

### III.1 RESPONSE TO COMMENTS

#### III.1.1 PROJECT OVERVIEW

This section contains responses to all comment letters received on the November 2011 Draft Environmental Impact Report (DEIR). Nine letters were received during the comment period, which closed December 19, 2011. A copy of each letter with bracketed comment numbers on the right margin is followed by the response for each comment as indexed in the letter. The comment letters are listed in Table III-1.

**TABLE III-1. DRAFT EIR COMMENT LETTERS  
MOUNT SIGNAL AND CALEXICO SOLAR FARM PROJECTS**

Letter No.	Commenter	Date
1	Law Offices of Stephan C. Volker ("Amended Letter")	12/23/11
2	Lozeau Drury, LLP	12/23/11
3	Air Pollution Control District	12/22/11
4	Imperial County Farm Bureau	12/15/11
5	Imperial County Fire Department	12/15/11
6	Imperial County Fire Department	12/13/11
7	Imperial Irrigation District	12/14/11
8	Department of Transportation	12/15/11
9	Michael and Julie Kemp	12/13/11

Stephan C. Volker  
Joshua A. H. Harris  
Alexis E. Krieg  
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10.511.01

December 23, 2011

*VIA EMAIL and U.S. MAIL*

Imperial County Planning and Development  
Services Department  
801 Main Street  
El Centro, CA 92243-2811  
[AngelinaHavens@co.imperial.ca.us](mailto:AngelinaHavens@co.imperial.ca.us)

Re: Amended and Expanded Comments of The Protect Our Communities Foundation,  
Backcountry Against Dumps and Danny Robinson on the Draft Environmental Impact  
Report for the Mount Signal and Calexico Solar Farm Projects

Dear Ms. Havens:

The following Comments of The Protect Our Communities Foundation (“POC”), Backcountry  
Against Dumps (“BAD”) and Danny Robinson (collectively “Conservation Groups”) amend and  
expand on Conservation Groups’ December 19, 2011 comments on Imperial County’s Draft  
Environmental Impact Report (“DEIR”) for the Mount Signal and Calexico Solar Farm Projects  
(“Mount Signal Solar” or the “Project”), proposed by 8minutenergy Renewables LLC  
(“8minutenergy”). Please substitute these Comments for Conservation Groups’ December 19  
comments.

1-1

**I. INTRODUCTION**

Pursuant to the California Environmental Quality Act (“CEQA”), California Public Resources  
Code (“PRC”) section 21000 *et seq.*, Conservation Groups submit the following Comments on the  
County’s DEIR for the Mount Signal Solar Project. The Project involves the construction and  
operation of expansive solar photovoltaic energy generation and transmission facilities, along with  
supporting uses, on 4,228 acres – nearly seven square miles – of “highly productive” agricultural land  
in the southeastern Imperial County. DEIR at 4.2-6 (quote). The Project comprises six sub-projects:  
Mount Signal Solar Farm I (1,431 acres), Calexico Solar Farm 1(A) (719 acres), Calexico Solar Farm

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1(B) (613 acres), Calexico Solar Farm 2(A) (940 acres), Calexico Solar Farm 2(B) (525 acres), and the construction of off-site transmission facilities including a new 230-kilovolt (“kV”) transmission line. Combined, the five projects would use 4.8 million photovoltaic panels, placed approximately 15 feet off the ground, to generate 600 megawatts (“MW”) of power for a period of at least 40 years.

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At the outset, Conservation Groups wish to express their opposition to this Project as an unnecessary industrialization of highly productive Prime Farmland and Farmland of Statewide Importance. Not only would the Project have significant environmental, agricultural and economic impacts, the proposed solar farm uses are forbidden by the Imperial County General Plan (and hence the Planning and Zoning Law, Government Code section 65000 *et seq.*) and, on some parcels, the Williamson Act, Government Code section 51200 *et seq.* Echoing a growing chorus of opinions on this subject, Conservation Groups urge Imperial County to analyze and adopt as an alternative to the proposed project the development of non-fossil fuel distributed generation projects near demand centers in already-disturbed areas.<sup>1</sup> The County fails to *even mention* a distributed generation alternative in the DEIR. In further expression of these major concerns and others, Conservation Groups offer the following comments on the DEIR.

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**II. THE PROPOSED SOLAR FARM USES ARE FORBIDDEN BY THE IMPERIAL COUNTY GENERAL PLAN LAND USE ELEMENT.**

**A. The County May Not Approve a Conditional Use that is Forbidden by the County General Plan.**

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The requirement that use permits must comply with a general law county’s<sup>2</sup> general plan has been recognized by the courts for over 35 years. In *Neighborhood Action Group v. County of Calaveras* (1984) 156 Cal.App.3d 1176, 1184, the Court of Appeal held that the requirement that use permits be consistent with the county general plan

<sup>1</sup> According to the California Public Utilities Commission (“CPUC”), distributed generation is electricity provided by “non-centralized electricity power production facilities less than 20 MW interconnected at the distribution side of the electricity system. [Distributed generation] technologies include solar, wind and water-powered energy systems; and renewable and fossil-fueled internal combustion (IC) engines, small gas turbines, micro-turbines and fuel cells.” CPUC, “Impacts of Distributed Generation, Final Report,” January 2010, p. 3-3, available at: [http://www.cpuc.ca.gov/NR/rdonlyres/750FD78D-9E2B-4837-A81A-6146A994CD62/0/Impacts ofDistributedGenerationReport\\_2010.pdf/](http://www.cpuc.ca.gov/NR/rdonlyres/750FD78D-9E2B-4837-A81A-6146A994CD62/0/Impacts ofDistributedGenerationReport_2010.pdf/).

<sup>2</sup> Imperial County is a general law county.

is necessarily to be implied from the hierarchical relationship of the land use laws. To view them in order: a use permit is struck from the mold of the zoning law ([Government Code] § 65901); the zoning law must comply with the adopted general plan (§ 65860); the adopted general plan must conform with state law (§§ 65300, 65302). The validity of the permit process derives from compliance with this hierarchy of planning laws. *These laws delimit the authority of the permit issuing agency to act and establish the measure of a valid permit. . . . A permit action taken without compliance with the hierarchy of land use laws is ultra vires as to any defect implicated by the uses sought by the permit.*

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*Id.* (emphasis added).

The foregoing settled law is dispositive. Since, as shown below, the proposed solar farm use is specifically forbidden under the Imperial County General Plan, neither the County Board of Supervisors nor any County administrative agency has authority to approve that use in contravention of the General Plan. Any “permit action taken without compliance with the hierarchy of land use laws is *ultra vires.*” *Id.*

**B. The Imperial County General Plan Forbids the Proposed Solar Farm Use.**

The DEIR asserts that “[w]ith the issuance of a [conditional use permit], the projects’ use would be consistent with the Imperial County land use ordinance and thus is also consistent with the [General Plan] land use designation of the site.” DEIR at 4.2-18. The DEIR is wrong. The Imperial County General Plan’s Land Use Element forbids the proposed solar use within the “Agriculture” plan designation to which the project’s lands are subject.

The Land Use Element directs in pertinent part that lands designated as “Agriculture” may not be developed with uses that do not preserve and protect agricultural production and related activities. It states in pertinent part as follows:

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**1. Agriculture.**

This category is intended to preserve lands for agricultural production and related industries including aquaculture (fish farms), ranging from light to heavy agriculture. Packing and processing of agricultural products may also be allowed in certain areas, and other uses necessary or supportive of agriculture. . . .

*Where this designation is applied, agriculture shall be promoted as the principal and dominant use to which all other uses shall be subordinate. Where questions of land use compatibility arise, the burden of proof shall be on the non-agricultural use to clearly demonstrate that an existing or proposed use does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations. No use should be permitted that would have a significant adverse effect on agricultural production, including food and fiber production,*



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horticulture, floraculture, or animal husbandry. . . .

No land shall be removed from the Agriculture category except for annexation to a city, where needed for use by a public agency, for geothermal purposes, where a mapping error may have occurred, or where a clear long term economic benefit to the County can be demonstrated through the planning and environmental review process.

Imperial County General Plan, Land Use Element (Revised 2008), page 48 (emphasis added).

It is clear from the foregoing language that lands designated “Agriculture” on the General Plan must be used *only* for agriculture and related industries that support agricultural production. “Where questions of land use compatibility arise, the burden of proof shall be on the non-agricultural use to *clearly demonstrate* that an existing or proposed use does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations.” *Id.*

Here, it is undisputed that the proposed solar farm uses will terminate and prevent all agricultural use of the subject lands for *at least 40 years*. DEIR at 4.2-14 (admitting that, at a minimum, “there would be a 40-year period where existing agricultural uses within the study area would no longer be possible”), 18 (admitting that the Project “would require the cancellation of up to 4 active Williamson Act Contracts”). As the California Department of Conservation has determined in both the Williamson Act and CEQA contexts, and reiterated in its November 1, 2011 and July 16, 2010 letters (respectively attached hereto as Exhibits 1 and 2) to the County Planning Department regarding the Calipatria Solar Farm II and Imperial Solar Energy South projects, commercial solar uses *are completely incompatible* with agricultural uses. Furthermore, as discussed below in relation to the DEIR’s failure to adequately analyze agricultural impacts, the Project would also impede agricultural operations on *surrounding* lands and negatively impact employment, income, sales and tax revenue in the County.

Because the proposed solar farm uses at the Project site are specifically forbidden by the General Plan,<sup>3</sup> neither the Board of Supervisors nor any of the County’s administrative agencies has authority to approve these uses.

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<sup>3</sup>[T]he General Plan’s provision for the issuance of conditional use permits for “geothermal plants” for lands designated “Agriculture” has no application here, because the proposed solar farm use is not a “geothermal plant.” Geothermal plants occupy a relatively small surface area (typically less than 10 acres for a 50-megawatt plant), unlike the proposed solar farm, which extends for hundreds of acres and occupies the entire project site, foreclosing all agricultural use.

**C. The Project’s Incompatibility with the General Plan Agricultural Use Provisions Is Not Cured by Other Conflicting General Plan Provisions or the County Land Use Ordinance.**

Despite the fact that the Project “would have a significant adverse effect on agricultural production” on the subject lands (General Plan, Land Use Element, p. 48), the DEIR asserts that “[w]ith the issuance of a [conditional use permit], the projects’ use would be consistent with the Imperial County land use ordinance and thus is also consistent with the [General Plan] land use designation of the site.” DEIR at 4.2-18. The County is wrong. The existing A-2 (General Agriculture), A-2-R (General Agricultural Rural Zone) and A-3 zoning (Heavy Agriculture) are *inconsistent* with the General Plan’s “Agriculture” designation.

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As described above, the Project is entirely incompatible with the General Plan’s explicit use standards for lands designated as “Agriculture.” To the extent the County Land Use Ordinance – which by law is subordinate to the County General Plan – allows uses such as the proposed solar farm that are inconsistent with the General Plan’s land use designations, it is invalid. Government Code § 65860(a); *Neighborhood Action Group, supra*, 156 Cal.App.3d at 1184. And to the extent the General Plan Land Use Element’s Compatibility Matrix approves zoning regulations that conflict with the Land Use Element’s textual land use standards, the Land Use Element is internally inconsistent and invalid. Government Code § 65300.5 (“the Legislature intends that the general plan and elements and parts thereof comprise an integrated, internally consistent and compatible statement of policies for the adopting agency”); *Concerned Citizens of Calaveras County v. Board of Supervisors* (1985) 166 Cal.App.3d 90, 97 (“a general plan must be reasonably consistent and integrated on its face”). Neither the Board of Supervisors nor any of the County’s administrative agencies may approve a land use in reliance on an invalid zoning regulation or General Plan element. “Under state law, the propriety of virtually any local decision affecting land use and development depends upon consistency with the applicable general plan and its elements. . . . [A]bsence of a valid general plan, or valid relevant elements or components thereof, precludes enactment of zoning ordinances and the like.” *Resource Defense Fund v. County of Santa Cruz* (1982) 133 Cal.App.3d 800, 806; *Neighborhood Action Group, supra*, 156 Cal.App.3d at 1104; *Concerned Citizens of Calaveras County, supra*, 166 Cal.App.3d at 97.

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**III. THE WILLIAMSON ACT CONTRACTS ON THE PROJECT SITE MAY NOT BE  
CANCELLED.**

The Williamson Act is California’s primary bulwark against the “premature and unnecessary conversion of agricultural land” and the bedrock for ensuring “the preservation of a maximum amount of the limited supply of agricultural land [that] is necessary to the conservation of the state’s economic resources . . . [and] the assurance of adequate, healthful and nutritious food for future residents of this state and nation. . . .” Government Code § 51220(c), (a).

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The Williamson Act authorizes counties and cities to enter into contracts with owners of agricultural and other open space lands whereby, in exchange for reduced property tax assessments of their properties, the owners agree to restrict their lands to solely agricultural or open space uses for a period of at least ten years. Government Code § 51240 *et seq.* Unless either the local government or the private land owner files a timely notice of non-renewal, the contract is renewed each year for the full term. *Id.* §§ 51244, 51245. If either party files a timely notice of non-renewal, the contract term is not renewed and the contract expires at the completion of the remaining term. *Id.* §§ 51245, 51246.

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After a request by the landowner, the local government may cancel a Williamson Act contract before the expiration of the remaining term if specified conditions are met. “The board or council may grant tentative approval for cancellation of a contract only if it makes one of the following findings: (1) That the cancellation is consistent with the purpose of this chapter; or (2) That cancellation is in the public interest.” Government Code § 51282 (a).

If the board or council elects to make the first finding, it must determine:

- (1) That the cancellation is for land on which a notice of nonrenewal has been served pursuant to Section 51245.
- (2) That cancellation is not likely to result in the removal of adjacent lands from agricultural use.
- (3) That cancellation is for an alternative use which is consistent with the applicable provisions of the city or county general plan.
- (4) That cancellation will not result in discontinuous pattern of urban development.
- (5) That there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

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Government Code § 51282(b).

If the board or council elects to make the second finding, it must determine

(1) that other public concerns substantially outweigh the objectives of this chapter; and

(2) that there is no proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put, or, that development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

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Government Code § 51282(c).

Here, the County cannot make either set of findings. First, with respect to the findings under Government Code section 51282(b), the proposed solar farm uses are *specifically forbidden* by the General Plan. In addition, it is likely that cancellation *would* result in removal of adjacent lands from agricultural use. As the Imperial County Agricultural Commissioner concluded in her February 25, 2011 letter (attached hereto as Exhibit 3) to the County Planning Department regarding the Calipatria Solar Farm II project, that project – and presumably other similar solar photovoltaic farms like the Project here – would impede agricultural operations on surrounding lands. “During the construction phase” of the Calipatria project, Commissioner Valenzuela stated, “neighboring agricultural operations would be impacted and restricted in their ability to use some pesticides or some pesticide application methods.” Moreover, Commissioner Valenzuela concluded that the entire County and its agricultural production would be affected, since the “removal of any farmland out of production would have a direct negative impact on employment, income, sales and tax revenue.” Exhibit 3 at 1.

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Furthermore, with respect to the findings under both Government Code sections 51282(b) and (c), it appears highly likely that there *is* “proximate noncontracted land which is both available and suitable for the use to which it is proposed the contracted land be put.” DEIR Figure 4.2-1, which maps the Williamson Act contracted lands in the vicinity of the Project, shows that there is substantial acreage of noncontracted land *directly adjacent* to the Project site. DEIR 4.2-3, 4. There is no explanation in the DEIR as to why these lands are not available and suitable for use as a solar photovoltaic farm.

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#### IV. THE DEIR IS INADEQUATE

##### A. The Project’s Purpose Is Unduly Narrow

CEQA requires that EIRs contain a “statement of objectives” that includes the “underlying purpose of the project.” 14 Cal. Code Regs. (“CEQA Guidelines”) § 15124(b). The primary goal of

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defining the project purpose is to “help the Lead Agency develop a reasonable range of alternatives.” *Id.*; see *id.* § 15126.6(c) (“[t]he range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project”). To ensure that an adequate range of alternatives are considered, “a lead agency may not give a project’s purpose an artificially narrow definition.” *In re Bay-Delta Programmatic Environmental Impact Report Coordinated Proceedings* (2008) 43 Cal.4th 1143, 1166.

Here, the DEIR identifies the first Project objective as “construct[ing] and operat[ing] a solar energy facility capable of producing up to 600 megawatts (MW) of electricity, which would help meet the increasing demand for clean renewable electrical power.” DEIR at 3-12. However, the DEIR provides *no* justification for why the Project needs to (1) be a *single* facility, or (2) have the capability to generate 600 MW of electricity. While these two criteria may be beneficial to the project proponent, 8minutenergy, they are by no means necessary to achieving the remaining eight Project objectives<sup>4</sup> and constitute arbitrary and unduly narrow restrictions on the identification and analysis of Project alternatives. As described below, a distributed solar generation alternative could feasibly meet the rest of the Project objectives, and do so with less environmental impact than the proposed Project and the other alternatives considered in the DEIR.

**B. The DEIR Fails to Analyze a Reasonable Range of Alternatives**

To comply with CEQA, agencies must consider a “reasonable range” of alternatives. CEQA Guidelines §15126.6(a); *Village of Laguna Beach, Inc. v. Board of Supervisors* (1982) 134 Cal.App.3d 1022, 1028. Here, the DEIR only considered four alternatives (and a no-project alternative) to the proposed Project: an alternative location, two reduced acreage alternatives (avoiding Prime Farmland

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<sup>4</sup> The remaining eight objectives are: (1) “Construction and operate a solar power facility with minimal impacts to the environment;” (2) “Operate a facility at a location that ranks amongst the highest in solar resources potential in the nation;” (3) “Interconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the ISO controlled transmission network, and maximize opportunities for sharing or use of existing utility transmission corridor(s);” (4) “Encourage economic investment and diversify the economic base for Imperial County;” (5) “Operate a renewable energy facility that does not produce significant noise, emit any greenhouse gases, and minimizes water use;” (6) “Help reduce reliance on foreign sources of fuel;” (7) “Supply on-peak power to the electrical grid in California;” and (8) “Help California meet its statutory and regulatory goal of increasing renewable power generation including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006).” DEIR at 3-12.

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and avoiding Williamson Act land), and reduced Calexico Solar Farm 2(A) alternative. The DEIR rejected all four alternatives on the ground that they would “make it more difficult to achieve the overall objective of providing a total of 600 megawatts of renewable solar energy” or would be otherwise infeasible or inconsistent with the Project objectives. DEIR at 8-16, 20.

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In considering only four true alternatives and rejecting them all, the DEIR violates CEQA for two reasons. First, as discussed, the Project objective of creating a single facility with the capability to generate up to 600 MW of electricity is unduly narrow. Therefore the two reduced acreage alternatives were improperly rejected on the sole basis that they would not achieve the objective of producing 600 MW of electricity. Second, the County failed to consider a reasonable range of alternatives in the DEIR by omitting analysis of a distributed generation alternative (solar and/or other generation sources). A distributed generation alternative is both feasible and environmentally preferable to the proposed Project.

Distributed solar, among other distributed renewable energy generation sources, is not only technically and economically feasible, *it is already occurring*. For example, SDG&E – a likely purchaser of the electricity to be generated by the Project – is on pace to add between 80 and 100 MW of distributed solar photovoltaic (“PV”) capacity in its service territory each year from 2011 through 2020. This new PV generation will be developed under the auspices of programs such as the Renewable Auction Mechanism program, which the CPUC approved in December 2010.<sup>5</sup> Under that program, California will add 1,000 MW of local PV by 2015. Another 750 MW will be added under the SB 32 feed-in tariff distributed PV program.<sup>6</sup> Even more distributed PV capacity will be added under the California Solar Initiative “million solar roofs” program.<sup>7</sup> And California has the ability to add significantly more, particularly in Imperial County, San Diego County and elsewhere in the southeastern portion of the state where there are substantial solar resources. In SDG&E’s service

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<sup>5</sup> CPUC Decision D.10-12-048, “Decision Adopting the Renewable Auction Mechanism,” December 16, 2010, p. 30, Table 1, available at: [http://docs.cpuc.ca.gov/word\\_pdf/FINAL\\_DECISION/128432.pdf](http://docs.cpuc.ca.gov/word_pdf/FINAL_DECISION/128432.pdf).

<sup>6</sup> CPUC feed-in tariff website, description of SB 32, available at: <http://www.cpuc.ca.gov/PUC/energy/Renewables/feedintariffsum.htm>.

<sup>7</sup> California Center for Sustainable Energy, “Overview of Solar Incentive Programs,” October 9, 2009, p. 7, available at: <http://www.slideshare.net/ccsemedia/overview-of-solar-incentive-programs>.

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territory alone, for example, there is at least 7,000 MW of urban and suburban PV potential.<sup>8</sup> Imperial Irrigation District (“IID”) has also begun to take advantage of its substantial solar resources, funding numerous distributed solar generation projects under its Solar Solutions Program.<sup>9</sup>

Harnessing California’s significant distributed solar generation potential would unquestionably “[h]elp California meet its statutory and regulatory goal of increasing renewable power generation including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006),” as well as the requirement that California’s investor-owned utilities, electric service providers and community choice aggregators provide 33 percent of their retail electricity sales from renewable energy sources by 2020 DEIR at 3-12. In addition, focusing on meeting the state’s renewable energy goals with distributed generation would further California’s current policy favoring the development of distributed renewable energy generation sources, as evinced by Governor Jerry Brown’s Clean Energy Jobs Plan. Governor Brown’s Plan sets a statewide target of deploying 12,000 MW of local renewable energy by 2020.<sup>10</sup>

Moreover, a distributed generation alternative would have similar economic benefits while providing environmental advantages over the proposed Project. As former CPUC Commissioner John Bohn acknowledged, “[u]nlike other generation sources, [distributed generation] projects can get built quickly and without the need for expensive new transmission lines. And . . . these projects are extremely benign from an environmental standpoint, with neither land use, water, or air emission impacts.”<sup>11</sup>

In sum, a distributed solar generation alternative is feasible, cost-effective, environmentally beneficial, and would meet the Project objectives. The County must thus fully examine this alternative. Further, the County should examine a distributed generation alternative that includes small-scale wind and combined heat and power generation, along with other non-solar distributed

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<sup>8</sup> Powers, *San Diego Smart Energy 2020: The 21st Century Alternative*, October 2007, p. 48, available at: [http://www.etechninternational.org/new\\_pdfs/smartenergy/52008\\_SmE2020\\_2nd.pdf](http://www.etechninternational.org/new_pdfs/smartenergy/52008_SmE2020_2nd.pdf).

<sup>9</sup> Imperial Irrigation District, “Solar Solutions Program Funding,” updated August 31, 2011, available at: <http://www.iid.com/index.aspx?page=488>

<sup>10</sup> See CEC, Transcript of Committee Workshop on Renewable Localized Generation, May 9, 2011, available at: [http://www.energy.ca.gov/2011\\_energypolicy/documents/index.html#05092011](http://www.energy.ca.gov/2011_energypolicy/documents/index.html#05092011).

<sup>11</sup> CPUC, “CPUC Approves Edison Solar Roof Program,” Press Release, June 18, 2009, available at: [http://docs.cpuc.ca.gov/published/News\\_release/102580.htm](http://docs.cpuc.ca.gov/published/News_release/102580.htm).



generation sources.

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**C. The DEIR Fails to Adequately Analyze Significant Agricultural and Land Use Impacts**

**1. Impacts to Agricultural Aircraft Operations**

The Project site contains the lone airport servicing agricultural spraying operations in the southeastern portion of Imperial County, and the airport is only one of four such airports in the entire County. The airport and associated airstrip begin just to the east of Weed Road, in between Anza Road and California Route 98. The airport's 10-acre parcel borders agricultural land that will be converted by the Project to the proposed solar farm use. The airport is owned and managed by Frontier Agricultural Services, Inc ("Frontier").

Despite the airport's critical importance to aerial spraying operations – and thus agricultural production – in the County, the DEIR *entirely fails* to describe or analyze the Project's impacts to it or the spraying operations it supports. The only mention of the airport in the whole DEIR is a meager response to comments submitted by Frontier, in which the County claims that the impacts to the airport are adequately discussed elsewhere in the document in reference to the Project's impacts *on the Calexico International Airport*. DEIR at 1-8. The DEIR's analysis of impacts to the Calexico airport, however, does not suffice under CEQA as an analysis of the impacts to *Frontier's* much different airport. With respect to the Project's glare and glint effects, for example, the DEIR contains calculations and analysis *specific* to the Calexico airport. DEIR at 4.1-51, 52, Appendix B. These calculations do not translate over to Frontier's airport, which (1) is located *within* the Project site, not miles to the east of it, and (2) supports a unique type of aircraft and aerial service (agricultural spraying). Furthermore, the DEIR omits *any* analysis of the significant risk posed to the low-flying spraying aircraft from the Project's transmission lines and other facilities.

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Frontier's airport and the aerial spraying operations it supports are integral to agricultural production in Imperial County, especially the southeastern portion. The County must analyze the Project's glare and other impacts to that airport (and its supported services) *specifically*. In failing to do so, it violated CEQA.

**2. Impacts to the Agricultural Economy**

The significant impact on agriculture-serving businesses of land fallowing and conversion of farmland to other uses is well established and has been widely described in recent media reports.<sup>12</sup>

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<sup>12</sup> See Barringer, Felicity, October 23, 2011, "Empty Fields Fill Urban Basins and Farmers' Pockets," *The New York Times*, available at: <http://www.nytimes.com/2011/10/24/science/earth/24water.html?pagewanted=all>; Mike Davis, November 8, 2011, "Joblessness Adds Heat to Imperial Valley Protests," *Los Angeles Times*, available at: <http://articles.latimes.com/2011/nov/08/opinion/la-oe-davis-elcentro-20111108>.



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Indeed, as Agricultural Commissioner Valenzuela noted in her comments on the Calipatria Solar Farm II project, “removal of any farmland out of production would have a direct negative impact on employment, income, sales and tax revenue.” Exhibit 1. Nonetheless, the DEIR entirely fails to analyze these impacts. This omission violates CEQA.

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**3. Violation of Agricultural Zoning and Land Use Restrictions**

CEQA Guidelines section 15125(d) recognizes the vital function of general plan prescriptions in determining the significance of a project’s environmental impact. It mandates that “[t]he EIR shall discuss any inconsistencies between the proposed project and applicable general plans . . . .” *Id.* As explained above, the General Plan specifically forbids the proposed solar farm use here. The DEIR’s contrary conclusion is wrong and must be corrected.

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**D. The DEIR Fails to Adequately Analyze Electromagnetic Field Impacts**

Instead of calculating the Project’s electromagnetic field (“EMF”) radiation and its impacts on humans and wildlife as required by CEQA, the County states in the DEIR that “Because there are no conclusive studies on EMF impacts it’s too speculative to evaluate further in this EIR.” DEIR at 4.8-10. In support of its “speculative” claim, the County advances two arguments. Neither is correct. First, the County claims that “[a]ny potential health risk associated with EMF is considered low as there are generally no sensitive uses in immediate proximity to the site.” *Id.* at 4.8-9. Second, the County contends that “there are no conclusive studies on EMF impacts.” *Id.* at 4.8-10. The County is mistaken, and its “speculative” characterization is contrary to science.

1-22

First, as to the threshold question of whether there are sensitive uses in sufficiently close proximity to the Project site to be harmed by its EMF radiation, the County’s conclusion is simply unsupported. As shown in DEIR Figure 4.2-1, the Project site is *surrounded* by farmland with active agricultural operations. In addition, it is undisputed that Frontier Agricultural Services, Inc.’s airport is located directly adjacent to the Project site, just to the east of Weed Road, between Anza Road and California Route 98. Thus, at the very least, the Project would expose numerous agricultural workers, pilots, airport employees and Project workers to EMF. People and wildlife near the many inverter modules for the Project’s photovoltaic panel arrays would be particularly susceptible to harm.<sup>13</sup>

<sup>13</sup> The “inverter modules would receive direct current (DC) electricity directly from the PV solar array where it is then converted to AC electricity.” DEIR at 3-13. The process of converting the DC electricity to AC electricity interrupts current flow and produces “dirty electricity” (contamination of the 60 Hz electricity on the electrical grid with high frequency voltage transients). *See, e.g.,* Samuel Milham, “Attention Deficit Hyperactivity Disorder and Dirty Electricity,” *Journal of Developmental and Behavioral Pediatrics*, September 2011 (attached hereto as Exhibit 4); Samuel Milham, “Historical Evidence That Electrification Caused the 20th Century Epidemic of ‘Diseases of Civilization,’” *Medical Hypotheses*, 74:337-345, 337 2010 (attached hereto as Exhibit 5); Samuel Milham and L. Lloyd Morgan, “A New Electromagnetic

Amended and Expanded Comments on DEIR for Mount Signal and Calexico Solar Farm Projects  
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Second, as to whether the available science shows that EMF exposure is harmful, the DEIR relies on outdated research. In support of its position that “there are no conclusive studies on EMF impacts” (DEIR at 4.8-10), the County cites a report publishing findings from a working group (organized under the auspices of the National EMF Research and Public Information Dissemination Program) that met in 1998 and a California Public Utilities Commission decision, D.06-01-042, that was issued in 2006. The County impermissibly ignores more recent EMF research, which shows *significant* EMF health impacts with increasing consistency.

Recent studies, such as those by Dr. Samuel Milham and Dr. Magda Havas, have linked EMF exposure with an increase in ailments such as diabetes, fibromyalgia, chronic fatigue syndrome and attention deficit disorder, among others.<sup>14</sup> Similarly, as reported in Jeffrey Lovich’s and Joshua Ennen’s recent peer-reviewed *BioScience* article (attached hereto as Exhibit 7), Doctor Alfonso Balmori (in a 2010 article) found the “possible impacts of chronic exposure to athermal electromagnetic radiation” on mammal species to include “damage to the nervous system, disruption of circadian rhythms, changes in heart function, impairment of immunity and fertility, and genetic and developmental problems.” Exhibit 4 at 987. Furthermore, even though there remains some disagreement over the impacts of EMF, many “authors suggest that [this] . . . should not be cause for inaction. Instead, they argue that the precautionary principle should be applied in order to prevent a recurrence of the ‘late lessons from early warnings’ scenario that has been repeated throughout history.” *Id.*

In sum, the County’s decision to omit from the DEIR any analysis of the Project’s EMF impacts is unsupported by the evidence and violates CEQA. The County must fully analyze the Project’s EMF radiation impacts on human health and wildlife.

1-22  
 Cont.

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Exposure Metric: High Frequency Voltage Transients Associated With Increased Cancer Incidence in Teachers in a California School,” *American Journal of Industrial Medicine*, 2008, p.2 (attached hereto as Exhibit 6). Dirty electricity has been recognized as a significant cause of EMF-related health risks, such as those described below.

<sup>14</sup> See, e.g., Exhibits 4-6; Magda Havas, “Dirty Electricity Elevates Blood Sugar among Electrically Sensitive Diabetics and May Explain Brittle Diabetes,” *Electromagnetic Biology and Medicine*, 27:135-146, 2008; Magda Havas, “Electromagnetic Hypersensitivity: Biological Effects of Dirty Electricity with Emphasis on Diabetes and Multiple Sclerosis,” *Electromagnetic Biology and Medicine*, 25:259-268, 2006, available at: [http://www.next-up.org/pdf/Magda\\_Havas\\_EHS\\_Biological\\_Effects\\_Electricity\\_Emphasis\\_Diabetes\\_Multiple\\_Sclerosis.pdf](http://www.next-up.org/pdf/Magda_Havas_EHS_Biological_Effects_Electricity_Emphasis_Diabetes_Multiple_Sclerosis.pdf); The National Foundation for Alternative Medicine, “The health effects of electrical pollution,” available at: [http://d1fj3024k72gdx.cloudfront.net/health\\_effects.pdf](http://d1fj3024k72gdx.cloudfront.net/health_effects.pdf).

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**E. The DEIR Fails to Adequately Analyze Hydrologic Impacts**

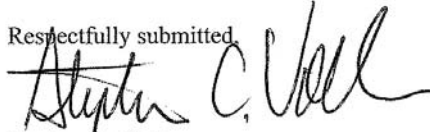
Recognizing that the Project is likely to cause substantial erosion, waterway siltation and other waterway pollution, the DEIR incorporates a mitigation measure requiring 8minutenergy to “acquire appropriate Clean Water Act regulatory permits, prepare [a stormwater pollution prevention plan (“SWPPP”)], and implement [best management practices] prior to construction and site restoration.” DEIR at 4.9-14. As part of this, the “SWPPP(s) shall incorporate control measures in the . . . categories” such as “[s]oil stabilization and erosion control practices.” *Id.* at 4.9-14, 15. However, the DEIR impermissibly fails to analyze the impacts of using soil stabilizers. Soil stabilizers can significantly change the surface water hydrology of a site, as well as lead to sedimentation of nearby waterways.

In their recent *BioScience* article, Jeffrey Lovich and Joshua Ennen reviewed the literature on the wildlife and other environmental impacts of utility-scale solar energy development in the southwestern United States. One of their findings was that the use of dust suppressants – which often double as soil stabilizers – can cause significant hydrologic impacts. These impacts include changing the “volume, rate, and timing of runoff” from project sites and, particularly when magnesium chloride (MgCl<sub>2</sub>) is used, “increas[ing] the total suspended solids loads in runoff.” Exhibit 7 at 985. The County failed to and must now analyze these likely impacts of the Project’s proposed use of soil stabilizers.

**CONCLUSION**

For each of the foregoing reasons, the DEIR for the Mount Signal and Calexico Solar Farm Projects is deficient.

Respectfully submitted,



Stephan C. Volker  
Attorney for The Protect Our Communities Foundation,  
Backcountry Against Dumps, and Danny Robinson

SCV:taf

1-23

# EXHIBIT 1

NATURAL RESOURCES AGENCY

EDMUND G. BROWN, JR., GOVERNOR



## DEPARTMENT OF CONSERVATION

*Managing California's Working Lands*

### DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE [conservation.ca.gov](http://conservation.ca.gov)

November 1, 2011

Mr. Armando G. Villa, Director  
Imperial County  
Department of Planning and Development Services  
801 Main Street  
El Centro, CA 92243

Dear Mr. Villa:

SUBJECT: Cancellation of Land Conservation (Williamson Act) Contract No. 2001-00706; Landowner: James R. & Barbara A. Smith; Applicant: 8 Minute Energy (Calipatria Solar Farm II); APN 022-170-005

The Department of Conservation (Department) monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act. The Department has reviewed the application submitted by the Imperial County Department of Planning and Development Services (County) regarding the referenced cancellation and offers the following recommendations.

