. *Id.*

113. 7 C.F.R. § 657.5(a)(1).

114. *See* Owley & Morris, *supra* note 89, at 442 (citing Order Denying Petition for Writ of Mandate, Cal. Farm Bureau Fed'n v. City of Fresno, No. 11-CE-CG-03780 (Fresno Super. Ct. Dec. 13, 2012)).

115. Steve Adler, *Land Conversion for Solar Plant Leads to Lawsuit*, AgAlert (2011). https://www.agalert.com/story/?id=3530 [https://perma.cc/6K49-Q527].

116. Owley & Morris, *supra* note 89, at 442 (citing Order Denying Petition for Writ of Mandate, Cal. Farm Bureau Fed'n v. City of Fresno, No. 11-CE-CG-03780 (Fresno Super. Ct. Dec. 13, 2012)).

117. A.B. 2528, 2023–2024 Leg., Reg. Sess. (Cal. 2024); *Williamson Act Contracts:*

for cancellation must be specifically "[l]ocated either in a basin designated as high or medium priority and subject to various groundwater management plans; has no groundwater rights sufficient to support viable irrigated agricultural use; or does not have permanent access to sufficient water."[118] Local governments would then be able to approve a cancellation (without cancellation fees) if it finds that the "land does not have permanent access to sufficient water, and the energy infrastructure project would use less water than the agricultural use on the land."[119]

This bill would improve the cancellation process, given the additional sufficient water access criteria, which would help ensure that solar development is funneled toward lands that will be coming out of production due to water scarcity. However, there are still drawbacks to this approach that need to be addressed to ensure that the transition to solar does not endanger the protection of important farmland in the San Joaquin Valley and the ongoing efficacy of the Williamson Act. This bill will still encourage cancellation and thus total removal of the lands from Williamson Act protections.[120] Instead, the Williamson Act should be tailored in more pragmatic ways, as addressed in the following sections, to adjust to substantial land use changes while ensuring the Act is retained as a critical tool to protect farmland across the state.

iv. Solar Use Easements

Senate Bill 618, which took effect on January 1, 2012,[121] was another attempt to provide a novel method for terminating Williamson Act Contracts (and FSZ contracts) in addition to non-renewal and cancellation.[122] The bill allows the local government and landowner to rescind the Williamson Act contract and simultaneously enter into a solar-use easement.[123] These easements require solar generation generally for a term of twenty years but not less than ten years.[124] Thus, a solar-use easement is a right or interest in land held by a local government that restricts the use of the land for solar development.[125] Contract rescission under SB 618 is only permitted if the land is

Cancellation: Energy Projects: Hearing on A.B. 2528 Before Assemb. Comm. on Utils. & Energy, 2023–2024 Leg., Reg. Sess. 1 (Cal. 2024) (summary), https://autl.assembly.ca.gov/system/files/2024–04/ab-2528-arambula.pdf [https://perma.cc/P2PT-PF3L].

118. *Williamson Act Contracts: Cancellation: Energy Projects: Hearing on A.B. 2528 Before Assemb. Comm. on Utils. & Energy*, *supra* note 117, at 1.

119. *Id.*

120. *Williamson Act Contracts: Cancellation: Energy Projects: Hearing on AB 2528 Before the Assembly Standing Comm. on Utils. And Energy*, 2023–2024 Leg., Reg. Sess. (Cal. 2024) (Statement of Alexandra Biering, Senior Policy Advocate, Cal. Farm Bureau).

121. The original Solar Use Easement law sunsetted in 2020 resulting in a period of uncertainty for the future of the program. However, on September 18, 2022, Governor Newsom signed SB 1489, which re-enacted the program.

122. S.B. 618, 2011–2012 Leg., Reg. Sess. (Cal. 2011).

123. *See* S.B. 1489, 2021–2022 Leg., Reg. Sess. § 11 (Cal. 2022) (reenacting Gov't Code section 51255.1).

124. Rajinder Singh Sungu, *Growing Energy: Amending the Williamson Act to Protect Prime Farmland and Support California's Solar Energy Future*, 21 San Joaquin Agric. L. Rev. 321, 334–35 (2012).

