



CONTRA COSTA COUNTY RENEWABLE RESOURCE POTENTIAL STUDY

Department of Conservation and Development

Presented to the Contra Costa County Board of Supervisors

December 18, 2018



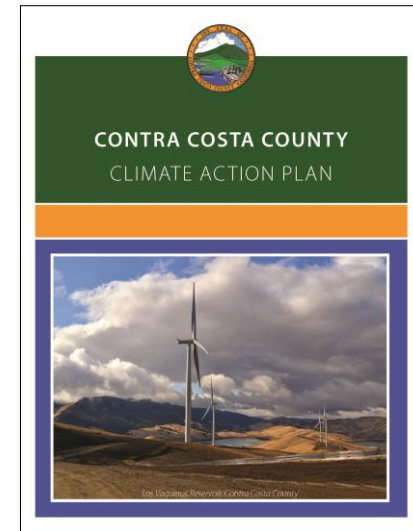
Renewable Resource Potential Study

- **Purpose:**
 - Identify how much renewable energy (solar, wind, biomass, biogas) can be generated within Contra Costa County, including a detailed analysis of land use constraints and opportunities
 - Look at options to update current land use policy to facilitate development of more renewable energy, while remaining mindful of planning considerations and trade-offs
- \$49,000 grant from California Strategic Growth Council
- Study prepared by the Cadmus Group
- Explore opportunities to develop community wind and solar projects in Bay Point, Rodeo, and North Richmond
- Seven cities contributed funding and received assessments of potential solar resources in their jurisdictions



History of Board Actions to Support Renewable Energy

- Altamont Pass windmills
- 2017 Zoning Code amendment to allow commercial solar in industrial and commercial areas
- Online permitting for rooftop solar – 1,500 permits/year



WE ARE STILL IN



Key Findings

- Anywhere from 50% to 83% of total energy used in the County could be generated here, looking only at technical potential.
- Solar energy generation has the largest potential and includes many different forms, ranging from existing rooftops, parking lots and infill in urban areas to “greenfield” parcels in rural areas.
- Solar generation on undeveloped parcels offers economies of scale, but involves trade-offs with other priority land uses, such as agriculture, rural infrastructure and open space.
- Opportunities for further action include:
 - Working with MCE and other potential providers to explore incentives to develop renewable energy projects in locations with the least tradeoffs
 - Mandating solar for new parking lots, as is done in Alameda County
 - Developing job training programs to enable local workers to benefit from local development of renewable energy technologies
 - Gaining community benefits from renewable energy projects
 - Creating expedited permitting for commercial-scale solar in commercial and industrial areas that have little other potential use
 - Defining specific additional areas where commercial ground-mounted solar may apply for a land use permit
 - Exploring a programmatic Environmental Impact Report that could enable specific solar projects to shorten regulatory approval timelines and risks



Stakeholder engagement

- Four meetings with stakeholders
- Participants included renewable energy developers, conservation and environmental groups, Sustainability Commission members, MCE, PG&E, County staff, staff from cities
- Written comments on draft report from six groups



Technical Renewable Resource Potential in Contra Costa County

Type		MW Capacity		Annual MWh	
		Low	High	Low	High
Solar	Rooftops	1450	2600	2,290,000	4,100,000
	Parking Lots	180	530	280,000	840,000
	Urban Land Unlikely to be Developed	120	310	190,000	490,000
	Agricultural Land with Relatively Low Constraints	760	970	1,200,000	1,530,000
	Total Solar	2,510	4,410	3,960,000	6,960,000
Wind	Total Wind	35	35	76,700	76,700
Biomass	Agricultural	3	6	24,100	48,200
	Wood Waste	6	26	48,000	192,000
	Landfill	62	78	459,000	580,500
	Total Biomass	71	110	531,000	820,700
Biogas	Food Waste	1.5	1.8	10,800	13,200
	Waste Water	1.7	2.0	12,400	15,200
	Landfill Gas:	11	14	83,400	104,200
	Total Biogas	14	18	106,600	132,600
Grand Total		2,600	4,600	4,674,000	7,990,000

Includes resources located in both the unincorporated areas of the County and the cities in the County. Estimates reflect future potential and do not include current generation.