#### Project Description

The petition proposes to cancel 563 acres of agricultural land subject to Williamson Act Contract in order to build a photovoltaic energy facility (Project) which will generate a total of 50 megawatts. The Project Site is located approximately one mile north of Calipatria, California within Imperial County and is bounded by Blair Road to the east, E. Peterson Road to the north, W. Lindsey Road to the south and the Southern Pacific Railroad to the west. The Calipatria State Prison is located to the northeast of the project site. According to the petition, the applicant has submitted a Conditional Use Permit for a 40 year term.

#### Cancellation Findings

Government Code (GC) section 51282 states that tentative approval for cancellation may be granted only if the local government makes *either* one of the following findings:

- 1) Cancellation is **consistent** with purposes of the Williamson Act, (not addressed by the cancellation petition) *or*
- 2) Cancellation is in the **public interest**.

The following are the requirements for the public interest findings required under GC section 51282 (above):

*The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.*

Mr. Armando G. Villa  
November 1, 2011  
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2) Cancellation is in the Public Interest

For the cancellation to be in the public interest, the Board must make both of the following findings:

- a. Other public concerns substantially outweigh the objectives of the Williamson Act, and
- b. There is no *proximate, noncontracted land*<sup>1</sup> which is available and *suitable*<sup>2</sup> for the use proposed on the contracted land, or, development of the contracted land would provide more contiguous patterns of urban development than development of proximate noncontracted land.

Department Comments on the Public Interest Cancellation Findings

The Department has reviewed the petition and additional information supplied by the applicant, and offers the following comments with regards to the submitted public interest findings:

a) Other public concerns substantially outweigh the objectives of the Williamson Act: Renewable energy is energy generated from sources such as the sun, wind, the ocean, and the earth's core. Solar photovoltaic electricity qualifies as a renewable energy source for the purposes of California's Renewables Portfolio Standards. In April, Governor Brown signed Senate Bill 2 (First Extraordinary Session) which extends the current 20% renewables portfolio standard target in 2010 to a 33% renewables portfolio standard by December 31, 2020. Through a number of legislative actions and/or policies, the State has placed an importance on renewable energy as well as preserving farmland.

There are many factors in determining whether the production of solar energy is of a higher public interest than the pre-existing agricultural use of the land. Some factors may include the quality of the soil, current agricultural production and the availability of reliable irrigation water. The Department has no comment regarding this particular finding.

<sup>1</sup> "Proximate, noncontracted land" means land not restricted by contract, which is sufficiently close to land which is so restricted that it can serve as a practical alternative for the use which is proposed for the restricted land. (GC section 51282).

<sup>2</sup> "Suitable" for the proposed use means that the salient features of the proposed use can be served by the land not restricted by contract. Such nonrestricted land may be a single parcel or may be a combination of contiguous or discontinuous parcels. (GC section 51282).

Mr. Armando G. Villa  
November 1, 2011  
Page 3 of 4

b) *There is no available and suitable proximate non-contracted land for the use proposed on the contracted land.*

According to the petition, the property was chosen due to its close proximity to the electrical grid which has the capacity for the solar facility. The Department has no comment regarding this particular finding.

**Cancellation Findings Conclusion**

Imperial County Board of Supervisors could approve the cancellation application based on the required public interest findings only if the Board feels it has adequate amount of information and has built the record to meet the statutory requirements.

**Compatible Use**

The Department has determined that commercial solar facilities are an industrial use of the land and inconsistent with the intent of the Williamson Act and its protection of open space and agricultural resources. The suggestion that a solar facility is a compatible use as defined by the Williamson Act is misguided. The footprint of a solar facility and the fact that it does not allow for the continuation of agricultural operations or open space activities as the main operation of the land, make it inconsistent with many different sections of the Act. The Department views GC §51238, which cites the compatibility of gas, electric, water, communication, or agricultural labor housing facilities in an *agricultural preserve*, as referring to those structures which have minimal impact on the land, and which are necessary for the needs of a community. The Department has consistently interpreted this section to describe overhead power lines, electrical substations, underground communication lines, and water lines, all of which take up a minimal amount of land.

Additionally, the Williamson Act provides a preferential tax assessment on contracted land in exchange for limiting the land to agricultural or open space uses. Agricultural use means the use of the land for the purpose of producing an agricultural commodity for commercial purposes (GC§51201(a)). Open space is the use or maintenance of land in a manner that preserves its natural characteristics, beauty, or openness for the benefit and enjoyment of the public or for wildlife habitat (GC§51201(o)). A commercial solar facility does not meet the definition of an agricultural use and solar energy does not meet the definition of an agricultural commodity, which means any and all plant and animal products produced in this State for commercial purposes. Nor is it consistent with the definition of an open space use. In addition, GC§51242 requires that land enrolled in a Williamson Act contract be devoted to agricultural use. When a solar project displaces all of the agriculture, and replaces it with a use that has no agricultural utility, the land clearly ceases to be devoted to agriculture.

Mr. Armando G. Villa  
November 1, 2011  
Page 4 of 4

Neither the Legislature nor City Councils or Boards of Supervisors can override the restrictions included within the Williamson Act or the Constitutional provision enabling the Act. The construction of solar facilities removes and replaces agriculture or open space uses to have a significant impact on agricultural and open space lands, including grazing land. After a review of the proposal, the Department does not believe that the County can consider commercial solar facilities compatible with the Williamson Act contract.

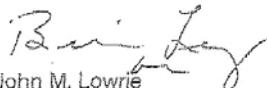
Site Restoration Plan

Since solar technology is advancing rapidly over time, the amount of open land that is needed for the same amount of solar energy production may decrease significantly in the future. That same land may also one day be needed again for the production of food.

It is important that proposals for the conversion of agricultural land to solar energy projects include a detailed site restoration plan describing how the project proponents will restore the land back to its current condition including irrigation supplies if and when some or all of the solar panels are removed. This type of plan would be similar to SMARA-required restoration plans on proposed mining sites. The Department recommends that an acceptable site restoration plan be required by the County for the proposed project.

Thank you for the opportunity to provide comments on the proposed cancellation. Please provide our office with a copy of the Notice of Public Hearing on this matter ten (10) working days before the hearing and a copy of the published notice of the Board's decision within thirty (30) days of the tentative cancellation pursuant to GC section 51284. If you have any questions concerning our comments, please contact Sharon Grewal, Environmental Planner at (916) 327-6643.

Sincerely,



John M. Lowrie  
Program Manager  
Williamson Act Program



# EXHIBIT 2

NATURAL RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, GOVERNOR



## DEPARTMENT OF CONSERVATION

### DIVISION OF LAND RESOURCE PROTECTION

801 K STREET • MS 18-01 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 324-0850 • FAX 916 / 327-3430 • TDD 916 / 324-2555 • WEBSITE [conservation.ca.gov](http://conservation.ca.gov)

July 16, 2010

**VIA FACSIMILE (760) 353-8338**

Ms. Patricia Valenzuela, Planner III  
Imperial County Planning & Development Services  
801 main Street  
El Centro, CA 92243

Subject: Notice of Preparation for a DEIR for Imperial Solar Energy Center South  
- SCH# 2010061038

Dear Ms. Valenzuela:

The Department of Conservation's (Department) Division of Land Resource Protection (Division) has reviewed the Notice of Preparation (NOP) for a DEIR for Imperial Solar Energy Center South. The Division monitors farmland conversion on a statewide basis and administers the California Land Conservation (Williamson) Act and other agricultural land conservation programs. We offer the following comments and recommendations with respect to the proposed project's potential impacts on agricultural land and resources.

**Project Description:**

The project is located on Pullman Road and Anza Road in an unincorporated part of Imperial County on the US/Mexico Border. The project site is 903 acres of agricultural land. The site is designated Prime Farmland and Farmland of Statewide Importance per the Imperial County Farmland Mapping and Monitoring Program maps. The existing General Plan designation is Agriculture and the zoning is General Agriculture Rural Zone and Heavy Agriculture.

The project proposes the development of a solar energy center and would consist of ground mounted photovoltaic solar power generation system, supporting structures, an operations and maintenance building, substation, water treatment facility, plant control system, meteorological station, roads and fencing. The project also plans a 120-foot wide Right-of-Way from the project site, along BLM land, within BLM's designated Utility Corridor "N" to the Imperial Valley Substation.

**Division Comments:**

The initial study for the NOP stated that because solar generation facilities are an allowed use within the zone district and subject to a conditional use permit, they do not conflict with existing zoning for agriculture and thus no impact is identified. However, the entire purpose of going through the conditional use permit process is to trigger a thorough CEQA review of a project's potential impacts. The development of 903 acres of Prime Farmland and Farmland of Statewide Importance is a substantial amount of development and displacement of agricultural resources.

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*The Department of Conservation's mission is to balance today's needs with tomorrow's challenges and foster intelligent, sustainable, and efficient use of California's energy, land, and mineral resources.*

Ms. Patricia Valenzuela  
July 16, 2010  
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The Department of Conservation considers the construction of a solar facility that removes and replaces agriculture on agricultural lands to have a significant impact on those agricultural lands, including grazing land. While solar panels may be an allowed use under the County zoning and General Plan, they can and should be considered an impact under CEQA to the project site's agricultural resources.

Although direct conversion of agricultural land is often an unavoidable impact under California Environmental Quality Act (CEQA) analysis, mitigation measures must be considered. A principal purpose of an EIR is to present a discussion of mitigation measures in order to fully inform decision-makers and the public about ways to lessen a project's impacts. In some cases, the argument is made that mitigation cannot reduce impacts to below the level of significance because agricultural land will still be converted by the project, and, therefore, mitigation is not required. However, reduction to a level below significance is not a criterion for mitigation. Rather, the criterion is feasible mitigation that lessens a project's impacts. Pursuant to CEQA Guideline §15370, mitigation includes measures that "avoid, minimize, rectify, reduce or eliminate, or compensate" for the impact. For example, mitigation includes "*Minimizing impacts by limiting the degree or magnitude of the action and its implementation (§15370(b))*" or "*Compensating for the impact by replacing or providing substitute resources or environments (§15370(e)).*"

All measures allegedly feasible should be included in the DEIR. Each measure should be discussed, as well as the reasoning for selection or rejection. A measure brought to the attention of the Lead Agency should not be left out unless it is infeasible based on its elements.

Finally, when presenting mitigation measures in the DEIR, it is important to note that mitigation should be specific, measurable actions that allow monitoring to ensure their implementation and evaluation of success. A mitigation consisting only of a statement of intention or an unspecified future action may not be adequate pursuant to CEQA.

#### Project Impacts on Agricultural Land

When determining the agricultural value of the land, the value of a property may have been reduced over the years due to inactivity, but it does not mean that there is no longer any agricultural value. The inability to farm the land, rather than the choice not to do so, is what could constitute a reduced agricultural value. The Division recommends the following discussion under the Agricultural Resources section of the Draft EIR:

- Type, amount, and location of farmland (Prime, Unique, and Farmland of Statewide Importance) conversion that may result directly and indirectly from project implementation and growth inducement, respectively.
- Impacts on current and future agricultural operations; e.g., land-use conflicts, increases in land values and taxes, etc.
- Incremental project impacts leading to cumulative impacts on agricultural land. This would include impacts from uses allowed with the proposed solar facility, as well as impacts from past, current, and likely projects in the future.

Ms. Patricia Valenzuela  
July 16, 2010  
Page 3 of 4

Under California Code of Regulations Section 15064.7, impacts on agricultural resources may also be both quantified and qualified by use of established thresholds of significance. As such, the Division has developed a California version of the USDA Land Evaluation and Site Assessment (LESA) Model. The California LESA model is a semi-quantitative rating system for establishing the environmental significance of project-specific impacts on farmland. The model may also be used to rate the relative value of alternative project sites. The LESA Model is available on the Division's website at:

[http://www.consrv.ca.gov/DLRP/gh\\_les.htm](http://www.consrv.ca.gov/DLRP/gh_les.htm)

#### Solar Facility Mitigations and Reclamation Plan

If the solar facility is considered a temporary displacement of agricultural resources, then there should be some assurances that it will be temporary and will be removed in the future. Hence the need for a reclamation plan. The loss of agricultural land (even temporary) represents a reduction in the State's agricultural land resources. The Division has witnessed the negative impacts of non-operational wind power generation facilities and related equipment that have been left to deteriorate on agricultural land. For that reason, the Division offers a variety of permitting conditions the County might use for energy projects on agricultural land:

- Require a reclamation plan suited for solar facilities, based on the principles of the Surface Mining and Reclamation Act (SMARA). As part of this plan, a performance bond or other similar measure may be used.
  - A typical requirement would be for the soil to be restored to the same condition it was in prior to the solar facility's construction. Whatever project-related materials have been brought in, or changes made to the land (i.e. graveling, roads, compaction, equipment), would be removed once the solar facility (or portions of) is no longer active.
- Solar projects are generally considered to be "temporary". The County could require that a new permit must be applied for after a certain period of time. Because this is a new and unprecedented use for agricultural land, this would allow the County more flexibility in determining what conditional uses or conditions may be most appropriate in the longer term.
- Require permanent agricultural conservation easements on land of at least equal quality and size as partial compensation for the direct loss of agricultural land.
  - Conservation easements will protect a portion of those remaining agricultural land resources and lessen project impacts in accordance with California Environmental Quality Act (CEQA) Guideline §15370. The Department highlights this measure because of its acceptance and use by lead agencies as an appropriate mitigation measure under CEQA and because it follows an established rationale similar to that of wildlife habitat mitigation.

Mitigation via agricultural conservation easements can be implemented by at least two alternative approaches: the outright purchase of easements or the donation of mitigation fees to a local, regional or statewide organization or agency whose purpose includes the acquisition and stewardship of agricultural conservation easements. The proposed conversion of agricultural land should be deemed an impact of at least regional significance. Hence, the search for replacement lands can be conducted regionally or statewide, and need not be limited strictly to lands within the project's surrounding area. Mitigation for the loss of Prime Farmland

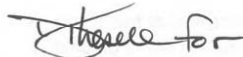
Ms. Patricia Valenzuela  
July 16, 2010  
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is suggested at a 2:1 ratio due to its importance in the State of California. The use of conservation easements is only one form of mitigation, and any other feasible mitigation measures should also be considered. Mitigations for temporary solar projects can also be flexible, especially in cases where there is a reclamation plan in place that requires the land to be returned to an agricultural state.

The Department also has available a listing of approximately 30 "conservation tools" that have been used to conserve or mitigate project impacts on agricultural land. This compilation report may be requested from the Division at the address or phone number at the conclusion of this letter. Of course, the use of conservation easements is only one form of mitigation that should be considered. Any other feasible mitigation measures should also be considered.

Thank you for giving us the opportunity to comment on the Notice of Preparation for a DEIR for Imperial Solar Energy Center South project. Please provide this Department with a copy of the DEIR, the date of any hearings for this particular action, and any staff reports pertaining to it. If you have questions regarding our comments, or require technical assistance or information on agricultural land conservation, please contact Meri Meraz, Environmental Planner, at 801 K Street, MS 18-01, Sacramento, California 95814, or by phone at (916) 445-9411.

Sincerely,



Dan Otis  
Program Manager  
Williamson Act Program

cc: State Clearinghouse

Imperial County Farm Bureau  
1000 Broadway  
El Centro, CA 92243  
FAX (760) 352-0232

# EXHIBIT 3

Connie L. Valenzuela  
Agricultural Commissioner  
Sealer of Weights and Measures

Linda S. Evans  
Assistant Agricultural Commissioner/  
Asst. Sealer of Weights and Measures



852 Broadway  
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(760) 482-4314  
Fax: (760) 353-9420

E-mail: agcom@co.imperial.ca.us

February 25, 2011

Armando G. Villa  
Planning & Development Services Director  
801 Main Street  
El Centro, CA 92243

RE: CUP 10-0035 & Minutenergy Renewables, LLC, Calipatria Solar Farm II

The project entails the construction, development and operation of a ground mounted 50 MW Photovoltaic solar energy facility. The proposed solar plant will convert approximately 563 acres of privately owned farmland to non-farm use. The project will be located approximately one mile north of Calipatria, California in Imperial County and is bounded by Blair Road to the east, E. Peterson Road to the north, W. Lindsey Road to the south, and the Southern Pacific Railroad to the west. Agricultural lands lie to the immediate north, south, east and west of the project. The Calipatria State Prison is located to the northeast of the project site. An algae farm (Earthrise Farms) is located adjacent to the northwest corner of the site across the Southern Pacific Railroad tracks.

The California Department of Conservation has classified the property as Farmland of Statewide Importance. This farmland supports crops that contribute directly to Imperial County's \$1.45 billion gross agricultural production value. Temporary or permanent removal of any farmland out of production would have a direct negative impact on employment, income, sales and tax revenue.

During the construction phase and perhaps afterwards depending on whether this project will have some level of permanent staffing, neighboring agricultural operations would be impacted and restricted in their ability to use some pesticides or some pesticide application methods. Also, any complaints received by the construction site regarding nearby agricultural operations would need to be investigated; costs incurred to conduct investigations into incidents and complaints are not directly reimbursed by the state.

Since the project will be surrounded by farmland it will be exposed to higher than normal levels of dust and potential pesticide drift which will likely increase the cleaning requirements of the panels.

The land under the solar panels could harbor pests including noxious weeds, plant diseases, insects, and vertebrates which are detrimental to agriculture and could cause damage to adjacent fields and crops. This could be a problem if a cover crop is used for dust control and needs to be addressed or mitigated. In addition to direct crop damage caused by pests, if these solar panels are located next to or near any produce or organic fields, they could create food safety issues (i.e. E. coli in spinach caused by animal droppings getting into the field). Many produce growers today have to comply with Leafy Greens Agreements to ensure product safety.

Sincerely,

Connie L. Valenzuela  
Agricultural Commissioner  
Sealer of Weights and Measures

RECEIVED

FEB 25 2011

IMPERIAL COUNTY  
PLANNING & DEVELOPMENT SERVICES

EEC ORIGINAL PKG

# EXHIBIT 4



## Attention Deficit Hyperactivity Disorder and Dirty Electricity

### To the Editor:

In February 2010, while studying a cancer cluster in teachers at a California elementary school, a fourth-grade teacher complained that her students were hyperactive and unteachable. The classroom levels of high-frequency voltage transients (dirty electricity) in the radio frequencies (RF) between 4 and 100 kHz measured in the outlets of her classroom with a Graham/Stetzer Microsurge meter were very high. Dirty electricity is a term coined by the electrical utilities to describe electrical pollution contaminating the 60 Hz electricity on the electrical grid. A cell phone tower on campus a few feet from this classroom and unshielded fluorescent lights both contributed to the electrical pollution in this room. Cell tower transmitters, like most modern electrical equipment, operate on direct current. The electrical current brought to the tower is alternating current that needs to be changed to direct current. This is done by a switching power supply. These devices interrupt the alternating current and are the likely major source of the dirty electricity in the classroom.

On a Friday afternoon after school, I filtered the 5 outlets in this room with Graham/Stetzer plug-in capacitive filters, reducing the measured

dirty electricity in the room wiring from more than 5000 Graham/Stetzer units to less than 50 units. With no change in either the lighting or the cell tower radiation, the teacher reported an immediate dramatic improvement in the behavior of her students in the following week. They were calmer, paid more attention, and were teachable all week except for Wednesday when they spent part of the day in the library.

In his 1973 book, *Health and Light*,<sup>1</sup> John N. Ott described a 1973 study of 4 first-grade classrooms in a windowless Sarasota, Florida school. Two of the rooms had standard white fluorescent lighting and the other two had full-spectrum fluorescent lighting with a grounded aluminum wire screen to remove the RF radiation produced by fluorescent bulbs and ballasts. Concealed time-lapse cameras recorded student behavior in classrooms for 4 months.<sup>2</sup> In the unshielded rooms, the first graders developed, "... nervous fatigue, irritability, lapses of attention, and hyperactive behavior." "... students could be observed fidgeting to an extreme degree, leaping from their seats, flailing their arms, and paying little attention to their teachers." In the RF-shielded rooms, "Behavior was entirely different. Youngsters were calmer and far more interested in their work."

The Old Order Amish live without electricity. A pediatric group prac-

tice in Jasper, Indiana, which cares for more than 800 Amish families has not diagnosed a single child with attention deficit hyperactivity disorder (ADHD).<sup>3</sup> Dozens of cases of childhood ADHD have been "cured" with no further need for drugs by simply changing their electrical environments (Stetzer D, personal communication [www.StetzerElectric.com]).

Before children are treated with drugs for ADHD, the dirty electricity levels in their homes and school environments should first be examined and reduced if needed.

I present the epidemiologic evidence linking dirty electricity to the other diseases of civilization in a recent book.<sup>4,5</sup>

Disclosure: The authors declare no conflict of interest.

**Samuel Milham, MD, MPH**  
Washington State Health Department  
Tumwater, WA

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IN PRESS: JOURNAL OF DEVELOPMENTAL AND BEHAVIORAL PEDIATRICS

# EXHIBIT 5

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## Historical evidence that electrification caused the 20th century epidemic of “diseases of civilization”<sup>☆</sup>

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### SUMMARY

The slow spread of residential electrification in the US in the first half of the 20th century from urban to rural areas resulted by 1940 in two large populations; urban populations, with nearly complete electrification and rural populations exposed to varying levels of electrification depending on the progress of electrification in their state. It took until 1956 for US farms to reach urban and rural non-farm electrification levels. Both populations were covered by the US vital registration system. US vital statistics tabulations and census records for 1920–1960, and historical US vital statistics documents were examined. Residential electrification data was available in the US census of population for 1930, 1940 and 1950. Crude urban and rural death rates were calculated, and death rates by state were correlated with electrification rates by state for urban and rural areas for 1940 white resident deaths. Urban death rates were much higher than rural rates for cardiovascular diseases, malignant diseases, diabetes and suicide in 1940. Rural death rates were significantly correlated with level of residential electric service by state for most causes examined. I hypothesize that the 20th century epidemic of the so called diseases of civilization including cardiovascular disease, cancer and diabetes and suicide was caused by electrification not by lifestyle. A large proportion of these diseases may therefore be preventable.

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### Background

In 2001, Ossiander and I [1] presented evidence that the childhood leukemia mortality peak at ages 2–4 which emerged in the US in the 1930s was correlated with the spread of residential electrification in the first half of the 20th century in the US. While doing the childhood leukemia study, I noticed a strong positive correlation between level of residential electrification and the death rate by state due to some adult cancers in 1930 and 1940 vital statistics. At the time, a plausible electrical exposure agent and a method for its delivery within residences was lacking. However, in 2008 I coauthored a study of a cancer cluster in school teachers at a California middle school [2] which indicated that high frequency voltage transients (also known as dirty electricity), were a potent universal carcinogen with cancer risks over 10.0 and significant dose–response for a number of cancers. They have frequencies between 2 and 100 kHz. These findings are supported by a large cancer incidence study in 200,000 California school employees which showed that the same cancers and others were in excess in California teachers statewide [3]. Power frequency

magnetic fields (60 Hz) measured at the school were low and not related to cancer incidence, while classroom levels of high frequency voltage transients measured at the electrical outlets in the classrooms accurately predicted a teacher's cancer risk. These fields are potentially present in all wires carrying electricity and are an important component of ground currents returning to substations especially in rural areas. This helped explain the fact that professional and office workers, like the school teachers, have high cancer incidence rates. It also explained why indoor workers had higher malignant melanoma rates, why melanoma occurred on part of the body which never are exposed to sunlight, and why melanoma rates are increasing while the amount of sunshine reaching earth is stable or decreasing due to air pollution. A number of very different types of cancer had elevated risk in the La Quinta school study, in the California school employees study, and in other teacher studies. The only other carcinogenic agent which acts like this is ionizing radiation.

Among the many devices which generate the dirty electricity are compact fluorescent light bulbs, halogen lamps, wireless routers, dimmer switches, and other devices using switching power supplies. Any device which interrupts current flow generates dirty electricity. Arcing, sparking and bad electrical connections can also generate the high frequency voltage transients. Except for the dimmer switches, most of these devices did not exist in the first half of the 20th century. However, early electric generating equipment

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and electric motors used commutators, carbon brushes, and split rings, which would inject high frequency voltage transients into the 60 Hz electricity being generated and distributed.

With a newly recognized electrical exposure agent and a means for its delivery, I decided to examine whether residential electrification in the US in the first half of the last century was related to any other causes of death. Most cancers showed increasing mortality in this period, and many are still increasing in incidence in the developed world.

Thomas Edison began electrifying New York City in 1880, but by 1920, only 34.7% of all US dwelling units and 1.6% of farms had electric service (Table 1). By 1940, 78% of all dwelling units and 32% of farms had electric service [4]. This means that in 1940 about three quarters of the US population lived in electrified residences and one quarter did not. By 1940, the US vital registration system was essentially complete, in that all the 48 contiguous United States were included. Most large US cities were electrified by the turn of the century, and by 1940, over 90% of all the residences in the northeastern states and California were electrified. In 1940 almost all urban residents in the US were exposed to electromagnetic fields (EMFs) in their residences and at work, while rural residents were exposed to varying levels of EMFs, depending on the progress of rural electrification in their states. In 1940, only 28% of residences in Mississippi were electrified, and five other southern states had less than 50% of residences electrified (Table 2). Eleven states, mostly in the northeast had residential electrification rates above 90%. In the highly electrified northeastern states and in California, urban and rural residents could have similar levels of EMF exposure, while in states with low levels of residential electrification, there were potentially great differences in EMF exposure between urban and rural residents. It took the first half of the 20th century for these differences to disappear. I examined US mortality records by urban and rural residence by percent of residences with electric service by state.

**Hypothesis**

The diseases of civilization or lifestyle diseases include cardiovascular disease, cancer and diabetes and are thought to be caused by changes in diet, exercise habits, and lifestyle which occur as countries industrialize. I think the critical variable which causes the radical changes in mortality accompanying industrialization is electrification. Beginning in 1979, with the work of Wertheimer and Leeper [5], there has been increasing evidence that some facet of electromagnetic field exposure is associated epidemiologically with an increased incidence of leukemia, certain other cancers and non-cancers like Alzheimer's disease, amyotrophic lateral sclerosis, and suicide. With the exception of a small part of the electromagnetic spectrum from infra red through visible light, ultraviolet light and cosmic rays, the rest of the spectrum is man-made and foreign to human evolutionary experience. I suggest that from

**Table 1**  
Growth of residential electric service US 1920–1956 percent of dwelling units with electric service.

Year	All		Urban and rural non-farm
	Dwellings	Farm	
1920	34.7	1.6	47.4
1925	53.2	3.9	69.4
1930	68.2	10.4	84.8
1935	68.0	12.6	83.9
1940	78.7	32.6	90.8
1945	85.0	48.0	93.0
1950	94.0	77.7	96.6
1956	98.8	95.9	99.2

**Table 2**  
Percent of residences with electric lighting 1930 and 1940 by state.

Code	State	1930	1940
AL	Alabama	33.9	43.3
AZ	Arizona	68.8	70.5
AR	Arkansas	25.3	32.8
CA	California	93.9	96
CO	Colorado	69.6	77.6
CT	Connecticut	95.3	96.5
DE	Delaware	78.4	81.8
FL	Florida	60.9	66.5
GA	Georgia	35.5	46.6
ID	Idaho	64.5	79.1
IL	Illinois	86.1	89.9
IN	Indiana	74.8	84
IA	Iowa	65.6	76.7
KS	Kansas	62	71.5
KY	Kentucky	44.2	54.2
LA	Louisiana	42.2	48.9
ME	Maine	76.1	80.4
MD	Maryland	81.8	85.9
MA	Massachusetts	97.1	97.6
MI	Michigan	84.8	92.1
MN	Minnesota	65.9	75.8
MS	Mississippi	19.4	28.3
MO	Missouri	65.5	70.6
MT	Montana	58.2	70.7
NE	Nebraska	61	70.5
NV	Nevada	76.2	80.8
NH	New Hampshire	84.9	87
NJ	New Jersey	95.8	96.6
NM	New Mexico	39.8	49.2
NY	New York	94.5	96.4
NC	North Carolina	40.8	54.4
ND	North Dakota	41.6	53.8
OH	Ohio	85.2	90.6
OK	Oklahoma	45.3	55.1
OR	Oregon	79.5	85.8
PA	Pennsylvania	89.5	92.3
RI	Rhode Island	97.3	97.7
SC	South Carolina	34.3	46.2
SD	South Dakota	44.4	56.6
TN	Tennessee	42	50.9
TX	Texas	*	59
UT	Utah	88.4	93.9
V	Vermont	71.9	80.2
VA	Virginia	50.5	60.6
WA	Washington	86.3	90.9
WV	West Virginia	63.4	69.1
WI	Wisconsin	74.5	83.9
WY	Wyoming	60	70.9

\*No data.

the time that Thomas Edison started his direct current electrical distribution system in the 1880s in New York City until now, when most of the world is electrified, the electricity carried high frequency voltage transients which caused and continue to cause what are considered to be the normal diseases of civilization. Even today, many of these diseases are absent or have very low incidence in places without electricity.

**Evaluation of the hypothesis**

To evaluate the hypothesis, I examined mortality in US populations with and without residential electrification. Vital statistics tabulations of deaths [6], US census records for 1920–1970 [7], and historical US documents [8,9] were examined in hard copy or downloaded from the internet. The same state residential electrification data used in the childhood leukemia study [1] was used in this study. Crude death rates were calculated by dividing number of deaths by population at risk, and death rates by state were then correlated with electrification rates by state using downloaded software [10]. Time trends of death rates for selected causes

of death by state were examined. Most rates were calculated by state for urban and rural residence for whites only in 1940 deaths, since complete racial data was available by urban/rural residence by state for only 13 of 48 states. Data was available for 48 states in the 1940 mortality tabulations. District of Columbia was excluded because it was primarily an urban population. Excel graphing software [11] and "Create a Graph" [12] software was used.

I had hoped to further test this hypothesis by studying mortality in individual US farms with and without electrification, when the 1930 US census 70 year quarantine expired in 2000. Unfortunately, the 1930 US farm census schedules had been destroyed.

**Findings**

Rural residential electrification did not reach urban levels until 1956 (Table 1). Table 2 shows the level of residential electrification for each state for 1930 and 1940. In 1930 and 1940 only 9.5% and 13%, respectively, of all generated electricity was used in residences. Most electricity was used in commercial and industrial applications.

Figs. 1–4 were copied and scanned from "Vital statistics rates in the United States 1940–1960", by Robert Grove Ph.D. and Alice M. Henzel. This volume was published in 1968. Fig. 1 shows a gradual decline in the all causes death rate from 1900 to 1960 except for a spike caused by the 1918 influenza pandemic. Death rates due to tuberculosis, typhoid fever, diphtheria, dysentery, influenza and pneumonia and measles all fell sharply in this period, and account for most of the decline in the all causes death rate. Figs. 2–4 show that in the same time period when the all causes death rate was declining, all malignant neoplasms (Fig. 2), cardiovascular diseases (Fig. 3), and diabetes (Fig. 4) all had gradually increasing death rates. In 1900, heart disease and cancer were 4th and 8th in a list of 10 leading causes of death. By 1940 heart disease had risen to first and cancer to second place, and have maintained that position ever since. Table 3 shows that for all major causes of death examined, except motor vehicle accidents, there was a sizable urban excess in 1940 deaths. The authors of the extensive 69 page introduction to the 1930 mortality statistics volume noted that the cancer rates for cities were 58.2% higher than those for rural areas. They speculated that some of this excess might have been due to rural residents dying in urban hospitals. In 1940, deaths by place of residence and occurrence are presented in separate volumes. In 1940 only 2.1% of all deaths occurred to residents of one state dying in another state. Most non-resident deaths were residents of other areas of the same state. Table 4 presents correlation coefficients for the relationship between death rates by urban rural areas of each state and the percent of residences in each state with

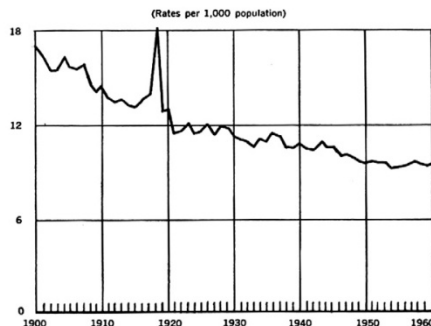


Fig. 1. Death rates: death registration states, 1900–32, and United States, 1933–60.

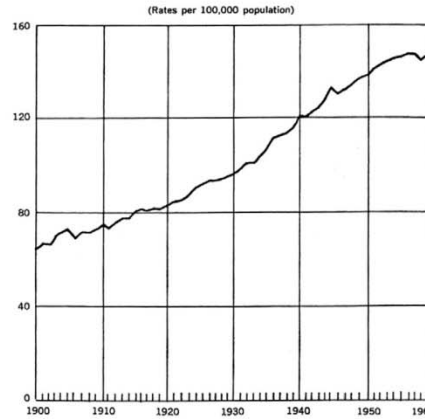


Fig. 2. Death rates for malignant neoplasms: death registration states, 1900–32, and United States, 1933–60.