125. Cal. Gov't Code § 51190.

physically impaired or marginally productive for agricultural production.[126] The land must also not be prime or unique farmland, or farmland of statewide importance, as designated by the Farmland Mapping and Monitoring Program.[127]

Solar-use easements can preserve agricultural land value by constraining solar development to marginal farmland. Further, solar energy developers may also find solar use easements appealing due to their reduced contract rescission fees, which are half as much as cancellation fees under the Williamson Act.[128] However, it is critical to note that few counties have adopted the regulations for the implementation of solar-use easements, which means they are not currently taking advantage of SB 618.[129] While there have been many applications for solar use easements, few have actually been completed, and none have even been submitted since 2013.[130] In particular, developers have noted that solar use easements are not attractive because they result in more of an administrative burden than just pursuing cancellation.[131] Counties also have pushed back on the program because of some concern that the state is encroaching on their land use decision-making processes.[132] Practitioners further note that the efficacy of solar-use easements is constrained by their applicability to only a fraction of potential Williamson Act land disputes and the obligation to convert the land back to agricultural use at the conclusion of the contract.[133]

Further, in determining if the land is eligible for rescission and placement of a solar-use easement, the regulations indicate the land must have "significantly reduced agricultural productivity for agricultural activities due to chemical or physical limitations, topography, drainage, flooding, adverse soil conditions, or other physical reasons," however, the regulations do not specifically address land that will be subject to reductions in water allocations.[134] While water scarcity may be

126. California Government Code section 51191(a)(1) provides that lands are eligible for contract rescission if one of the following criteria is met: "(A) The land consists predominantly of soils with significantly reduced agricultural productivity for agricultural activities due to chemical or physical limitations, topography, drainage, flooding, adverse soil conditions, or other physical reasons. (B) The land has severe adverse soil conditions that are detrimental to continued agricultural activities and production. Severely adverse soil conditions may include, but are not limited to, contamination by salts or selenium, or other naturally occurring contaminants."

127. Id. § 51191(a).

128. *See* S.B. 1489, 2021–2022 Leg., Reg. Sess. § 11 (Cal. 2022) (reenacting Gov't Code section 51255.1).

129. *See* Westlands Water Dist., Westlands Solar Park Draft Program Environmental Impact Report § 3.2: Agricultural Resources (2017) https://cs.westlandswater.org/resources/resources_files/misc/Environmental_Docs/201710/3–2-WSP-DraftPEIR-AgriculturalResources-Oct-2017.pdf

130. Cal. Dep't Of Conservation, The Williamson Act Status Rep. 2016–17 (2016) https://www.conservation.ca.gov/dlrp/wa/Documents/stats_reports/2018%20WA%20Status%20Report.pdf

131. Owley & Morris, *supra* note 89, at 453.

132. *Id.*

133. Kelly Rizzetta, *Williamson Act to Face Scrutiny in Solar Land Use Suit*, Law 360 (2012), https://www.law360.com/articles/358056/williamson-act-to-face-scrutiny-in-solar-land-use-suit [https://perma.cc/XDY9-JZ5L].

134. Cal. Gov't Code § 51191(a)(1)(A).

somewhat addressed by "other physical reasons," the regulations cast some uncertainty on that possibility, as they specifically prohibit solar use easements on land designated as prime farmland, unique farmland, or farmland of statewide importance unless "circumstances exist that limit the use of the parcel for agricultural activities," which specifically does not include "irrigation status."[135]

Further, and most importantly, given that SB 612 was put into effect in 2012, it also does not address the new complexities of SGMA or mandate involvement by the GSAs. Thus, solar use easements do not reflect the current realities of agricultural land management in the San Joaquin Valley under SGMA. Lastly, as solar-use easements are subject to voluntary adoption by counties for implementation, there remains a complex patchwork of local regulations that constrain streamlined solar adoption and multi-benefit land repurposing.

v. Compatible Use Designation

Lastly, the Williamson Act grants local governments discretion to determine what activities, like solar development, are considered "compatible" with agricultural use of lands subject to Williamson Act contracts.[136] If an activity is deemed compatible, it thus does not represent a breach of the Williamson Act contract. Local governments must make their assessments using the principles of compatibility outlined in the Williamson Act, which provides that to be compatible, uses must not (1) significantly compromise the long-term productive agricultural capability of the land, (2) significantly displace or impair current or reasonably foreseeable agricultural operations on any land under contract unless it is for an activity related directly to the production of commercial agricultural products, nor (3) result in the significant removal of adjacent contracted land from agricultural or open-space use.[137] This will be a fact-specific inquiry and the statutory test directs cities and counties to evaluate the degree to which the proposed project would significantly interfere with the underlying agricultural operation.[138]

A local government could, therefore, find a proposed solar project to displace or impair only a small percentage of the current or reasonably foreseeable agricultural operation on the land, and thus, the local government would be permitted to find that the solar project would be a compatible use.[139] Determination that solar development is compatible with agricultural use is relatively simple if a farmer is planning to convert just a small portion of their acreage to solar for generating electricity to be used onsite in support of their agricultural operation.[140]

The assessment becomes more complicated when farmers plan to convert land to a solar project where excess energy would be sold to the grid. However, even if

135. *Id.* § 51191(a)(2).

