



SUMMARY REPORT

Agenda Date: 6/13/2019

To: Board of Supervisors

Department or Agency Name(s): Permit Sonoma

Staff Name and Phone Number: Brian Keefer 565-1908

Vote Requirement: Majority

Supervisorial District(s): Two

Title: PLP16-0055 - Bodega Avenue.

Recommended Actions: Adopt a Mitigated Negative Declaration, adopt an Ordinance for a zone change to add the Renewable Energy Combining Zone to the subject parcel, grant a Use Permit to Juniper Energy LLC for a 2-megawatt photovoltaic ground-mounted commercial solar facility occupying approximately 15 acres with 3.88 acres of solar panels located at 5853 Bodega Avenue, Petaluma (APN 022-200-036), and authorize the Chair of the Board to execute the proposed Sales and Use Tax Agreement.

Executive Summary: Juniper Energy, LLC applied to add the RE Renewable Energy Combining Zone on a 25-acre parcel in the LEA zoning district and for a Use Permit for a 2-megawatt, alternating current, photovoltaic (PV), ground-mounted, commercial solar facility occupying 15 acres on the parcel.

The solar panels would be 7-9 feet in height and would generally follow the contours of the site. The proposed project would utilize arrays of ground-mounted photovoltaic modules on tilting structures that track the sun. The rows of support posts would be spaced 33 feet apart, with 23-26 feet clearance between the arrays. The support structures would be installed using rammed metal piers and concrete footings. Construction and installation would require vegetation removal in disturbed areas that would be re-vegetated with native grasses and wildflowers. The parcel is not under a Land Conservation Act (Williamson Act) contract.

The Planning Commission reviewed the project on December 20, 2018 and adopted a resolution recommending the Board of Supervisors adopt a Mitigated Negative Declaration for the project, approve a zone change to add the RE Renewable Energy Combining Zone to the parcel, and grant a use permit to Juniper Energy, LLC for the solar facility. The Planning Commission recommended a condition of approval strengthening the applicant's financial security to ensure the completion of site reclamation if the facility were to be abandoned (Condition No. 49, Attachment A).

On April 30, 2019, the Board of Supervisors considered this application and raised questions regarding: (1) the legislative history for the Renewable Energy Combining Zone, Renewable Energy Systems and Facilities Development Standards, and Solar Energy Facilities - Special Use Standards; (2) the potential overconcentration of solar facilities in agricultural zones; (3) agriculture as primary use; and (4) the effect of the proposed facility on agricultural uses of the subject property. The Board continued the item to its June 13, 2019 meeting for staff to respond to these questions.

In summary, agricultural land preservation is a paramount concern for commercial solar facilities in agricultural lands. Applications must be appropriately vetted within LEA (Land Extensive Agricultural) districts through a two-step process involving: (1) a rezone to add the RE Combining Zone to the site when the facility is greater than 30% of the site area (to a maximum of 50 acres); and (2) discretionary use permit approval that shows the project is consistent with clearly defined standards of review. This process ensures that commercial solar facilities in agricultural lands are compatible with agriculture on the subject and neighboring parcels.

This supplemental report addresses the questions and concerns raised by the Board. As detailed in the discussion section of this report, the Board created the RE (Renewable Energy) Combining Zone to allow Board discretionary review for projects in agricultural lands where 30% or more of the site area (up to 50 acres) is proposed for solar facilities. The discretionary review allows consideration of agricultural compatibility, solar facility overconcentration in agricultural zones, and other site-specific issues. Staff has reviewed the application in light of all evidence in the record, including Board input at the April 30, 2019 hearing on the project, and recommends the Board find that the proposed facility does not displace agriculture.[slb - do we need to be clear that the policy makers have the ultimate determination to decide whether ag is displaced or is that staff's sole jurisdiction?]

Discussion: Legislative History:

On September 10, 2013, with a unanimous Planning Commission recommendation for approval, the Board of Supervisors passed Resolution No. 13-0350 to amend the General Plan Open Space and Resource Conservation Element to allow commercial renewable energy systems in agricultural resource areas, and adopted Ordinance No. 6046 to revise the Zoning Code to allow renewable energy systems and facilities in designated Zoning Districts. The Sonoma County Farm Bureau expressed support for voluntary development of renewable energy on public and private lands, encouraged development of the facilities on marginally productive or non-productive land, and suggested restrictions and review for proposed projects on farmland to preserve agricultural viability on these sites (Attachment 8).