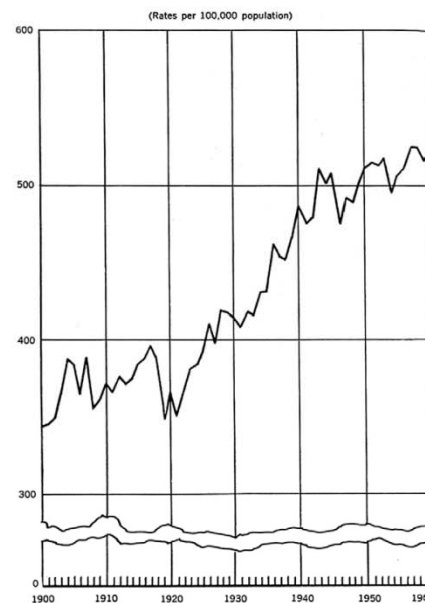


Fig. 3. Death rates for major cardiovascular renal diseases: death registration states, 1900–32, and United States, 1933–60.

electric service. In 1940 urban and rural residence information was not available for individual cancers as it was in 1930, but death rates for each cancer were available by state. They were used to calculate correlations between electric service by state and respiratory cancer, breast cancer and leukemia mortality.

*All causes of death*

There was no correlation between residential electrification and total death rate for urban areas, but there was a significant

correlation for rural areas ( $r = 0.659, p = <0.0001$ ). Fig. 5 shows the 1940 resident white death rates for urban and rural areas of states

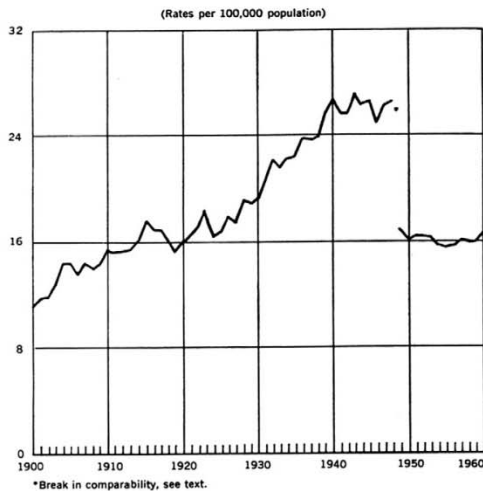


Fig. 4. Death rates for diabetes mellitus: death registration states, 1900–32, and United States, 1933–60.

having greater than 96% of residences electrified and states having less than 50% of residences electrified. In the highly electrified states, urban and rural death rates were similar, but in low electrification states, the urban death rates were systematically higher than the rural death rates. The urban death rates were similar in both high and low electrification states.

All malignant neoplasms

In 1940, the urban total cancer rate was 49.2% higher than the rural rate. Both urban and rural cancer deaths rates were significantly correlated with residential electrification. Fig. 6 shows the 1940 resident white total cancer rates for urban and rural areas of states having greater than 96% of residences electrified and states having less than 50% of residences electrified. Four of the five high electrification states had similar urban and rural total cancer rates, while all the low electrification states had urban rates about twice as high as rural rates. Both urban and rural total cancer rates were lower in low electrification states than in high electrification states. Fig. 7 shows the time trend of the total cancer rate between 1920 and 1960 for Massachusetts (1940 electrification rate = 97.6%) and Louisiana (1940 electrification rate = 48.9%). The Massachusetts cancer rate was about twice that of Louisiana between 1920 and 1945. The Massachusetts rate leveled off in 1945, but the Louisiana rate increased steadily between 1920 and 1960. A declining urban–rural gradient for cancer is still evident in 1980–1990 US cancer incidence data [13]. Swedish investigators [14] have reported increasing cancer mortality and incidence time trend breaks in the latter half of the 20th century.

Table 3  
1940 US white resident crude death rates per 100,000 by urban/rural residence.

Cause of death	ICD No. <sup>a</sup>	Urban rate	Rural rate	(%) Urban excess
All	1-200	1124.1	929.5	20.9
All cancers	47-55	145.8	97.7	49.2
Coronary disease	94	92.4	69.1	33.7
Other diseases of heart	90b,91,92a,d,e 93a,b,d,e 95a,c	217.0	162.8	33.3
Diabetes	61	33.2	20.0	66.0
Suicide	163-164	17.1	13.2	29.5
Motor vehicle accidents	170	26.6	26.3	1.1

<sup>a</sup> 1938 Revision International classification of disease.

Table 4  
Correlation coefficients (r) 1940 crude US death rates by state by electrification for white resident deaths.

Cause	ICD No. <sup>A</sup>	Residence	r	r <sup>2</sup>	p One tailed	Slope	Y intercept
All causes	1-200	Urban	0.083	0.007	0.285	0.007	11.114
		Rural	0.659	0.434	<0.0001	0.070	4.185
All cancers	45-55	Urban	0.667	0.445	<0.0001	0.883	75.970
		Rural	0.758	0.575	<0.0001	1.502	-10.040
Respiratory cancer <sup>B</sup>	47	State	0.611	0.374	<0.0001	0.071	1.020
Breast cancer female	50	State	0.794	0.630	<0.0001	0.170	-1.506
Diabetes	61	Urban	0.666	0.444	<0.0001	0.278	8.168
		Rural	0.693	0.480	<0.0001	0.366	-6.184
Leukemia <sup>B</sup>	72a	State	0.375	0.140	0.0042	0.021	1.980
Coronary artery Disease	94	Urban	0.400	0.160	0.0024	0.494	61.570
		Rural	0.781	0.610	<0.0001	1.252	25.319
Other diseases of the heart	90b, 91	Urban	0.449	0.202	0.0006	1.236	100.35
	92a,d,e	Rural	0.799	0.639	0.0001	2.887	-48.989
	93a,b,d,e						
	95a,c						
Suicide	163-4	Urban	0.077	0.006	0.2993	0.028	16.235
		Rural	0.729	0.532	<0.0001	0.181	0.299
Motor vehicle Accidents	170	Urban	-0.254	0.064	0.0408	-0.171	44.572
		Rural	0.451	0.203	0.0006	0.195	12.230

<sup>A</sup> International classification of diseases 1938 revision.

<sup>B</sup> Age adjusted death rate both sexes.

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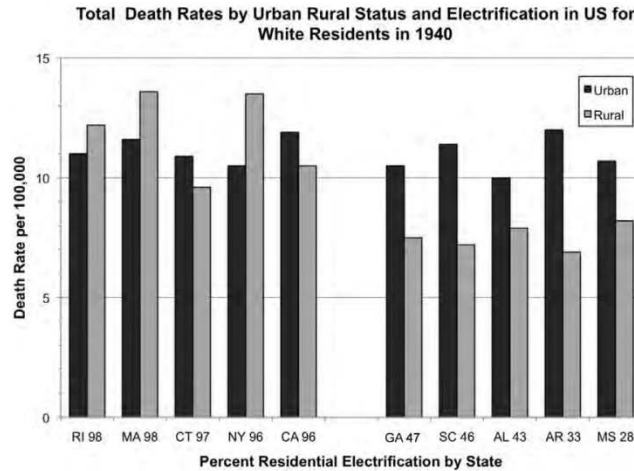


Fig. 5. All causes death rates by urban rural status and electrification in the US for white residents in 1940.

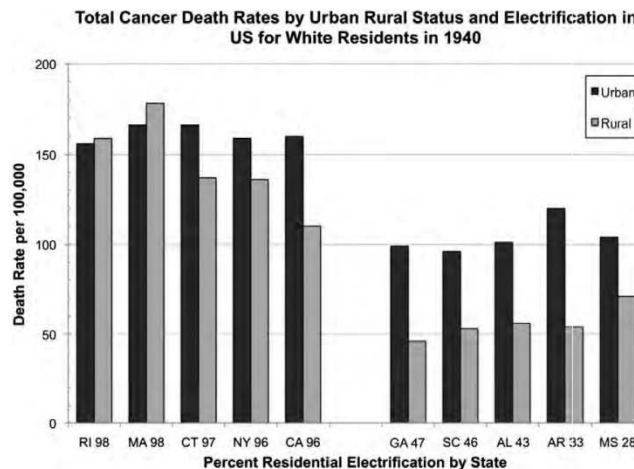


Fig. 6. Total cancer death rates by urban rural status and electrification in the US for white residents in 1940.

*Respiratory cancer*

No urban rural information was available for respiratory cancer, but the correlation between residential electrification and state death rates was  $r = 0.611$ ;  $p < 0.0001$ . This cancer is etiologically strongly related to cigarette smoking, so the correlation with electrification is surprising. A large electrical utility worker cohort study found a high respiratory cancer incidence related to high frequency EMF transient exposure independent of cigarette smoking with a significant dose–response relationship [15].

*Breast cancer*

Although urban/rural information was not available for breast cancer, the 1940 state breast cancer death rates have a correlation

of  $r = 0.794$ ;  $p < 0.0001$  with residential electrification. Fig. 8 shows the typical time trend of breast cancer death rates for a state with a high level of electrification (96%) and one with a low level of electrification (<50) in 1940. The California breast cancer death rate increased from 1920 to 1940, and then gradually decreased until 1960. The Tennessee breast cancer death rate is less than half of the California rate in 1920 and continues a steady increase until 1960.

*Diabetes*

This cause has a 66% urban excess. In spite of this, the correlation coefficients for urban and rural areas are similar at  $r = 0.66$ ;  $p < 0.0001$ . There is some animal and human evidence that EMFs can effect insulin production and blood glucose levels [16]. Fig. 9



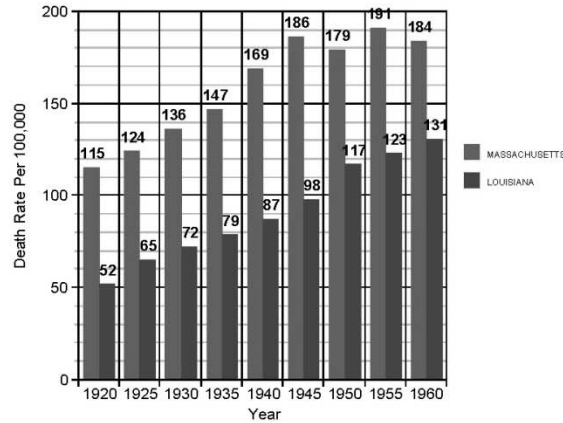


Fig. 7. US white resident total cancer death rates for Massachusetts (97.6% elect.) and Louisiana (48.9% elect.) by year.

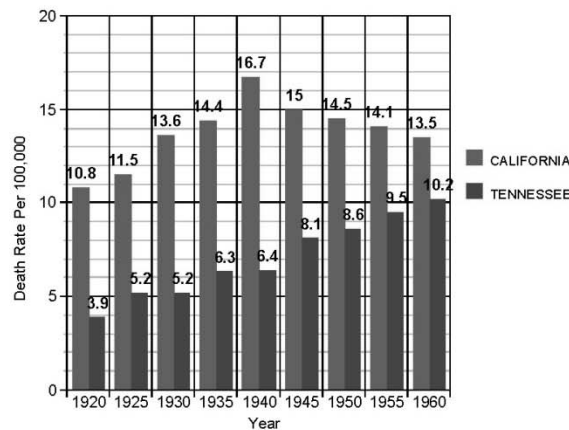


Fig. 8. US white resident breast cancer death rates for California (96% elect.) and Tennessee (50% elect.) by year.

shows that in states with low levels of electrification in 1940, the urban diabetes death rates are consistently higher than the rural rates, but are always lower than the urban and rural rates in the high electrification states.

*Leukemia*

Since the childhood leukemia age peak is strongly associated with residential electrification, it was interesting that the all leukemia death rate correlation was  $r = 0.375$ ;  $p = 0.0042$ . Most of these deaths are in adults and are of different types of leukemia. A study of amateur radio operators showed a selective excess only of acute myelogenous leukemia [17].

*Coronary artery disease and other heart disease*

These two cause groups had the same percentage urban excess (33%), and very similar patterns of urban and rural correlation

coefficients with residential electrification. The urban correlations were about  $r = 0.4$  and rural deaths had correlations of 0.78 and 0.79, respectively. Fig. 10 shows the 1940 resident white coronary artery disease death rates for urban and rural areas of states having greater than 96% of residences electrified and states having less than 50% of residences electrified. Four of the five high electrification states had similar urban and rural total cancer rates, while all the low electrification states had urban rates about twice as high as rural rates. Urban and rural coronary artery death rates were lower in low electrification states than in high electrification states.

*Suicide*

The urban suicide death rate is about 30% higher than the rural rate. The urban suicide rate is not correlated with residential electrification ( $r = 0.077$ ;  $p = 0.299$ ), but the rural death rate is correlated with 1940 state residential electrification levels ( $r = 0.729$ ;  $p < 0.0001$ ). Fig. 11 shows the 1940 resident white suicide for

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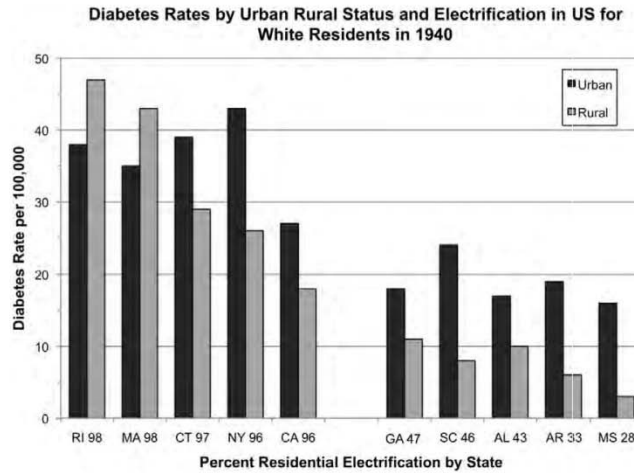


Fig. 9. Total diabetes rates by urban rural status and electrification in the US for white residents in 1940.

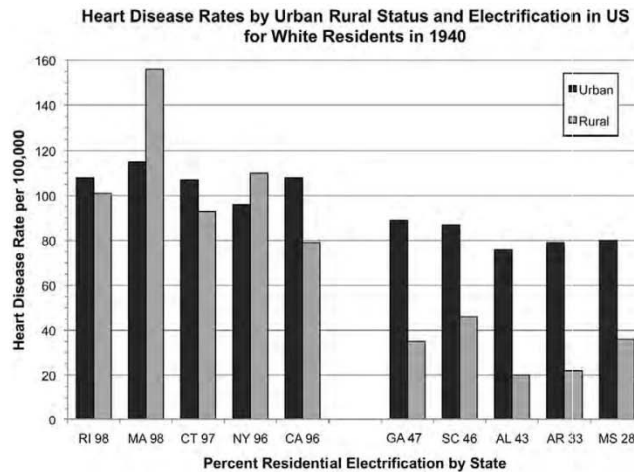


Fig. 10. Total heart disease rates by urban rural status and electrification in the US for white residents in 1940.

urban and rural areas of states having greater than 96% of residences electrified and states having less than 50% of residences electrified. In four of five high electrification states, rural suicide rates are higher than the urban rates. In all of the low electrification states, the urban rate is higher. The rural rates in the high electrification states are higher than the rural rates in the low electrification states. Fig. 12 shows X Y scatter plots for urban and rural suicide by electrification for 48 states. Suicide has been associated with both residential [18] and occupational [19] EMF exposure. Suicide is probably the visible peak of the clinical depression iceberg.

*Motor vehicle accidents*

Although the mortality rates are similar in urban and rural areas, the correlations with residential electrification levels are dif-

ferent. There is a slight negative correlation ( $r = -0.254$ ) in urban areas and a positive correlation ( $r = 0.451$ ) in rural areas. Since motor vehicle fatality is related to access to a vehicle and to speed. It may be that in the larger cities it was difficult to go fast enough for a fatal accident, and in rural areas especially on farms, a farmer who could afford electrification could also afford a car.

**Discussion**

When Edison and Tesla opened the Pandora's box of electrification in the 1880s, the US vital registration system was primitive at best, and infectious disease death rates were falling rapidly. City residents had higher mortality rates and shorter life expectancy than rural residents [8]. Rural white males in 1900 had an expectation of life at birth of over 10 years longer than urban residents.

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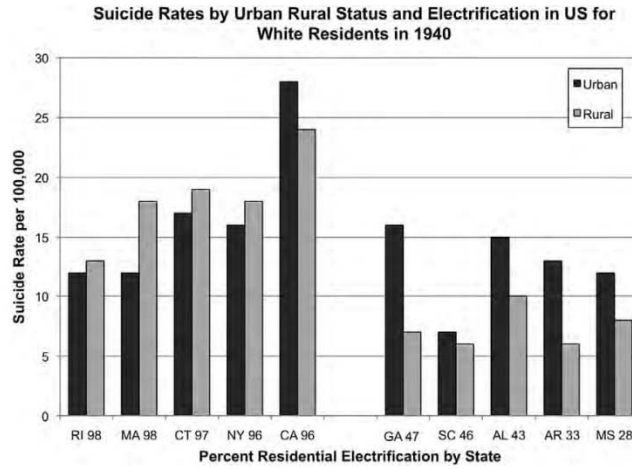


Fig. 11. Total suicide death rates by urban rural status and electrification in the US for white residents in 1940.

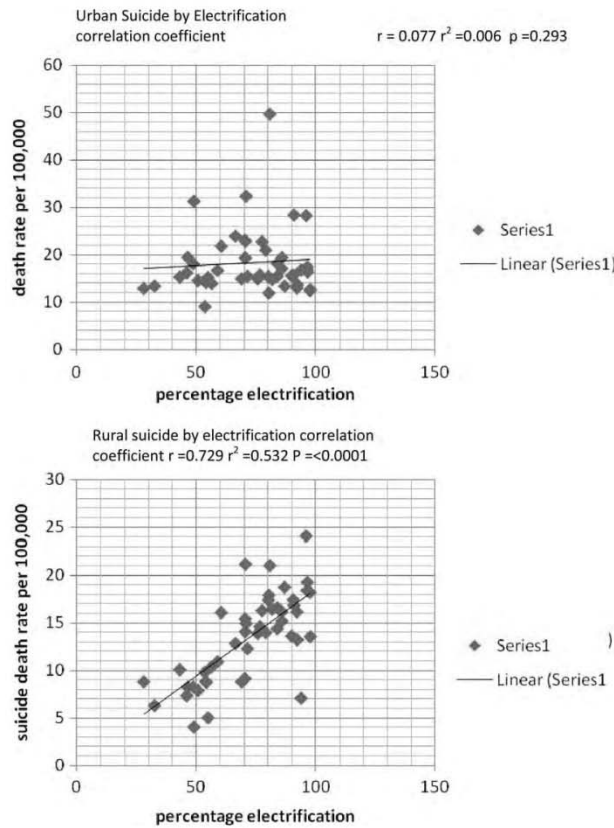


Fig. 12. 1940 US white resident urban rural suicide death rates by state and electrification.

Although the authors of the 1930 US vital statistics report noted a 58.2% cancer mortality excess in urban areas, it raised no red flags. The census bureau residential electrification data was obviously not linked to the mortality data. Epidemiologists in that era were still concerned with the communicable diseases.

Court Brown and Doll reported [20] the appearance of the childhood leukemia age peak in 1961, forty years after the US vital statistics mortality data on which it was based was available. I reported a cluster of childhood leukemia [21] a decade after it occurred, only because I looked for it. Real time or periodic analysis of national or regional vital statistics data is still only rarely done in the US.

The real surprise in this data set is that cardiovascular disease, diabetes and suicide, as well as cancer seem to be strongly related to level of residential electrification. A community-based epidemiologic study of urban rural differences in coronary heart disease and its risk factors was carried out in the mid 1980s in New Delhi, India and in a rural area 50 km away [22]. The prevalence of coronary heart disease was three times higher in the urban residents, despite the fact that the rural residents smoked more and had higher total caloric and saturated fat intakes. Most cardiovascular disease risk factors were two to three times more common in the urban residents. Rural electrification projects are still being carried out in parts of the rural area which was studied.

It seems unbelievable that mortality differences of this magnitude could go unexplained for over 70 years after they were first reported and 40 years after they were noticed. I think that in the early part of the 20th century nobody was looking for answers. By the time EMF epidemiology got started in 1979 the entire population was exposed to EMFs. Cohort studies were therefore using EMF-exposed population statistics to compute expected values, and case-control studies were comparing more exposed cases to less exposed controls. The mortality from lung cancer in two pack a day smokers is over 20 times that of non-smokers but only three times that of one pack a day smokers. After 1956, the EMF equivalent of a non-smoker ceased to exist in the US. An exception to this is the Amish who live without electricity. Like rural US residents in the 1940s, Amish males in the 1970s had very low cancer and cardiovascular disease mortality rates [23].

If this hypothesis and findings outlined here are even partially true, the explosive recent increase in radiofrequency radiation, and high frequency voltage transients sources, especially in urban areas from cell phones and towers, terrestrial antennas, wi-fi and wi-max systems, broadband internet over power lines, and personal electronic equipment, suggests that like the 20th century EMF epidemic, we may already have a 21st century epidemic of morbidity and mortality underway caused by electromagnetic fields. The good news is that many of these diseases may be preventable by environmental manipulation, if society chooses to.

#### Conflicts of interest statement

None declared.

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# EXHIBIT 6

## A New Electromagnetic Exposure Metric: High Frequency Voltage Transients Associated With Increased Cancer Incidence in Teachers in a California School

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**Background** In 2003 the teachers at La Quinta, California middle school complained that they had more cancers than would be expected. A consultant for the school district denied that there was a problem.

**Objectives** To investigate the cancer incidence in the teachers, and its cause.

**Method** We conducted a retrospective study of cancer incidence in the teachers' cohort in relationship to the school's electrical environment.

**Results** Sixteen school teachers in a cohort of 137 teachers hired in 1988 through 2005 were diagnosed with 18 cancers. The observed to expected (O/E) risk ratio for all cancers was 2.78 ( $P = 0.000098$ ), while the O/E risk ratio for malignant melanoma was 9.8 ( $P = 0.0008$ ). Thyroid cancer had a risk ratio of 13.3 ( $P = 0.0098$ ), and uterine cancer had a risk ratio of 9.2 ( $P = 0.019$ ). Sixty Hertz magnetic fields showed no association with cancer incidence. A new exposure metric, high frequency voltage transients, did show a positive correlation to cancer incidence. A cohort cancer incidence analysis of the teacher population showed a positive trend ( $P = 7.1 \times 10^{-10}$ ) of increasing cancer risk with increasing cumulative exposure to high frequency voltage transients on the classroom's electrical wiring measured with a Graham/Stetzer (G/S) meter. The attributable risk of cancer associated with this exposure was 64%. A single year of employment at this school increased a teacher's cancer risk by 21%.

**Conclusion** The cancer incidence in the teachers at this school is unusually high and is strongly associated with high frequency voltage transients, which may be a universal carcinogen, similar to ionizing radiation. Am. J. Ind. Med. 2008. © 2008 Wiley-Liss, Inc.

**KEY WORDS:** high frequency voltage transients; electricity; dirty power; cancer; school teachers; carcinogen

Abbreviations: EMF, electromagnetic fields; O, observed cases; E, expected cases; O/E, risk ratio; p, probability; Hz, Hertz or cycles per second; OSHA, Occupational Safety and Health Administration; OCMAP, occupational mortality analysis program; AM, amplitude modulation; GS units, Graham/Stetzer units; G/S meter, Graham/Stetzer meter; MS II, Microsurge II meter; mG, milligauss; EKG, electrocardiogram; LQMS, La Quinta Middle School.

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### BACKGROUND

Since the 1979 Wertheimer–Leeper study [Wertheimer and Leeper, 1979] there has been concern that exposure to power frequency (50/60 Hz) EMFs, especially magnetic fields, may contribute to adverse health effects including cancer. Until now, the most commonly used exposure metric has been the time-weighted average of the power-frequency magnetic field. However, the low risk ratios in most studies suggest that magnetic fields might be a surrogate for a more important metric. In this paper we present evidence that a

new exposure metric, high frequency voltage transients existing on electrical power wiring, is an important predictor of cancer incidence in an exposed population.

The new metric, GS units, used in this investigation is measured with a Graham/Stetzer meter (G/S meter) also known as a Microsurge II meter (MS II meter), which is plugged into electric outlets [Graham, 2005]. This meter displays the average rate of change of these high frequency voltage transients that exist everywhere on electric power wiring. High frequency voltage transients found on electrical wiring both inside and outside of buildings are caused by an interruption of electrical current flow. The electrical utility industry has referred to these transients as “dirty power.”

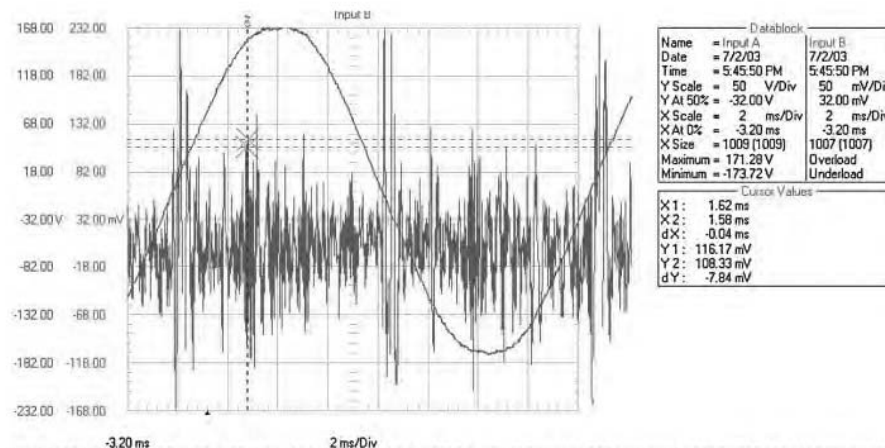
There are many sources of “dirty power” in today’s electrical equipment. Examples of electrical equipment designed to operate with interrupted current flow are light dimmer switches that interrupt the current twice per cycle (120 times/s), power saving compact fluorescent lights that interrupt the current at least 20,000 times/s, halogen lamps, electronic transformers and most electronic equipment manufactured since the mid-1980s that use switching power supplies. Dirty power generated by electrical equipment in a building is distributed throughout the building on the electric wiring. Dirty power generated outside the building enters the building on electric wiring and through ground rods and

conductive plumbing, while within buildings, it is usually the result of interrupted current generated by electrical appliances and equipment.

Each interruption of current flow results in a voltage spike described by the equation  $V = L \times di/dt$ , where V is the voltage, L is the inductance of the electrical wiring circuit and di/dt is the rate of change of the interrupted current. The voltage spike decays in an oscillatory manner. The oscillation frequency is the resonant frequency of the electrical circuit. The G/S meter measures the average magnitude of the rate of change of voltage as a function of time (dV/dT). This preferentially measures the higher frequency transients. The measurements of dV/dT read by the meter are defined as GS (Graham/Stetzer) units.

The bandwidth of the G/S meter is in the frequency range of these decaying oscillations. Figure 1 shows a two-channel oscilloscope display. One channel displays the 60 Hz voltage on an electrical outlet while the other channel with a 10 kHz hi-pass filter between the oscilloscope and the electrical outlet, displays the high frequency voltage transients on the same electrical outlet [Havas and Stetzer, 2004, reproduced with permission].

Although no other published studies have measured high frequency voltage transients and risk of cancer, one study of electric utility workers exposed to transients from pulsed



THE WAVEFORM WAS COLLECTED IN ROOM 114 AT THE ELGIN/MILLVILLE MN HIGH SCHOOL. CHANNEL 1 WAS CONNECTED TO THE 120 VAC UTILITY SUPPLIED POWER RECEPTACLE. CHANNEL 2 WAS CONNECTED TO THE SAME POTENTIAL, EXCEPT THROUGH THE GRAHAM UBIQUITOUS FILTER. (REMOVES THE 60 HERTZ) THE AREA BETWEEN THE CURSORS REPRESENTS A FREQUENCY OF 25 KILO HERTZ. A TEACHER WHO PREVIOUSLY OCCUPIED THE ROOM DIED OF BRAIN TUMORS AND THE TEACHER IN THE ADJOINING ROOM DIED OF LUEKEMIA.

**FIGURE 1.** Oscilloscope display of dirty power: 60 Hz electrical power (channel 1) with concurrent high frequency voltage transients (channel 2). A 10 kHz hi-pass filter was used on channel 2 in order to filter out the 60 Hz voltage and its harmonics. [Color figure can be viewed in the online issue, which is available at [www.interscience.wiley.com](http://www.interscience.wiley.com).]

electromagnetic fields found an increased incidence of lung cancer among exposed workers [Armstrong et al., 1994].

## INTRODUCTION

In February 2004, a Palm Springs, California newspaper, *The Desert Sun*, printed an article titled, "Specialist discounts cancer cluster at school," in which a local tumor registry epidemiologist claimed that there was no cancer cluster or increased cancer incidence at the school [Perrault, 2004]. An Internet search revealed that the teacher population at La Quinta Middle School (LQMS) was too small to generate the 11 teachers with cancer who were reported in the article. The school was opened in 1988 with 20 teachers hired that year. For the first 2 years, the school operated in three temporary buildings, one of which remains. In 1990, a newly constructed school opened. In 2003, the teachers complained to school district management that they believed that they had too many cancers. Repeated requests to the school administration for physical access to the school and for teachers' information were denied. We contacted the teachers, and with their help, the cancers in the group were characterized. One teacher suggested using yearbooks to develop population-at-risk counts for calculating expected cancers. We were anxious to assess the electrical environment at the school, since elevated power frequency magnetic field exposure with a positive correlation between duration of exposure and cancer incidence had been reported in first floor office workers who worked in strong magnetic fields above three basement-mounted 12,000 V transformers [Milham, 1996]. We also wanted to use a new electrical measurement tool, the Graham/Stetzer meter, which measures high frequency voltage transients.

The Graham/Stetzer Microsurge II meter measures the average rate of change of the transients in Graham/Stetzer units (GS units). Anecdotal reports had linked dirty power exposure with a number of illnesses [Havas and Stetzer, 2004]. We decided to investigate whether power frequency magnetic field exposure or dirty power exposure could explain the cancer increase in the school teachers.

## METHODS

After the school administration (Desert Sands Unified School District) had refused a number of requests to assist in helping us evaluate the cancers reported by the teachers, we were invited by a teacher to visit the school after hours to make magnetic field and dirty power measurements. During that visit, we noted that, with the exception of one classroom near the electrical service room, the classroom magnetic field levels were uniformly low, but the dirty power levels were very high, giving many overload readings. When we reported this to Dr. Doris Wilson, then the superintendent of schools (retired December, 2007), one of us (SM) was threatened

with prosecution for "unlawful.. trespass," and the teacher who had invited us into the school received a letter of reprimand. The teachers then filed a California OSHA complaint which ultimately led to a thorough measurement of magnetic fields and dirty power levels at the school by the California Department of Health Services which provided the exposure data for this study. They also provided comparison dirty power data from residences and an office building, and expedited tumor registry confirmation of cancer cases.

Classrooms were measured at different times using 3 meters: an FW Bell model 4080 tri-axial Gaussmeter, a Dexsil 310 Gaussmeter, and a Graham-Stetzer (G/S) meter. The Bell meter measures magnetic fields between 25 and 1,000 Hz. The Dexsil meter measures magnetic fields between 30 and 300 Hz. The G/S meter measures the average rate of change of the high frequency voltage transients between 4 and 150 KHz.

All measurements of high frequency voltage transients were made with the G/S meter. This meter was plugged into outlets, and a liquid crystal display was read. All measurements reported were in GS units. The average value was reported where more than one measurement was made in a classroom.

We measured seven classrooms in February 2005 using the Bell meter and the G/S meter. Later in 2005, the teachers measured 37 rooms using the same meters. On June 8, 2006, electrical consultants for the school district and the California Department of Health Services (Dr. Raymond Neutra) repeated the survey using the G/S meter and a Dexsil 320 Gaussmeter, measuring 51 rooms. We used results of this June 8, 2006 sampling in our exposure calculations, since all classrooms were sampled, multiple outlets per room were sampled, and an experienced team did the sampling. Additionally, GS readings were taken at Griffin Elementary school near Olympia, Washington, and Dr. Raymond Neutra provided GS readings for his Richmond California office building and 125 private California residences measured in another Northern California study.

All the cancer case information was developed by personal, telephone, and E-mail contact with the teachers or their families without any assistance from the school district. The local tumor registry verified all the cancer cases with the exception of one case diagnosed out of state and the two cases reported in 2007. The out-of state case was verified by pathologic information provided by the treating hospital. The teachers gathered population-at-risk information (age at hire, year of hire, vital status, date of diagnosis, date of death, and termination year) from yearbooks and from personal contact. The teachers also provided a history of classroom assignments for all teachers from annual classroom assignment rosters (academic years 1990–1991 to 2006–2007) generated by the school administration. The school administration provided a listing of school employees, including



the teachers, to the regional tumor registry after the teachers involved the state health agency by submitting an OSHA complaint. The information we obtained anecdotally from the teachers, yearbooks, and classroom assignment rosters was nearly identical to that given to the tumor registry. None of the cancer cases were ascertained initially through the cancer registry search.

Published cancer incidence rates by age, sex, and race for all cancers, as well as for malignant melanoma, thyroid, uterine, breast, colon, ovarian cancers, and non-Hodgkin's lymphoma (NHL) were obtained from a California Cancer Registry publication [Kwong et al., 2001]. We estimated the expected cancer rate for each teacher by applying year, age, sex, and race-specific cancer incidence rates from hire date until June 2007, or until death. We then summed each teacher's expected cancer rate for the total cohort.

Using the California cancer incidence data, the school teacher data, and the GS exposure data, we calculated cancer incidence and risks. A replicate data set was sent to Dr. Gary Marsh and to Mike Cunningham at the University of Pittsburgh School of Public Health for independent analysis using OCMAP software. We calculated cancer risk ratios by duration of employment and by cumulative GS unit-years of exposure. We calculated an attributable risk percent using the frequencies of total observed and expected cancers, and performed trend tests [Breslow and Day, 1987] for cancer risk versus duration of employment and cumulative GS unit-years of exposure. Poisson *P* values were calculated using the Stat Trek website (Stat Trek, 2007). We also performed a linear regression of cancer risk by duration of employment in years and by time-weighted exposure in GS unit-years.

Since neither author had a current institutional affiliation, institutional review board approval was not possible. The teachers requested the study, and their participation in the study was both voluntary and complete. All the active teachers at the school signed the Cal OSHA request. The authors fully explained the nature of the study to study participants and offered no remuneration to the teachers for participation in the study. The authors maintained strict confidentiality of all medical and personal information provided to us by the teachers, and removed personal identifiers from the data set which was analyzed by the University of Pittsburgh. Possession of personal medical

information was limited to the two authors. No patient-specific information was obtained from the tumor registry. With the individual's permission we provided the registry with case information for a teacher with malignant melanoma diagnosed out of state. The exposure information was provided by the California Department of Health Services. The basic findings of the study were presented to the Desert Sands Unified School District School Board and at a public meeting arranged by the teachers.