136. *Id.* § 51238.1.

137. *Id.* § 51238.1(a).

138. Cal. Dep't of Conservation, Solar Power and the Williamson Act (2023) https://www.conservation.ca.gov/dlrp/wa/Documents/lrcc/WA%20Solar%20Power%202023.pdf

139. Cal. Gov't Code § 51238.1(a).

140. Sungu, *supra* note 124, at 330.

a larger solar project would be inconsistent with the principles of compatibility, a city or county may still approve it if (1) the proposed site is located on non-prime land; (2) the proposed site is approved pursuant to a conditional use permit; and (3) the following four findings are made, based on substantial evidence in the record:[141]

> 1) The conditional use permit requires mitigation or avoidance of onsite and offsite impacts to agricultural operations.
> 2) The productive capability of the subject land has been considered as well as the extent to which the solar power generation facility may displace or impair agricultural operations.
> 3) The solar power generation facility is consistent with the purposes of the Williamson Act, to preserve agricultural and open-space land, or supports the continuation of agricultural uses, or the use or conservation of natural resources, on the contracted parcel or on other parcels in the agricultural preserve.
> 4) The solar power generation facility does not include a residential subdivision

When evaluating these findings, a county or city will consider multiple factors, including the "availability of irrigation water, size of the solar power generation facility, size of the contracted parcel, slope, placement and location of solar panels, and types of mitigation and avoidance offered."[142] This presents a promising pathway for solar development on Williamson Act lands coming out of production in the San Joaquin Valley, which should be further streamlined by tailored reform to the Williamson Act, which will be discussed in detail in the following section.

c. Reforming the Williamson Act: Define Solar as a Compatible Use in the San Joaquin Valley for Water-Constrained Farmlands

The Williamson Act should be amended to allow current and future water constraints to inform the compatible use designations of solar development on Williamson Act contract lands. This approach allows farmers to obtain critical income on lands they can no longer grow on, while funneling solar development to areas with minimal species impact and habitat value. Further, by keeping the Williamson Act contracts in place, rather than canceling them outright, counties retain their key lever to protect productive farmland and to require environmental and agricultural impact mitigation efforts by solar developers.

Currently, local rules play a critical role in the ultimate potential of solar development on Williamson Act lands, as local municipalities have the authority to determine whether solar production is a compatible use under Williamson Act contracts. Interestingly, the decision to deem solar a compatible use varies significantly between counties in the San Joaquin Valley.[143] Of the eight counties in the San

141. Cal. Dep't. of Conservation, *supra* note 138.
142. *Id.*
143. Sungu, *supra* note 124, at 331.

Joaquin Valley, five—San Joaquin[144], Merced[145], Fresno[146], Madera,[147] and Kern[148]—do not consider solar energy a compatible use. However, three counties—Stanislaus, Kings, and Tulare—consider solar development a compatible use. In these cases, landowners can keep their Williamson Act contracts in place while developing solar. They thus can retain the associated tax benefits alongside the development of a solar project while the local government preserves its oversight over the protection of the agricultural land.

In Stanislaus County, uses on contracted lands are considered compatible with the Williamson Act if they do not have the potential to significantly compromise, displace, or impair the current agricultural operation or long-term productive agricultural capability of the contracted land or other contracted lands in agricultural preserves.[149] The erection, construction, alteration, and maintenance of electric facilities are considered to be categorically consistent with these principles of compatibility and is thus permitted on contracted land unless the planning commission or board of supervisors makes a finding to the contrary.[150] Therefore, solar development on Williamson Act contracted lands is significantly streamlined in Stanislaus County.

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144. San Joaquin Cnty., Cal., Dev. Title § 9–1810.3(*b*) (2004), https://www.sjgov.org/commdev/cgi-bin/cdyn.exe/file/Planning/Title%209/SJC%20TITLE%209%20-%20Division%20(18%2C19).pdf [https://perma.cc/4PRB-U2M3].