The Planning Commission and the Board of Supervisors were apprehensive of large-scale solar development on agricultural land. To limit the loss of agricultural land to solar facilities, two specific measures were included in Ordinance No. 6046: (1) restrictions to solar facilities in prime agricultural land; and (2) a mandatory rezoning and use permit procedure for ground-mounted commercial solar projects exceeding 30% of the parcel size.

The Ordinance prohibits adding the RE Combining Zone on lands best suited for permanent agricultural use and capable of high production per acre (*i.e.*, parcels zoned Land Intensive Agricultural (LIA) parcels), but allows the RE Combining Zone in less productive areas (*i.e.*, parcels zoned Land Extensive Agriculture (LEA), Diverse Agriculture (DA), Resources and Rural Development (RRD), Timber Production (TP), General Commercial (C3), Heavy Industrial (M2), or Public Facilities (PF)).

In zones where the RE Combining Zone may be considered, the Ordinance requires that applicants for

commercial solar projects occupying more than 30% of a parcel in agricultural areas apply to rezone the site to add the RE Combining Zone. Following rezoning, the Board is able to consider a use permit for the commercial solar facility subject to specific standards of review, allowing maximum oversight.

Protecting farmland was the Board's primary concern. The siting criteria in the Ordinance for renewable energy systems were developed to protect agriculture, aesthetics, air safety, biotic and cultural resources, and surrounding land uses. The Renewable Energy Systems and Facilities Development Standards (Section 26-88-200) prohibit removal of permanent crops in mapped Important Farmlands to facilitate a commercial renewable energy facility. Additionally, the Solar Energy Facilities Special Use Standards (Section 26- 88-206) prohibit locating commercial solar facilities in mapped Important Farmlands.

Commercial Solar Facility Potential Overconcentration:

APN	Map Label	Permit No.	Record	Opened Date	Location	Capacity	Panel Acres	Parcel Acres
115-240-018	A	UPE12-0049	Use Permit	08/22/2012	200 Kelly Rd	3 MW	20.00	127.95
115-260-023	B	UPE15-0065	Use Permit	08/06/2015	1255 Hiatt Rd	1 MW	3.50	375.43
068-020-017	C	UPE15-0057	Use Permit	04/28/2017	520 Stage Gulch Rd	1 MW	2.80	226.62
020-110-007	D	UPE15-0080	Use Permit	03/13/2018	4990 D St	3 MW	4.00	157.60
137-011-025	E	UPE16-0041	Use Permit	02/27/2019	368 Ely Rd	0.84 MW	2.36	20.00
					Subtotals	8.84 MW	32.66	
022-200-036	F	PLP16-0055	RE Rezone (BOS)	N/A	5853 Bodega Ave	2 MW	15.50	25.00
					Total w/Approval	10.84 MW	48.16	

Sonoma County has approved five use permits for commercial solar facilities countywide, occupying 32.66 acres total and generating an accumulated power production of 8.84 MW (megawatts). The current application is the first to require Board of Supervisors approval: because a higher ratio of panels to parcel size is proposed, a rezone to add the RE Renewable Energy Combining Zone is required so that the Board can determine whether the required findings for approval can be made, including the finding of General Plan consistency (see discussion and page 5). The following table (also in Attachment C) lists acres used for solar vs. total size of the parcel, as well as power generated and permitting levels and status:

The *Potential Renewable Energy Resources Solar Suitability Map* (Attachment D) shows the location of each facility listed in the Table.

Taken together, the above facilities provide 11% of Sonoma Clean Power's electrical generation, with the balance being geothermal (11%), wind (23%), large hydroelectric (42%), and CAISO (California Independent System Operator) system power (13%). Sonoma County's existing commercial solar facilities are located near electrical transmission lines to avoid the need for significant infrastructure improvements for their use. However, the distribution line and power substation serving the subject parcel require some improvements to facilitate the power generation of the facility (Attachment L). The power generation of the proposed facility will maximize the load on the infrastructure with the proposed improvements. Development of another commercial solar facility in the vicinity of the proposed project is unlikely, as it would require major upgrades to the substation and distribution line.