**RESULTS**

**Electrical Measurements**

In our seven-room survey of the school in 2005, magnetic field readings were as high as 177 mG in a classroom adjacent to the electrical service room. A number of outlets had overload readings with the G/S meter. Magnetic fields were not elevated (>3.0 mG) in the interior space of any of the classrooms except in the classroom adjacent to the electrical service room, and near classroom electrical appliances such as overhead transparency projectors. There was no association between the risk of cancer and 60 Hz magnetic field exposures in this cohort, since the classroom magnetic field exposures were the same for teachers with and without cancer (results not shown).

This school had very high GS readings and an association between high frequency voltage transient exposure in the teachers and risk of cancer. The G/S meter gives readings in the range from 0 to 1,999 GS units. The case school had 13 of 51 measured rooms with at least one electrical outlet measuring "overload" ( $\geq 2,000$  GS units). These readings were high compared to another school near Olympia Washington, a Richmond California office building, and private residences in Northern California (Table I). Altogether, 631 rooms were surveyed for this study. Only 17 (2.69%) of the 631 rooms had an "overload" (maximum,  $\geq 2,000$  GS units) reading. Applying this percentage to the 51 rooms surveyed at the case school, we would expect 1.4 rooms at the school to have overload GS readings ( $0.0269 \times 51 = 1.37$ ). However, thirteen rooms (25%) measured at the case school had "overload" measurements above the highest value (1,999 GS units) that the G/S meter can

**TABLE I.** Graham/Stetzer Meter Readings: Median Values in Schools, Homes and an Office Building

Place	Homes	Office bldg	Olympia WA School	LQMS	Total
No. of rooms surveyed	500	39	41	51	531
Median GS units	159	210	160	750	<270 <sup>a</sup>
Rooms with overload GS units ( $\geq 2,000$ )	4	0	0	13*	17

<sup>a</sup>Excludes homes as specific room data was not available.

\* $P = 3.14 \times 10^{-9}$ .

**TABLE II.** Risk of Cancer by Type Among Teachers at La Quinta Middle School

Cancer	Observed	Expected	Risk ratio (O/E)	P-value
All cancers	18	6.51	2.78*	0.000098
Malignant melanoma	4	0.41	9.76*	0.0008
Thyroid cancer	2	0.15	13.3*	0.011
Uterus cancer	2	0.22	9.19*	0.019
Female breast cancer	2	1.5	1.34	0.24
All cancers less melanoma	14	6.10	2.30*	0.0025

\*P ≤ 0.05.

measure. This is a highly statistically significant excess over expectation (Poisson  $P = 3.14 \times 10^{-9}$ ).

We noticed AM radio interference in the vicinity of the school. A teacher also reported similar radio interference in his classroom and in the field near his ground floor classroom. In May 2007, he reported that 11 of 15 outlets in his classroom overloaded the G/S meter. An AM radio tuned off station is a sensitive detector of dirty power, giving a loud buzzing noise in the presence of dirty power sources even though the AM band is beyond the bandwidth of the G/S meter.

**Cancer Incidence**

Three more teachers were diagnosed with cancer in 2005 after the first 11 cancer diagnoses were reported, and another former teacher (diagnosed out-of-state in 2000) was reported by a family member employed in the school system. One cancer was diagnosed in 2006 and two more in 2007. In the years 1988–2005, 137 teachers were employed at the school. The 18 cancers in the 16 teachers were: 4 malignant melanomas, 2 female breast cancers, 2 cancers of the thyroid, 2 uterine cancers and one each of Burkitt’s lymphoma (a type of non-Hodgkins lymphoma), polycythemia vera, multiple myeloma, leiomyosarcoma and cancer of the colon, pancreas, ovary and larynx. Two teachers had two primary cancers each: malignant melanoma and multiple myeloma, and colon and pancreatic cancer. Four teachers had died of cancer through August 2007. There have been no non-cancer deaths to date.

The teachers’ cohort accumulated 1,576 teacher-years of risk between September 1988 and June 2007 based on a 12-month academic year. Average age at hire was 36 years. In 2007, the average age of the cohort was 47.5 years.

When we applied total cancer and specific cancer incidence rates by year, age, sex, race, and adjusted for cohort ageing, we found an estimate of 6.5 expected cancers, 0.41 melanomas, 0.15 thyroid cancers, 0.22 uterine cancers, and 1.5 female breast cancers (Table II). For all cancers, the risk ratio (Observed/Expected = 18/6.5) was 2.78 ( $P = 0.000098$ , Poisson test); for melanoma, (O/E = 4/0.41) was 9.8 ( $P = 0.0008$ , Poisson test); for thyroid cancer (O/E = 2/0.15) was 13.3 ( $P = 0.0011$ , Poisson test); for uterine cancer (O/E = 2/0.22), was 9.19 ( $P = 0.019$ , Poisson test).

Table III shows the cancer risk among the teachers by duration of employment. Half the teachers worked at the school for less than 3 years (average 1.52 years). The cancer risk increases with duration of employment, as is expected when there is exposure to an occupational carcinogen. The cancer risk ratio rose from 1.7 for less than 3 years, to 2.9 for 3–14 years, to 4.2 for 15+ years of employment. There was a positive trend of increasing cancer incidence with increasing duration of employment ( $P = 4.6 \times 10^{-10}$ ). A single year of employment at this school increases a teacher’s risk of cancer by 21%.

Using the June 8, 2006 survey data (Table IV), the cancer risk of a teacher having ever worked in a room with at least one outlet with an overload GS reading ( $\geq 2000$  GS units) and employed for 10 years or more, was 7.1 ( $P = 0.00007$ , Poisson test). In this group, there were six teachers diagnosed

**TABLE III.** Cancer Risk by Duration of Employment

Time at school	Average time	Teachers	% of teachers	Cancer observed	Cancer expected	Risk ratio (O/E)	Poisson p
<3 years	1.52 years	68	49.6	4	2.34	1.72	0.12
3–14 years	7.48 years	56	40.9	9	3.14	2.87*	0.0037
15+ years	16.77 years	12	8.8	5	1.02	4.89*	0.0034
Total		137	100	18	6.51	2.78*	0.000098

Positive trend test (Chi square with one degree of freedom = 38.8,  $P = 4.61 \times 10^{-10}$ ).  
\*P ≤ 0.05.

**TABLE IV.** Cancer in Teachers Who Ever Taught in Classrooms With at Least One Overload GS Reading ( $\geq 2000$  GS Units) by Duration of Employment

Ever in a room > 2,000 GS units	Employed 10+ years	Total teachers	Cancers observed	Cancers expected	Risk ratio (O/E)	Poisson p
Yes	Yes	10	7 <sup>a</sup>	0.988	7.1*	0.00007
Yes	No	30	3 <sup>a</sup>	0.939	3.2	0.054
Total		40	10	1.93	5.1*	0.00003
No	Yes	19	2	1.28	1.6	0.23
No	No	78	6	3.25	1.8	0.063
Total		97	8	4.56	1.8*	0.047
Grand total		137	18	6.49	2.8*	0.000098

<sup>a</sup>One teacher had two primary cancers.  
\* $P < 0.05$ .

with a total of seven cancers, and four teachers without a cancer diagnosis, who were employed for 10 or more years and who ever worked in one of these rooms. Five teachers had one primary cancer and one teacher had two primary cancers. These teachers made up 7.3% of the teachers' population (10/137) but had 7 cancers or 39% (7/18) of the total cancers. The 10 teachers who worked in an overload classroom for 10 years or more had 7 cancers when 0.99 would have been expected ( $P = 6.8 \times 10^{-5}$  Poisson test). The risk ratio for the 8 teachers with cancer and 32 teachers without cancer, who ever worked in a room with an overload GS reading, regardless of the time at the school, was 5.1 ( $P = 0.00003$ , Poisson test). The risk ratio for 8 teachers with cancer and 89 teachers without cancer who never worked in a room with an overload G-S reading was 1.8 ( $P = 0.047$ , Poisson test). Teachers who never worked in an overload classroom also had a statistically significantly increased risk of cancer.

A positive dose-response was seen between the risk of cancer and the cumulative GS exposure (Table V). Three categories of cumulative GS unit-years of exposure were selected: <5,000, 5,000 to 10,000, and more than 10,000 cumulative GS unit-years. We found elevated risk ratios of 2.0, 5.0, and 4.2, respectively, all statistically significant, for each category. There was a positive trend of increasing cancer

incidence with increasing cumulative GS unit-years of exposure ( $P = 7.1 \times 10^{-10}$ ). An exposure of 1,000 GS unit-years increased a teacher's cancer risk by 13%. Working in a room with a GS overload ( $\geq 2,000$  GS units) for 1 year increased cancer risk by 26%.

An attributable risk percentage was calculated: (observed cancers-expected cancers)/observed cancers =  $(18-6.51)/18 = 63.8\%$ .

The fact that these cancer incidence findings were generated by a single day of G/S meter readings made on June 8, 2006 suggests that the readings were fairly constant over time since the school was built in 1990. For example, if the 13 classrooms which overloaded the meter on June 8, 2006 were not the same since the start of the study and constant throughout, the cancer risk of teachers who ever worked in the overload rooms would have been the same as the teachers who never worked in an overload room.

Although teachers with melanoma and cancers of the thyroid, and uterus, had very high, statistically significant risk ratios, there was nothing exceptional about their age at hire, duration of employment, or cumulative GS exposure. However, thyroid cancer and melanoma had relatively short latency times compared to the average latency time for all 18 cancers. The average latency time between start of

**TABLE V.** Observed and Expected Cancers by Cumulative GS Exposure (GS Unit-Years)

Exposure group	< 5,000 GS unit-years	5,000 to 10,000	> 10,000 GS unit-years	Total
Average GS unit-years	914	7,007	15,483	
Cancers obs.	9	4	5	18
Cancers exp.	4.507	0.799	1.20	6.49
Risk ratio (O/E)	2.01*	5.00*	4.17*	2.78*
Poisson p	0.0229	0.0076	0.0062	0.000098

Positive trend test (Chi square with one degree of freedom = 38.0,  $P = 7.1 \times 10^{-10}$ ).  
\* $P < 0.05$ .

employment at the school and diagnosis for all cancers was 9.7 years. The average latency time for thyroid cancer was 3.0 years and for melanoma it was 7.3 years (with three of the four cases diagnosed at 2, 5, and 5 years).

An independent analysis of this data set by the University of Pittsburgh School of Public Health using OCMAP software supported our findings.

**DISCUSSION**

Because of access denial, we have no information about the source, or characterization of the high frequency voltage transients. We can assume, because the school uses metal conduit to contain the electrical wiring, that any resultant radiated electric fields from these high frequency voltage transients would radiate mainly from the power cords and from electrical equipment using the power cords within a classroom.

The school's GS readings of high frequency voltage transients are much higher than in other tested places (Table I). Also, teachers in the case school who were employed for over 10 years and who had ever worked in a room with an overload GS reading had a much higher rate of

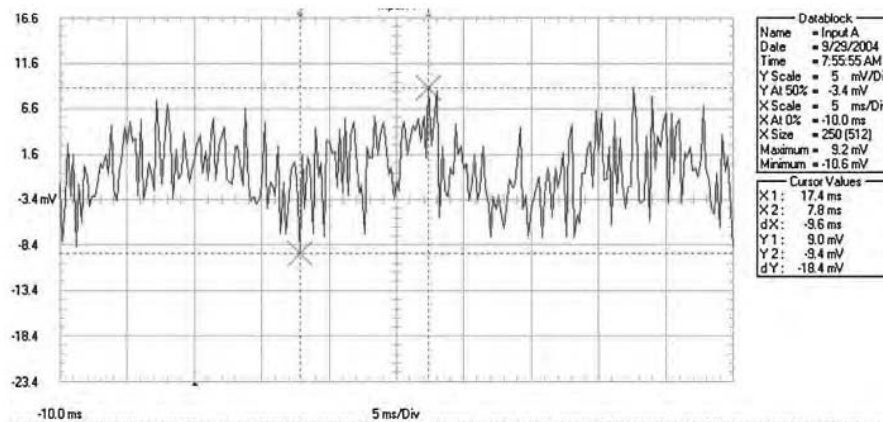
cancer. They made up 7.3% of the cohort but experienced 39% of all cancers.

The relatively short latency time of melanoma and thyroid cancers suggests that these cancers may be more sensitive to the effects of high frequency voltage transients than the other cancers seen in this population.

In occupational cohort studies, it is very unusual to have a number of different cancers with an increased risk. An exception to this is that cohorts exposed to ionizing radiation show an increased incidence of a number of different cancers. The three cancers in this cohort with significantly elevated incidence, malignant melanoma, thyroid cancer and uterine cancer, also have significantly elevated incidence in the large California school employees cohort [Reynolds et al., 1999].

These cancer risk estimates are probably low because 23 of the 137 members of the cohort remain untraced. Since exposure was calculated based on 7 days a week for a year, this will overstate the actual teachers' exposure of 5 days a week for 9 months a year.

We could not study field exposures in the classrooms since we were denied access to the school. We postulate that the dirty power in the classroom wiring exerted its effect by capacitive coupling which induced electrical currents in the



The waveform was recorded between 2 EKG patches placed on the ankles of XXXXXX XXXXXXXXXX standing in front of his kitchen sink at his home near Bright Ontario. It shows a distorted 60 cycle sine wave containing high frequencies applied to each foot, allowing high frequency current to freely oscillate up one leg and down the other. XXXXXX has been diagnosed with prostate cancer since moving to the house in less than a year. He was standing with feet shoulder width apart, wearing shoes, at the time of the readings. The amplitude increased as the feet were placed farther apart.

**FIGURE 2.** Oscilloscope display of 60 Hz current distorted with high frequencies taken between EKG patches applied to the ankles of a man standing with shoes on at a kitchen sink. [Color figure can be viewed in the online issue, which is available at [www.interscience.wiley.com](http://www.interscience.wiley.com).]

teachers' bodies. The energy that is capacitively coupled to the teachers' bodies is proportional to the frequency. It is this characteristic that highlights the usefulness of the G/S meter. High frequency dirty power travels along the electrical distribution system in and between buildings and through the ground. Humans and conducting objects in contact with the ground become part of the circuit. Figure 2 [Havas and Stetzer, 2004, reproduced with permission] shows an oscilloscope tracing taken between EKG patches on the ankles of a man wearing shoes, standing at a kitchen sink. The 60 Hz sine wave is distorted by high frequencies, which allows high frequency currents to oscillate up one leg and down the other between the EKG patches.

Although not demonstrated in this data set, dirty power levels are usually higher in environments with high levels of 60 Hz magnetic fields. Many of the electronic devices which generate magnetic fields also inject dirty power into the utility wiring. Magnetic fields may, therefore, be a surrogate for dirty power exposures. In future studies of the EMF-cancer association, dirty power levels should be studied along with magnetic fields.

The question of cancer incidence in students who attended La Quinta Middle School for 3 years has not been addressed.

## CONCLUSION

The cancer incidence in the teachers at this school is unusually high and is strongly associated with exposure to high frequency voltage transients. In the 28 years since electromagnetic fields (EMFs) were first associated with cancer, a number of exposure metrics have been suggested. If our findings are substantiated, high frequency voltage transients are a new and important exposure metric and a possible universal human carcinogen similar to ionizing radiation.

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# EXHIBIT 7

# Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States

JEFFREY E. LOVICH AND JOSHUA R. ENNEN

*Large areas of public land are currently being permitted or evaluated for utility-scale solar energy development (USSED) in the southwestern United States, including areas with high biodiversity and protected species. However, peer-reviewed studies of the effects of USSED on wildlife are lacking. The potential effects of the construction and the eventual decommissioning of solar energy facilities include the direct mortality of wildlife; environmental impacts of fugitive dust and dust suppressants; destruction and modification of habitat, including the impacts of roads; and off-site impacts related to construction material acquisition, processing, and transportation. The potential effects of the operation and maintenance of the facilities include habitat fragmentation and barriers to gene flow, increased noise, electromagnetic field generation, microclimate alteration, pollution, water consumption, and fire. Facility design effects, the efficacy of site-selection criteria, and the cumulative effects of USSED on regional wildlife populations are unknown. Currently available peer-reviewed data are insufficient to allow a rigorous assessment of the impact of USSED on wildlife.*

*Keywords: solar energy development, Mojave Desert, Sonoran Desert, wildlife, desert tortoises*

**T**he United States is poised to develop new renewable energy facilities at an unprecedented rate, including in potentially large areas of public land in the Southwest. This quantum leap is driven by escalating costs and demand for traditional energy sources from fossil fuels and by concerns over global climate change. Attention is focused largely on renewable forms of energy, especially solar energy. The potential for utility-scale solar energy development (USSED) and operation (USSEDO) is particularly high in the southwestern United States, where solar energy potential is high (USDO and USDOE 2011a) and is already being harnessed in some areas. However, the potential for USSEDO conflicts with natural resources, especially wildlife, is also high, given the exceptional biodiversity (Mittermeier et al. 2002) and sensitivity (Lovich and Bainbridge 1999) of arid Southwest ecosystems, especially the Mojave (Randall et al. 2010) and Sonoran Deserts, which are already stressed by climate and human changes (CBI 2010). In addition, the desert Southwest is identified as a “hotspot” for threatened and endangered species in the United States (Flather et al. 1998). For these reasons, planning efforts should consider ways to minimize USSEDO impacts on wildlife (CBI 2010). Paradoxically, the implementation of large-scale solar energy development as an “environmentally friendly” alternative to conventional energy sources may actually increase environmental degradation on a local and on a regional scale (Bezdek 1993, Abbasi and Abbasi 2000) with concomitant negative effects on wildlife.

A logical first step in evaluating the effects of USSEDO on wildlife is to assess the existing scientific knowledge. As renewable energy development proceeds rapidly worldwide, information is slowly accumulating on the effects of USSEDO on the environment (for reviews, see Harte and Jassby 1978, Pimentel et al. 1994, Abbasi and Abbasi 2000). Gill (2005) noted that although the number of peer-reviewed publications on renewable energy has increased dramatically since 1991, only 7.6% of all publications on the topic covered environmental impacts, only 4.0% included discussions of ecological implications, and less than 1.0% contained information on environmental risks. A great deal of information on USSEDO exists in environmental compliance documents and other unpublished, non-peer-reviewed “gray” literature sources. Published scientific information on the effects on wildlife of any form of renewable energy development, including that of wind energy, is scant (Kuvlesky et al. 2007). The vast majority of the published research on wildlife and renewable energy development has been focused on the effects of wind energy development on birds (Drewitt and Langston 2006) and bats (Kunz et al. 2007) because of their sensitivity to aerial impacts. In contrast, almost no information is available on the effects of solar energy development on wildlife.

From a conservation standpoint, one of the most important species in the desert Southwest is Agassiz’s desert

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tortoise (*Gopherus agassizii*; figure 1). Distributed north and west of the Colorado River, the species was listed as *threatened* under the US Endangered Species Act in 1990. Because of its protected status, Agassiz's desert tortoise acts as an "umbrella species," extending protection to other plants and animals within its range (Tracy and Brussard, 1994). The newly described Morafka's desert tortoise (*Gopherus morafkai*; Murphy et al. 2011) is another species of significant conservation concern in the desert Southwest, found east of the Colorado River. Both tortoises are important as ecological engineers who construct burrows that provide shelter to many other animal species, which allows them to escape the temperature extremes of the desert (Ernst and Lovich 2009). The importance of these tortoises is thus greatly disproportionate to their intrinsic value as species. By virtue of their protected status, Agassiz's desert tortoises have a significant impact on regulatory issues in the listed portion of their range, yet little is known about the effects of USSEDO on the species, even a quarter century after the recognition of that deficiency (Pearson 1986). Large areas of habitat occupied by Agassiz's desert tortoise in particular have potential for development of USSEDO (figure 2).



Figure 1. Agassiz's desert tortoise (*Gopherus agassizii*). Large areas of desert tortoise habitat are developed or being evaluated for renewable energy development, including for wind and solar energy. Photograph: Jeffrey E. Lovich.

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In this article, we review the state of knowledge about the known and potential effects, both direct and indirect, of USSEDO on wildlife (table 1). Our review is based on information published primarily in peer-reviewed scientific journals for both energy and wildlife professionals. Agassiz's desert tortoise is periodically highlighted in our review because of its protected status, wide distribution in areas considered for USSEDO in the desert Southwest, and well-studied status (Ernst and Lovich 2009). In addition, we identify gaps in our understanding of the effects of USSEDO on wildlife and suggest questions that will guide future research toward a goal of mitigating or minimizing the negative effects on wildlife.

**Background on proposed energy-development potential in the southwestern United States**

The blueprint for evaluating and permitting the development of solar energy on public land in the region, as is required under the US National Environmental Policy Act (USEPA 2010), began in a draft environmental impact statement (EIS) prepared by two federal agencies (USDO and USDOE 2011a). The purpose of the EIS is to "develop a new Solar Energy Program to further support utility-scale solar energy development on BLM [US Bureau of Land

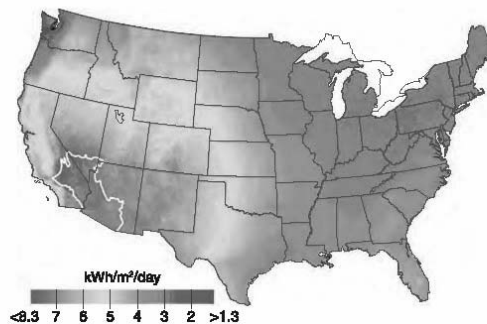


Figure 2. Concentrating solar energy potential (in kilowatt-hours per square meter per day [kWh/m<sup>2</sup>/day]) of the United States. The map shows the annual average direct normal solar resource data based on a 10-kilometer satellite-modeled data set for the period from 1998 to 2005. Refer to NREL (2011) for additional details and data sources. The white outline defines the approximate composite ranges of Agassiz's (west of the Colorado River) and Morafka's (east of the Colorado River) desert tortoises (Murphy et al. 2011) in the United States, both species of significant conservation concern. This figure was prepared by the National Renewable Energy Laboratory for the US Department of Energy (NREL 2011). The image was authored by an employee of the Alliance for Sustainable Energy, LLC, under Contract no. DE-AC36-08GO28308 with the US Department of Energy. Reprinted with permission from NREL 2011.

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**Table 1. List of known and potential impacts of utility-scale solar energy development on wildlife in the desert Southwest.**

Impacts due to facility construction and decommissioning	Impacts due to facility presence, operation, and maintenance
Destruction and modification of wildlife habitat	Habitat fragmentation and barriers to movement and gene flow
Direct mortality of wildlife	Noise effects
Dust and dust-suppression effects	Electromagnetic field effects
Road effects	Microclimate effects
Off-site impacts	Pollution effects from spills
Destruction and modification of wildlife habitat	Water consumption effects
	Fire effects
	Light pollution effects, including polarized light
	Habitat fragmentation and barriers to movement and gene flow
	Noise effects

Management] -administered lands... and to ensure consistent application of measures to avoid, minimize, or mitigate the adverse impacts of such development” (p. ES-2). As of February 2010, the BLM had 127 active applications for solar facilities on lands that the BLM administers. According to USDO I and USDOE (2011a), all of the BLM-administered land in six states (California, Arizona, Utah, Nevada, New Mexico, and Colorado) was considered initially, for a total of 178 million hectares (ha). Not all of that land is compatible with solar energy development, so three alternative configurations are listed by USDO I and USDO I (2011a) for consideration, ranging from 274,244 to 39,972,558 ha. The larger figure is listed under the *no action alternative* where BLM would continue to use existing policy and guidance to evaluate applications. Of the area being considered under the two action alternatives, approximately 9 million ha meet the criteria established under the BLM’s preferred action alternative to support solar development. Twenty-five criteria were used to exclude certain areas of public land from solar development and include environmental, social, and economic factors. The preferred alternative also included the identification of proposed *solar energy zones* (SEZs), defined as “area[s] with few impediments to utility-scale production of solar energy” (USDO I and USDOE 2011a, p. ES-7). By themselves, these SEZs constitute the nonpreferred action alternative of 274,244 ha listed above. Maps of SEZs are available at <http://solareis.ani.gov/documents/dpeis/index.cfm>.

Several sensitive, threatened, or endangered species are being considered within the EIS, but Agassiz’s desert tortoise is one of only four species noted whose very presence at a site may be sufficient to exclude USSED in special cases (see table ES.2-2 in USDO I and USDOE 2011a). The potential effects of USSEDO are not trivial for tortoises or other wildlife species. Within the area covered in the draft EIS by USDO I and USDOE (2011a), it is estimated that

approximately 161,943 ha of Agassiz’s desert tortoise habitat will be directly affected. However, when including direct and indirect impacts on habitat (excluding transmission lines and roads that would add additional impacts; see Lovich and Bainbridge 1999, Kristan and Boarman 2007), it is estimated that approximately 769,230 ha will be affected. Some SEZs are adjacent to critical habitat designated for the recovery of Agassiz’s desert tortoise, and this proximity is considered part of the indirect impacts.

On 28 October 2011, while this paper was in press, the BLM and US Department of Energy released a supplement to the EIS (USDO I and USDOE 2011b, 2011c) after receiving more than 80,500 comments. The no action alternative remains the same as in the EIS. The new preferred alternative (slightly reduced to 8,225,179 ha as the modified program alternative) eliminates or adjusts SEZs (now reduced to 115,335 ha in 17 zones as the modified SEZ alternative) to ensure that they are not in high-conflict areas and provides incentives for their use. The new plan also proposes a process to accommodate additional solar energy development outside of SEZs and to revisit ongoing state-based planning efforts to allow consideration of additional SEZs in the future.

**The impacts of USSED on wildlife: Effects due to construction and decommissioning**

The construction and eventual decommissioning of solar energy facilities will have impacts on wildlife, including rare and endangered species, and on their habitats in the desert (Harte and Jassby 1978). These activities involve significant ground disturbance and direct (e.g., mortality) and indirect (e.g., habitat loss, degradation, modification) impacts on wildlife and their habitat (Kuvlesky et al. 2007). Solar energy facilities require large land areas to harness sunlight and convert it to electrical energy. According to Wilshire and colleagues (2008), photovoltaic panels with a 10% conversion efficiency would need to cover an area of about 32,000 square kilometers, or an area a little smaller than the state of Maryland, to meet the current electricity demands of the United States. Many of the areas being considered for the development of solar energy in the Mojave and Sonoran Deserts are, at present, relatively undisturbed (USDO I and USDOE 2011a).

The extent of surface disturbance of USSED is related to the cooling technology used. Because of the scarcity of water in the desert Southwest region, dry-cooling systems, which consume 90%–95% less water than wet-cooling systems (EPRI 2002), are becoming a more viable option for concentrating solar facilities. Although wet-cooling systems are more economical and efficient, they consume larger amounts of water per kilowatt-hour (Torcellini et al. 2003). Unlike wet-cooling systems, dry-cooling systems use ambient air, instead of water, to cool the exhaust steam from the turbines. However, to achieve a heat-rejection efficiency similar to that in a wet-cooling system, Khalil and colleagues (2006) estimated that a direct dry-cooling system will require a larger footprint and would thus affect more wildlife habitat.

Although we found no information in the scientific literature about the direct effects of USSED on wildlife, the ground-disturbance impacts are expected to be similar to those caused by other human activities in the desert (Lovich and Bainbridge 1999).

**Dust and dust suppressants.** USSED transforms the landscape substantially through site preparation, including the construction of roads and other infrastructure. In addition, many solar facilities require vegetation removal and grading. These construction activities produce dust emissions, especially in arid environments (Munson et al. 2011), which already have the potential for natural dust emission. Dust can have dramatic effects on ecological processes at all scales (reviewed by Field et al. 2010). At the smallest scale, wind erosion, which powers dust emission, can alter the fertility and water-retention capabilities of the soil. Physiologically, dust can adversely influence the gas exchange, photosynthesis, and water usage of Mojave Desert shrubs (Sharifi et al. 1997). Depending on particle size, wind speed, and other factors, dust emission can physically damage plant species through root exposure, burial, and abrasions to their leaves and stems. The physiological and physical damage to plant species inflicted by dust emissions could ultimately reduce the plants' primary production and could indirectly affect wildlife food plants and habitat quality.

From an operational perspective, dust particles reduce mirror and panel efficiency in converting solar energy into heat or electricity. To combat dust, solar energy facilities apply various dust suppressants to surfaces with exposed soil (e.g., graded areas, areas with vegetation removed, roads). There are eight categories of common dust suppressants used for industrial applications: water, salts and brines, organic nonpetroleum products, synthetic polymers, organic petroleum, electrochemical substances, clay additives, and mulch and fiber mixtures (reviewed in Piechota et al. 2004). In a study conducted in the Mojave Desert in which the hydrological impacts of dust suppressants were compared, Singh and colleagues (2003) reported that changes did occur in the volume, rate, and timing of runoff when dust suppressants were used. In particular, petroleum-based and acrylic-polymer dust suppressants drastically influenced the hydrology of disturbed areas by increasing runoff volume and changing its timing. When it is applied to disturbed desert soils, magnesium chloride ( $MgCl_2$ ), a commonly used salt-based dust depressant, does not increase runoff volume but does, however, increase the total suspended solids loads in runoff (Singh et al. 2003).

Others have highlighted the fact that there is a dearth of scientific research and literature on the effects of dust suppressants on wildlife, including the most commonly used category of dust depressant: brines and salts (Piechota et al. 2004, Goodrich et al. 2008). However, the application of  $MgCl_2$  to roads was correlated with a higher frequency of plant damage (Goodrich et al. 2008). Because chloride salts, including  $MgCl_2$ , are not confined to the point of application

but have the ability to be transported in runoff (White and Broadly 2001), the potential exists for a loss of primary production associated with plant damage in the habitats surrounding a solar facility, which could directly affect wildlife habitat.

**Mortality of wildlife.** We are not aware of any published studies documenting the direct effects of USSED on the survival of wildlife. However, subterranean animals can be affected by USSED, including species that hibernate underground. In the Sonoran Desert portion of California, Cowles (1941) observed that most reptiles in the Coachella Valley hibernated at depths of less than 33 centimeters (cm), with many at considerably shallower depths. Included in his observations were flat-tailed horned lizards (*Phrynosoma mcallii*)—a species of special concern in the region because of solar energy development (USDOI and USDOE 2011a)—and the federally protected Coachella Valley fringe-toed lizard (*Uma inornata*). Even lightweight vehicles like motorcycles are capable of causing greatly increased soil density (soil compaction) at a depth of 30–60 cm as their tires pass over the surface (Webb 1983). These observations suggest that vehicular activities in the desert have the potential to kill or entrap large numbers of subterranean animals (Stebbins 1995) through compressive forces or burrow collapse. Similar or greater impacts would be expected from the heavy equipment associated with the construction activities at an energy facility.

**Destruction and modification of wildlife habitat.** Despite the absence of published, peer-reviewed information on the effects of USSED on wildlife and their habitats, a considerable body of literature exists on the effects of other ground-disturbing activities on both ecological patterns and processes that are broadly comparable. Ground-disturbing activities affect a variety of processes in the desert, including soil density, water infiltration rate, vulnerability to erosion, secondary plant succession, invasion by exotic plant species, and stability of cryptobiotic soil crusts (for reviews, see Lovich and Bainbridge 1999, Webb et al. 2009). All of these processes have the ability—individually and together—to alter habitat quality, often to the detriment of wildlife. Any disturbance and alteration to the desert landscape, including the construction and decommissioning of utility-scale solar energy facilities, has the potential to increase soil erosion. Erosion can physically and physiologically affect plant species and can thus adversely influence primary production (Sharifi et al. 1997, Field et al. 2010) and food availability for wildlife.

Solar energy facilities require substantial site preparation (including the removal of vegetation) that alters topography and, thus, drainage patterns to divert the surface flow associated with rainfall away from facility infrastructure (Abbasi and Abbasi 2000). Channeling runoff away from plant communities can have dramatic negative effects on water availability and habitat quality in the desert, as was shown by Schlesinger and colleagues (1989). Areas deprived

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of runoff from sheet flow support less biomass of perennial and annual plants relative to adjacent areas with uninterrupted water-flow patterns.

**The impacts of roads.** Roads are required in order to provide access to solar energy infrastructure. Both paved and unpaved roads have well-documented negative effects on wildlife (Forman and Alexander 1998), and similar effects are expected in utility-scale solar energy facilities. Although road mortality is most easily detected on the actual roadway, the effects of roads extend far beyond their physical surface. In a study of the effects of roads on Agassiz's desert tortoise populations in southern Nevada, von Seckendorff Hoff and Marlow (2002) examined transects along roads with traffic volumes varying from 25 to 5000 vehicles per day. Tortoises and tortoise sign (e.g., burrows, shells, scat) decreased with their proximity to a road. On roads with high traffic volumes, tortoises and tortoise sign were reduced as far as 4000 meters from the roadside. Roads with lower traffic volumes had fewer far-reaching effects.

Another effect of roads in the desert is the edge enhancement of plants and arthropod herbivores (Lightfoot and Whitford 1991). Perennial plants along the roadside are often larger than those farther away, and annual plant germination is often greatest along the shoulders of roads. It is possible that increased runoff due to impervious pavement or compacted soil contributes to this heterogeneity of vegetation in relationship to a road. Agassiz's desert tortoises may select locations for burrow construction that are close to roads, perhaps because of this increased productivity of food plants (Lovich and Daniels 2000). Although this situation suggests potentially beneficial impacts for herbivorous species of wildlife, such as tortoises, it increases their chance of being killed by vehicle strikes, as was shown by von Seckendorff Hoff and Marlow (2002).