Putting Renewables in Context

- 250 households can be served by 1 Megawatt (MW) of solar Photovoltaic (PV) in California.
- It typically takes 7.5 acres to create 1 MW of solar.
- It would take over 150 typical rooftop installations to produce the same output as a typical 1 MW (7.5 acre) wholesale solar project.
- Solar costs dropped 60-80% between 2009 and 2016, according to the National Renewable Energy Labs.
- The International Renewable Energy Agency forecasts that costs for solar and wind electricity will continue to fall by 59% and 26%, respectively between 2015 and 2025.



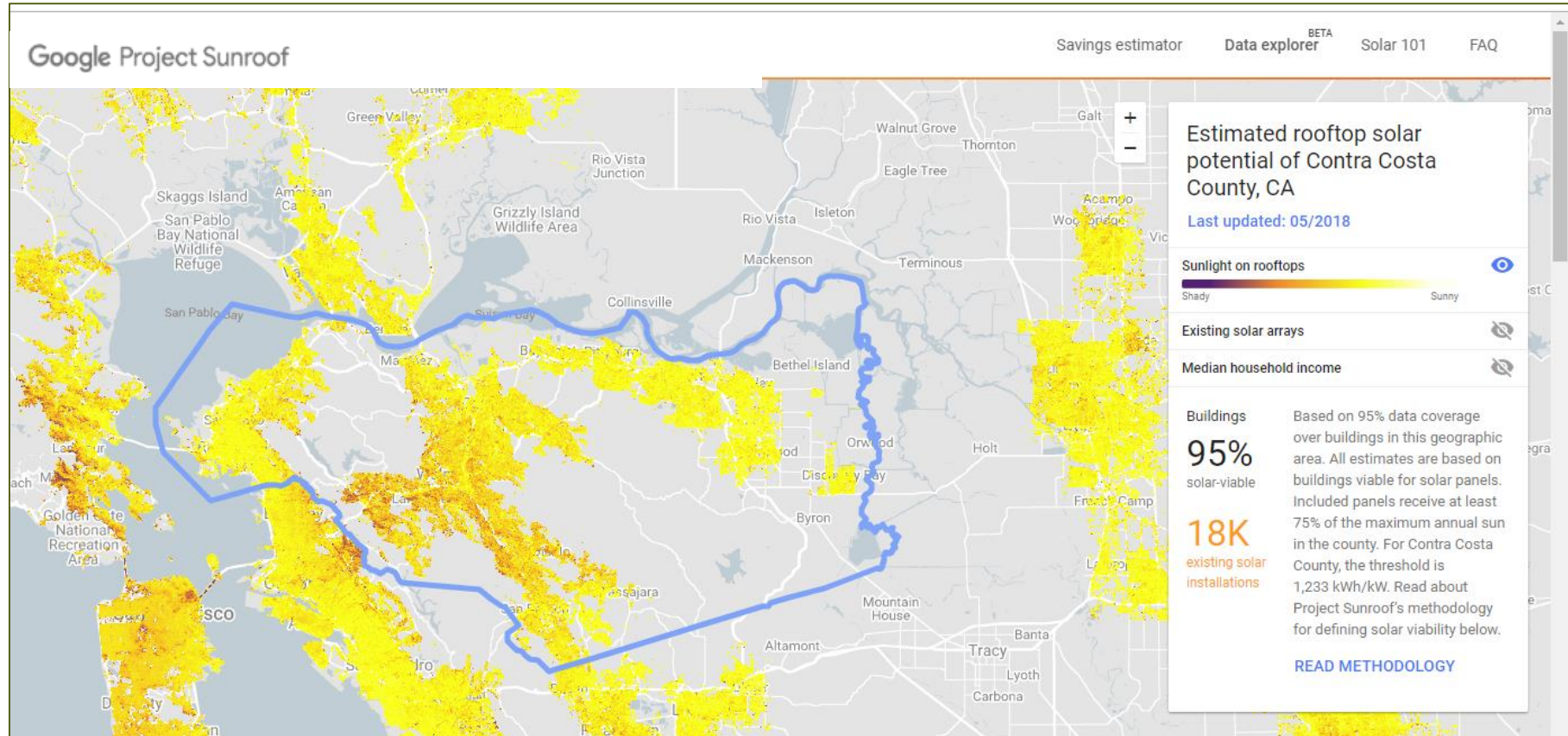
Contra Costa County Has Significant Opportunities for Rooftop Solar