The *Potential Renewable Energy Resources Solar Suitability Map* (Attachment D) displays land characteristics and features that may facilitate or restrict solar/renewable energy facilities. Examples of restrictive characteristics and features include, but are not limited to: (1) scenic resources; (2) biotic habitat; (3) transmission lines; and (4) agricultural preserves. A previous version of this map was included with the staff report provided to the Board before the Board's adoption of Resolution No. 13-0350, approving the RE Combining Zone. Attachment D, updated on May 13, 2019, reflects new data that has become available since the passage of the resolution and Ordinance No. 6046. The subject parcel, depicted on the map as proposed ground-mounted commercial facility "F," is within a "varied suitability" area for solar exposure. Sonoma Clean Power supports this project, recognizing it as a viable solar production site (Attachment K).

When considering high-production agricultural lands, biotic habitat, scenic resources, transmission line location, and solar suitability based on cloud cover, the most desirable areas for ground-mounted commercial solar facilities are the Cloverdale Planning Area and the Petaluma Planning Area. Applicants for two of the five approved facilities chose sites in the Cloverdale area, facilities A and B in the above table and on the map (Attachment D). Applicants for the other three approved facilities (C, D, & E) and the proposed project (F) located in the Petaluma area.

General Plan Policy OSRC-15d promotes the development and use of renewable energy, with protections of scenic, biotic, and agricultural resources. Ordinance No. 6046 neither defines nor contains parameters for considering overconcentration of renewable energy facilities; however, discretionary review can include analysis of the cumulative effects of ground-mounted commercial solar facilities.

The subject parcel is approximately four miles from the nearest approved commercial solar facility on Ely Road (UPE16-0041), and the average separation of the approved and proposed facilities in the Petaluma area is 6.7 miles.

Staff analyzed the total land occupation of ground-mounted commercial solar facilities on permissible agricultural parcels in the desirable areas of Cloverdale and Petaluma, within 3.5 miles of transmission lines. GIS staff added a designation on the Potential Renewable Energy Resources Map - *Ground-Mounted*

Commercial Solar Facility Preferred Area, which includes all parcels that include zoning designations of LEA (Land Extensive Agriculture), DA (Diverse Agriculture), or RRD (Resources and Rural Development) within 3.5 miles of transmission lines within the two planning areas, excluding state mapped important farmlands.

The total area of the mapped parcels permissible for ground-mounted commercial solar facilities in the preferred area in the Cloverdale Planning Area is 118,410 acres. The ground-mounted commercial solar facilities occupy 23.5 acres, or just .02% of the mapped preferred area. The total area of mapped parcels in the preferred area of the Petaluma Planning Area is 43,035 acres. The approved and proposed ground-mounted commercial solar facilities occupy 24.66 acres, or just 0.057% of the mapped preferred area. Approved and proposed ground-mounted commercial solar facilities in both of the mapped Cloverdale and Petaluma areas occupy a total of 48.16 acres of the 161,445 acres, or just 0.03% of the mapped areas. There is no imminent overconcentration of commercial solar facilities on parcels zoned for agricultural production.

Agricultural Primary Use:

Resolution No. 13-0350 amended the General Plan Open Space and Resource Conservation Element to allow commercial renewable energy systems in agricultural resource areas. Ordinance No. 6046 revised the zoning code to allow renewable energy systems and facilities at appropriate scale in select zoning districts.

The amendment to the General Plan included Policy OSRC-15d:

Incorporate energy facility siting policies into the Sonoma County Development Code that would: ...

(4) Notwithstanding Policy AR-4a, consider allowing commercial renewable energy as a primary use facilities on agricultural lands only where a Renewable Energy (RE) Combining District is applied, when the history of the site demonstrates that it is of low value for agricultural production, and agricultural operations on surrounding agricultural parcels are not compromised, consistent with Policies AR 4d, 4e and 4f.