**Off-site impacts.** Direct impacts on wildlife and habitat can occur well outside the actual footprint of the energy facility. Extraction of large amounts of raw materials for the construction of solar energy facilities (e.g., aggregate, cement, steel, glass); transportation and processing of those materials; the need for large amounts of water for cooling some installations; and the potential for the production of toxic wastes, including coolants, antifreeze, rust inhibitors, and heavy metals, can affect wildlife adjacent to or far from the location of the facility (Abbasi and Abbasi 2000). Abbasi and Abbasi (2000) summarized data suggesting that the material requirements for large-scale solar facilities exceed those for conventional fossil-fuel plants on a cost-per-unit-of-energy basis. In addition, water used for steam production at one solar energy facility in the Mojave Desert of California contained selenium, and the wastewater was pumped into evaporation ponds that attracted birds that fed on invertebrates. Although selenium toxicity was not considered a threat on the basis of the results of one study, the possibility exists for harmful bioaccumulation of this toxic

micronutrient (Herbst 2006). In recognition of the hazard, Pimentel and colleagues (1994) suggested that fencing should be used to keep wildlife away from these toxic ponds.

**The impacts of USSED on wildlife: Effects due to operation and maintenance**

This category includes the effects related to the presence and operation of the solar facility, not the physical construction and decommissioning of the same. Some of the effects (e.g., mortality of wildlife and impacts caused by roads) are similar to those discussed previously for construction and decommissioning and are not discussed further.

**Habitat fragmentation.** Until relatively recently, the desert Southwest was characterized by large blocks of continuous and interconnected habitat. Roads and urban development continue to contribute to habitat fragmentation in this landscape. Large-scale energy development has the potential to add to and exacerbate the situation, presenting potential barriers to movement and genetic exchange in wildlife populations, including those of bighorn sheep (*Ovis canadensis*), deer (*Odocoileus* spp.), tortoises, and other species of concern and social significance. Research conducted on the effects of oil and gas exploration and development (OGED) on wildlife in the Intermountain West provides a possible analog to USSEDO, since comparable data are not available for the desert Southwest. The potential effects on mule deer (*Odocoileus hemionus*) and other wildlife species include impediments to free movement, the creation of migration bottlenecks, and a reduction in effective winter range size. Mule deer responded immediately to OGED by moving away from disturbances, with no sign of acclimation during the three years of study by Sawyer and colleagues (2009). Some deer avoidance resulted in their use of less-preferred and presumably less-suitable habitats.

Despite a lack of data on the direct contributions of USSEDO to habitat fragmentation, USSEDO has the potential to be an impediment to gene flow for some species. Although the extent of this impact is, as yet, largely unquantified in the desert, compelling evidence for the effects of human-caused habitat fragmentation on diverse wildlife species has already been demonstrated in the adjacent coastal region of southern California (Delaney et al. 2010).

**Noise effects.** Industrial noise can have impacts on wildlife, including changes to their habitat use and activity patterns, increases in stress, weakened immune systems, reduced reproductive success, altered foraging behavior, increased predation risk, degraded communication with conspecifics, and damaged hearing (Barber et al. 2009, Pater et al. 2009). Changes in sound level of only a few decibels can elicit substantial animal responses. Most noise associated with USSEDO is likely to be generated during the construction phase (Suter 2002), but noise can also be produced during operation and maintenance activities. Brattstrom and Bondello (1983) documented the effects of noise on Mojave

Desert wildlife on the basis of experiments involving off-highway vehicles. Noise from some of these vehicles can reach 110 decibels—near the threshold of human pain and certainly within the range expected for various construction, operation, and maintenance activities (Suter 2002) associated with USSEDO. This level of noise caused hearing loss in animals, such as kangaroo rats (*Dipodomys* spp.), desert iguanas (*Dipsosaurus dorsalis*), and fringe-toed lizards (*Uma* spp.). In addition, it interfered with the ability of kangaroo rats to detect predators, such as rattlesnakes (*Crotalus* spp.), and caused an unnatural emergence of aestivating spadefoot toads (*Scaphiopus* spp.), which would most likely result in their deaths. Because of impacts on wildlife, Brattstrom and Bondello (1983) recommended that “all undisturbed desert habitats, critical habitats, and all ranges of threatened, endangered, or otherwise protected desert species” (p. 204) should be protected from loud noise.

Although many consider solar energy production a “quiet” endeavor, noise is associated with their operation. For example, facilities at which wet-cooling systems are used will have noises generated by fans and pumps. As for facilities with dry-cooling systems, only noise from fans will be produced during operation (EPRI 2002). Because of the larger size requirements of dry-cooling systems, there will be more noise production associated with an increase in the number of fans.

**Electromagnetic field generation.** When electricity is passed through cables, it generates electric and magnetic fields. USSEDO requires a large distribution system of buried and overhead cables to transmit energy from the point of production to the end user. Electromagnetic fields (EMFs) produced as energy flows through system cables are a concern from the standpoint of both human and wildlife health, yet little information is available to assess the potential impact of the EMFs associated with USSEDO on wildlife. Concerns about EMFs have persisted for a long time, in part because of controversy over whether they’re the actual cause of problems and disagreement about the underlying mechanisms for possible effects. For example, there is presently a lack of widely accepted agreement about the biological mechanisms that can explain the consistent associations between extremely low-frequency EMF exposure from overhead power lines and childhood leukemia, although there is no shortage of theories (Gee 2009).

Some conclude that the effects of EMFs on wildlife will be minor because of reviews of the often conflicting and inconclusive literature on the topic (Petersen and Malm 2006). Others suggest that EMFs are a possible source of harm for diverse species of wildlife and contribute to the decline of some mammal populations. Balmori (2010) listed possible impacts of chronic exposure to athermal electromagnetic radiation, which included damage to the nervous system, disruption of circadian rhythm, changes in heart function, impairment of immunity and fertility, and genetic and developmental problems. He concluded that enough evidence exists to confirm harm to wildlife but suggested that

further study is urgently needed. Other authors suggest that the generally inconsistent epidemiological evidence in support of the effects of EMFs should not be cause for inaction. Instead, they argue that the precautionary principle should be applied in order to prevent a recurrence of the “late lessons from early warnings” scenario that has been repeated throughout history (Gee 2009).

Magnetic information is used for orientation by diverse species, from insects (Sharma and Kumar 2010) to reptiles (Perry A et al. 1985). Despite recognition of this phenomenon, the direct effects of USSEDO-produced EMFs on wildlife orientation remains unknown.

**Microclimate effects.** The alteration of a landscape through the removal of vegetation and the construction of structures by humans not only has the potential of increasing animal mortality but also changes the characteristics of the environment in a way that affects wildlife. The potential for microclimate effects unique to solar facilities was discussed by Pimentel and colleagues (1994) and by Harte and Jassby (1978). It has been estimated that a concentrating solar facility can increase the albedo of a desert environment by 30%–56%, which could influence local temperature and precipitation patterns through changes in wind speed and evapotranspiration. Depending on their design, large concentrating solar facilities may also have the ability to produce significant amounts of unused heat that could be carried downwind into adjacent wildlife habitat with the potential to create localized drought conditions. The heat produced by central-tower solar facilities can burn or incinerate birds and flying insects as they pass through the concentrated beams of reflected light (McCrary et al. 1986, Pimentel et al. 1994, Tsoutsos et al. 2005, Wilshire et al. 2008).

A dry-cooled solar facility—in particular, one with a concentrating-trough system—could reject heated air from the cooling process with temperatures 25–35 degrees Fahrenheit higher than the ambient temperature (EPRI 2002). This could affect the microclimate on site or those in adjacent habitats. To our knowledge, no research is available to assess the effects of USSEDO on temperature or that of any other climatic variable on wildlife. However, organisms whose sex is determined by incubation temperatures, such as both species of desert tortoises, may be especially sensitive to temperature changes, because small temperature changes have the potential to alter hatchling sex ratios (Hulin et al. 2009).

**Pollutants from spills.** USSEDO, especially at wet-cooled solar facilities, has a potential risk for hazardous chemical spills on site, associated with the toxicants used in cooling systems, antifreeze agents, rust inhibitors, herbicides, and heavy metals (Abbasi and Abbasi 2000, Tsoutsos et al. 2005). Wet-cooling solar systems must use treatment chemicals (e.g., chlorine, bromine, selenium) and acids and bases (e.g., sulfuric acid, sodium hydroxide, hydrated lime) for the prevention of fouling and scaling and for pH control of the water used in their recirculating systems (EPRI 2002).



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Solar facilities at which a recirculating system is used also have treatment and disposal issues associated with water discharge, known as *blowdown*, which is water with a high concentration of dissolved and suspended materials created by the numerous evaporation cycles in the closed system (EPRI 2002). These discharges may contain chemicals used to prevent fouling and scaling. The potentially tainted water is usually stored in evaporative ponds, which further concentrates the toxicants (Herbst 2006). Because water is an attraction for desert wildlife, numerous species could be adversely affected. The adverse effects of the aforementioned substances and similar ones on wildlife are well documented in the literature, and a full review is outside the scope of this article. However, with the decreased likelihood of wet-cooling systems for solar facilities in the desert, the risk of hazardous spills and discharges on site will be less in the future, because dry-cooling systems eliminate most of the associated water-treatment processes (EPRI 2002). However, there are still risks of spills associated with a dry-cooling system. More research is needed on the adverse effects of chemical spills and tainted-water discharges specifically related to USSEDO on wildlife.

**Water consumption (wet-cooled solar).** The southwestern United States is a water-poor region, and water use is highly regulated throughout the area. Because of this water limitation, the type of cooling systems installed at solar facilities is limited as well. For example, a once-through cooling system—a form of wet cooling—is generally not feasible in arid environments, because there are few permanent bodies of water (i.e., rivers, oceans, and lakes) from which to draw cool water and then into which to release hot water. Likewise, other wet-cooling options, such as recirculating systems and hybrid systems, are becoming less popular because of water shortage issues in the arid region. Therefore, the popularity of the less-efficient and less-economical dry-cooling systems is increasing on public lands. Water will also be needed at solar facilities to periodically wash dust from the mirrors or panels. Although there are numerous reports in which the costs and benefits were compared both environmentally and economically (EPRI 2002, Khalil et al. 2006) between wet- and dry-cooled solar facilities, to our knowledge no one has actually quantified the effects of water use and consumption on desert wildlife in relation to the operation of these facilities.

**Fire risks.** Any system that produces electricity and heat has a potential risk of fire, and renewable energy facilities are no exception. Concentrating solar energy facilities harness the sun's energy to heat oils, gases, or liquid sodium, depending on the system design (e.g., heliostat power, trough, dish). With temperatures reaching more than 300 degrees Celsius in most concentrated solar systems, spills and leaks from the coolant system increase the risk of fires (Tsoutsos et al. 2005). Even though all vegetation is usually removed from the site during construction, which reduces the risk of a fire propagating on and off site, the increase of human activity

in a desert region increases the potential for fire, especially along major highways and in the densely populated western Mojave Desert (Brooks and Matchett 2006).

The Southwest deserts are not fire-adapted ecosystems: fire was historically uncommon in these regions (Brooks and Esque 2002). However, with the establishment of numerous flammable invasive annual plants in the desert Southwest (Brown and Minnich 1986), coupled with an increase in anthropogenic ignitions, fire has become more common in the deserts, which adversely affects wildlife (Esque et al. 2003). For Agassiz's desert tortoise, fire can translate into direct mortality at renewable energy facilities (Lovich and Daniels 2000) and can cause reductions in food and habitat quality. To our knowledge, however, there is no scientific literature related to the effects of USSEDO-caused fire on wildlife.

**Light pollution.** Two types of light pollution could be produced by solar energy facilities: ecological light pollution (ELP; Longcore and Rich 2004) and polarized light pollution (PLP; Horváth et al. 2009). The latter, PLP, could be produced at high levels at facilities using photovoltaic solar panels, because dark surfaces polarize light. ELP can also be produced at solar facilities in the form of reflected light. The reflected light from USSEDO has been suggested as a possible hazard to eyesight (Abbasi and Abbasi 2000). ELP could adversely affect the physiology, behavior, and population ecology of wildlife, which could include the alteration of predation, competition, and reproduction (for reviews, see Longcore and Rich 2004, Perry G et al. 2008). For example, the foraging behavior of some species can be adversely affected by light pollution (for a review, see Longcore and Rich 2004). The literature is limited regarding the impact of artificial lighting on amphibians and reptiles (Perry G et al. 2008), and, to our knowledge, there are no published studies in which the impacts on wildlife of light pollution produced by USSEDO have been assessed. However, light pollution is considered by G. Perry and colleagues (2008) to be a serious threat to reptiles, amphibians, and entire ecological communities that requires consideration during project planning. G. Perry and colleagues (2008) further recommended the removal of unnecessary lighting so that the lighting conditions of nearby habitats would be as close as possible to their natural state.

Numerous anthropogenic products—usually those that are dark in color (e.g., oil spills, glass panes, automobiles, plastics, paints, asphalt roads)—can unnaturally polarize light, which can have adverse effects on wildlife (for a review, see Horváth et al. 2009). For example, numerous animal species use polarized light for orientation and navigation purposes (Horváth and Varjú 2004). Therefore, the potential exists for PLP to disrupt the orientation and migration abilities of desert wildlife, including those of sensitive species. In the review by Horváth and colleagues (2009), which was focused mostly on insects but included a few avian references, they highlighted the fact that anthropogenic products that produce PLP can appear to be water bodies to wildlife and can become ecological traps for insects and, to a lesser degree, avian species. Therefore,

utility-scale solar energy facilities at which photovoltaic technology is used in the desert Southwest could create a direct effect on insects (i.e., ecological trap), which could have profound but unquantified effects on the ecological community surrounding the solar facility. In addition, there may be indirect effects on wildlife through the limitation of plant food resources, especially if pollinators are negatively affected. As was stated by Horváth and colleagues (2009), the population- and community-level effects of PLP can only be speculated on because of the paucity of data.

#### **Unanswered questions and research needs**

In our review of the peer-reviewed scientific literature, we found only one peer-reviewed publication on the specific effects of utility-scale solar energy facility operation on wildlife (McCrary et al. 1986) and none on utility-scale solar energy facility construction or decommissioning. Although it is possible that we missed other peer-reviewed publications, our preliminary assessment demonstrates that very little critically reviewed information is available on this topic. The dearth of published, peer-reviewed scientific information provides an opportunity to identify the fundamental research questions for which resource managers need answers. Without those answers, resource managers will be unable to effectively minimize the negative effects of USSEDO on wildlife, especially before permitting widespread development of this technology on relatively undisturbed public land.

**Before-and-after studies.** Carefully controlled studies are required in order to tease out the direct and indirect effects of USSEDO on wildlife. Pre- and postconstruction evaluations are necessary to identify the effects of renewable energy facilities and to compare results across studies (Kunz et al. 2007). In their review of wind energy development and wildlife, with an emphasis on birds, Kuvlesky and colleagues (2007) noted that experimental designs and data-collection standards were typically inconsistent among studies. This fact alone contributes measurably to the reported variability among studies or renders comparisons difficult, if not impossible. Additional studies should emphasize the need for carefully controlled before-after-control-impact (BACI) studies (Kuvlesky et al. 2007) with replication (if possible) and a detailed description of site conditions. The potential payoff for supporting BACI studies now could be significant: They could provide answers for how to mitigate the negative impacts on wildlife in a cost-effective and timely manner.

**What are the cumulative effects of large numbers of dispersed or concentrated energy facilities?** Large portions of the desert Southwest have the potential for solar energy development. Although certain areas are targeted for large facilities because of resource availability and engineering requirements (e.g., their proximity to existing transmission corridors), other areas may receive smaller, more widely scattered facilities. A major unanswered question is what the cumulative impacts of these facilities on wildlife are. Would it be better for

wildlife if development is concentrated or if it is scattered in smaller, dispersed facilities? Modeling based on existing data would be highly suspect because of the deficiency of detailed site-level published information identified in our analysis. Except for those on habitat destruction and alteration related to other human endeavors, there are no published articles on the population genetic consequences of habitat fragmentation related to USSEDO, which makes this a high priority for future research.

**What density or design of development maximizes energy benefits while minimizing negative effects on wildlife?** We are not aware of any published peer-reviewed studies in which the impacts on wildlife of different USSEDO densities or designs have been assessed. For example, would it benefit wildlife to leave strips of undisturbed habitat between rows of concentrating solar arrays? Research projects in which various densities, arrays, or designs of energy-development infrastructure are considered would be extremely valuable. BACI studies would be very useful for addressing this deficiency.

**What are the best sites for energy farms with respect to the needs of wildlife?** The large areas of public land available for renewable energy development in the desert Southwest encompass a wide variety of habitats. Although this provides a large number of choices for USSEDO, not all areas have the same energy potential because of resource availability and the limitations associated with engineering requirements, as was noted above. Detailed information on wildlife distribution and habitat requirements are crucially needed for proper site location and for the design of renewable energy developments (Tsoutsos et al. 2005). Public-resource-management agencies have access to rich geospatial data sets based on many years of inventories and resource-management planning. These data could be used to identify areas of high value for both energy development and wildlife. Areas with overlapping high values could be carefully studied through risk assessment when it appears that conflicts are likely. Previously degraded wildlife habitats, such as old mine sites, overgrazed pastures, and abandoned crop fields, may be good places to concentrate USSEDO to minimize its impacts on wildlife (CBI 2010).

**Can the impacts of solar energy development on wildlife be mitigated?** The construction of solar energy facilities can cause direct mortality of wildlife. In addition, building these facilities results in the destruction and fragmentation of wildlife habitat and may increase the possibility of fire, as was discussed above. Beyond these effects, essentially nothing is known about the operational effects of solar energy facilities on wildlife. Current mitigation strategies for desert tortoises and other protected species include few alternatives other than translocation of the animals from the footprint of the development into other areas. Although this strategy may be appealing at first glance, animal translocation has a checkered history of success, especially for reptiles and amphibians (Germano and Bishop 2008, CBI 2010). Translocation

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has yet to be demonstrated as a viable long-term solution that would mitigate the destruction of Agassiz's desert tortoise habitat (Ernst and Lovich 2009, CBI 2010).

### Conclusions

All energy production has associated social and environmental costs (Budnitz and Holdren 1976, Bezdek 1993). In their review of the adverse environmental effects of renewable energy development, Abbasi and Abbasi (2000) stated that "renewable energy sources are not the panacea they are popularly perceived to be; indeed, in some cases, their adverse environmental impacts can be as strongly negative as the impacts of conventional energy sources" (p. 121). Therefore, responsible, efficient energy production requires both the minimization of environmental costs and the maximization of benefits to society—factors that are not mutually exclusive. Stevens and colleagues (1991) and Martín-López and colleagues (2008) suggested that the analyses of costs and benefits should include both wildlife use and existence values. On the basis of our review of the existing peer-reviewed scientific literature, it appears that insufficient evidence is available to determine whether solar energy development, as it is envisioned for the desert Southwest, is compatible with wildlife conservation. This is especially true for threatened species such as Agassiz's desert tortoise. The many other unanswered questions that remain after reviewing the available evidence provide opportunities for future research, as was outlined above.

The shift toward renewable energy is widely perceived by the public as a "green movement" intended to reduce greenhouse-gas emissions and acid rain and to curb global climate change (Abbasi and Abbasi 2000). However, as was noted by Harte and Jassby (1978), just because an energy technology is simple, thermodynamically optimal, renewable, or inexpensive does not mean that it will be benign from an ecological perspective. The issue of wildlife impacts is much more complex than is widely appreciated, especially when the various scales of impact (e.g., local, regional, global) are considered. Our analysis shows that, on a local scale, so little is known about the effects USSEDO on wildlife that extrapolation to larger scales with any degree of confidence is currently limited by an inadequate amount of scientific data. Therefore, without additional research to fill the significant information void, accurate assessment of the potential impacts of solar energy development on wildlife is largely theoretical but needs to be empirical and well-founded on supporting science.

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**Letter 1**  
**Law Offices of Stephan C. Volker**  
**December 23, 2011**

**Response to Comment 1-1**

The County acknowledges receipt of the “Conservation Group’s” December 23, 2011 comment letter on the Draft EIR for the Mount Signal and Calexico Solar Farm Projects and as requested in this comment, has substituted the December 23, 2011 letter with the previously submitted December 19, 2011 letter.

**Response to Comment 1-2**

This comment summarizes the overall characteristics of the projects as described in the EIR, and does not address the adequacy of the EIR; therefore, no further response is necessary.

**Response to Comment 1-3**

The Conservation Group’s stated opposition to the proposed projects is acknowledged.

The proposed solar farm use is not “forbidden” by the Imperial County General Plan—as is claimed according to the commentator’s interpretation of the General Plan. The proposed solar use is consistent with the County’s General Plan and is a conditionally permitted use under the County’s Zoning Ordinance. Please refer to responses to comments 1-4 and 1-5.

Regarding distributed energy generation projects, please refer to response to comment 1-18.

**Response to Comment 1-4**

This comment refers to the court ruling “Neighborhood Action Group v. County of Calaveras” (1984) 156 Cal. App.3d 1176, 1184. In that case, the County of Calaveras approved a conditional use permit (CUP) for a proposed project, but the County did not have a valid General Plan (i.e., the General Plan was determined not to be in compliance with State law). This, in turn, invalidated the County’s issuance of a CUP for the project. The circumstances regarding the Neighborhood Action Group v. County of Calaveras case are not applicable to the Mount Signal and Calexico Solar Farm projects. Unlike the “Neighborhood” case, the County of Imperial’s General Plan meets State requirements and is legally valid. As such, no defect exists as it relates to the County’s authority to issue a CUP for the proposed solar generation projects, consistent with the underlying zoning designations within the project sites.

Specifically with respect to the proposed projects, as indicated on EIR page 4.10-6:

Sections 90508.02 and 90509.02 of the Land Use Ordinance identify the permitted and conditional uses within the A-2, A-2-R and A-3 zoning designations. Uses identified as conditionally permitted require a Conditional Use Permit (CUP), which is subject to the discretionary approval of the County Board of Supervisors (Board) per a recommendation by the County Planning Commission. The projects include several uses identified as conditionally permitted within the A-2, A-2-R, and A-3 zones. These uses include electrical substations in an electrical transmission system (500 kilovolt (kV)/230 kV/161 kV); facilities for the transmission of electrical energy (100-200 kV); solar energy plants; and solar energy electrical generators.

One of the Court’s primary considerations in the “Neighborhood” case was whether the county of Calaveras had the authority to issue a conditional use permit if it had failed to adopt a general plan containing elements, required by state law, which are relevant to the uses authorized by the permit. The County of Imperial’s General Plan Land Use Element recognizes solar energy (an alternative form of energy) as being consistent with the County’s overall goals and energy policies. As indicated on EIR

Table 4.10-1, PROJECT Consistency with Applicable Plan Policies (see EIR page 4.10-6), *Development of Geothermal/Alternative Energy Resources. Goal 1* - the County of Imperial supports and encourages the full, orderly, and efficient development of geothermal/alternative energy resources while at the same time preserving and enhancing where possible agricultural, biological, human, and recreational resources. With the approval of all CUPs, Variances and discretionary permits, the proposed projects would be an allowable use within the existing land use and zoning designations for the sites. In addition, the projects would promote Imperial County's renewable energy policies and would be consistent with the County's goal, as stated in its April 20, 2010 proclamation. According to the April 28, 2009 Joint Resolution of Imperial County Irrigation District and County of Imperial for the Creation of an Imperial Valley Renewable Energy Development Program, Imperial County is a major source of renewable energy for the State of California (see response to comment 1-16).

#### **Response to Comment 1-5**

This comment incorrectly states an interpretation of the General Plan that it "forbids" the proposed solar farm use on the proposed project sites. While the County's General Plan Land Use Agriculture category states that "agriculture shall be promoted as the principal and dominate use"; the Element does not restrict or otherwise forbid other uses. As provided in the Land Use Element, conversion of agricultural uses is allowed in cases "where a clear long term economic benefit to the County can be demonstrated through the planning and environmental review process." An economic, employment, and fiscal impact analysis has been prepared for the proposed projects (Development Management Group, Inc., March 3, 2012) and is provided as EIR Technical Appendix M. The information in this analysis will be considered by the Planning Commission and Board of Supervisors as part of consideration of approval of the proposed projects, consistent with this particular provision of the General Plan. This study concludes the following:

- The economic impact to the Imperial County region will be approximately \$1.01 billion dollars over thirty years (inclusive of both project construction and operations).
- The proposed projects represent the equivalent to 300 construction jobs for three years and 30 full time equivalent permanent jobs. By comparison, the current use of the project sites has approximately 18 permanent jobs. When comparing both the direct and indirect permanent employment of agriculture versus utility (energy) production, the proposed use will generate a total of 118.83 permanent jobs while the current use creates 32.41 permanent jobs.
- The proposed projects will generate a projected economic surplus (or benefit) to the County of approximately \$20.99 million over the life of the projects (this factors in the cost to the County to provide services to the project sites, and does not include any economic benefits that may be received by the County under a Public Benefits Agreement).

Furthermore, in compliance with County policy, the applicant has also prepared agricultural restoration plans for the project sites (see EIR Appendix L). Please also refer to response to comment 1-14, which discusses the applicant's Petitions for Cancellation of Contract for Williamson Act lands. The Petitions for Williamson Act Cancellation are included as EIR Appendix N.

Conditional Use Permits for solar energy projects on agriculturally-zoned land are not expressly prohibited in the Imperial County General Plan. Although each conditional use permit application must be evaluated on a case-by-case basis, such conditional uses are not inherently inconsistent with the General Plan Agricultural Element or Land Use Element. The Agricultural Element and Land Use Element contain no express prohibition of non-agricultural uses on land designated within the Agricultural category. Rather, the Agricultural Element specifically allows non-agricultural development on land within the Agricultural Category. According to the Land Use Element, Agriculture is the principal and dominant use, but it expressly allows non-agricultural uses on agricultural land and places an appropriate burden on those proposing a non-agricultural use to demonstrate that (1) it "does not conflict with agricultural operations and will not result in the premature elimination of such agricultural operations" and (2) it meets the requirement that "no use should be permitted which would have a significant adverse effect on

agricultural production.” (ICGP Land Use Elem. IV.C.1.) The Lead Agency has the authority to interpret the meaning of the General Plan and determine whether the proposed projects, together with the mitigation measures set forth in the EIR and the conditions of approval mandated by a conditional use permit, are consistent with the General Plan.

The Agricultural Element also specifically anticipates the conversion of agricultural land to non-agricultural uses under certain circumstances. (See ICGP Ag. Elem. III Goal 1, Objectives 1.5 [directing development to less valuable farm land “when conversion of agricultural land is justified”] and Objective 1.8 [allowing “conversion of agricultural land to non-agricultural uses only where a clear and immediate need can be demonstrated...”].) Agricultural Element Goal 3 “Agricultural and Non-Agricultural Land Use Relations expressly states: “*Limit* the introduction of conflicting uses into farming areas.... (emphasis added).” Furthermore, the Agricultural Element expressly allows land within the Agricultural category to be removed from the category for various reasons including “where a clear long term benefit to the County can be demonstrated through the planning and environmental review process.” (ICGP Ag. Elem. Implementation Program IV.C.1; Land Use Elem. IV.C.1.) Thus, the General Plan Agricultural Element and Land Use Element both anticipate that non-agricultural uses may be established on land within the Agricultural category and further anticipates that overriding economic benefits may necessitate even the removal of land from the Agricultural category.

General Plan goals and policies for preserving agricultural land are not inflexible and, pursuant to the language in the General Plan, should be balanced with General Plan goals and objectives of economic growth and regional vision. The General Plan Agricultural Element specifically cautions against its Goals and Policies being interpreted as doctrine:

Imperial County’s Goals and Objectives are intended to serve as long-term principles and policy statements representing ideals which have been determined by the citizens as being desirable and deserving of community time and resources to achieve. The Goals and Objectives, therefore, are important guidelines for agricultural land use decision making. It is recognized, however, that other social, economic, environmental, and legal considerations are involved in land use decisions and that these [Agricultural Element] Goals and Objectives, and those of other General Plan Elements, *should be used as guidelines but not doctrines.* (ICGP Ag. Elem. III.A Preface [emphasis added].)

In addition to the considerations set forth in the Agricultural Element regarding non-agricultural use of land within the Agricultural category, preserving Agricultural land for agricultural use must be balanced against the Economic Growth and Regional Vision goals and objectives of the General Plan Land Use Element. In particular, Goal 2 states: “Diversify employment and economic opportunities in the County while preserving agricultural activity.” Goal 3, Objective 3.2 states: “Preserve agricultural and natural resources while promoting diverse economic growth through sound land use planning.” These goals and objectives call for a balanced approach between preserving agricultural land and promoting economic growth.

### **Response to Comment 1-6**

As stated in response to comment 1-5, the proposed projects are consistent with the General Plan. The General Plan designates the subject site as “Agriculture.” The existing A-2 (General Agriculture, A-2-R (General Agriculture Rural) and A-3 (Heavy Agriculture) zoning is compatible with the County’s Land Use designation (see Table 4, Compatibility Matrix, in the Land Use Element of the General Plan). The project’s proposed solar energy facility use is a conditionally permitted use per the County’s Land Use Ordinance (sections 90508.02, 90509.02, and 90203.10).

The proposed use is listed as a use within the zone or sub-zone or is found to be similar to a listed conditional use according the procedures of Section 90203.10. The proposed use is a solar energy facility, which is consistent with the electrical power generating plant and solar energy plant uses listed as conditionally-permitted uses in the A-2, A-2-R and A-3 zones (i.e., these uses are permitted in these zones subject to obtaining a CUP pursuant to Section 90508.02 and Section 90509.02). Transmission

lines, including supporting towers, poles, microwave towers, utility substations are permitted uses within the A-3 zone.

The project applicant must agree to the County's Conditions of Approval in the CUP. Compliance with the Conditions of Approval will ensure that the proposed projects comply with all applicable regulations of the County of Imperial and the State of California. Therefore, the projects will meet the minimum requirements of the Land Use Ordinance.

Furthermore, this comment makes an "argument from silence" that improperly relies on a statement in the General Plan that a geothermal project is a conditionally compatible use within the Agricultural designation to mean that other renewable energy projects are not a conditionally compatible use and therefore a General Plan Amendment must be processed allowing this use before the projects can be approved. Imperial County did not intend the Land Use Element to be read that narrowly. Page 64 of the Land Use Element clarifies that "Implementation of the Land Use Element is intended to be a continual process involving amendments to the County Zoning Ordinance and Zoning Map, and discretionary review of proposed subdivisions and conditional use permits..." Furthermore, on page 37 of the Land Use Element, it clarifies that "It is recognized, however, that other social, economic, environmental and legal considerations are involved in land use decisions and that these Goals and Objectives, and those of other General Plan Elements should be used as guidelines, but not doctrines."

Consistent with a reading of the entire Land Use Element, the County enacted its Land Use Ordinance. It states, "The text, including any tables, metrics, charts, sketches, and the official zoning maps referenced in this title shall constitute the comprehensive land use regulations for all unincorporated areas of the County of Imperial. These regulations are adopted to promote and protect the public health, safety, and general welfare through the orderly regulation of land uses throughout the unincorporated areas of the county. Furthermore, the purpose of this title is also to: A. Encourage and guide development consistent and in conformity with the Imperial County General Plan." County Code Section 90101.01. Therefore, the County properly interpreted the General Plan's Land Use Element to allow conditional use permits for various power generating facilities in the agricultural zones more broadly than is interpreted by this comment. Case law supports that Courts give public agencies broad discretion in interpreting its land use documents.

Please also refer to response to comment 1-14, which discusses the applicant's Petitions for Cancellation of Contract for Williamson Act lands.

#### **Response to Comment 1-7**

The County recognizes that the proposed solar uses are not compatible with the existing Williamson Act lands located within the project sites. Therefore, cancellation of William Act contracted lands is a required discretionary action associated with approval of the projects. EIR Section "Required Project Approvals" (see EIR page 3-49) states:

**Williamson Act Contract Cancellation.** There are four active Williamson Act Contracts within the study areas. Agricultural Preserve 115 includes the northern portions of CSF1(A) (Assessors Parcel Numbers (APN) 052-210-001 and 002). Agricultural Preserve 117 includes the southern portions of CSF1(B) (APNs 052-210-038 and 039). Agricultural Preserve 160 includes the southern portions of CSF2(B)(APNs 052-180-022, 050, and 051). Agricultural Preserve 159 includes the northeastern portion of CSF2(A) (APN 059-110-007). Petitions for cancellation of these contracts were filed within the County in September and October of 2011.

The EIR identifies the conversion of 409 acres of Prime Farmland and 3,790 acres of Farmland of Local Importance as a significant impact. This conversion includes both Williamson Act contracted lands and other agricultural lands. Implementation of Mitigation Measure 4.2-1 is required to reduce this significant impact to a level less than significant. This mitigation measure provides three options to address the physical impact associated with the temporary conversion of agricultural land - the payment of in-lieu

agricultural conversion fees, or recordation of conservation easements, or implementation of an agricultural restoration plan at the time the solar facilities are de-commissioned. The applicant has prepared agricultural restoration plans as required by Mitigation Measure 4.2-1, discussed further below.

The Department of Conservation's letter references "agricultural preserves." For clarification, the project sites are not located within an agricultural preserve nor do the projects propose an agricultural preserve.

The County also acknowledges the concluding statements of the Department of Conservation's letter. As stated in their letter, the Department recommends that restoration plans be prepared for solar projects located on agricultural lands. Specifically, with respect to this matter the Department's letter states:

"It is important that proposals for the conversion of agricultural land to solar energy projects include a detailed site restoration plan describing how the project proponents will restore the land back to its current condition including irrigation supplies if and when some or all of the solar panels are removed. This type of plan would be similar to SMARA-required restoration plans on proposed mining sites. The Department recommends that an acceptable site restoration plan be required by the County for the proposed project."

The projects are consistent with this specific recommendation. A restoration plan is required as a component of project approval (see EIR page 3-49). As stated in the EIR, "The County is responsible for approving the project restoration plan and confirming that financial assurances for the project are in conformance with Imperial County Ordinances." Further, the restoration plan is required by Mitigation Measure 4.2-1 which states:

**4.2-1 Minimize Impacts to Important Farmlands.** The applicant shall mitigate for short- and long-term impacts to Prime Farmland and Farmland of Statewide Importance through the implementation of one of the three optional mitigation requirements as prescribed in the County's MOU regarding solar generation projects on agricultural lands.