145. Interestingly, in Merced County compatible uses include mines, quarries, gravel pits and oil and gas wells, but electric facilities and solar are not listed. The Merced County General Plan generally encourages the installation of solar and wind energy production facilities in agricultural areas, however not in areas that require cancellation of Williamson Act contracts. *See* Merced Cnty. Bd. of Supervisors, Cal., Res. No. 2000–137 (July 25, 2000), https://www.countyofmerced.com/DocumentCenter/View/11089/Williamson-Act-Rules-Revision-reformatted-060115?bidId= [https://perma.cc/4M8E-QFBE].

146. In Fresno County, solar energy is not a compatible use under the Williamson Act. Cancellation of Williamson Act contracts is necessary before the erection of commercial solar facilities. *See* Div. of Land Res. Prot., Cal. Dep't Conservation, *supra* note 78, at 19.

147. Solar energy is also not a compatible use in Madera County. The county has a particularly outdated general plan, last released in 1995. Their plan and development codes do not address utility-scale renewable energy development. *See* Kelly & Delfino, *supra* note 60, at 7.

148. Commercial solar facilities are not considered a compatible use by the Kern County Board of Supervisors. *See* Kern Cnty., Cal., Agric. Preserve Standard Uniform Rules (Form 505) (Jan. 2013), https://d2l2jhoszs7d12.cloudfront.net/state/CA/Counties/Kern%20County/Planning/httpskernplanning.comforms-applications/Forms/FORM%20505%20-%20Agricultural%20Preserve%20Uniform%20Rules.pdf [https://perma.cc/45K4-SATC].

Kern County has also noted that despite "favorable climatic conditions in the desert and valley regions of Kern County," "no commercial solar development has occurred in Kern County to date. The reason for this is not completely clear." Removing the barrier of the Williamson Act compatible use constraint may be an important step in achieving the county's goal of "identify[ing] and remov[ing] disincentives to domestic and commercial solar energy development." *See* Kern Cnty., Cal., General Plan § 5.4.5 Solar Energy Dev. https://psbweb.kerncounty.com/planning/pdfs/kcgp/KCGP_Complete.pdf [https://perma.cc/ZRD3-SSCB].

149. Stanislaus Cnty., Cal., Zoning Ordinance § 21.20.045(A) (2016), https://www.stancounty.com/planning/forms/zoning-ordinance.pdf [https://perma.cc/GQS4-A29V].

150. *Id.* § 21.20.045(B)(1).

In Tulare County, solar generating facilities can be found as a compatible use on Williamson Act contracted lands.[151] The county allows impaired agricultural lands to be put to the highest and best use without canceling the Williamson Act contract, preserving the option to return to farming the land in the future. As a condition of approval, a "Reclamation Plan" must be submitted to provide financial assurances along with a detailed plan to remediate soils and return the land to its original pre-construction condition upon termination of the solar project.[152]

In Kings County, solar development on Williamson Act contract lands is generally possible if it is compatible with continued onsite agricultural use.[153] In the past, commercial solar photovoltaic systems designed primarily to produce electricity for third-party consumption were generally incompatible unless the economic output of agricultural operations on the contracted land would be within 90 percent of preproject output.[154] However, Kings County made critical updates to this approach in 2013 when it adopted Resolution No. 13–058.[155]

Resolution No. 13–058 established a process for evaluating growing conditions on agricultural lands in the project area on a site-by-site basis to determine whether solar can be considered a compatible use. Specifically, Resolution No. 13–058 recognized that "due to reduced surface water deliveries, poor groundwater quality and severe groundwater overdrafts, impaired soil conditions, and regulatory burdens," it is "reasonably foreseeable that a specific subset of agricultural preserves in [Kings County] currently used for more intensive agriculture activity (south of State Route 198, west of State Route 41, and northeast of Interstate 5) will be used in the near future for less intensive uses."[156]

In these cases, and notwithstanding the present agricultural use of the land, Kings County considers solar development a compatible use if it is a "concomitant use with dry farm seasonal grazing or a similar commercial agricultural activity" and if the applicant provides "a soil reclamation plan and financial assurances," and if a "finding can be made, based upon substantial evidence, and taking into account surface water availability, groundwater quality and availability, and soil conditions, that the proposed concomitant commercial agricultural operation is a reasonably foreseeable use of the land."[157]

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151. *See* Tulare County Board of Supervisors Resolutions No. 2010–0717 and No. 2013–0104 which created a two-level process through which solar facility projects can be found as a compatible use on Williamson Act contracted lands.

152. *Id.*

153. *See* Westlands Water Dist., *supra* note 129, at 16.

154. *See id.* at 20.