The photographic history of the subject parcel for this particular application dating back to 1942 shows no active agricultural use apart from intermittent grazing. While the parcel lies within a Class 2 major natural groundwater recharge area, the Well Completion Report on file for the property dated July 3, 2015, shows just 5 gallons per minute yield. According to Permit Sonoma's staff hydrogeologist, the well water yield is sufficient for a single family home but marginally sufficient for agricultural irrigation. Even dry farming of crops requires irrigation for the first 2-3 years until plantings are established, making the site more suitable for livestock grazing than a permanent, high-valued crop cultivation.

The project would retain agriculture as the primary use of the parcel because the proposed solar facility would not displace existing or potential agriculture on the site. Instead, the project solidifies agriculture as the primary use of the property by establishing a formal grazing lease on the property (Attachment I), and a

commitment by deed restriction (supported by a recommended condition of approval No. 70) to continue agricultural use on the property as a primary use as long as the solar facility remains on site.

The proposed facility occupies 15 acres, or 60% of the parcel. However, the actual parcel coverage of the solar arrays is far less. The rows of arrays are spaced 23-26 feet apart. The 8,064 solar panels proposed for the project, at 20.95 square feet for each panel, would cover 3.88 acres. With 0.54 acres dedicated to internal access roads and switchgear pads, the total area of site coverage is effectively 4.42 acres, or under 18% of the parcel.

The area rendered unusable for agricultural purposes is smaller still because grazing may occur successfully between and underneath the solar panels. The portions of the property dedicated to the internal access road, switchgear pads, and solar array posts represent the total area that is unusable for agricultural production. The area of the site rendered unusable for agriculture is 0.61 acres, or 2.44% of the parcel (Attachment H). This area is negligible and congruent with normal support facilities required for any active agricultural operation, and retains agriculture as the primary use on the parcel.

Agricultural Compatibility/Project Design:

The design of solar arrays can dramatically impact whether the space under and adjacent to the array mounts is usable space for agricultural purposes. The proposed design would have minimal impact on agricultural production, because vegetated areas below the mounts and between the support structures are agriculturally productive for livestock grazing. Attachment E provides photographs of vegetation growing beneath solar arrays and livestock grazing in similarly designed solar fields.

Sonoma County has only approved use permits for commercial solar facilities with stationary (non-tracking) solar arrays. Stationary solar arrays are typically low to the ground and spaced very close together on south facing slopes to maximize site coverage and solar capture. This design eliminates any productive capacity for the land beneath the solar arrays and, therefore, undermines agricultural potential within the area of the facility that might otherwise be suitable for agriculture. Current RE zoning provisions may have the unintended effect of displacing agricultural uses on some parcels, because applicants are incentivized to use stationary solar arrays that are low to the ground and densely packed together in order to avoid the 30% threshold that would trigger the need for a rezone to add the RE Combining Zone.

However, this proposal, while occupying more land per solar array for the facility subjecting it to the RE rezone, has a design that maintains productive agricultural land beneath and between the arrays. In contrast to previously approved projects, the proposed project involves tracking solar arrays that rotate on their ground mounts to follow the sun. This design requires arrays to be spaced farther apart to allow each panel to tilt and maintain a perpendicular alignment to the sun without casting shadows on adjacent panels. The proposed project includes 23 feet to 26 feet of space between individual arrays, depending on the angle of tilt, which allows sufficient sunlight to support groundcover vegetation and provides ample room for livestock grazing between and underneath the panels.

The proposed project is similar to an approved facility on a relatively level site on Ely Road (UPE16-0041). The solar facility on Ely Road is located on an existing cattle ranch; the design of the solar structures, which are 6 feet - 9 inches off the ground and spaced approximately 20 feet apart, allows cattle to graze under and between the solar arrays. Likewise, the height and spacing of the solar arrays in the proposed project will allow vegetation to grow under and between the panels to support grazing. Thus, the proposed solar facility would continue to support agricultural use of the property. The applicant will ensure that farming continues to occur through a deed restriction and contractual agreement with a sheep farmer. In addition, the applicant has added to his proposal a livestock water trough with automatic filling by the onsite well to facilitate the grazing of the parcel (Attachment G).