Zoomed in screenshot of Google Sunroof's characterization of rooftop solar availability and shading at DCD's offices and surrounding buildings in Martinez



Source: <https://www.google.com/get/sunroof/data-explorer/>, accessed 10/19/2018.

Contra Costa County Has Significant Opportunities for Rooftop Solar



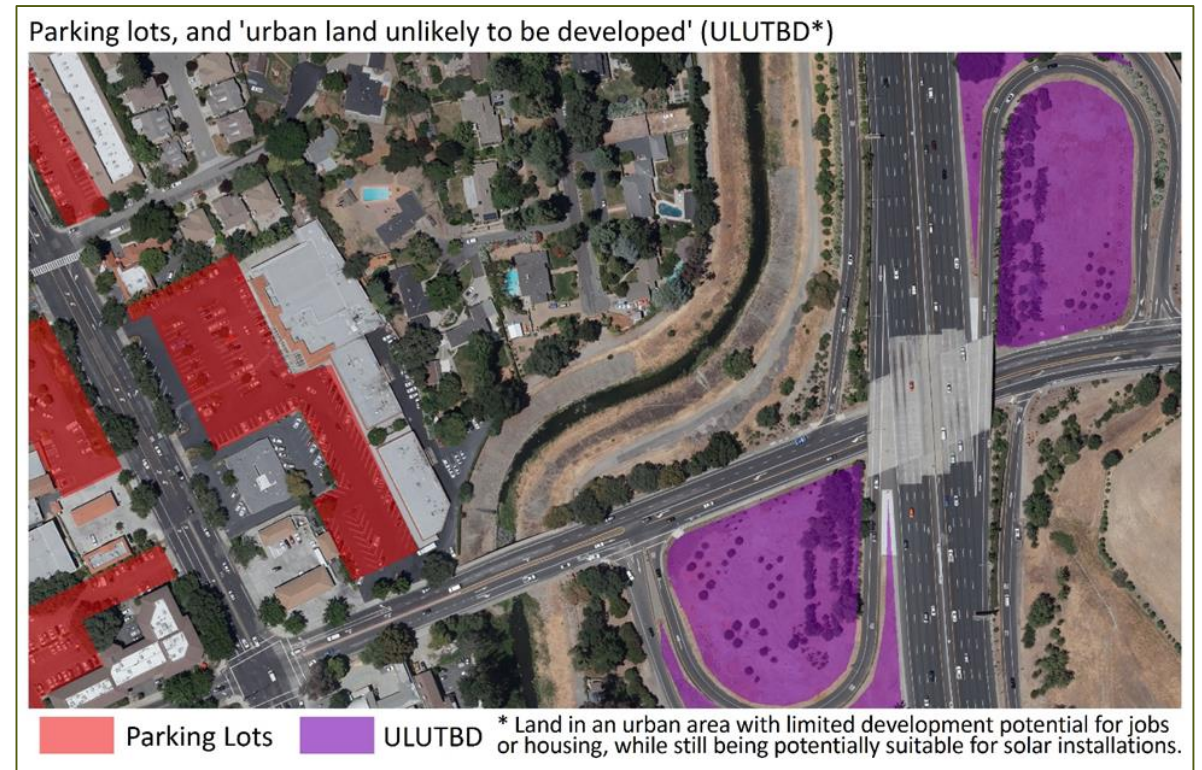
Source: <https://www.google.com/get/sunroof/data-explorer/>, accessed 9/16/2018.