**Option 1: Provide Agricultural Conservation Easement(s).** The applicant shall provide agricultural conservation easements on a "2 to 1" basis for Prime Farmland and "1 to 1" basis for Farmland of Statewide Importance on land of equal size, of equal farmland quality, and outside the path of development. The conservation easement shall meet DOC standards and shall be recorded prior to issuance of any grading or building permits.

**Option 2: Pay Agricultural In-Lieu Mitigation Fee.** The applicant shall pay an "Agricultural In-Lieu Mitigation Fee" in the amount of 20% of the fair market value per acre for the total based on five comparable sales of land used for agricultural purposes as of the effective date of the permit, including program costs on a cost recovery/time and material basis. The Agricultural In-Lieu Mitigation Fee will be placed in a trust account administered by the Imperial County Agricultural Commissioner's office and will be used for such purposes as the acquisition, stewardship, preservation and enhancement of agricultural lands within Imperial County.

**Option 3: Prepare an Important Farmland Restoration Plan.** The applicant shall submit to Imperial County a site-specific restoration plan capable of restoring on-site soils back to current agricultural conditions prior to the issuance of grading or building permits. The restoration plan shall include a site restoration cost estimate prepared by a California-licensed general contractor or civil engineer. The applicant shall provide financial assurances/bonding in the amount equal to the site restoration cost estimate to return the land back to its agricultural conditions after the solar facility ceases operations and closes.

In compliance with this measure, the applicant has prepared agricultural restoration plans for the project sites (GS Lyon Consultants, Inc., January 2012). The agricultural restoration plans are provided in EIR Appendix L. Please also refer to response to comment 1-14, which discusses the applicant's Petitions for Cancellation of Contract for Williamson Act lands.

Finally, the economic, employment, fiscal impact analysis of the proposed projects (Development Management Group, Inc., March 3, 2012), provided in EIR Appendix M, will be considered by the Planning Commission and Board of Supervisors as part of consideration of approval of the proposed projects.

#### **Response to Comment 1-8**

Please refer to response to comment 1-6.

#### **Response to Comment 1-9**

Please refer to response to comment 1-6.

#### **Response to Comment 1-10**

Please refer to response to comment 1-6.

#### **Response to Comment 1-11**

Pursuant to Government Code §51200 et seq., Williamson Acts, cancellation of lands within Williamson Act contracts is allowed. The Act contains specific provisions for the cancellation of the contracts which the County will implement as part of the approvals of the projects. Please also refer to response to comment 1-14, which discusses the applicant's Petitions for Cancellation of Contract for Williamson Act lands.

#### **Response to Comment 1-12**

These comments recite provisions of the Williamson Act and do not specifically address the adequacy of the EIR. The County acknowledges that there are specific provisions for the cancellation of Williamson Act contracts. Included among the provisions is that if cancellation of Williamson Act lands is proposed, cancellation fees must be paid. The applicant and/or property owner must comply with this provision.

#### **Response to Comment 1-13**

This comment is acknowledged, and is consistent with the EIR. As stated on EIR page 4.2-18:

“Given that the properties currently under the provision of the Williamson Act would be leased by the applicant and, therefore, the burden of cancellation or non-renewal would be placed on the landowner. Additionally, per Government Code Section 51282(a), the County Board of Supervisors is required to make certain findings prior to tentative approval for the cancellation of a contract.”

#### **Response to Comment 1-14**

The County Board of Supervisors will be responsible for making the findings associated with the proposed Williamson Act cancellations.

The comment correctly restates the alternative findings necessary to issue non-renewal notice of the Williamson Act contracts related to certain parcels proposed for solar energy development. The comment then argues without reference to substantial evidence that the County could not make either requisite finding.

The Applicant submitted three Petitions for Cancellation of Contract which includes substantial evidence that the County may consider in determining whether to elect not to renew the affected contracts. The Petitions for Cancellation of Contract are provided in EIR Appendix N.

Whether the Lead Agency elects not to renew the affected Williamson Act contracts and whether the Lead Agency is willing to adopt either of the requisite findings is within the discretion of the Lead Agency. Furthermore, as a result in changes to the program incentives the County has already determined not to renew the remaining Williamson Act contracts in the County. The purpose of the EIR is to identify the reasonably foreseeable impacts that would result if the Williamson Act contracts are not renewed and the proposed projects are implemented. Therefore, the commenter's arguments will be forwarded to the lead Agency for consideration.

The proposed solar generation use of the project sites is not forbidden by the County's General Plan. Please refer to responses to comments 1-5 and 1-6.

The comment provides no substantial evidence that cancellation of contracts will likely result in the removal of adjacent lands from agricultural use. Substantial evidence shows that a significant portion of the projects border the international boundary between the United States and Mexico, on the edge of developable land within the County. The projects are also adjacent to the approved Imperial Solar Energy Center South and Centinela Solar facilities, and are located in close proximity to both approved as well as proposed off-site transmission lines, Utility Corridor "N" and the City of Calexico.

Where the proposed projects are adjacent to agricultural uses substantial evidence shows that the proposed projects will not result in the removal of agricultural uses from adjacent lands. Typically, cancellation of Williamson Act contracts in an area may result in the removal of adjacent lands if the proposed use for the property is an incompatible use or is a use that encourages "leap frog" urban development. Although the commenter argues that the proposed projects are an incompatible use, substantial evidence shows that it is not. The types of development projects that in other parts of the state have resulted in the removal of adjacent lands from agricultural use have included traditional residential and commercial development – which permanently removes agricultural uses and introduces human populations and activities that are incompatible with adjacent agricultural uses. Solar farms, unlike typical residential or commercial development projects, do not encourage the premature removal of adjacent lands because solar farms, as part of their approval and development, generally do not involve the construction of backbone infrastructure (water and sewer) that would accelerate or encourage "leap frog" urban development. Additionally, the cancellation is unlikely to be the cause of the removal of additional property from agricultural use because:

- Agricultural operations in Imperial County have occurred on parcels of land with or without agricultural contracts regardless of whether those parcels are located within or outside of an agricultural preserve. Therefore, the cancellation of these contracts are not likely to result in the removal of adjacent lands from agricultural use.
- In nine years, all Williamson Act Contracts in the County will expire because the County Board of Supervisors in 2010 directed County staff to file notices of Non-Renewal for all active Williamson Act Contracts in the County. This policy direction by the County Board of Supervisors in essence determined that the cancellation of Williamson Act Contracts may not have an effect of removing land from agricultural production.
- Backbone Infrastructure (water and sewer) is not being proposed nor is required as part of the solar farm development projects.
- The proposed project sites represent approximately 0.25% of the total amount of land devoted to agriculture in Imperial County.
- Locating the solar farm within the agricultural property could be found to be a compatible use on the contracted land and the County as a whole.



- Solar energy projects do not eliminate access roads, transportation routes or other farm infrastructure and, unlike commercial or residential projects, do not involve the construction of backbone infrastructure, such as water or sewer lines or expanded roadways that would create the potential for future urbanized areas.
- Because solar energy projects are largely passive facilities that do not generate dust, noise, or other impacts that would impact adjacent agricultural uses, they do not threaten the preservation of such adjacent agricultural uses.

Therefore, the cancellation of the contract for this property will not result in the removal of adjacent lands from agricultural use.

#### **Response to Comment 1-15**

The County acknowledges that other tracts of non Williamson Act contracted lands exist within and surrounding the proposed project areas. However, the EIR does not state that private agricultural lands surrounding the Williamson Act contracted lands are “unavailable and suitable for use as a solar photovoltaic farm.” Rather, a substantial portion of the project areas is comprised of non-contracted Williamson Act lands (see EIR Figure 4.2-1 FMMP and Williamson Act Contracted Lands). Therefore, the project does utilize non-contracted lands.

Several other solar generation projects are being processed by the County in the same general area as the proposed projects. Although other, non-Williamson Act contracted agricultural lands exist in the vicinity of the project sites, this land is not necessarily available as an alternative location for the proposed projects as they are not under the control of the applicant. As stated previously, the proposed projects utilize non-contracted lands where they are available and under the applicant’s control. As shown on EIR Figure 6.2, several other large solar projects are proposed within the surrounding agricultural lands, and include the Imperial Solar Energy Center South, Centinela Solar, and Acorn Greenworks. Please also refer to EIR page 8-2 for a discussion of an Alternative Location to the proposed projects. This alternative was considered, but rejected from further consideration based on several factors, including those mentioned above.

The Applicant submitted three Petitions for Cancellation of Contract which includes substantial evidence that the Applicant made diligent efforts to analyze the availability of alternative non-contracted land. Appendix D in each of these petitions provides an “Analysis of Nearby Lands.” These analyses show that the land not included in the proposed projects is: a) land being used for another solar project; b) land where the landowner is not interested in having the land used for a solar energy project; or c) land insufficient size to accommodate a solar facility of the scale proposed by the Applicant. The applications include exhibits showing the land surrounding the proposed projects and identify sections that are already used or scheduled for use as solar energy facilities, land for which its owners have rejected solar energy as a proposed use, and land that is otherwise unsuitable for solar energy facilities due to insufficient size or lack of proximity to existing electrical facilities (including transmission lines).

Furthermore, an alternative to the proposed projects that specifically avoids Williamson Act contracted lands is analyzed in the EIR (see EIR page 8-12, Alternative 3: Reduced Acreage (Avoid Williamson Act Land)).

#### **Response to Comment 1-16**

As stated in the EIR, the proposed projects involve five separate Conditional Use Permit (CUP) applications associated with five project sites. A single solar energy facility is not proposed. In fact, five separate solar generating facilities are contemplated, each governed by its own CUP application; however, they would share the same transmission line. The County has prepared this EIR in order to comprehensively address the potential environmental impacts associated with the development of the project areas under these five CUP applications. The objective of the projects, to generate a minimum of

600 MW of solar generated electricity, would be accomplished through a combination of the CUP's evaluated in the EIR. The project objective of providing 600 MW of power reflects the County's mission to help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006), the County's goals of becoming a major source of renewable energy for California, and the Applicant's goal to assist the County with these initiatives.

According to the April 28, 2009 Joint Resolution of Imperial County Irrigation District and County of Imperial for the Creation of an Imperial Valley Renewable Energy Development Program, Imperial County is a major source of renewable energy for the State of California. One of the purposes of the Imperial Valley Renewable Energy Development Program is to "[m]aximize development of all renewable energy resources." In addition to the project objective cited by the commenter, an objective of the projects is "to help California meet its statutory and regulatory goal of increasing renewable power generation, including greenhouse gas reduction goals of Assembly Bill (AB) 832 (California Global Warming Solutions Act of 2006)." Pursuant to SB 2X, California utilities have been mandated to obtain 33% of their energy from renewable sources (wind, solar, geothermal, biofuels, etc.) by 2020. Additional objectives of the projects are to "[i]nterconnect with electrical transmission infrastructure either planned or being constructed by other nearby projects, interconnect to the ISO controlled transmission network, and maximize opportunities for the sharing or use of existing utility transmission corridor(s)" and to "[e]ncourage economic investment and diversify the economic base for Imperial County."

Please also refer to response to comment 1-17 which discusses alternatives to the proposed projects.

Regarding a distributed energy alternative, please refer to response to comment 1-18. Other alternatives to the proposed projects are considered and analyzed in EIR Section 8.0 Alternatives. After consideration, some of these alternatives did not meet certain project objectives. CEQA establishes no categorical legal imperative as to the scope of alternatives to be analyzed in an EIR. To be legally sufficient, the consideration of project alternatives in an EIR must permit informed agency decision-making and informed public participation. The analysis of alternatives is evaluated against a rule of reason. Alternatives are suitable for study in an EIR if they meet all of the following thresholds: (1) substantially reduce or avoid the project's significant environmental impacts; (2) attain most of the basic project objectives; (3) are potentially feasible; and (4) are reasonable and realistic. (Guidelines § 15126.6, subs. (a), (c).) Candidate alternatives that do not satisfy these requirements may be excluded from further analysis. An EIR need not consider alternatives that would change the fundamental nature of the project or that cannot achieve the fundamental goals and purposes of the proposed projects. The case law makes it clear that (provided the objectives of the proposed projects are not synonymous with the proposed projects, i.e., the objectives cannot include "development of the proposed project") lead agencies are given broad discretion to determine the objectives of a project for CEQA purposes, and that such objectives will often and appropriately be narrower when the project at issue is proposed by a private applicant rather than by the Lead Agency. See, e.g., *Sierra Club v. County of Napa*, 121 Cal. App. 4<sup>th</sup> 1490 (2004)(upholding agency's reliance on project applicant's objectives to narrow scope of alternatives and ultimately reject reduced-scale alternative as infeasible based on its frustration of project objectives); *Sequoyah Hills Homeowners Association v. City of Oakland*, 23 Cal. App. 4<sup>th</sup> 704(1993). Therefore, the objectives identified in the EIR are considered appropriate for the proposed projects.

#### **Response to Comment 1-17**

The County disagrees that the EIR does not evaluate a reasonable range of alternatives. Furthermore, the EIR does not reject any of the alternatives analyzed and each of these alternatives would remain under consideration by the County decision makers. For each of these alternatives, the EIR states, "However, this alternative would make it more difficult to achieve the overall objective of providing a total of 600 megawatts of renewable solar energy, as there would be less area available for the placement of PV structures." However, this statement is not a categorical rejection of the alternative.

The EIR's range of alternatives is reasonable given the type of projects proposed (a solar generation facility) and the potential environmental impacts associated with the projects. In an effort to avoid or reduce these impacts, the EIR's range of alternatives includes: (1) No Project/No Development; (2) Reduced Acreage Alternative (Avoid Prime Farmland); (3) Reduced Acreage Alternative (Avoid Williamson Act Land); and (4) Reduced CSF2(A). Furthermore, an alternative location was considered and rejected (see EIR page 8-2). This is considered a reasonable range of alternatives. Please refer to response to comment 1-18 regarding a distributed generation alternative.

#### **Response to Comment 1-18**

The County disagrees that the EIR fails to analyze a reasonable range of alternatives (please refer to response to comment 1-17).

#### ***Regarding Distributed Generation Alternative:***

CEQA states that an EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. (CEQA Guidelines 15126.6(a).) This comment alleges that the EIR fails to examine a reasonable range of alternatives and should have examined a Renewable Distributed Generation alternative.

However, an EIR need not consider alternatives that are infeasible (CEQA Guidelines 15126.6(a)) or which would change the fundamental nature of the proposed project. (*Al Larson Boat Shop, Inc. v. Board of Harbor Comm.* (1993) 18 Cal.App.4th 729, 745.) The alternatives presented in an EIR must be potentially feasible, defined as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social and technological factors." (Pub. Res. Code Section 21061.1). The CEQA Guidelines add the term "legal" to the list of factors to take into account. (CEQA Guidelines 15364.) The alternatives discussed in the EIR must be reasonable alternatives, selected to foster informed decision-making and public participation (CEQA Guidelines 15126.6(a).) An EIR need not consider an alternative whose effect cannot reasonably be ascertained or whose implementation is remote and speculative, because unrealistic alternatives do not contribute to a useful analysis. (CEQA Guidelines 16126.6(f)(3).)

Further, CEQA does not contain ironclad rules relating to the range of alternatives to be discussed in an EIR. The nature and scope of alternatives in an EIR is governed by the rule of reason (CEQA Guidelines 15126.6(a)). An EIR is not deficient if it excludes potential alternatives from its analysis so long as it discusses a reasonable range of alternatives. No set number of alternatives is necessary to constitute a legally adequate range of alternatives. The scope of alternatives will vary from case to case depending on the nature of the project under review. If a reasonable basis for the choices the agency makes is found in the record, a reviewing court will defer to the agency's selection of alternatives (see, e.g. *Save San Francisco Bay Ass'n v. San Francisco Bay Conserv. & Dev. Comm'n*, 10 Cal. App. 4<sup>th</sup> 908, 919 (1992) upholding an EIR's discussion of alternatives because the record showed that the public agency had considered a number of potential alternatives and selected a range of prototypical alternatives for analysis in the EIR.)

This comment states that the County should have analyzed a Renewable Distributed Generation alternative to supply solar power instead of (or in addition to) a large scale solar generation facility. Distributed generation refers to the installation of small-scale solar energy facilities at individual locations at or near the point of consumption (e.g., use of solar PV panels on a business or home to generate electricity for on-site consumption). Distributed generation systems typically generate less than 10 kW per system. Other terms for distributed generation include on-site generation, dispersed generation, distributed energy, and others.

The Distributed Generation Alternative is rejected as infeasible because Renewable Distribution Generation cannot meet most of the project objectives and cannot be implemented by a private applicant in a reasonable period of time. Furthermore, a distributed solar project appears to change the fundamental nature of the projects by requiring the acquisition or lease of numerous unidentified locations throughout Imperial County to assemble a distributed solar array. Furthermore, most distributed solar arrays do not deliver on-peak power directly to the State power grid, which is one of the fundamental goals of the proposed projects.

The County's evaluation in the EIR is that of a privately proposed project (i.e., the Mount Signal and Calexico Solar Farm projects), and the applicant does not own the types of buildings, post offices, correctional facilities, and military facilities which could be used in a Renewable Distributed Generation alternative. At approximately 10 kW per system, it would take many, many years (compared to the proposed project's three year construction schedule) for the applicant to secure rights to construct solar facilities on private and public building rooftops to reach the 600 MW capacity proposed as an objective of the proposed projects. Therefore, distributed generation is not an alternative that is capable of being implemented by a private applicant within a reasonable period of time and therefore is not considered a feasible alternative.

Likewise, a project objective is to assist California in meeting its Renewable Portfolio Standard ("RPS") goals of 33 percent of electrical power retail sales by 2020, which is only eight years away. Distributive Generation systems at 10 kW per project only comprise about 974 MW in California.<sup>1</sup> An additional 75 Trillion Watt hours (TWh) are needed to meet the RPS target.<sup>2</sup> Furthermore, the California Public Utility Commission has identified 21 challenges to developing a high penetration of distributed generation in California all of which are incorporated by reference into this response.<sup>3</sup> The list of barriers were developed following an exhaustive literature review of documents from the Institute of Electrical and Electronic Engineers, Department of Energy, CPUC proceedings and comments, Federal Energy Regulatory Commission, California Energy Commission, National Renewable Energy Laboratories, and various academic papers. Among the more notable barriers that the CPUC's experts identified was "The potentially time consuming and costly process of going through the interconnection process creates a barrier." This, like most of the 21 challenges was identified as a current problem with low effort to resolve them. The County believes this is substantial evidence from experts with respect to all of these barriers, with only 8 years remaining to meet the RPS goals, and with the need to generate approximately 75 TWh of additional renewable energy, a Distributive Generation alternative cannot be implemented within a reasonable period of time to achieve this key project objective and therefore is not considered feasible.

Furthermore, a recent California Public Utilities Commission's Renewable Portfolio Standard's Quarterly Report notes that the RPS is the "primarily vehicle for new utility-scale renewable energy development in California" and that a program to stimulate distributive generation "does not contribute towards the RPS requirements" because "in the case of renewable customer generation, the system-owner owns the renewable energy credits (REC)" and would have to decide to sell the RECs to retail sellers to contribute to the RPS targets<sup>4</sup>. Neither the County nor the applicant can force the sale of such credits to help meet the RPS targets. Therefore, it is not an alternative that is legally feasible in achieve a major project objective.

Another key project objective is to operate a facility at a location that ranks among the highest in solar resource potential. A Renewable Distributive Generation alternative involves locating PV systems on existing buildings, but does not guarantee that those buildings are efficiently located in an area that ranks among the highest in solar resource potential even if the applicant or the County had legal authority to access rooftops in Imperial County; therefore, this objective may not be achieved.

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<sup>1</sup> California Solar Statistics. <http://www.californiasolarstatistics.ca.gov> on 9/28/2011

<sup>2</sup> <http://www.cpuc.ca.gov/NR/rdonlyres/B123F7A9-17BD-461E-AC34-973B906CAE8E/0/ExecutiveSummary33percentRPSImplementationAnalysis.pdf>

<sup>3</sup> <http://www.cpuc.ca.gov/PUC/energy/Renewables/Re-DEC.htm>

<sup>4</sup> <http://www.cpuc.ca.gov/NR/rdonlyres/1D24680C-BDF1-4EE9-A43F-59B309602172/0/Q2ReporttotheLegislatureFINAL.pdf>

Additionally, if the County were to disapprove the projects, it would not necessarily lead to adoption of a distributed generation alternative that the applicant could implement. Therefore, it does not offer a useful analysis that should be analyzed in the EIR.

A Distributed Energy alternative could avoid some of the significant impacts associated with the proposed project, but could also result in additional impacts not associated with the project. The following provides an analysis of the potential environmental impacts associated with a Distributed Energy alternative as compared to the proposed projects:

**Aesthetics:** A Distributed Energy alternative would reduce the overall size of the solar energy fields. However, this alternative would involve placement of PV structures, transmission lines, and development of additional supporting facilities, such as switching stations and substations at various locations throughout the County. There could be significant aesthetic impacts in certain areas depending on the locations of these facilities. Transmission lines would need to be constructed to serve the PV generation sites, all of which would be placed in closer proximity to urban areas, and all of which would be more readily visible to more people as compared to the proposed projects. No significant aesthetic impact associated with the proposed projects has been identified as the project facilities would not impact scenic resources, or result in the degradation of the existing visual character of the project study areas. This alternative would avoid any potential glare impact to airport operations.

**Agriculture:** Under a Distributed Energy alternative, the project study areas would continue to be used for active agricultural uses. However, since this alternative would include the use of large acreages of Farmland of Statewide Importance for the solar generation facilities, mitigation would be required to reduce significant farmland impacts to a less than significant level. Impacts associated with contributing to the conversion of other agricultural lands or otherwise affecting agricultural operations would not occur. Compared to the proposed project, this alternative would reduce the significant impacts associated with these agricultural issues.

**Air Quality:** Under a Distributed Energy alternative, air emissions due to project construction could be less than the proposed projects; however, PV facilities and supporting infrastructure would still need to be constructed to support this alternative, which would involve short-term construction emissions. This alternative would develop less renewable energy megawatt generation as compared to the projects in the near-future, thereby reducing its ability to provide a long-term source of renewable energy and meeting renewable energy goals.

**Biological Resources:** Under a Distributed Energy alternative, potential impacts to the two burrowing owls locations identified within the project sites and indirect impacts associated with burrowing owls in the adjacent drainage canals would be avoided as compared to the proposed projects. However, a Distributed Energy alternative would also require the construction of supporting infrastructure that has the potential to result in biological impacts. As such, while this alternative may avoid the specific impacts associated with the proposed projects, it could also result in additional biological impacts in other areas of the County where supporting infrastructure is required to support Distributed Energy facilities.

**Cultural Resources:** No significant cultural resources have been identified on the solar energy field portion of the project sites, and therefore, this alternative would not avoid or reduce a cultural resources impact. Depending on the configuration of transmission lines, this alternative would still require the placement of the transmission lines within BLM Lands in order to connect to the Imperial Valley substation. Compared to the proposed projects, this alternative would likely incur similar impacts to cultural and paleontological resources by virtue of any transmission connection required through BLM Lands.

**Geology and Soils:** Grading and construction of new facilities such as transmission facilities, and solar arrays would still occur. Similar to the projects, this alternative would require the incorporation of mitigation measures identified for the proposed projects to minimize these impacts to a less than

significant level. In this context and when compared to the proposed projects, this alternative would result in similar geological and soil impacts.

**Greenhouse Gas Emissions:** Under the Distributed Energy alternative, the projects' footprint would be reduced thereby contributing to reductions in GHG emissions during project construction. However, as a consequence of the reduced footprint, this alternative would result in a reduced power production capacity as compared to the projects; hence, the overall benefits of the projects to global climate change through the creation of renewable energy would also be reduced. This alternative would not conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. Although this alternative would result in reduced construction emissions, this alternative would still require mitigation during construction at individual sites throughout the County, similar to the proposed projects.

**Hazards and Hazardous Materials:** This alternative would avoid the project-specific impact associated with the potential for exposure of construction workers to hazardous materials based on the presence of hydrocarbon stains found throughout surface coils at CSF2. Other hazards and hazardous materials-related impacts, including the potential for accidental discovery of undocumented hazardous materials and wildfire hazards during construction would be avoided, as well as potential compatibility issues related to airport safety.

**Hydrology/Water Quality:** This alternative would likely avoid any impacts associated with modifications to the existing drainage patterns and the volume of storm water runoff, as this alternative would introduce less impervious surface areas (the Distributed Energy alternative would involve construction PV facilities on existing structures and within existing developed areas).

**Land Use/Planning:** This alternative would avoid any potential conflict with respect to the Calexico International Airport and private airstrip. Similar to the proposed projects, this alternative would not divide an established community or result in incompatibilities with adjacent agricultural uses. Unlike the projects, the Distributed Energy alternative could involve multiple planning approvals (e.g., variances, CUPs, rezones) in order to accommodate the solar generating uses within other zones of the County that currently do not allow such uses. Based on these considerations, land use/planning impacts resulting from this alternative would be similar, and potentially greater than those identified for the proposed projects.

**Noise:** As with the proposed projects, this alternative would result in significant, but mitigable noise impacts associated with construction activities. Compared to the proposed projects, this alternative would require the operations of the same facilities required for the projects and, therefore, would not reduce any significant noise impacts nor eliminate the need to incorporate mitigation measures. As with the proposed projects, operational impacts associated with this alternative would not expose persons or generate noise levels in excess of applicable noise standards, exposure persons to, or generate excessive groundborne vibration, or expose persons to excessive aircraft noise. In this context, significant noise impacts as a result of this alternative would be similar to the proposed projects.

**Public Services:** This alternative would require increased public services to the various sites, specifically in relation to law enforcement and fire protection services. It is anticipated that public services and associated service ratios would be similar, as the facilities would require fire and law enforcement protection, and distributed over a larger geographical area. Like the projects, this alternative would be conditioned to provide law enforcement and fire service fees. In this context, this alternative would result in a similar impact to public services when compared to the proposed projects.

**Recreation:** This alternative would not reduce or avoid impacts to recreation when compared to the projects. As provided in Chapter 4, no significant impact to recreation has been identified for the proposed projects given that no formal recreational opportunities exist within the project study areas, and the projects would not generate an increase in demand for parks and recreational facilities. Although informal

recreational opportunities would no longer exist, these impacts are considered less than significant, similar to the proposed projects.

**Transportation/Traffic:** This alternative would not reduce or avoid an impact to transportation/traffic and would result in less than significant impacts similar to the proposed projects. As with the proposed projects, this alternative would not impact any applicable plan, ordinance, or policy addressing the performance of the circulation system, conflict with an applicable congestion management program, change air traffic patterns, substantially increase hazards due to a design feature, result in inadequate emergency access, or conflict with public transit, bicycle, or pedestrian facilities.

**Utilities:** The Distributed Energy alternative would require water service and energy for the operation of the projects. As with the proposed projects, panel washing and other maintenance would be required. This alternative would also allow agricultural operations to continue at the project sites, which utilizes more water than solar farm activities. As a consequence, this alternative would have increased water demands when compared to the projects.

**Comparison to Project Objectives.** The Distributed Generation Alternative would make it more difficult to achieve the overall objective of providing a total of 600 megawatts of renewable solar energy, as there would be less area available for the placement of PV structures, and would not likely be achievable within the state-mandated timeframes.

In conclusion, the Renewable Distributed Solar Generation is technically infeasible as a replacement alternative for industrial scale projects for a variety of reasons including, upper limits on integrating distributed generation into the electric grid, lack of electricity storage in most distributed generation systems, and continued dependency of buildings on grid-supplied power for reliability). In order to achieve the 600 MV goal of the projects, thousands of acres of rooftops would need to be available in the County for solar use. Hundreds or thousands of installation locations across the County would be required, many of which would require additional discretionary actions and development review processing. Other factors contributing to the infeasibility include:

- There would be difficulties with respect to building of the system within a timeframe that would be similar to the proposed projects;
- Given the distributed nature of such a network of facilities, management and maintenance would not be as efficient, and total capital costs would likely be higher;
- The requirement to negotiate with a large number of individual property owners to permit placement of solar panels on rooftops which would likely add substantial approvals and time to meeting the stated renewable energy goals;
- The difficulty in ensuring proper maintenance of a large number of small solar installations;
- The lack of an effective electricity distribution system for large numbers of small electricity producers.

#### **Response to Comment 1-19**

The County disagrees that the EIR “entirely fails” to describe or analyze the project’s impacts to the private airstrip owned and managed by Frontier Agricultural Services, Inc.

The airport is identified on EIR Figure 3.0-3 (see EIR page 3-9). As shown, the airstrip is bordered on three sides by the Calexico Solar Farm 2 – Phase A (CSF2(A)). However, the airstrip is not located within the boundaries of the CSF2(A) site.

The potential for compatibility impacts between the airstrip and the proposed CSF2(A) project include the project’s potential to produce light and glare impacts and the introduction of structures on the project sites that could interfere with the aerial application operations. It should be noted that, to the extent that they

currently exist, aerial application operations would be discontinued over the project sites as the existing agricultural uses would be replaced with solar uses.

The EIR addresses the potential for light and glare impacts associated with the Calexico airport and private airfield. Specifically, EIR page 4.1-48 states:

“However, CSF2(A) which is situated closer to nearby development along the western fringe of Calexico, contains a private airfield, and is located adjacent to the Airport Land Use Compatibility Plan (ALUCP) area for Calexico International Airport, which is delineated by Hammers Road.”

Further, as stated on EIR page 4.1-51, a significant impact is identified associated with this issue and mitigation is required. EIR page 4.1-51 states:

“However, given that CSF2(A) would produce new glint impacts in addition to direct sunlight at these times, these effects could result in a significant impact to airport operations. Implementation of Mitigation Measure 4.1-4 would reduce impacts to less than significant.”

Mitigation Measure 4.1-4 is proposed in order to address the potential impact associated with glint. More specifically, Mitigation Measure 4.1-4 is applicable only to the CSF2(A) project site. The private airstrip is adjacent to CSF2(A). Specifically, Mitigation Measure 4.1-4 states:

The following mitigation measure is required for CSF2(A). No mitigation is required for CSF1(A), CSF1(B), CSF2(B), OTF-Private, and OTF-BLM.

**4.1-4 Coordinate Final Design Plans for CSF2(A) with Imperial County Airport Land Use Commission (ALUC) to Minimize Glare and Glint Effects on Airport Operations.** The project applicant shall coordinate the final design of CSF2(A) with the Imperial County ALUC to ensure that glare and glint effects from the proposed solar arrays are minimized to less than significant levels. The project applicant shall incorporate design recommendations prescribed by the ALUC for CSF2(A), including the use of tracker mounting systems as opposed to fixed-tilt systems. To ensure that recommendations are integrated into the final design plans for CSF2(A), Imperial County shall coordinate the final design plans for CSF2(A) with the ALUC prior to final approval.

In compliance with this measure, the applicant has: 1) prepared an additional glint study addressing the potential impacts associated with the private airstrip (Calexico Solar Farm II – 89MA Project Reflectivity Analysis, AZTEC Engineering, Inc., January 30, 2012). This study concludes no significant impact; 2) in consultation with the airstrip operator, has modified the project layout in the area of the airstrip which provides a 125-foot buffer from the centerline of the airstrip, where no facilities would be located; and, 3) has obtained a consistency determination from the Imperial County ALUC on March 15, 2012. With respect to other potential compatibility impacts associated with the introduction of structures on the project sites, see EIR Section 4.8 Hazards and Hazardous Materials. The Johnson Brothers Private Airstrip is identified on Figure 4.8-1. EIR page 4.8-17 specifically addresses other hazards and mitigation is prescribed. Specifically, EIR page 4.8-17 states:

#### **CSF2(A) and OTF-Private Land**

Johnson Brothers private airstrip is located adjacent to, and encompassed on three sides of CSF2(A). Project features such as transmission towers and overhead/aboveground utility lines, lighting, and the use of cranes during construction and maintenance have the potential to conflict with commercial aerial application operations associated with farming and aircraft utilizing nearby private airstrips. This impact is considered significant absent



incorporation of mitigation measures. Implementation of Mitigation Measure 4.10-2 within Section 4.10 Land Use and Planning would require a consistency determination with the ALUC and ensure that the impact is less than significant. Furthermore, a 125-foot buffer from the runway centerline is proposed on either side of the landing strip as measured from the centerline of the landing strip. This buffer would setback solar uses from the runway, so as to not interfere with aircraft operations. Finally, a glint analysis was prepared that indicates there would be no significant glint impact to private aircraft operations.

Subsequent to the publication of the Draft EIR, the Applicant contracted with Aztec to complete an expert glare and reflectivity analysis of potential impacts to flight operations at Frontier Airport. The reflectivity analysis by Aztec (January, 2012) is provided as EIR Appendix B. The Aztec Study modeled glare and reflectivity for several scenarios, including daytime and nighttime scenarios. The Aztec study concludes:

According to the mathematical analysis, geometric conditions for glint scenarios could occur from PV modules installed in plant section North of the runway (for fixed tilt and inclined axis trackers), and from modules installed in plant section South of the runway (for horizontal axis trackers). In some cases, when the reflected beam could be nearly parallel to the runway axis, the pilot would be directly facing the sun's disk simultaneously, which is much brighter than the reflection itself. Geometric glint may happen also during central hours, with high sun elevation angles and the sun disk not directly in pilot's visual path. In those cases, reflected light could be directed at the airplane perpendicularly to its path; i.e., the pilot would have to turn his head to the side and look away from the runway axis to be affected by this direct glint reflection.

According to Byron D. Nelson, of Frontier Ag. Service, Inc, most aircraft operations at frontier take place at night. The Aztec study concludes: "self glint or glare from airplanes' headlights during landing or taking-off to the airfield at night will never occur under normal maneuvering conditions."