155. *See* Kings Cnty., Cal., County of Kings Implementation Procedures for the California Land Conservation "Williamson" Act of 1965, Including Farmland Security Zones (2013), http://www.countyofkings.com/home/showdocument?id=3166.

156. *Id.*

157. *See* Kings Cnty., Cal., County of Kings Implementation Procedures for the California Land Conservation "Williamson" Act of 1965, Including Farmland Security Zones (2020), https://www.countyofkingsca.gov/home/showpublisheddocument/24863/637412266027400000.

Thus, in Kings County, there is an exciting opportunity to develop solar on Williamson Act lands while maintaining the productive agricultural capability of the site and responding to emerging water constraints. The approach taken in Resolution No. 13–058 is particularly practical because it defines areas that are water-constrained in the county where Williamson Act contracts will be treated differently. The resolution explicitly addresses Williamson Act lands "south of State Route 198, west of State Route 41, and northeast of Interstate 5," which are impacted directly by "reduced surface water deliveries, poor groundwater quality and severe groundwater overdrafts, impaired soil conditions, and regulatory burdens."[158] The resolution finds that these areas, which are currently used for more intensive agricultural activity, will be used in the near future for less intensive uses. In this way, the Kings County government can concentrate solar development in degraded and water-constrained areas.

Kings County's consideration of solar as a compatible use in specific areas with degraded soil conditions and water constraints has allowed the county to attract significant solar development in these no longer agriculturally productive areas while preserving prime farmland elsewhere in the county.[159] With this approach, Kings County is also able to require mitigation activities and soil reclamation plans on these lands, allowing for continued oversight and protection of the agricultural parcel. This can include requiring native ground cover and sustainable soil management for solar development to qualify for compatible use. Thus, by taking this approach, a county can amplify the project's environmental benefits compared to leaving the land bare. Lastly, if in the future water supplies increase and if solar power generation technology improves and requires less acreage to produce power, Kings County's approach will allow for the land to return to agricultural production.[160]

Stanislaus and Tulare Counties' approach to allowing solar as a compatible use, and particularly Kings County's strategy of utilizing water availability and agricultural capacity to inform compatible use analysis, should be replicated by the remaining counties in the San Joaquin Valley. The Williamson Act should thus be amended to encourage this approach and specifically recommend that county regulators work with GSAs in their operating areas to determine which lands are or will be coming out of production due to emerging water constraints. In these areas, solar development should be deemed a compatible use. This approach presents a more effective solution than leaving cancellation as the primary avenue for farmers looking to develop solar on their lands coming out of production. Cancellation is legally cumbersome, and further, when contracts are canceled, the county loses a key lever it could utilize to protect prime farmland and increase environmental impact mitigation efforts by the developer to protect agriculture and open space.

Ultimately, the patchwork of regulation across the San Joaquin Valley constrains effective solar development, especially as projects slated for development

158. *Id.*

159. *See* Westlands Water Dist., *supra* note 129.

160. Price, *supra* note 67.

across counties may be subject to differing regulations in various parcels. This adds complexity and expense to solar development. It also can be a barrier to developing San Joaquin Valley-wide strategies for developing solar in areas where agriculture is most impacted by water scarcity and preserving production where growing is most sustainable. Amending the Williamson Act to encourage counties to work with their GSAs to define water-constrained areas in their boundaries where solar development can be a compatible use will allow for more effective multi-benefit land repurposing. Further, it will ensure coordination across the San Joaquin Valley, which is urgently necessary to guide solar projects toward areas that have adequate transmission and are coming out of production due to water constraints. Water-constrained areas across the San Joaquin Valley need a clear and unified approach to compatible use designation to advance the clean energy transition while protecting the most valuable habitats and ensuring the best agricultural land stays in production.

i. Case Study: Westlands Solar Park

Given the county's pragmatic Williamson Act regulations, Kings County has attracted a critical solar energy project, the Westlands Solar Park. The California Renewable Energy Transmission Initiative[161] identified the project area, the southern part of the Westlands Water District in the San Joaquin Valley, as a zone that holds the greatest potential for cost-effective and environmentally responsible renewable energy development, and thus the project has support from both agricultural and environmental stakeholders.[162] The project itself is entirely located on drainage-impaired farmland and is sited adjacent to existing transmission corridors that can deliver electricity to both Northern and Southern California.[163] Thus, the Westlands Solar Park project represents a key pathway for major solar energy projects to navigate transmission and Williamson Act barriers. Once completed, Westlands Solar Park will be the largest solar generating facility in the US, allowing for 2.7 GW of solar generation on 20,000 acres of agriculturally disturbed land.[164] Westlands Solar Park will generate enough renewable energy to power more than 2 million homes, resulting in a reduction of more than 3.2 million tons of carbon dioxide compared to conventional energy.[165]