Detailed Mapping to Evaluate Opportunities and Constraints For Solar

Example ULUTBD Highway Cloverleaf Potential Solar Site

Appendix D: Cartography	
Maps 1-8	Locate areas with significant acreage potentially suitable for large-scale, ground-mounted solar
Maps 9-19	Examine less constrained agricultural areas in eastern part of County
Maps 20-24	Maps of land potentially suitable for solar installations, after removing land with high agricultural value



Contra Costa County Leads the Region in Installed Solar Capacity

Existing Renewable Capacity in Nine-County Bay Area Counties, Plus San Joaquin County^a

(Sorted by Total Installed Capacity of Renewables)

County	Biomass MW	Solar MW	Wind MW	Total Bioenergy, Solar, and Wind MW (only the renewable technologies studied for this report)	Population
Solano	10	18	1,035	1,063	445,458
Alameda	24	15	182	221	1,663,190
San Joaquin	82	10	4	96	745,424
Contra Costa	7	31	38 ^b	76	1,147,439
Santa Clara	3	30		33	1,938,153
Sonoma	8	14		22	504,217
San Francisco	2	14		16	884,363
San Mateo	11			11	771,410
Marin	4	3		7	260,955
Napa	1	2		3	140,973

^a Data from December 2017 Tracking Progress report (CEC):

http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf

^b Note that this undercounts the total installed wind in the County, most likely because the output of some of the County's wind projects is likely being purchased by entities that are retiring the Renewable Energy Credits (RECs) without directly being counted toward a compliance obligation.



Opportunities for Community Solar and Wind Projects

Resource Potential in Bay Point, Rodeo, and North Richmond

Type	MW Capacity	
	Low	High
Rooftop Solar	233	339
Parking Lot Solar	40	80
Urban Land Unlikely to be Developed Solar	30	100
Agricultural Land With Least Constraints Solar	0	0
Large Wind	22	22
Total Solar and Wind	325	541

- Community energy projects allow customers to access the energy produced by these projects and get credits toward their electricity bills.
- Staff is learning that solar developers do not find current regulatory and pricing structures in California conducive to these types of projects.
- Grant report to State may recommend changes to current policies.



Opportunities on County Facilities

Additional Solar Capacity on County-Owned and Leased Buildings

Type	MW Capacity		Annual MWh	
	Low	High	Low	High
Owned	7	11	11,100	16,700
Leased	4	5	5,600	8,400
Total	11	16	16,700	25,100

- County owns or leases 350 buildings potentially suitable for solar
- County currently has installed nearly 5 MW of solar.
- New Administration building will have solar
- Working to install solar at 11 more sites, and pair those projects with energy storage