In addition, the project site plan for CSF(2) has been revised to provide a buffer from the northern edge of the Frontier airstrip runway to the project fence line, which is approximately 125 feet from the runway centerline. According to the Applicant, Byron D. Nelson, of Frontier Ag. Service, Inc. has agreed that this buffer would adequately address his safety concerns, and the County has agreed to include this buffer as requirement of the proposed project. The applicant revised site plan reflects this buffer.

#### **Mitigation Measure(s)**

No additional mitigation measures beyond Mitigation Measure 4.10-2 is required to reduce impact below significant levels.

#### **Significance After Mitigation**

With incorporation of Mitigation Measure 4.10-2, possible safety hazards to the public residing or working within proximity of the Johnson Brothers airstrip would be reduced to a level **less than significant**.

Consistent with the requirements of EIR Mitigation Measure 4.1-4, the project applications have been reviewed by the Airport Land Use Commission and a consistency determination has been made. Furthermore, a 125-foot structure setback, measured from the centerline of the airstrip, is proposed which addresses the potential conflict with the airstrip.

As such, the EIR does indeed address impacts to agricultural aircraft operations and no violation of CEQA exists.

**Response to Comment 1-20**

Pursuant to CEQA, an economic impact is not an impact on the physical environment that must be addressed in an EIR (see CEQA Guidelines Section 15131). The County considers the fiscal and economic impacts as part of approval of the projects. Conditions of Approval, in terms of financing of services, etc. are also placed on each of these projects based on the findings of the particular fiscal/economic study. Previous solar projects approved by the County have been shown to provide a fiscal benefit to the County.

An economic, employment, and fiscal analysis has been prepared for the projects and this information will be considered as part of the Planning Commission and Board of Supervisor consideration for approval of the projects.

**Response to Comment 1-21**

Please refer to responses to comments 1-4 and 1-5.

**Response to Comment 1-22**

The commenter claims that the 1998 and 2006 research relied upon in the EIR regarding EMF impacts on people and wildlife is out-of-date, and provides additional sources from 2001 and 2011 that the commenter claims are more conclusive. The commenter provides four sources, three of which are by the same author – Samuel Milham. According to an expert analysis by Gayle Nichol, PhD, of URS, which was prepared in response to this comment, none of the sources provided by the commenter provide substantial evidence that the proposed projects presents a potentially significant health risk associated with EMF exposure. The URS Report provides substantial evidence and expert analysis showing that potentially significant impacts resulting from EMF output from the proposed projects will not be significant. The URS report is provided as EIR Appendix G. The URS report concludes:

URS has addressed [Mr.] Volker's comments, and specifically discussed the following points:

1. EMF levels are not expected to be above background levels outside the fenced in area of the projects.
2. EMF will not interfere with airport operations.
3. EMF levels within the projects are expected to be below ICNIRP levels.
4. ICNIRP levels already have a safety factor built into the recommended levels for both magnetic and electric fields.

URS has also addressed the Exhibits, and specifically discussed the following points:

1. All three Exhibits are from the same author, Samuel Milham.
2. Mr. Milham's work has serious scientific deficiencies and is not accepted as sound work by the scientific community.

One of the articles provided by the commenter describes the EMF impacts of utility-scale solar energy facilities on wildlife as an unanswered question needing more research. (Lovich & Ennen, *Wildlife Conservation and Solar Energy Development in the Desert Southwest, United States*, BioScience Dec. 2011/Vol. 61 No. 2.) The same article states: "little information is available to assess the potential impact of the EMFs . . . on wildlife." (Id. at p. 987.) Another source provided by the commenter studied correlation between high voltage basement-mounted 12,000 V transformers on a population of teachers

at one Middle School. (Milham & Morgan, *A New Electromagnetic Exposure Metric: High Frequency Voltage Transients Associated with Increased Cancer Incidence Teachers in a California School*, Am. J. of Industrial Medicine (2008).) This paper studied a population of teachers working daily in close proximity to the source of electromagnetic exposure, and showed that duration of exposure was an important variable in the risk of cancer among the population. This study is not comparable to the electromagnetic fields generated by a solar energy facility that is outdoors, and several hundred feet and at some points miles from the persons described by the commenter. Furthermore, the study provides no evidence inferring that the distance and much shorter exposure period associated with a solar energy facility poses a cancer risk comparable to the teachers in the study. The author of another source provided by the commenter describes the report as merely a “hypothesis.” (Milham, *Historical Evidence that Electrification Caused the 20<sup>th</sup> Century Epidemic of “Diseases of Civilization,”* Elsevier (2009).) The hypothesis and the data included to support it are not evidence of EMF impacts associated with the proposed projects because the hypothesis regards electromagnetic field exposure in residences. Even if the hypothesis is treated as credible, the hypothetical risk of disease from residential exposure to EMFs cannot be compared to much less frequent exposure to EMFs from the proposed projects at distances much greater than those of a residential exposure. The commenter also provides a Letter to the Editor of the Journal of Developmental and Behavioral Science from Samuel Milham (the author of the hypothesis Middle School article referenced above). The letter recounts an unscientific and unverified anecdote purporting to show a correlation between student hyperactivity and “dirty electricity” exposure. Even if this anecdotal report is factual, it does not provide evidence that the proposed project’s EMFs pose a significant health impact to humans or animals. Student populations in close proximity to EMFs for several hours per day several days in a row does not provide any comparable reliable data to the distance and frequency of potential EMF exposure from an outdoor solar energy project.

The uses identified in this comment – agricultural uses and aircraft operations are not considered sensitive land uses with respect to hazards, including EMF. The URS Report corroborates this conclusion. Agricultural uses have co-existed with transmission and other electrical facilities throughout the County, and in fact, these utilities are necessary to support agricultural operations. Further, as shown on EIR Figure 4.3-1 (see EIR page 4.3-9), no residential uses are located in proximity to the transmission corridor. One residential dwelling is located 0.25 miles north of the transmission corridor. The other nearest residential uses are located no closer than 0.5 miles from the transmission corridor.

### **Response to Comment 1-23**

The use of Best Management Practices specifically for soil stabilization as identified in EIR Section 4.9 Hydrology/Water Quality does not include soil binders, as referenced by this comment. As identified in the EIR, soil stabilization techniques during construction activities may include use of straw bails, sand bags, etc. Mitigation Measure 4.9-2 requires that a drainage plan be prepared that provides for both short- and long-term drainage solutions to ensure the proper sequencing of drainage facilities and treatment of runoff generated from project impervious surfaces prior to off-site discharge. Furthermore, Mitigation Measure 4.9-4 requires that a drainage plan be prepared that would maintain off-site runoff during peak conditions to pre-construction discharge levels.

As stated on EIR page 3-35:

#### **3.3.6.7 Dust Suppression and Erosion Control**

Groundcover, in the form of salt grasses (or similar plant types), would be planted in between the solar arrays to provide dust suppression. This type of cover crop generally has minimal irrigation requirements and, thus, minimal vegetation management (e.g., mowing) is anticipated. An alternative to using a cover crop would include the use of permeable soil stabilizing polymers, which would also provide dust suppression and erosion control against wind and water. Likewise, a combination of the two control measures may be employed.

The use of permeable soil stabilizers would mitigate for potential hydrology/drainage impacts associated with other non-permeable soil binders. Furthermore, the EIR provides a conservative estimate of potential runoff, using a runoff co-efficient of 0.38 (assumes 38% of the site would be comprised of non-permeable surfaces), and is considered appropriate for the type of use proposed, and also considering the potential use of soil stabilizers.

The commenter refers to the Lovich and Ennen report as support for his claim that run-off from dust suppressants may cause significantly hydrological impacts. However, this article provides only a general description of the potential for hydrological impacts associated with certain kinds of dust suppressants. The article does not provide evidence of potential impacts resulting from the dust suppression efforts of the proposed projects. Furthermore, as stated above, the Draft EIR includes Mitigation Measures to reduce potential hydrological impacts from dust suppression and run-off. Mitigation Measure 4.9-1a requires preparation of a SWPPP that expressly requires monitoring discharges and receiving waters for floating material, oil and grease, pH, and turbidity and corrective action required. Mitigation Measure 4.9-2 requires treatment and management of run-off with a performance standard that on-site containment and pollution-control devices to avoid the off-site release of various pollutants as well as treatment chemicals and sediments. Substantial evidence supports the conclusion that these measures will mitigate impacts below significant levels.



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BY FACSIMILE, ELECTRONIC MAIL AND US MAIL

December 23, 2011

Ms. Angelina Havens  
Imperial County Planning & Development Services  
Department  
801 Main Street  
El Centro, CA 92243  
Fax: (760) 353-8338  
Email: [angelinahavens@co.imperial.ca.us](mailto:angelinahavens@co.imperial.ca.us)

CC via Email only:  
Ms. Maria Scoville ([mariascoville@co.imperial.ca.us](mailto:mariascoville@co.imperial.ca.us))  
Ms. Sylvia Bermudez: [sylviabermudez@co.imperial.ca.us](mailto:sylviabermudez@co.imperial.ca.us)

RE: Draft Environmental Impact Report: 8 Minute Energy, Mount Signal PV Solar Farm, Calexico I Solar Farm, and Calexico II Solar Farm Phase II Addition (collectively, SCH Number: 2011071066)

Dear Ms. Havens:

I am writing on behalf of Laborers International Union of North America, Local Union 1184, and its members living in Imperial County ("LIUNA" or "Commenters") regarding the Mount Signal Solar Farm and Calexico I and II Solar Farm Projects (SCH No. 2011071066), consisting of (1) the construction and operation of solar facility sites at the Mount Signal Solar Farm 1, Calexico Solar Farms 1A and 1B, and Calexico Solar Farms 2A and 2B site locations; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnection (located within both private and public lands), with primary components consisting of solar arrays, electrical substation facilities, and other operation and maintenance facilities, including solar photo-voltaic panels, inverter modules, pad mounted transformer(s), and optional, on-site substation(s), projected to generate up to 600 MW of alternating current (AC) on a daily basis at build-out (collectively, "Mount Signal Project" or "Project").

2-1

LIUNA hereby requests and urges the County of Imperial ("County") to fully comply with the California Environmental Quality Act ("CEQA"), Public Resources Code § 21000 et seq., in all aspects of the Mount Signal Project, including but not limited to, County preparation and

2-2

Mount Signal, Calexico I and II Solar Farm  
December 23, 2011  
Page 2 of 2

consideration of any and all CEQA documents prepared for the Project, County responses to any and all comments submitted on the Project, and County consideration of any and all applications for licenses, permits, or any other notices or approvals sought for the Project.

2-2  
Cont.

LIUNA expressly reserves the right to submit additional comments on the Project in conjunction with the Final Environmental Impact Report ("FEIR") for the Project or any other future actions taken with regard to the Project.

2-3

LIUNA has previously filed with the County a request to be placed on the notice list for any and all CEQA or other land use actions, notices, or hearings related to the Project, and reiterates that request here. We also specifically request that the County place us on its notice list to inform us of any other meetings, comment periods, or other actions taken with regard to the Draft and Final EIRs for the Project.

2-4

Please send notices by electronic mail and U.S. Mail to:

Richard Drury  
Christina Caro  
Lozeau Drury LLP  
410 12<sup>th</sup> Street, Suite 250  
Oakland, CA 94607  
[richard@lozeaudrury.com](mailto:richard@lozeaudrury.com); [christina@lozeaudrury.com](mailto:christina@lozeaudrury.com)

Please call should you have any questions. Thank you for your attention to this matter.

Sincerely,

Richard Drury  
Christina Caro  
Attorneys for Laborers International Union of North  
America and Local Union 1184

**Letter 2**  
**Lozeau Drury LLC**  
**December 23, 2011**

**Response to Comment 2-1**

This comment states that the author represents the Laborers International Union of North America, Local Union 1184 (LUNA) and provides a summary of the proposed project. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 2-2**

This comment requests that the County fully comply with CEQA and the CEQA Guidelines with respect to the proposed project. The County has fully complied with all applicable provisions of CEQA and the CEQA Guidelines with respect to the proposed project. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 2-3**

This comment states that the commenter reserves the right to submit additional comments on the project. This comment is acknowledged; however, this comment does not specifically address the adequacy of the EIR; therefore, no further response is required at this time.

**Response to Comment 2-4**

As requested by this comment, the County will provide notice related to the proposed project to the address and contact person identified in this comment.

150 SOUTH NINTH STREET  
EL CENTRO, CA 92243-2850

TELEPHONE: (760) 482-4606  
FAX: (760) 353-9904



AIR POLLUTION CONTROL DISTRICT

December 22, 2011

Mr. Armando Villa  
Planning & Development Services Department  
801 Main Street  
El Centro, CA 92243

SUBJECT: Draft EIR for Mt. Signal Solar and Calexico Solar Farm Projects

Dear Mr. Villa,

The Imperial County Air Pollution Control District (Air District) has completed its review of the Draft EIR for Mt. Signal Solar and Calexico Solar Farm Projects. The proposed project consists of “4,228 acres of land located in the southern portion of Imperial County. The project also involves the connection of transmission facilities that would traverse the project area east to west, and would connect to approved transmission facilities associated with the Imperial Solar Energy Center South project. “

3-1

General Comments

As a commenting agency in the CEQA review process for the project, the Air District assesses air pollution control impacts from both the construction and operational phases of a project, with separate significant thresholds for each. Therefore, please address the actions items listed below.

3-2

Section 4.3 – Air Page 4.3-14

Please clarify if the emissions calculated in Table 4.3–5 through Table 4.3-9 for CSFI I and CSFI 2 included phases 1 and 2 for each.

3-3

Section 4.3 Air Quality – Impact 4.3-4

This section mentions that there are “23 residences scattered within the project study area and vicinity.” However, no specific information was provided to make a determination on the air impacts around the residences. Therefore, since the project site will be over the significance threshold for ROG, NOx, CO, PM10 and PM2.5 (see table below) it is imperative that a Health Risk Assessment be conducted for the use of heavy-duty diesel equipment. Typically, these health risk assessments are of a quantitative nature but can be a mixed qualitative and quantitative analysis. In any case, the relative human exposure, location of the project, distance to sensitive receptors all should be considered when developing the risk assessment.

3-4

AN EQUAL OPPORTUNITY / AFFIRMATIVE ACTION EMPLOYER



Mt. Signal Solar Project Cumulative Estimated Construction Emissions Lbs/day						
	ROG	NOx	CO	Sox	PM10	PM2.5
MSSF1	436.34	1110.70	1038.18	35.84	71.91	46.63
Transmission Line	179.46	697.43	777.86	21.40	80.26	46.35
CSF1	421.65	1072.20	1009.57	32.42	70.69	45.43
CSF2	408.66	1037.07	981.71	29.23	69.35	44.10
Auxiliary Facility						
<b>Significance Thresholds</b>	<b>75</b>	<b>100</b>	<b>550</b>	<b>150</b>	<b>150</b>	<b>150</b>
TOTAL	1446.1	3917.4	3807.3	118.89	292.21	182.51
Above threshold?	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	No	<b>Yes</b>	<b>Yes</b>

Created by the Air District based on Table 4.3-5 through Table 4.3-9

3-4  
Cont.

On page 4.3-21 the applicant indicated that "Pursuant to ICAPCD Policy Number 5, prior to construction activities, the applicant shall pay an in-lieu impact fee as determined by the ICAPCD using the formula provided in ICAPCD Policy Number 5 to reduce PM10 and NOx Emissions". However, according to records obtained by the APC Engineering Department, the Applicant has not submitted their ATC application to the Air District. It is recommended a meeting is scheduled with the Engineering Department for further information. Any outstanding issues will be addressed during the permit review period.

3-5

The Air Districts' rule book, including all new regulations can be accessed via internet at <http://www.Imperialcounty.net> under "Air Pollution Control." Thank you for allowing the Air District an opportunity to comment on this project. Should you have any questions please do not hesitate to call the office at (760)482-4606.

3-6

Sincerely,



Belen Leon  
APC Environmental Coordinator

Cc: Brad Poiriez  
Reyes Romero  
Monica Soucier

**Letter 3**  
**Imperial County Air Pollution Control District**  
**December 22, 2011**

**Response to Comment 3-1**

This comment states the Imperial County Air Pollution Control District has completed its review of the Mount Signal and Calexico Solar Farm Projects Draft EIR, and summarizes the proposed project components. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 3-2**

This comment states that the District assesses air pollution control impacts associated with both construction and operation of the project. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 3-3**

This is correct. The emissions calculated in EIR Table 4.3-5 through 4.3-10 for CSF1 and CSF2 included both phases of each project (i.e., CSF1(A), CSF1(B), CSF2(A), CSF2(B)).

**Response to Comment 3-4**

It is acknowledged that the calculated project emissions (construction-related) are above the thresholds for criteria pollutants. However, health risk assessments (HRAs) typically address toxic air contaminants and do not address criteria pollutant impacts.

There are 23 residences identified in the general study area. EIR Figure 4.3-1 identifies the location of these residences as they relate to the project sites. As shown, 3 of the residences are located within the site boundaries, approximately 12 are located on the site perimeter, and 7 are located at further distances of approximately ¼ mile. There is the potential that residences at these locations may experience some nuisance type of impacts associated with construction activities, such as dust; however, mitigation measures are required to control dust and other construction emissions. A health risk assessment (HRA) is not warranted for the proposed projects. The reason that HRAs are not typically conducted for construction projects is that the main toxic air contaminant associated with construction activity will be diesel particulate matter. According to the California Office of Environmental Health Hazard Assessment, diesel particulate is identified as a chronic/carcinogenic pollutant, not as a pollutant with health effects from short-term exposures. There is no acute reference exposure level identified for diesel particulate matter. Carcinogenic risk is typically calculated based on 70 years of exposure; the construction of the Mount Signal and Calexico solar facilities would take place over a much shorter period of time than that (i.e., up to three years for the development of all the project areas), and no one area would be expected to be exposed to emissions for the entire duration of the construction process (i.e. construction activity would not be concentrated in one location for the entire three year construction period). Therefore, an HRA is not warranted for this project.

**Response to Comment 3-5**

This comment references Mitigation Measure 4.3-2c, which requires the applicant to pay an in-lieu mitigation fee pursuant to ICAPCD Policy Number 5.

The comment is acknowledged that the project applicant has not submitted an ATC application to the Air District for the proposed project and that a meeting with the Air District is recommended.

**Response to Comment 3-6**

This comment indicates that the District's rule book, including all new regulations is available on the internet. This comment is noted.



December 15, 2011

Imperial County Planning & Development Services  
Mr. Armando Villa, Director  
801 Main Street  
El Centro, CA 92243

**Re: Notice of Preparation of a Draft Environmental Impact Report and Environmental Assessment – Mt. Signal Solar and Calexico Solar Projects**

Dear Mr. Villa:

The Imperial County Farm Bureau is a private, non-profit advocacy organization that serves approximately 800 members, primarily farmers, ranchers and landowners in the Imperial Valley. Thank you for the opportunity to comment on the Draft Environmental Impact Report (EIR) for Mt. Signal Solar and Calexico Solar Projects.

The proposed projects are located on approximately 4,228 acres of privately owned land in the County of Imperial, west of the city of Calexico and adjacent to the border of Mexico. The project site consists of highly productive farmland listed as both *Prime Farmland* and *Farmland of Statewide Importance* based on maps prepared by the California Department of Conservation. Acreage included in these projects is currently in agricultural production.

**Williamson Act**

Included within these two projects are four Williamson Act contracts to which the developers have petitioned to be canceled. Government Code 51282 states upon public hearing and after consultation with California’s Department of Conservation, the board of supervisors may tentatively grant cancellation in the “public interest” if it finds two things: 1) that other public concerns “substantially outweigh” the objectives of the Williamson Act; and 2) that there is no proximate, non-contracted land which is both available and suitable for the use proposed on the contracted land, or development of the contracted land would provide more contiguous patters of urban development than development of proximate non-contracted land. Fresno County recently cancelled Williamson Act contracts for under similar circumstances which is

4-1

4-2

1000 Broadway, El Centro CA 92243 | 760 352 3831 phone | 760 352 0232 fax | info@icfb.net | www.icfb.net

currently being challenged in *California Farm Bureau Federation vs. County of Fresno Board of Supervisors*.

4-2  
Cont.

**Agricultural Mitigation Fee**

Of mitigation measures required for approval of a Conditional Use Permit the payment of an Agricultural Mitigation Fee is included; however, guidelines to manage and distribute these funds have not been established. Guidelines identifying who will manage and how the funds will be distributed should be addressed and confirmed before any such fee is assessed.

4-3

**Impacts to Adjacent Farming Operations**

Land underneath the solar panels has the potential to harbor animal habitat and pests, which could cause damage to adjacent fields and crops. This could be of concern if a cover crop is used for dust control. Weeds allowed to grow uncontrolled are known to harbor insect pests detrimental to agriculture. Produce growers today have to comply with Leafy Greens Agreements to ensure produce safety; uncontrolled weeds and pest in nearby fields would be of notable concern to produce farmers. Mitigation measures should be considered when developing an EIR for this project.

4-4

Although aerial application of non-restricted pesticides could still be allowed, glare from the panels could create visual hazards during the day and evening applications. In addition, as experienced by landowners near other renewable energy projects, during the construction phase, aerial application of some pesticides would likely be restricted or even prohibited on adjacent fields. If applicable, possible restrictions to nearby farming operations concerning the application of legal chemicals should be addressed in the EIR.

4-5

A runway used by Frontier Agricultural Service, Inc., a local aerial applicator, is located in the middle of Calexico Solar 2 Phase A. The angle of panels, during both day and night flight times presents a very serious glare issue regarding their reflective and/or refractive properties and intensities, both from the sun and high intensity aircraft landing lights) to safely land without being temporarily blinded by glare. Forty percent of landing made by Frontier Agricultural Service, Inc. are made at night.

4-6

In addition, guy-wires, lights on poles and any use of cranes during the construction phase or those required for maintenance could create an obstruction to the applicators current business.

4-7

An Economic Impact Analysis should be completed to determine the direct and indirect negative economic change resulting from lost crop value, employment, income, sales and tax revenue during both construction and normal operation of the project versus any positive economic benefits to the community of this project. Impacts to Farm Service Providers and the entire agricultural industry should be taken into consideration when preparing this report.

4-8

**Restoration Plan**

To ensure the future productivity of the farmland, mitigation requirements should be included to ensure the properties are returned to their original farmable condition should the company discontinue business operations. Although a restoration plan has been included in this Draft EIR, there is no guarantee the bonds attached to this restoration will remain current. A plan to ensure bonds associated with the restoration of this property at the end of the project remain current should be guaranteed before approval.

4-9

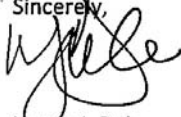
**Right to Farm Ordinance**

Following the guidelines of Imperial County's Right to Farm Ordinance (Imperial County Code of Ordinances, Chapter 5.56), businesses (purchasers or users) seeking to operate adjacent to or near agricultural operations should be prepared to accept conditions including, but not limited to noise, odors, fumes, dust, chemicals, smoke, the operation of machinery of any kind during any twenty-four hour period (including aircraft), the storage and disposal of manure, and the application of chemical fertilizers, soil amendments and pesticides as the natural result of doing business in or near rural areas. We appreciate that this information has been included in the Draft EIR and would request that it remain in the Final EIR.

4-10

Thank you in advance for your consideration. Please feel free to contact me if any questions arise from our comments.

Sincerely,



Linsey J. Dale  
Executive Director

**Letter 4**  
**Imperial County Farm Bureau**  
**December 15, 2011**

**Response to Comment 4-1**

This comment explains that the Farm Bureau is a private, non-profit advocacy organization and summarizes the primary components of the project. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 4-2**

This comment summarizes certain provisions of Government Code 51282 regarding Williamson Act Cancellation and that certain findings are required to be made by the County as part of the Williamson Act cancellation process. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required; however, please also refer to response to comment 1-14 regarding Williamson Act Cancellation and required findings.

**Response to Comment 4-3**

The EIR identifies mitigation options to address the impact associated with the temporary conversion of agricultural land to a solar use. Mitigation Measure 4.2-1 provides for alternative mitigation methods to address the project's impact associated with the temporary conversion of agricultural lands to a solar use. In compliance with Mitigation Measure 4.2-1, the applicant has prepared restoration plans for the project sites (see EIR Appendix L). Preparation of the restoration plans satisfies the intent of the mitigation measures prescribed in the EIR as the restoration plans require that the sites be restored back to current agricultural conditions upon termination of the solar use of the sites. The County will consider approval of the restoration plans in conjunction with consideration of approval of the project. As part of their approval, the applicant shall provide financial assurances/bonding in the amount equal to the site restoration cost estimate to return the land back to its agricultural conditions after the solar facility ceases operations and closes. This mitigation approach is consistent with the Department of Conservation's recommendation that restoration plans be prepared for solar projects located on agricultural lands (please refer to response to comment 1-7).

**Response to Comment 4-4**

As identified on EIR "Dust Suppression and Erosion Control" page 3-35, groundcover, in the form of salt grasses (or similar plant types), may be planted in between the solar arrays to provide dust suppression. This type of cover crop generally has minimal irrigation requirements and, thus, minimal vegetation management (e.g., mowing) is anticipated. An alternative to using a cover crop would include the use of permeable soil stabilizing polymers, which would also provide dust suppression and erosion control against wind and water. Likewise, a combination of the two control measures may be employed. Furthermore, fencing is proposed around the perimeters of the solar farms, which would preclude some larger animals from accessing the site.

In order to ensure that potential impacts, such as increasing pests, to nearby agricultural fields are minimized, Mitigation Measure 4.2-2 has been added to Section 4.2 Agricultural Resources:

**4.2-2** Prior to the issuance of a grading permit or building permit (whichever occurs first), a Weed and Pest Control Plan shall be developed by the Project Applicant and approved by the County of Imperial Agricultural Commissioner. The Plan shall provide the following:

1. Monitoring, preventative, and management strategies for weed and pest control during construction activities at any portion of the project (e.g., transmission line) that are adjacent agricultural lands;

2. Control and management of weeds and pests in areas temporarily disturbed during construction where native seed will aid in site revegetation; and,
3. A long-term strategy for weed and pest control and management during the operation of the proposed project. Such strategies may include, but are not limited to:
  - a. Use of specific types of ground cover and maintenance (mowing, replacement, etc.) of such ground cover;
  - b. Use of specific types of herbicides and pesticides on a scheduled basis; and
  - c. Maintenance and management of project site conditions to reduce the potential for a significant increase in pest-related nuisance conditions on adjacent agricultural lands.



*ADMINISTRATION/TRAINING*

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Heber, CA 92249  
Phone: (760) 482-2420  
Fax: (760) 482-2427



*OPERATIONS/PREVENTION*

2514 LaBrucherie Road  
Imperial, CA 92251  
Phone: (760) 355-1191 Ext. 2  
Fax: (760) 355-7051

December 15<sup>th</sup>, 2011

To: Angelina Havens, Planner

From: Alfredo Estrada  
Deputy Fire Marshal  
Imperial County Fire Prevention Bureau

**Subj: Draft Environmental Impact Report Mount Signal and Calexico Solar Farm Projects**

The Imperial County Fire Prevention Bureau would like to thank you for allowing us to comment on this project. We reserve the right to make any further comments on this project. Please review our comments below.

] 5-1

**O&M Buildings:**

Provide the square footage and detailed conceptual drawings of all supporting structures for the proposed O&M buildings.

] 5-2

**Transformers:** Provide the quantities/gallons of mineral oil or solution that each transformer will contain.

] 5-3

**Emergency Hazardous Material Plan:** Include a description of your emergency and hazardous materials plan.

] 5-4

**Fiscal Impacts:**

Any agreement with the applicant over terms and conditions of fiscal impacts or provisions will remain open until meeting with the department head and developer, which may include but not limited to:

1. Capital purchases which may be required to assist in servicing this project
2. Costs for services during construction and life of the project
3. Training

5-5

Please feel free to contact us with any questions or concerns at (760) 482-2429.

Respectfully submitted,

Alfredo Estrada, Deputy Fire Marshal  
Imperial County Fire Prevention Bureau

*An Equal Opportunity / Affirmative Action Employer*

**Letter 5**  
**Imperial County Fire Prevention Bureau**  
**December 13, 2011**

**Response to Comment 5-1**

This comment states that the Bureau reserves the right to make further comments on the project. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 5-2**

EIR Section 3.0 Project Description provides a detailed description of the proposed Operations and Maintenance (O&M) buildings. An O&M building is contemplated for each of the project sites; however, there may be cases where the O&M building on one site can be shared with an adjacent solar project (see EIR page 3-14). As described, the footprint of the O&M buildings at each location would not exceed an area of approximately 3,200 square feet. The parking area would comprise an area of less than 0.25 acres. The O&M buildings would consist of a steel framed structure with metal siding and roof panels and painted to match the surrounding landscape (e.g., desert sand). The O&M buildings would include a small office, storage space, an electrical/array control room, restroom, and a compact water treatment facility.

Subsequent to project approval, construction level engineering plans will be submitted by the applicant to the County Planning & Development Services Department, which in turn will be provided to the Fire Prevention Bureau for review and approval as part of the development review/building permit process.

**Response to Comment 5-3**

As part of development review, this information would be provided to the Fire Prevention Bureau.

**Response to Comment 5-4**

As described on EIR page 4.8-14, if the on-site storage of hazardous materials necessitate at any time during construction and/or operations and long term maintenance, quantities in excess of 55 gallons, a Hazardous Material Management Program (HMMP) would be required. As identified in the Phase I hazardous materials survey report for CSF2(A), the CSF2(A) site could contain multiple 55-gallon drums on-site. An HMMP will need to be developed and implemented prior to the start of construction or prior to the storage on-site of an excess of 55 gallons of hazardous materials. In addition, the HMMP developed for the projects will include, at a minimum, procedures for:

- Hazardous materials handling, use and storage;
- Emergency response;
- Spill control and prevention;
- Employee training; and
- Record keeping and reporting.

Additionally, hazardous material storage and management will be in accordance with requirements set forth by the Imperial County Fire Department (ICFD), Imperial County Office of Emergency Services, Department of Toxic Substances Control (DTSC), and the Certified Unified Program Agency (CUPA) for storage and handling of hazardous materials. Further, construction activities would occur according to OSHA regulatory requirements; therefore, it is not anticipated that the construction activities for the proposed projects would release hazardous emissions or result in the handling of hazardous or acutely hazardous materials, substances, or waste.

**Response to Comment 5-5**

This comment states that any agreement regarding the terms and conditions addressing fiscal impacts or other provisions of service is contingent upon meeting with the Department head and the applicant, and may include capital purchases, costs for services during the life of the project, and training. The County acknowledges this comment and will include the fire service agreement(s) as part of the conditions of approval for the project.

*ADMINISTRATION/TRAINING*

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December 13<sup>th</sup>, 2011

To: Angelina Havens, Planner

From: Alfredo Estrada  
Deputy Fire Marshal  
Imperial County Fire Prevention Bureau

**Subj: Draft Final EIR/EA Mt. Signal Solar and Calexico Solar Farm Projects**

The Imperial County Fire Prevention Bureau would like to thank you for allowing us to comment on this project. We reserve the right to make any further comments on this project. Please review our comments below.

**O&M Buildings:**

Provide the square footage and detailed conceptual drawings of all supporting structures for the proposed O&M buildings.

**Transformers:** Provide the quantities/gallons of mineral oil or solution that each transformer will contain.

**Emergency Hazardous Material Plan:** Include a description of your emergency and hazardous materials plan.

6-1

**Fiscal Impacts:**

Any agreement with the applicant over terms and conditions of fiscal impacts or provisions will remain open until meeting with the department head and developer, which may include but not limited to:

1. Capital purchases which may be required to assist in servicing this project
2. Costs for services during construction and life of the project
3. Training

6-1  
Cont.

Please feel free to contact us with any questions or concerns at (760) 482-2422.

Respectfully submitted,

Alfredo Estrada, Deputy Fire Marshal  
Imperial County Fire Prevention Bureau

*An Equal Opportunity / Affirmative Action Employer*

**Letter 6**  
**Imperial County Fire Prevention Bureau**  
**December 13, 2011**

**Response to Comment 6-1**

This letter is duplicative of the December 15, 2011 letter. Please refer to responses to comments 5-1 through 5-5.



www.iid.com

GS-EREP

December 14, 2011

Ms. Angelina Havens  
Planner III  
Planning & Development Services Department  
County of Imperial  
801 Main Street  
El Centro, CA 92243

SUBJECT: Mount Signal and Calexico Solar Farm Projects DEIR

Dear Ms. Havens:

On November 15, 2011, we received from Imperial County Planning & Development Services Department, the Draft Environmental Impact Report (DEIR) for the Mount Signal and Calexico Solar Farm Projects. The Mount Signal Solar Farm 1 and Calexico Solar Farm 1 Phases A and B and Calexico Solar Farm 2 Phases A and B Projects consist of two primary components: (1) the combined construction and operation of expansive photovoltaic solar energy facilities and supporting uses; and (2) the construction and operation of off-site electrical transmission infrastructure and associated interconnections on private land and BLM land. The project sites encompass a total of 4,228 acres of land located approximately three miles west of Calexico, California in the southern portion of Imperial County. The U.S./Mexico border is located immediately south of the project study area.

Intro.

The Imperial Irrigation District (IID) submits the following comments on the DEIR:

1. IID has become aware that several of the solar energy generation projects being reviewed by the County of Imperial (County) and the Bureau of Land Management (BLM) as stand-alone projects, including but not limited to the Imperial Solar Energy Center South, Centinela Solar Energy, Silverleaf Solar and Campo Verde Solar Energy projects, are part of a larger proposal submitted by San Diego Gas & Electric (SDG&E) to the California Independent System Operator (CALISO), to develop a Locational Constrained Resource Interconnection Facility (LCRIF) named the "Imperial Valley Solar Collector Project." The proposed LCRIF has not been studied either operationally, as to its effect on the IID balancing authority, or environmentally as to its effect on the resources within the Imperial County. SDG&E is suggesting that there are not sufficient facilities in Imperial County to transmit new renewable resources and that the gen-ties approved or in the process of being approved, for the various solar projects in the vicinity of the Imperial Valley Substation, should become part of a larger interconnected facility to transfer energy to the CALISO.
2. The apparent piecemealing being done regarding the effects of the various solar projects that together will form the framework for the LCRIF facilities is a cause of concern for IID given the potential impacts to our electrical balancing authority and our irrigation system integrity. A concern that is exacerbated by the fact that the County and BLM are being asked to approve projects that are part of a larger whole without completing the full analysis of the entirety of the project impacts.