161. The Renewable Energy Transmission Initiative (RETI) 2.0 Gateway supports the public process of the California Energy Commission, California Public Utilities Commission, and the California Independent System Operator to identify potential transmission that could access and integrate renewable energy with the most environmental, economic, and community benefits. *Renewable Energy Transmission Initiative (RETI)*, RETI DataBasin, https://reti.databasin.org [https://perma.cc/68JL-7AK4] (last visited Apr. 18, 2025).

162. Golden State Clean Energy, Comments on SB 100 Report Draft Results and Workshop (Sept. 15, 2019), https://efiling.energy.ca.gov/GetDocument.aspx?tn=234726&DocumentContentId=67578.

163. *Id.*

164. *Id.*

165. Westlands Water Dist., Farming the Sun: Solar Power in Westlands (2023), https://wwd.ca.gov/wp-content/uploads/2023/06/farming-the-sun.pdf [https://perma.cc/ZR9Q-FRT7].

The Westlands Solar Project was able to maintain its Williamson Act contract by ensuring the ongoing maintenance of vegetative cover over the site for sheep grazing. Since solar arrays are mounted on posts and raised several feet above ground level, less than 10 percent of ground area is covered by equipment, buildings, and internal driveways.[166] The remaining 90 percent of the land will be revegetated with native grasses and managed as non-irrigated pasture for sheep grazing, allowing agricultural production on solar facility sites to be maintained for the life of the solar operation.[167] Further, specific actions will be taken to reduce the introduction of invasive weed species[168] and dust generation.[169] The Westlands Solar Park project illustrates how effective county regulation can allow for solar development while protecting agricultural land. Further, due to this land's previous agricultural use, there is a significantly lower risk of negative impact on native species from solar development.[170]

Golden State Clean Energy, the developer of Westlands Solar Park, is now working with Westlands Water District to attempt to repurpose up to 130,000 acres of drainage-impaired and other agricultural lands for solar generation, energy storage, and electric transmission facilities in western Fresno County, with the goal of generating a striking 20 GW of clean energy under the Valley Clean Infrastructure Plan (VCIP).[171] When completed, this project could provide a sixth[172] of California's electricity in 2035.[173] The project will need to contend with Fresno County's more rigid Williamson Act requirements and will have an environmental impact report released in 2025.

166. *See* Westlands Water Dist., *supra* note 129, at 23, 27.

167. *Id.* at 23.

168. The Westlands Solar Project Draft Program Environmental Impact Report indicates that the potential introduction of invasive weed species by the solar projects would be minimized through revegetation of sites in accordance with Kern County's required mitigation measures and weed abatement required under Article 11, Section 1112.B.2.e of the Kings County Development Code. *See id* at 28.

169. The Westlands Solar Project Draft Program Environmental Impact Report also notes that dust generation during project operations would not occur since the project would include no exposed soils that could be mobilized as windborne dust (e.g., 90 percent of each site would be vegetated; approximately 9 percent of each site would consist of durable dust free driveway surface as required by the Kings County Improvement Standards, and about 1 percent of each site would be covered by impervious surfaces of equipment pads). *See id* at 28.

170. Westlands Water Dist., *supra* note 165.

171. *Valley Clean Infrastructure Plan (VCIP)*, Golden State Clean Energy, https://goldenstatecleanenergy.com/project/valley-clean-infrastructure/ [https://perma.cc/W2SX-HEPL] (last visited Apr. 24, 2025).

172. Jesse Vad, *Westlands Water District teams up with Democrats on massive solar project,* SJV Water (Oct. 11, 2024), https://sjvwater.org/westlands-water-district-teams-up-with-democrats-on-massive-solar-project/ [https://perma.cc/CM5E-997Q].

173. *Valley Clean Infrastructure Plan (VCIP)*, *supra* note 171.

B. Advancing Habitat Restoration and Stewardship for Least-Conflict Solar Development

While solar development represents an avenue for significant economic benefits for farmers and crucial progress towards California's renewable energy goals, it is still critical to integrate restoring and enhancing native habitats into the land repurposing strategy. There is some degree of land stewardship that can occur within solar developments, like ecologically sensitive site design and management, that can maximize the benefits to nature and ecosystem services.[174] However, some parcels of land across the San Joaquin Valley may be better suited for habitat conservation than solar development.