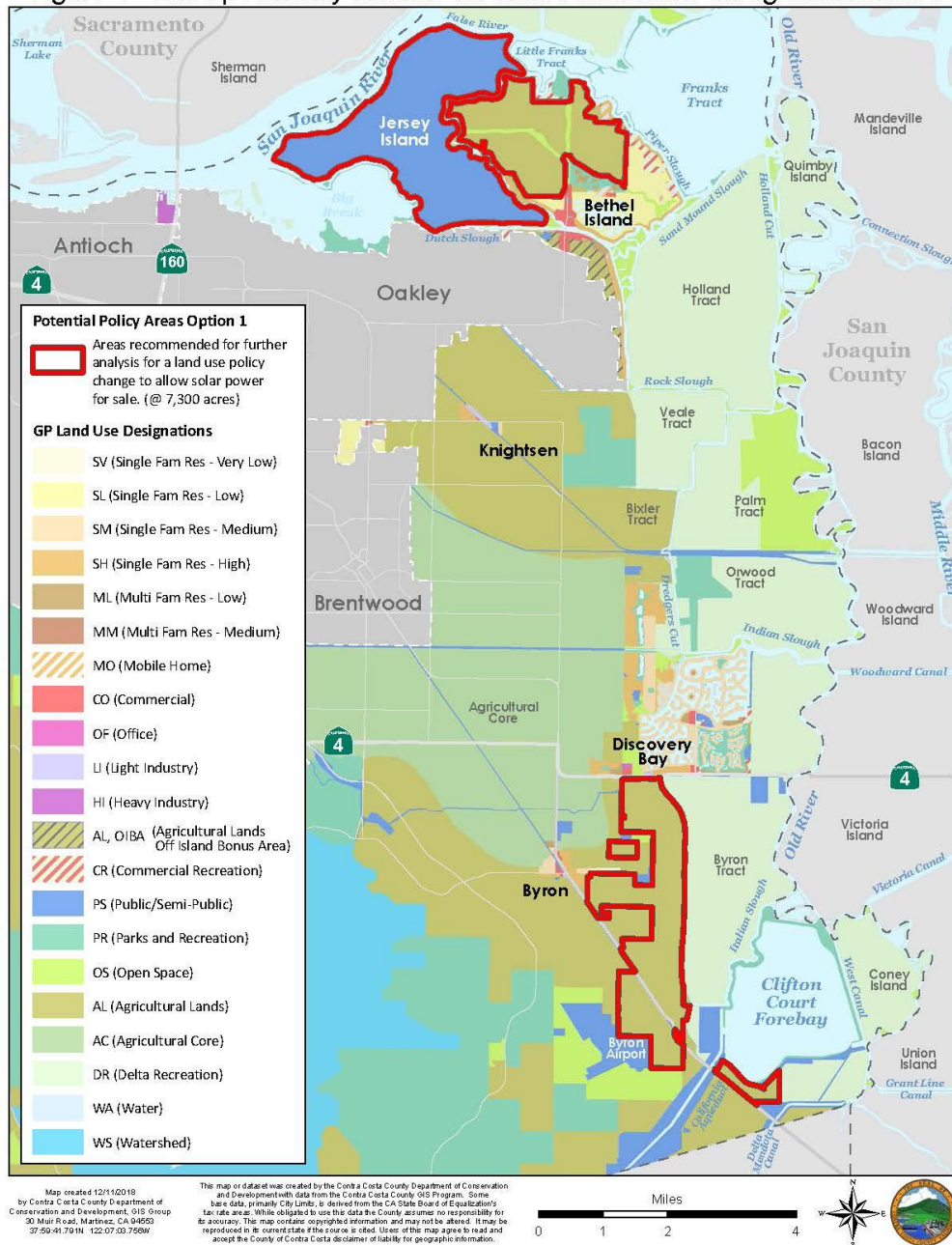
Staff Recommendations

- **DIRECT** the Department of Conservation and Development to take the following steps to further analyze and address through future Board actions the findings and recommendations of the Study:
- Prepare and analyze draft amendments to the County General Plan and Zoning Code that would expand the area within which an applicant could apply for a Land Use Permit. This would include additional public outreach, review and consideration by the Planning Commission and a final determination by the Board of the two Options shown in the attached Figures 1-4, staff recommends the larger Option 1;
- Explore incentives and other means of encouraging the construction of solar energy projects on commercial rooftops, parking lots, and underutilized land in commercial, industrial, and other infill areas and seek collaboration with MCE and other potential partners to propose policies to achieve this;
- Consider and evaluate other findings and recommendations of the Study as part of the projects currently underway to update the County's General Plan and Climate Action Plan.