"Energy and food together: Under solar panels, crops thrive," is an article by Frank Jossi published by Public Radio International at

<https://www.pri.org/stories/2018-06-08/energy-and-food-together-under-solar-panels-crops-thrive>

(Attachment F). The article discusses successful crop cultivation beneath solar panels and pollinator-benefitting wildflower gardens. Physicist Adolph Goetzberger developed one of the first concepts of mixing of solar and agriculture and coined it as APV, or "agrophotovoltaics". At the University of Arizona School of Geography and Development, associate professor Greg Barron-Gafford's "agrivoltaic" pilot project showed that solar facilities designed similarly to the proposed project have the potential to enhance agricultural capacity on site by extending the growing season for certain crops.

The proposed solar arrays therefore would not eliminate the potential of future crop production. Additionally, since the project requires some site grading, the application includes removing and stockpiling of the topsoil and redistribution on the site after grading is complete to ensure the soil preservation. Staff recommends condition of approval No. 69 requiring the stockpiling and redistribution of topsoil.

Since the spacing of the arrays allows growth and grazing of vegetation beneath and in-between the panels, and as demonstrated by the coverage calculations above, the construction of the facility preserves the agricultural use of the parcel.

This application, as conditioned, would not encroach upon or displace agricultural production, and demonstrates successful integration of solar power generation and agriculture.

Conclusion:

The Board's adoption of Resolution No. 13-0350 amended the General Plan to allow commercial renewable energy systems in agricultural resource areas. Ordinance No. 6046 created the RE (Renewable Energy) combining zone and added the use and development standards for renewable energy facilities to the Zoning Code. These standards restricted development of commercial solar facilities on LIA (Land Intensive Agriculture) parcels, but allowed consideration of them on other agricultural lands with specific protections for agriculture. With the existing and proposed ground-mounted commercial solar facilities only occupying 0.03% of the permissible agricultural parcels in the desirable areas, there is no overconcentration of commercial solar on agricultural land. The design of the proposed facility maintains grazing as the primary use of the parcel and successfully integrates commercial solar with agriculture.

Prior Board Actions:

On September 10, 2013, the Board of Supervisors adopted Resolution No. 13-0350 amending the General Plan

Open Space and Resource Conservation Element to allow commercial renewable energy systems in agricultural resource areas, and Ordinance No. 6046 - Renewable Energy Combining Zone, Renewable Energy Systems and Facilities Development Standards, Solar Energy Facilities - Special Use Standards.

FISCAL SUMMARY

Expenditures	FY 18-19 Adopted	FY19-20 Projected	FY 20-21 Projected
Budgeted Expenses	N/A	N/A	N/A
Additional Appropriation Requested	N/A	N/A	N/A
Total Expenditures	N/A	N/A	N/A
Funding Sources			
General Fund/WA GF	N/A	N/A	N/A
State/Federal	N/A	N/A	N/A
Fees/Other	N/A	N/A	N/A
Use of Fund Balance	N/A	N/A	N/A
Contingencies	N/A	N/A	N/A
Total Sources			

Narrative Explanation of Fiscal Impacts: N/A

Staffing Impacts:			
Position Title (Payro	Monthly Salary Range (A - I Step)	Additions (number)	Deletions (number)
N/A			

Narrative Explanation of Staffing Impacts (If Required): N/A

Attachments:

- A - Revised Conditions
- B - Draft Ordinance
- C - Commercial Solar Facilities Use Permits
- D - Potential Renewable Energy Resources Solar Suitability Map
- E - Sheep and Solar
- F - Energy and Food Together- Under Solar article
- G - Livestock Watering Trough Exhibit
- H - Site Coverage Calculations
- I - Draft Grazing Lease
- J - Grazing Lease LOI - Redacted
- K - Letter of Support from Sonoma Clean Power
- L - PG&E Supplemental Review Excerpts
- M - Farm Bureau Letters

Related Items “On File” with the Clerk of the Board:

Supplemental Attachments for Supervisors:

- 1 - Ordinance No. 6046
- 2 - Resolution No. 13-0350
- 3 - Section 26-88-200 Table 1
- 4 - ORD11-0005 SUMM 9-10-13
- 5 - Staff Report to BOS 9-10-13
- 6 - ORD11-0005 BOS Summ 5-7-13
- 7 - ORD11-0005 Memo 5-7-13
- 8 - PLP16-0055 Renewable Energy Summary and Attachments 4-30-2019