The San Joaquin Valley has seen immense landscape-scale change since the early twentieth century, with widespread habitat conversion.[175] The conversion of wetlands, forests, and grasslands to agriculture has permanently removed and fragmented habitat, resulting in massive losses in native species abundance and diversity.[176] It is estimated that ninety-five percent of the San Joaquin Valley's riparian woodlands were lost during the last century due to changing land uses.[177] Habitat protection is particularly important in the region, as the San Joaquin Valley lies directly within the Pacific Flyway and the California Floristic Province, one of twenty-five global hotspots for biodiversity.[178] Retiring agricultural land strategically along existing wildlife corridors presents a critical opportunity to maximize species health and habitat benefits, particularly for habitat that was displaced by agricultural development.[179] In particular, upland habitat restoration in key corridors that connect existing conservation areas can create substantial conservation benefits with extremely low water requirements.[180]

Conservation organizations generally put conservation easements on land to preserve critical parcels. Conservation easements permanently remove the development rights on a parcel of land to protect the habitat, open space, or agricultural value of the property.[181] These easements are attached to the land deed and are usually

174. Greening the Clean Energy Transition Smart Siting and Pollinator-Friendly Solar Energy in Illinois 6, The Nature Conservancy (2023), https://www.pollinator.org/pollinator.org/assets/generalFiles/Pollinator-Friendly-Solar-Guide.pdf [https://perma.cc/VX4Z-A6HF].

175. Patrick A. Kelly et al., *Documenting Ecological Change in Time and Space: The San Joaquin Valley of California*, *in* Mammalian Diversification: From Chromosomes to Phylogeography 57 (2012), https://doi.org/10.1525/california/9780520098534.003.0002 https://esrp.csustan.edu/publications/pdf/mvz2005.pdf [https://perma.cc/U37C-ZEUG].

176. *Id.* at 63.

177. San Joaquin River National Wildlife Refuge, U.S. Fish & Wildlife Service, https://www.fws.gov/refuge/san-joaquin-river/about-us#:~:text=It%20is%20estimated%20that%20ninety,landscape%20level%20at%20the%20refuge [https://perma.cc/8QXP-595C].

178. Pearce et al., *supra note* 71, at 19.

179. Sarah Bardeen, *The Challenges of Using Less Water in the Southern San Joaquin Valley,* Public Policy Institute of California (2022), https://www.ppic.org/blog/the-challenges-of-using-less-water-in-the-southern-san-joaquin-valley/.

180. Ellen Hanak et al., *supra* note 37.

181. Conservation Easement, California Council of Land Trusts, https://calandtrusts.org/conservation-basics/conservation-tools/conservation-easement/ [https://perma.cc/XVP4-SAJZ].

permanent. Easements can have significant habitat benefits, as they preserve the land in perpetuity. Generally, landowners will work with a land trust or conservation group to fund the land acquisition and manage the habitat. However, both the acquisition and management of restored conservation areas are expensive, and most conservation programs cannot fully replace the revenue lost by transitioning away from traditional agriculture.[182]

To address the financial barriers to habitat conservation, recent research suggests that mitigation and conservation banks could be a possible regulatory tool for establishing conservation projects on fallowed agricultural land that would increase the economic incentive for farmers.[183] A mitigation bank is a wetland, stream, or other aquatic resource area that has been restored, established, enhanced, or preserved to compensate for unavoidable impacts to aquatic resources elsewhere permitted under Section 404 of the Clean Water Act (or a similar state or local wetland regulation).[184] A conservation bank is a permanently protected land area that contains natural resource values and is conserved and permanently managed for at-risk species.[185] Under these programs, a landowner can create a bank on their property and then sell "credits" to agencies, developers, or other entities with permit requirements. These banks generally require a permanent conservation easement to be established.[186] Additionally, California has also developed Mitigation Credit Agreements that provide more flexible mitigation options—like temporary credits (10-year contracts) and compatibility with some types of wildlife-friendly agriculture.[187] These programs can help to make conservation economically viable for farmers with land coming out of production and should be encouraged in areas in the San Joaquin Valley that are particularly valuable for habitat enhancement and species protection.