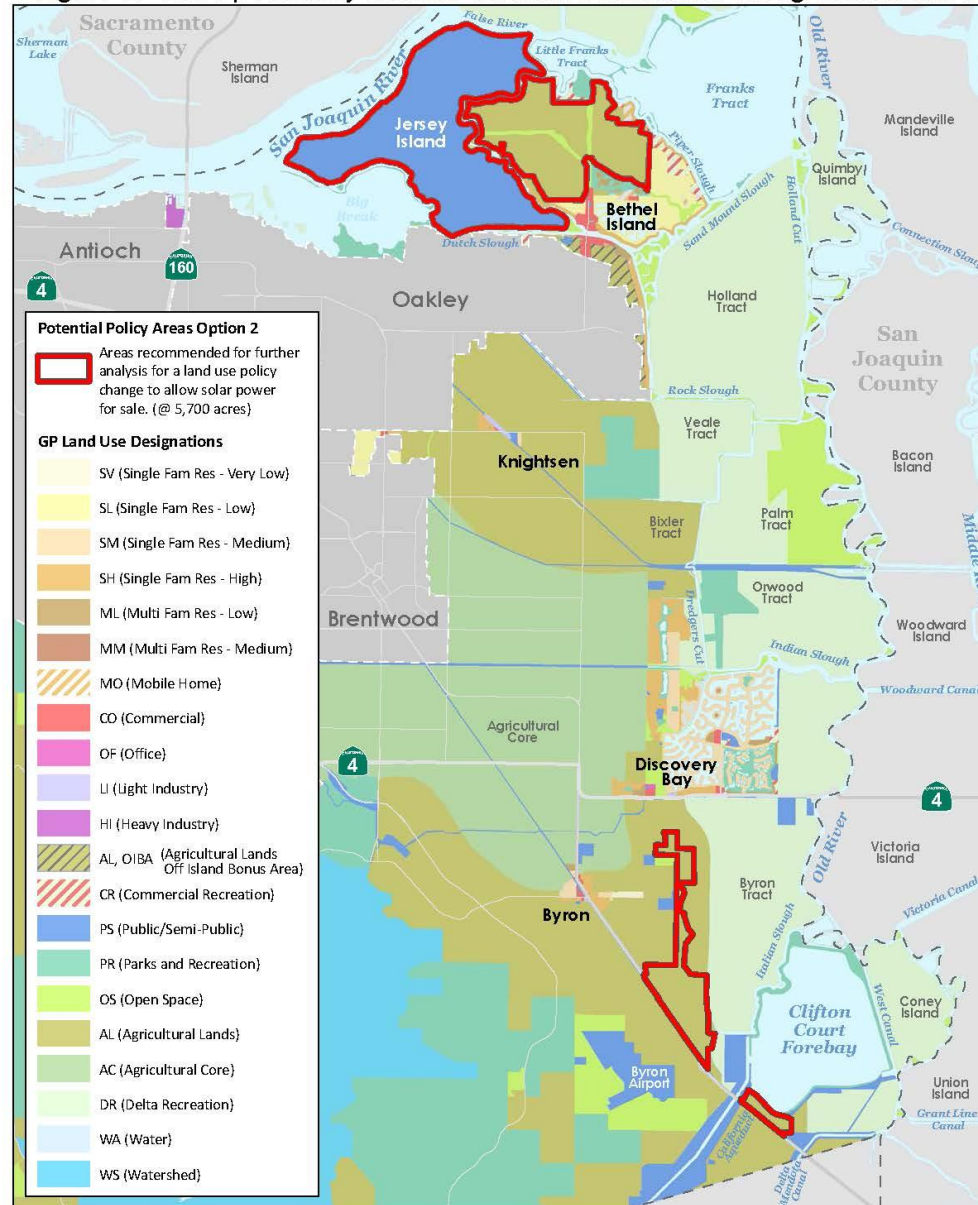


Option 1: Area Recommended for Further Analysis for a Land Use Policy Change to allow Solar Power for Sale (staff recommendation)

Option 1
Figure 1 - Land potentially suitable for solar installations on agricultural land



Option 2
Figure 2 - Land potentially suitable for solar installations on agricultural land



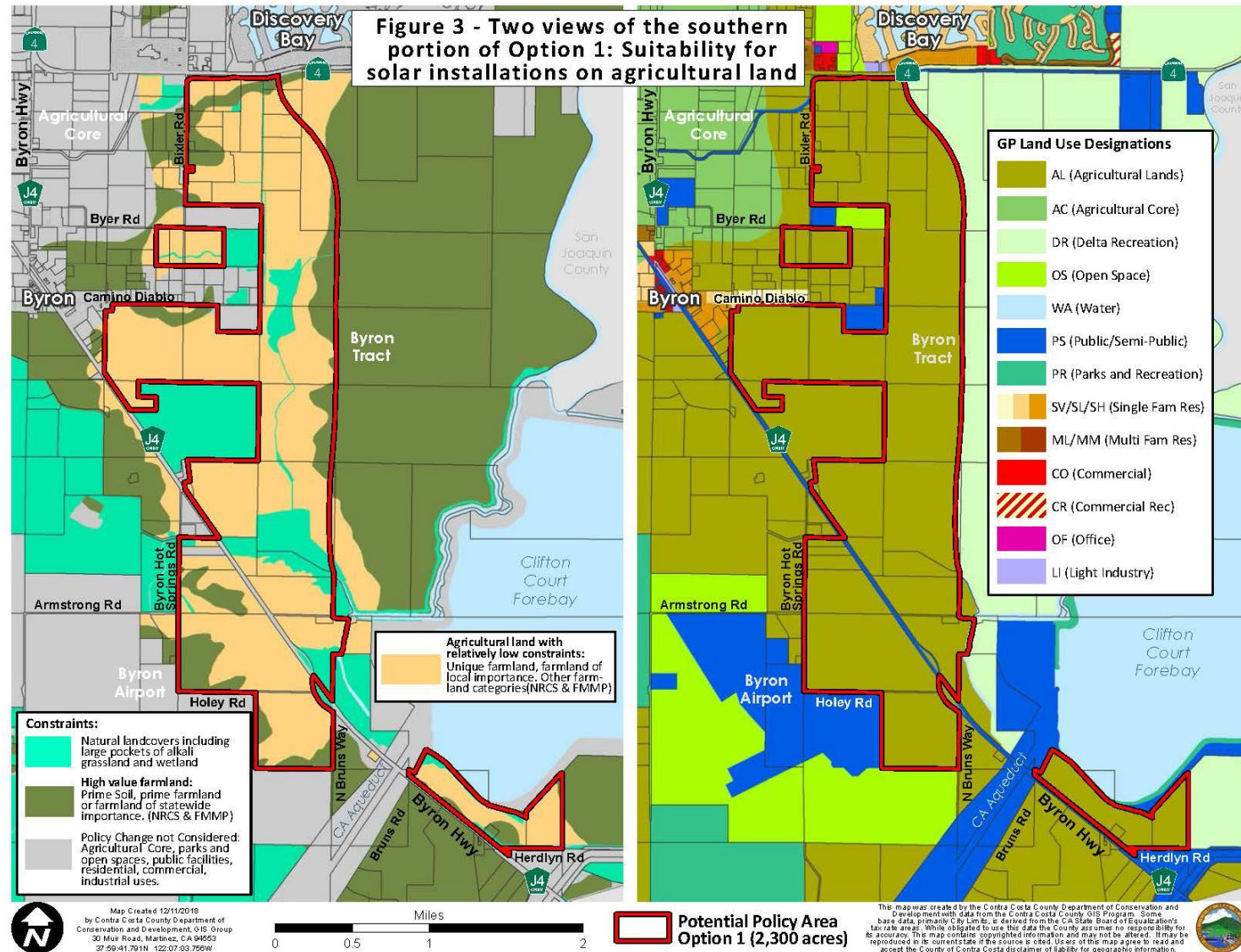
Map created 12/11/2018
by Contra Costa County Department of Conservation and Development, GIS Group
30 Muir Road, Martinez, CA 94553
37°50'41.79"N 122°07'03.75"W

This map or dataset was created by the Contra Costa County Department of Conservation and Development with data from the Contra Costa County GIS Program. Some base data, primarily City Limits, is derived from the CA State Board of Equalization's tax rate data. While obligated to use this data the County assumes no responsibility for its accuracy. This map contains copyrighted information and may not be altered. It may be reproduced in its current state if the source is cited. Use of the map agree to read and accept the County of Contra Costa disclaimer of liability for geographic information.