Addressing funding barriers and integrating habitat conservation into land repurposing strategies is already taking off in the San Joaquin Valley; under the California Department of Conservation (DOC) Multi-benefit Land Repurposing Program (MLRP), the state has awarded nearly $20 million in block grants to eight programs.[188] MLRP increases regional capacity for repurposing irrigated agricultural

182. Environmental Defense Fund, Advancing Strategic Land Repurposing and Groundwater Sustainability in California: A guide for developing regional strategies to create multiple benefits 37 (2021), https://www.edf.org/sites/default/files/documents/EDF_AdvancingLandRepurposing_March2021_0.pdf [https://perma.cc/JG5C-4ACJ].

183. *Id.* at 39.

184. *Mitigation Banks under CWA Section 404*, U.S. Environmental Protection Agency (2024), https://www.epa.gov/cwa-404/mitigation-banks-under-cwa-section-404 [https://perma.cc/G8SL-M776].

185. *Conservation Banking: Incentives for Stewardship*, U.S. Fish & Wildlife Service (2019), https://www.fws.gov/sites/default/files/documents/conservation-banking.pdf [https://perma.cc/DH2V-5NHW].

186. *Conservation and Mitigation Banking*, Cal. Dep't. of Fish & Wildlife, https://wildlife.ca.gov/Conservation/Planning/Banking/Overview [https://perma.cc/KW3A-99Q3].

187. *Mitigation Credit Agreements (MCAs)*, California Department of Fish & Wildlife, https://wildlife.ca.gov/Conservation/Planning/Regional-Conservation/MCAs [https://perma.cc/5EH8-ZZHF].

188. Multibenefit Land Repurposing Program: 2023 Annual Report, Cal. Dep't. of

land to uses that reduce reliance on groundwater while protecting community health, generating renewable energy, supporting local economies, restoring habitats, and more.[189] Organizations across the San Joaquin Valley are getting involved with the program, and in particular, the Westlands Water District Groundwater Sustainability Agency (Westlands GSA) received a block grant in 2023 to work with Sequoia Land Trust, among other partners, to repurpose agricultural lands, cut groundwater use, reduce subsidence, improve groundwater supply, and provide benefits to disadvantaged communities.[190]

Ultimately, conserving lands where it is most impactful in the San Joaquin Valley directly aligns with the importance of siting solar developments sustainably. Researchers and policymakers have long emphasized the importance of least conflict assessments[191] for solar development, striking a "balance between addressing new-term impact of industrial-scale renewable energy development on wildlife and wildlands and the long-term impacts of climate change on biological diversity, fish and wildlife habitat and prime agricultural lands."[192] The most pragmatic approach to solar development and habitat conservation in the San Joaquin Valley will allow for renewable energy development on degraded and water-constrained agricultural lands with minimal species impact, as well as habitat restoration and conservation on lands with the greatest biodiversity value.[193]

IV. Conclusion

There is great opportunity for agricultural land coming out of production in the San Joaquin Valley to accelerate progress toward ambitious renewable energy goals for the State of California while protecting communities, farmers, and habitats. To ensure this progress, the Williamson Act should be reformed to encourage county regulators to work with their GSAs to proactively assess which agricultural areas in their county are or will be water-constrained, and where solar development should be deemed a compatible use. This will be a key step to ensuring solar development is focused on the most degraded and water-constrained lands while conserving land along key habitat corridors and within ecologically sensitive areas. To ensure equity and sustainability, regulators must ensure community members, especially those

Conservation (2023), https://www.conservation.ca.gov/dlrp/grant-programs/Pages/Multibenefit-Land-Repurposing-Program.aspx [https://perma.cc/H6K5–4VCJ].

189. *Id.*

190. Westlands Water District, *Westlands GSA Awarded Grant for Multibenefit Land Repurposing Program*, Ass'n of Cal. Water Agencies (2023), https://www.acwa.com/news/westlands-water-district-partners-awarded-grant-from-california-department-of-conservation-for-multibenefit-land-repurposing-program/ [https://perma.cc/UA95–8D7P].

191. Least conflict solar assessment is a proactive landscape-level approach to renewable energy development planning that encourages developers to locate projects in areas with low environmental value and proximity to existing transmission corridors. Agricultural interests in the San Joaquin Valley have also advocated for development to be constrained to lands that are no longer agriculturally productive. *See* Pearce et al., *supra* note 71.

192. Kelly & Delfino, *supra* note 60, at 2.

193. Pearce et al., *supra* note 71.

from historically underrepresented groups and farmers with operations of all sizes, are included in developing strategies for land repurposing. The most effective land repurposing strategy will harmonize various approaches that simultaneously protect communities, conserve habitats, replenish water resources, and accelerate progress toward reaching ambitious renewable energy goals.