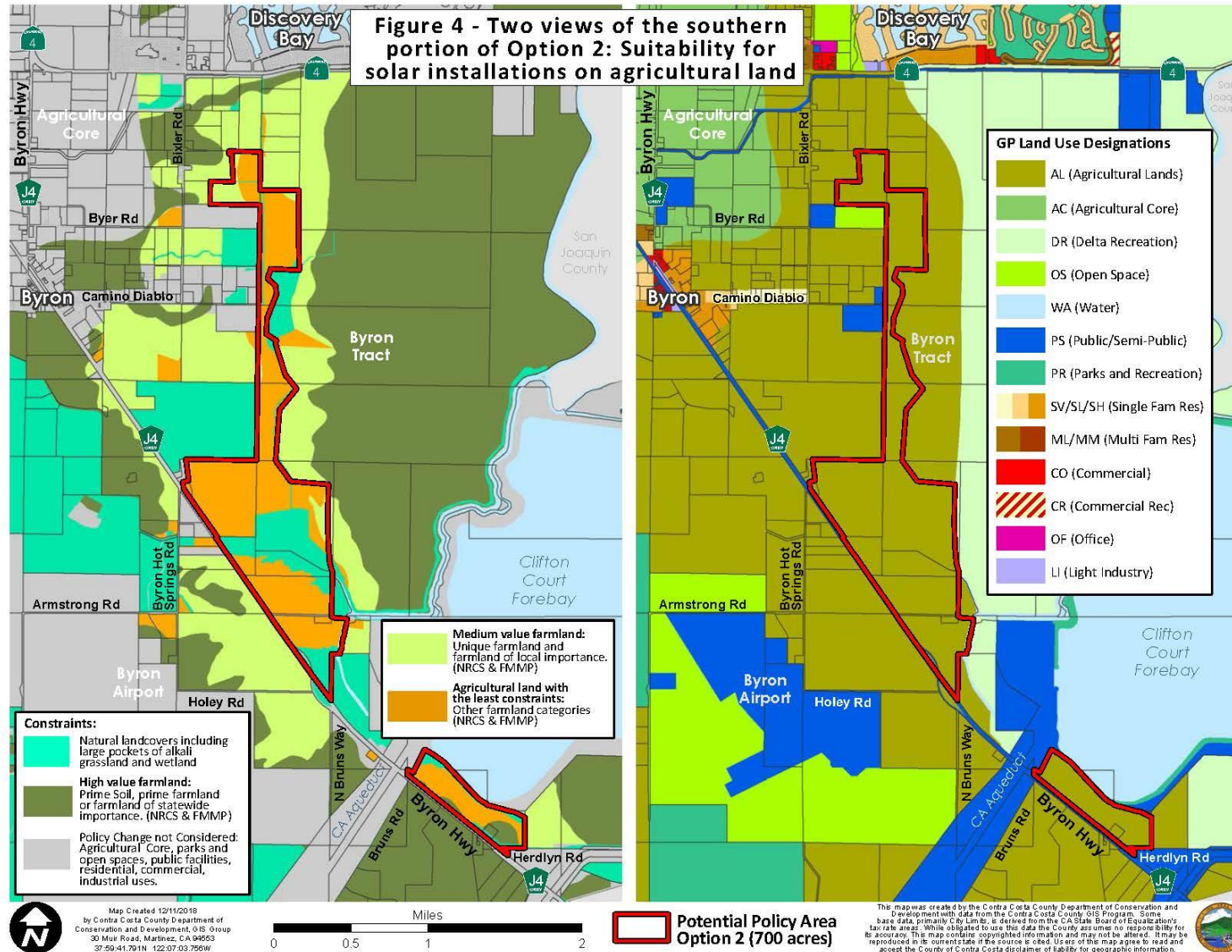


Option 2: Area for Further Analysis for a Land Use Policy Change to allow Solar Power for Sale

Detail of a Portion of Option 1



Detail of a Portion of Option 2



Next Steps

- Board of Supervisors provides direction to staff
- Staff will return with proposed General Plan and Zoning Code amendments, if directed by Board
- Staff completes research on community wind and solar feasibility and potentially reaches out to communities, with leadership from Supervisors
- Submit grant report to State by March 1, 2019



Questions? Comments?

Thank you!

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