7-1

7-2

IMPERIAL IRRIGATION DISTRICT  
OPERATING HEADQUARTERS • P.O. BOX 937 • IMPERIAL, CA 92251



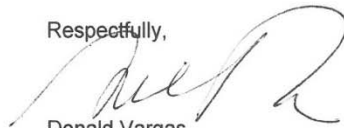
- 3. If SDG&E seeks approval from the County and the BLM for its LCRIF proposal and required facilities, IID will be able to review the many impacts and participate in the environmental and operational review. Until that time, any approval for the Mount Signal and Calexico Solar Farm Projects or any other renewable generation development in the same vicinity as the proposed LCRIF should be limited to the generation project as described and analyzed in the environmental documents for the project. The above mentioned LCRIF proposal is not part of the Mount Signal and Calexico Solar Farms project description. Any Conditional Use Permit or BLM Right-of-Way Grant should specifically limit the use of the permitted facilities for the purposes studied and until such time as a new permit application is received that addresses any required mitigation for an expanded use. } 7-3
  
- 4. Just as the California Department of Transportation objects to unnecessary crossing of the state's highways for safety reasons, IID is equally concerned about numerous crossing of the major IID irrigation canals. A case in point is the potential impacts to the Westside Main Canal (WSM) due to various solar projects' electrical transmission line (gen-tie) crossings for interconnection to the Imperial Valley Substation. In an effort to limit the number of crossing of the WSM, one of IID's major irrigation canals, and enable the Imperial Solar Energy Center South (ISECS) and the Centinela Solar Energy (CSE) facilities to interconnect to the Imperial Valley Substation, the IID will be constructing a 230 KV transmission line along the east side of the WSM, from the ISECS project site to the CSE project site and terminate at the proposed Drew Road Substation (see attached map). Given the fact that the Mount Signal and Calexico Solar Farm Projects would connect their energy generation transmission facilities to the facilities that will be developed as part of ISECS project, located immediately west of the Mount Signal Solar Farm project site, the projects would be subject to IID's non-discriminatory Open Access Transmission Tariff provisions that include availability of electrical energy facilities, capacity and deliverability on and from the IID's transmission system. For further information on this matter the projects proponent should contact IID's Interconnection Transmission Contracts Administrator at (750) 482-3639 or access the IID website at: <http://www.oatioasis.com/iid/index.html>. } 7-4
  
- 5. Project proponent assumes that permanent electric service for the O&M building and for substation backfeed power will be provided by IID. Thus, it is important to note that all costs associated with the relocation and/or upgrade of IID electrical infrastructure to service the project will be the responsibility of the project proponent. Project proponent is urged to contact IID Energy - Customer Operations & Planning Section at 760-482-3402 for additional information regarding electrical service for the project. } 7-5
  
- 6. The Projects entail the construction of private 34.5kV underground (UG) and/or overhead (OH) power lines on private land within a fenced area on their sites. In some cases, these lines will be paralleling existing IID lines, and crossing existing IID distribution lines, drains and canals. Consequently, the Project proponent should address concerns for safety; identify the private UG or OH 34.5kV lines, and emergency and communications protocols with the IID. The circuits of particular concern are portions of the X-123 distribution circuit fed from Calexico Substation and the L-27 circuit from Silsbee Substation. A collective review of IID serving these solar generating facilities would need to be done at the distribution level in general. IID Energy - Customer Operations & Planning Section should be contacted for guidance on this matter. } 7-6
  
- 7. Analysis should be provided for the routes of the proposed 34.5kV collector lines routing to the 34.5kV-230kV substations and the outbound 230kV overhead transmission lines to check for impacts and clearances per IID, Imperial County, California State General Order 98 & 128 and any federal requirements. IID Energy will need to review any clearances and impacts the proposed new 230kV lines would have to IID facilities (see item No. 4). } 7-7

- 8. The Projects will impact numerous IID Water Department facilities such as the All American Canal; Wisteria Canal; Wisteria Laterals 1, 1-A, and 2; Woodbine Canal, Woodbine Laterals 2, 3, and 4; AA Drains No. 11 and 13; Mt Signal Drain; Brockman Drain No. 2; Wisteria Drain; Wells Drain; Greeson Drain; and Greeson Drain No. 2. } 7-8
- 9. The project could potentially involve using the banks of the WSM as an access road. Be advised that the use of IID's canal or drain banks to access the project sites is prohibited. } 7-9
- 10. All new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP) (see <http://www.iid.com/index.aspx?page=152> for a link to the IWSP). In order to obtain a water supply from IID for the project, the project proponent will be required to comply with all applicable IID policies and regulations and may be required to enter into a water supply agreement with IID. Such policies and regulations require, among other things, that all potential environmental and water supply impacts of the project have been adequately assessed, appropriate mitigation has been developed and appropriate conditions have been adopted by the relevant land use permitting/approving agencies. Furthermore, the project proponent will be required to meet standards for water use efficiency and best management practices, including but not limited to those established by the County of Imperial, as well as other water use efficiency standards, adopted by IID or local government agencies. For additional information regarding the Interim Water Supply Policy, the IID Water Supply Planning/Colorado River Manager may be contacted at (760) 339-9038. } 7-10
- 11. The DEIR should address impacts to IID's drains. 33.3% of water delivered to agricultural users is discharged into the IID's drainage system. Reduction in field drainage due to land use conversion has an incremental effect on both drain water quality and volume of impacted drain and subsequent drainage path to the Salton Sea. This affects drainage habitat (flora and fauna) and the elevation of the Salton Sea (shoreline habitat and exposed acreage that may have air quality issues). Additionally certain direct-to-Sea drains have been identified as pupfish drains which require additional protections under state and federal Endangered Species Acts. } 7-11
- 12. Furthermore, the DEIR should also contain an assessment or analysis of cumulative impacts considering other non-agricultural facilities whose water use (or potential water use) would reduce the inflow conveyed to IID drains and subsequently, the Salton Sea. } 7-12
- 13. If agricultural water delivery gates and small parcel water service pipes exist in the project area, they shall not to be used for the solar project, except those designated in the water supply agreement. The Mount Signal and Calexico Solar Farms shall plug the outlets of delivery gate and service pipes prior to commencing construction at each parcel and shall be abandoned with an Abandonment Request Form (ARF). The ARF is available at: <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2587>. The ARF shall be submitted prior to commencing construction at each parcel. Abandoned delivery gates and small parcel service pipes can be re-established in the future, upon written request. The Mount Signal and Calexico Solar Farms shall continue to pay Water Availability Charges after the gates are abandoned. } 7-13
- 14. Any existing canal and drain facilities within the project site are to be abandoned and quitclaimed by IID. The Mount Signal and Calexico Solar Farms shall execute an Abandonment Agreement with IID for these facilities. The Abandonment Agreement will include provisions for the canal and drain facilities to remain in service with IID for the parcels they serve until agricultural activities are suspended. The Agreement will also address IID requirements for returning the project site to a condition to support agricultural } 7-14

- production in the event the facility is decommissioned and deconstructed. The IID Real Estate Section should be contacted at (760) 339-9239 for further details. } 7-14 Cont.
15. All existing underground tile drain pipe outlets into IID drains that serve the Mount Signal and Calexico Solar Farms project area are to be plugged prior to construction at each parcel. IID is to be notified 48 hours in advance of plugging, for on-site inspection and verification. } 7-15
16. IID drains are designed for farm drainage not storm water runoff. The proposed projects may impact drains, site runoff flows, and proposed storm water detention facilities. On site storm water runoff must be contained in retention ponds for release per IID requirements to make sure drain capacities are not exceeded. Consequently, a comprehensive IID hydraulic drainage system analysis is required to properly design system modifications to mitigate project impacts. The detailed drainage analysis will review the project's drainage hydraulics relative to IID system hydraulics; IID's hydraulic drainage system analysis includes an associated drain impact fee. Completion of the analysis may indicate the need for additional capital improvements, the cost of which would be borne by the Mount Signal and Calexico Solar Farms. Developer should contact IID's Chief Civil Engineer at (760) 339-9559 for more information. } 7-16
17. IID is working on development of a program to address operation and maintenance of the drainage system for non-agricultural connections. The program will provide a mechanism to ensure the drainage system is properly operated and maintained for non-agricultural connections. Non-agricultural connections such as the Mount Signal and Calexico Solar Farms will be required to execute an agreement with IID regarding drain operation and maintenance costs. } 7-17
18. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities. } 7-18
19. Any construction or operation on IID property or within its existing and proposed right of way or easements will require an encroachment permit, including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities. A copy of the encroachment permit application is included in the IID's *Developer Project Guide 2008*, and can be accessed at: <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2328>. Also, instructions for the completion of encroachment applications can be found at: <http://www.iid.com/Modules/ShowDocument.aspx?documentid=2335>. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits. } 7-19
20. An IID encroachment permit is required in order to utilize existing surface water drain pipe connections to drains, and receive drainage service from IID. Surface water drain pipe connections are to be modified in accordance with IID standards. } 7-20
- a. Construction Storm Water Permit: A construction storm water permit from the California Regional Water Quality Control Board (CRWQCB) is required before commencing construction. Copies of this permit and the Storm Water Pollution Prevention Plan for the CVSE Project are to be submitted to IID.

- b. An industrial storm water permit from CRWQCB is required for operation of the proposed solar facility. A copy of this permit is to be submitted to IID. } 7-20  
Cont.
  
- 21. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to electrical utility substations, electrical transmission and distribution lines, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or upgrade of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully mitigated. **Any and all mitigation necessary as a result of the construction, relocation and/or modification of IID facilities is the responsibility of the project proponent.** } 7-21
  
- 22. IID remains supportive of the Mount Signal and Calexico Solar Farm Projects and all renewable generation projects in the Imperial County in general and offers its assistance in the review of how to avoid unnecessary impacts to vital IID facilities or undermine IID's electrical balancing authority, as well as requirements for constructing around all IID facilities and interconnecting to IID's electrical grid. } 7-22
  
- Should you have any questions, please do not hesitate to contact me by phone at 760-482-3609 or by e-mail at [dvargas@iid.com](mailto:dvargas@iid.com). Thank you for the opportunity to comment on this matter. } 7-23

Respectfully,



Donald Vargas  
Environmental Specialist

Kevin Kelley – General Manager  
 Michael Campbell - Chief Admin. Officer  
 Jesse Silva – Manager, Water Dept.  
 Joel Ivy – Interim Manager, Energy Dept.  
 Jeff M. Garber – General Counsel  
 Paul G. Peschel - Executive Program Manager  
 Carlos Villalon – Asst. Mgr., Water Dept. System Control & Monitoring  
 Juan Carlos Sandoval – Asst. Mgr. Energy Dept.  
 Carlton L. King – Asst. Mgr., Energy Dept. Customer Service Operations  
 Mike L. King – Manager, Water Dept. Colorado River Water Issues  
 Tina Shields – Asst. Mgr., Water Dept. Resources Planning & Management  
 David L. Barajas – General Supt., Energy Dept. System Planning & Engineering  
 Michael S. Trump – General Supt., Energy Dept. Customer Operations & Planning  
 Ismael Gomez – Chief Engineer, Water Dept. Engineering Services  
 Bruce Wilcox – Environ. Proj. Mgr., Water Dept. OSA Water Transfer  
 Randy Gray – Interim Supervisor, Real Estate & Right-of-Way  
 Vikki Dee Bradshaw – Interim Supervisor, Environmental Services



		<b>IID ENERGY DIVISION</b> 550 E. BARDON BLVD. IMPERIAL, CA 92201		SHEET NO. <b>P-01</b>
<b>DESCRIPTION:</b> C-SOLAR 230 KV LINE		<b>PLAN VIEW</b>		DRAWING NO. <b>P-01</b>
DATE: 01/11/11	DESIGNED BY: [Name]	DATE: 11/20/11	APPROVED BY: [Name]	SHEET NO. <b>P-01</b>

**Letter 7**  
**Imperial Irrigation District**  
**December 14, 2011**

**Response to Comment – Intro**

This comment summarizes the overall project characteristics as described in the EIR, and does not address the adequacy of the EIR; therefore, no further response is necessary.

**Response to Comment 7-1**

This comment is acknowledged; however, it does not address the adequacy of the EIR; therefore, no additional response with respect to the adequacy of the EIR is necessary.

The County acknowledges that on October 13, 2011 San Diego Gas and Electric (SDG&E) filed an application to the California Independent System Operator (CAISO) to develop a Locational Constrained Resource Interconnection Facility (LCRIF). With respect to the proposed projects, regardless of whether the projects would benefit from the LCRIF, the County is required to process and evaluate the projects, as proposed by 8minutenergy, and as legally-applied and described in the CUP applications for the Mount Signal Solar Farms and Calexico I and II projects. Furthermore, the project sites referenced in this comment are owned and controlled by different entities (not SDG&E). To the extent that there are cumulative impacts associated with the development and operation of the various solar projects referenced in this comment, these impacts have been addressed in EIR Section 6.0 Cumulative Impacts.

**Response to Comment 7-2**

Comment noted. Please refer to response to comment 7-1. The projects referenced in this comment are independent projects, and the County has reviewed, or is in the process of reviewing these projects in compliance with CEQA and the CEQA Guidelines. To the extent that these projects have cumulative impacts, these impacts have been addressed in EIR Section 6.0 Cumulative Impacts.

**Response to Comment 7-3**

The County concurs with this comment that the LCRIF project is not part of the proposed Mount Signal and Calexico Solar Farm Projects. The LCRIF project is proposed by SDG&E and not the project applicant. The CUP's issued for the proposed Mount Signal and Calexico Solar Farm projects will be limited to the uses evaluated in this EIR. Please refer to response to comment 7-1.

**Response to Comment 7-4**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The requirement that the projects will be subject to IID's non-discriminatory Open Access Transmission Tariff provisions will be included as a Condition of Approval for the projects.

**Response to Comment 7-5**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. It is acknowledged that costs associated with the relocation or upgrade of IID electrical infrastructure to service the project will be the responsibility of the project proponent. This requirement will be included as a Condition of Approval for the projects.

**Response to Comment 7-6**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. As a Condition of Approval of the projects, the County will require that the applicant coordinate with the IID Energy – Customer Operations & Planning Section as necessary regarding safety, identification of the private UG or OH 34.5 kV lines, and emergency communications protocols.

**Response to Comment 7-7**

The applicant will be required to coordinate with IID regarding all matters related to impacts and clearances for IID facilities. The proposed alignment of the project's 230 kV line is identified in the EIR (see EIR Figure 3.0-3) and potential impacts associated with the construction of the line are evaluated where appropriate (e.g., biological resources). The requirement that clearances be checked per IID requirements, County requirements, California State General Order 98 & 128 and any other federal requirements will be included as a Condition of Approval for the projects.

**Response to Comment 7-8**

It is acknowledged that the IID facilities identified in this comment are located within, or adjacent to the project areas. The project applicant intends to avoid impacts or changes to IID facilities to the extent feasible, and details of the various transmission and connection facilities will be developed as part of construction level engineering. To the extent that IID facilities are located within the project sites' boundaries, the impacts associated with the development of such facilities have been addressed in the EIR as they would be located within the area of disturbance assumed for the assessment of impacts to issues such as agricultural resources, biological resources, and cultural resources.

**Response to Comment 7-9**

Access to the project sites is not proposed in the vicinity of the Westside Main Canal (WSM). Therefore, the projects are not considering the use of access roads within the vicinity of WSM and no impact to IID facilities at this location is anticipated.

**Response to Comment 7-10**

Comment noted. It is acknowledged that the project applicant will be required to comply with all applicable IID policies and regulations of IID regarding water supply, and that a water supply agreement for the non-agricultural use of water may be required. It should also be noted that water supply for the projects is considered to be reliable.

As stated on EIR page 4.15-4, the water for the projects will be supplied by IID. The IID's Interim Water Supply Policy (IWSP) allocates 25,000 AFY for non-agricultural projects, and is to remain in effect pending the approval of policies that will be adopted in association with the Final Imperial Water Resource Management Plan (IWRMP), which is projected to make available up to 50,000 AFY of water for similar uses. Of the IWSP's 25,000 AFY, IID has only approved one water supply agreement in the amount of 800 AFY for the Hudson Ranch I Project. IID recognizes having a remaining balance of IWSP water in the amount of 24,200 AFY, as noted in four letters from IID to Jesse P. Silva dated August 16, 2011, as well as in another letter dated September 1, 2011 (WSA 2011).

The IWSP will be the source of water for the proposed projects unless and until such time as policies and projects perhaps in association with the Final IWRMP are implemented and available so that the applicant may begin to acquire raw water from IID through the Final IWRMP or other means. The WSA determined that IID has adequate policies, programs and projects in place to provide water to agricultural, commercial, industrial and municipal users in the Imperial Unit. Adequate supply is currently available, as well as during normal water years. The IID's Equitable Distribution Plan (EDP) is considered to be

sufficient to manage water supply during multiple dry water years. Conservation plans and measures are available to reduce the probability of supply demand imbalance from occurring.

The area that would be taken out of agricultural production as a result of the projects is estimated to use 22,207.5 AFY as farmland based on the calculations presented above, which uses a consumption rate of 5.25 acre-feet per acre per year. Based on the history of water delivered to the same area by the IID from 2001-2010, on average the project study areas have received 19,588.73 AFY. The applicant(s) proposes to use 1,310 AFY for operation of the projects. When compared to agricultural water usage for the project study areas, the result is a decrease in usage at build-out during operation of 94% and 93.31% (Table 4.15-3) when compared to an agricultural consumption rate of 5.25 acre-feet per acre per year, and the average of the IID's 10-year annual delivery history for the same area, respectively.

#### **Response to Comment 7-11**

Potential impacts to IID drains as a result of decrease of water usage is addressed in EIR Sections 4.4 Biological Resources and 6.0 Cumulative Impacts (see EIR pages 6-17 through 6-19). The proposed projects' reduction in agricultural water use would support IID's needs in fulfilling its legal obligations under State Water Resources Control Board (SWRCB) orders, the Quantification Settlement Agreement and IID Water Transfer Agreement, which includes mitigation of water quality and biological impacts to the Salton Sea. As such, the proposed projects are consistent with the IID Water Transfer Agreement HCP EIR/EIS, the existing Section 7 Biological Opinion, and IID CESA Permit 2081. Further, IID has created an Equitable Distribution Plan (EDP) to give itself the flexibility to meet changing circumstances in supply and demand. The EDP would essentially create an agricultural fallowing incentive program in the event of a supply/demand imbalance. By October of each year, IID staff must forecast water demand and available supply and recommend whether there will be a supply/demand imbalance (SDI). With the knowledge that the proposed projects are anticipated to use only 1,310 acre-feet per year (AFY) of water during its long lease period, instead of a more intense agricultural water use, IID can account for this lower water demand when determining whether there will be a SDI and may help prevent the need to activate the EDP, which will allow more agricultural landowners to use their agricultural water supply, which is expected to result in a neutral net impact on water flowing to the sea (Imperial County 2011).

Likewise, in the years when IID must trigger the EDP, the water conservation from the proposed projects reduces the need to induce fallowing on as many agricultural acres to generate the additional water conservation needed to meet its transfer obligations and Salton Sea mitigation obligations. According to IID's EDP Negative Declaration, in 2003, IID implemented a rotation fallowing program to successfully create conserved water to deliver to the Salton Sea and now IID plans to increase fallowing incrementally to a -maximum of about 25,000 acres. With the knowledge that the proposed projects will be using less water, IID can fallow less than the 25,000 acres to produce the same amount of water needed to meet its transfer obligations and conserve water to deliver to the Salton Sea (Imperial County 2011). In this context, to the extent IID believes mitigation is needed in implementing the EDP, IID controls the mitigation by selecting how many farmland acres to enroll in its fallowing program to create the Salton Sea mitigation water.

In addition, IID acknowledged in its Negative Declaration adopting the EDP that the fallowing necessary to provide the transfer and Salton Sea mitigation water would not have a significant impact on water quality or biology. Specifically, it states for biology, "Implementation of the EDP would not have an effect on any biological resources within the IID water service area. The EDP could result in minor short-term changes in the location of water use and therefore, the volume of flows in the drains. However, any changes in the location of flows would be temporary and negligible, and well within historic variations, and therefore are not expected to result in any adverse effects on biological resources that rely on the drains for habitat...[i]t is expected that under an SDI [state and federal refuges in the IID service area] will have sufficient supplied to maintain current uses and operations and/or to fulfill obligations under environmental permits issued to IID (Imperial County 2011). Previous environmental documentation has made a similar finding, that there would be no impact as a result of cumulative development related to the EDP (see Imperial Solar Energy Center South Project EIR/EA).



For water quality, it states, "The proposed EDP would not result in any impacts associated with hydrology and water quality....the magnitude of any potential change is anticipated to be minimal and, due to constant variation in cropping patterns and locations of idled lands, most likely to undetectable when compared to the existing condition" (Imperial County 2011).

Finally, Figure 3 of the Negative Declaration shows how insignificant the IID's EDP following program is in comparison with the historic variation in following levels in Imperial Valley. The Mount Signal and Calexico Solar Farm projects EIR tiers off this conclusion and incorporates it by reference into the proposed projects' analysis and these responses to comments. Therefore, not only do the projects reduce the need for as much following under the Equitable Distribution Plan, but Figure 3 demonstrates, even without aiding the IID's EDP, the projects' temporary following of agricultural lands is not significant when compared to the historic levels of following in Imperial County. The Mount Signal and Calexico Solar Farm projects EIR incorporates by reference the less than significant cumulative impact determination related to the reduction in agricultural use water use associated with the cumulative solar development as compared to historic levels of agricultural use water reductions that are attributed to following.

The IID's EDP Negative Declaration also analyzed the cumulative impacts of the EDP following program and concluded "Because there are no environmental impacts associated with implementation of the EDP, there are no cumulative impacts to consider." These findings are incorporated by reference in conjunction with the Imperial Solar Energy Center South Project EIR/EA. Based on these findings, it is reasonable to conclude that the proposed projects' conservation of water reduces the need for IID to declare a supply/demand imbalance, aids IID in meeting its water transfer and mitigation water obligations, and is within the range of historic levels of following within Imperial County and, therefore, the County concludes that no cumulatively considerable impact would occur.

#### **Response to Comment 7-12**

This comment requests that the analysis regarding water use and the effects on IID drains be evaluated from a cumulative standpoint. Please refer to response to comment 7-11 which addresses cumulative impacts related to this issue.

#### **Response to Comment 7-13**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The requirement to complete an Abandonment Request Form will be included as a Condition of Approval for the project. Further, it is acknowledged that the projects must pay Water Availability Charges, which would also ensure the availability of water for the project sites at the time solar uses are discontinued at the project sites and the agricultural restoration plans are implemented.

#### **Response to Comment 7-14**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The requirement that the Mount Signal and Calexico Solar Farm projects shall execute an Abandonment Agreement with IID for existing canal and drain facilities will be included as a Condition of Approval for the projects.

#### **Response to Comment 7-15**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The requirement that all existing underground tile drain pipe outlets into IID drains that serve the proposed project shall be plugged will be included as a Condition of Approval for the projects.

**Response to Comment 7-16**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. It is acknowledged that storm water runoff will be controlled to the satisfaction of IID. This requirement will be included as a Condition of Approval for the projects.

Additionally, potential hydrology and water quality impacts are addressed in EIR Section 4.9 Hydrology/ Water Quality. Included is Mitigation Measure 4.9-4, which states in part, "The project applicant shall prepare a site specific Drainage Plan for all facilities constructed in conjunction with the projects that meets the County Department of Public Works and IID requirements, where applicable."

**Response to Comment 7-17**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The requirement that the applicant will be required to execute an agreement with IID regarding drain operation and maintenance costs will be included as a Condition of Approval for the projects.

**Response to Comment 7-18**

This comment is noted and does not address the adequacy of the EIR; therefore, no additional response is necessary. The applicant will coordinate with IID with respect to any potential encroachment into IID rights of way. Coordination with IID regarding these matters will be included as a Condition of Approval for the projects.

**Response to Comment 7-19**

Comment noted. EIR page 3-50 identifies an Encroachment Permit from IID as a potential approval required for implementation of the project. The applicant will coordinate with IID with respect to any potential encroachment into IID rights of way. Coordination with IID regarding these matters will be included as a Condition of Approval for the projects.

**Response to Comment 7-20**

Comment noted. EIR Mitigation Measure 4.9-1a requires that the appropriate encroachment and stormwater permits are obtained prior to construction of the proposed projects.

**Response to Comment 7-21**

The project does not propose specific changes, modifications, or relocations to IID facilities and avoidance of IID facilities is proposed to the extent feasible. Potential impacts associated with any unforeseen improvements to IID facilities would occur within the footprint of the proposed project and, to that extent, impacts have been addressed. These physical impacts include the conversion of agricultural land, and potential biological and cultural resources impacts. These impacts have been evaluated to the extent that the entire project site is assumed to be within the development footprint and proposed area of disturbance, with the exception of IID drainages and canals. Mitigation associated with these impacts (e.g., burrowing owl, agricultural restoration, drainage) are the responsibility of the project applicant.

**Response to Comment 7-22**

This comment states IID's support for the proposed project and offers assistance regarding review of and avoidance of impacts associated with IID facilities. This comment does not specifically address the adequacy of the EIR; therefore, no further response is required.

**Response to Comment 7-23**

Comment noted.

DEPARTMENT OF TRANSPORTATION  
DISTRICT 11, DIVISION OF PLANNING  
4050 TAYLOR ST, M.S. 240  
SAN DIEGO, CA 92110  
PHONE (619) 688-6960  
FAX (619) 688-4299  
TTY 711



Flex your power!  
Be energy efficient!

Angelina  
Copy

December 15, 2011

11-IMP-98  
PM 23.09

Mount Signal Solar Energy and Calexico Solar Farm Projects  
DEIR – SCH #2011071066

Angelina Havens  
Imperial County  
Planning and Development Services  
801 Main Street  
El Centro, CA 92243

Dear Ms. Havens:

The California Department of Transportation (Caltrans) received a copy of the Draft Environmental Impact Report (DEIR) for the proposed Mount Signal Solar Energy Project (SCH #2011071066) located near State Route 98 (SR-98). Caltrans has the following comments:

8-1

It is understood by our agency, as documented in Visual Study of the DEIR, that the project will not have any potential impacts to motorists driving on SR-98.

8-2

It is also understood that the projects will access SR-98 from County roads at SR-98 and Ferrell Road, Rockwood Road, and Brockman Road. It is recommended that advance warning signs be installed to warn motorists of slow truck ingress/egress traffic at these intersections.

8-3

The STAA Design Vehicle (15m-18m) should be used at intersections where STAA truck access is anticipated. Due to varying shoulder widths, it's recommended that the appropriate template be used to verify the adequacy of the corner radius at these intersections. Public road intersections in rural areas should conform to Highway Design Manual Figure 405.7

8-4

The DEIR identifies that the project is proposing a transmission line that will connect to the Imperial Valley Substation. The following statements are general information provided previously for the Notice of Preparation (NOP) for transmission lines. Please refer to Caltrans Encroachment Permits Manual for guidance on utility encroachment. ([http://www.dot.ca.gov/hq/traffops/developserv/permits/encroachment\\_permits\\_manual/index.html](http://www.dot.ca.gov/hq/traffops/developserv/permits/encroachment_permits_manual/index.html))

8-5

Any work performed within Caltrans right-of-way (R/W) will require approval by Caltrans and an encroachment permit will be required for any work within the Caltrans' R/W prior to construction. Any traffic control will need to be addressed as part of the encroachment permit.

8-6

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DEC 19 2011

IMPERIAL COUNTY  
PLANNING & DEVELOPMENT SERVICES

"Caltrans improves mobility across California"

Ms. Havens, Imperial County  
December 15, 2011  
Page 2

Any work performed within Caltrans R/W must provide an approved final environmental document including the California Environmental Quality Act (CEQA) determination addressing any environmental impacts within the Caltrans' R/W, and any corresponding technical studies. If these materials are not included with the encroachment permit application, the applicant will be required to acquire and provide these to Caltrans before the permit application will be accepted. Identification of avoidance and/or mitigation measures will be a condition of the encroachment permit approval as well as procurement of any necessary regulatory and resource agency permits.

8-7

Additional information regarding encroachment permits may be obtained by contacting the Caltrans Permits Office at (619) 688-6158. Early coordination with Caltrans is strongly advised for all encroachment permits.

8-8

If you have any questions on the comments Caltrans has provided, please contact Marisa Hampton of the Development Review Branch at (619) 688-6954.

8-9

Sincerely,



JACOB M. ARMSTRONG, Chief  
Development Review Branch

c: Armando G. Villa, Imperial County

*"Caltrans improves mobility across California"*

**Letter 8**  
**California Department of Transportation**  
**December 15, 2011**

**Response to Comment 8-1**

This comment acknowledges Caltrans' receipt of the Draft EIR. No further response is necessary.

**Response to Comment 8-2**

This comment is correct. No visual impacts to motorists driving on SR-98 have been identified in the EIR.

**Response to Comment 8-3**

This comment is acknowledged. The following will be added to the conditions of approval for the project:

Advance warning signs, consistent with Caltrans standards for such construction signage, shall be installed at SR-98/Ferrell Road, SR-98/Rockwood Road, and SR-98/Brockman Road to warn motorists of slow truck ingress/egress at these intersections.

**Response to Comment 8-4**

It is acknowledged that Caltrans recommends that the STAA Design Vehicle should be used at intersections where truck access is anticipated and that public road intersections in rural areas should conform to Highway Design Manual Figure 405.7.

**Response to Comment 8-5**

This comment identifies requirements from the Caltrans Encroachment Permit Manual regarding line supports for overhead lines crossing freeways/highways and does not address the adequacy of the EIR. The applicant will be responsible for obtaining appropriate encroachment permits and/or approvals for any project component that affects Caltrans facilities.

**Response to Comment 8-6**

The County acknowledges that any work performed within Caltrans right-of-way will require approval by Caltrans and an encroachment permit will be required. The requirement for an encroachment permit is acknowledged in EIR Section 3.6.2 Discretionary Actions and Approval by Other Agencies (see EIR page 3-50.) Furthermore, it is noted that any traffic control plan required as part of the project construction would need to be addressed as part of the Caltrans encroachment permit approval process. Traffic control would occur in accordance with policy provided in the Caltrans Standard Plans and the California Manual on Uniform Traffic Control Devices.

**Response to Comment 8-7**

The limits of project disturbance have been evaluated in terms of potential environmental impacts to various resources such as biology and cultural resources. No improvements to Caltrans facilities or within Caltrans right of way are proposed or required. The applicant will provide any necessary supporting documentation as part of the encroachment permit application process.

**Response to Comment 8-8**

It is acknowledged that early coordination with Caltrans involving encroachment permits is advised.

**Response to Comment 8-9**

Comment noted.

December 13, 2011

Planning & Development Services Department  
County of Imperial  
Attn: Angelina Havens, Planner III  
801 Main Street  
El Centro, CA 92243

Subject: Comments regarding the Draft EIR for Mount Signal Solar Farm

**To whom it may concern:**

**I will make every effort to organize my comment regarding this DEIR consistent with how they are presented in the document. However, the scope and complexity of many elements in this DEIR are segregated in a manner that will require reiteration of key deficiencies throughout the document.**

9-1

**Executive Summary:**

I'd like to begin by expressing my expectation that County Planning staff, Commissioners and the Board of Supervisors (BOS) will respect their role in this process and seek to understand the long-term effects of approving this DEIR/Project and pursue their due diligence with a desire to truly understand impacts to the area and the valley as a whole and honor the public trust that has been put in their hands.

9-2

As a general note, I would characterize this DEIR as a smoke-screen for the developer and the County, HDR acting as the agent for Imperial County has checked all the boxes in an off the shelf DEIR, but has failed to engage key stakeholders and drill down in sufficient detail to truly define impacts regarding this project. If the Developer and the County have an agreement in principle, this DEIR will fill another box in the march to short term goals at the expense of permanent long-term alterations of the Imperial Valley landscape and economy.

9-3

As I have a residence within the impacted area proposed for this project, I find it unconscionable that at NO TIME during the planning of this project, nor during the construction of the DEIR, was I contacted by any of the proponents of the project or authors of this report. This suggests to me that the Developer, BOS or the author of the DEIR is seeking to serve an agenda of approval at the expense of area residents, the land they call home and the surrounding environment.

9-4

**Temporary Use:**

Of specific concern, is the suggestion that land of any kind could be subjected to decades of developed use, yet still be characterized as temporary by land use planners? I reject this assertion outright and find the idea that it can be "put back the way it was" after 20, 30 or 40 years is absurd. If the land is to be turned into an industrial park and used for solar development, let the County conduct the appropriate amount of due diligence and re-classify the area, then re-zone the land appropriate to its intended use. I contend;

9-5a

- The DEIR failed to consider the full impacts to the soils once developed. Fencing, foundations and roadways suggest significant compaction and import of rock and concrete that will require excavation and significant resources to remove at the "end" of the "temporary use".
- Damage to farm infrastructure is not sufficiently reviewed to determine an adequate process for restoration of tile lines, proper drainage or grade for irrigation.
- Existing irrigation infrastructure is not discussed to include irrigation ditch maintenance, mitigation or restoration.
- Stockpiles of topsoil (if this is accepted as a mitigation option) in volumes adequate to restore such a large number of acres constitutes a significant project (with impacts) in and of itself.
- There is no discussion regarding how the water used on the existing site will be redirected, reused or banked to facilitate the restoration after the "temporary use".
- There is no discussion of continued use for energy production and how/what that would mean to the CUP or the property owners.

9-5b

9-5c

9-5d

9-5e

9-5f



I don't believe the County or HDR as its vendor has adequately addressed the impacts of the land use with regard to a temporary designation.

9-5g

If the restoration plan is used to justify the "temporary use" of this land, the funding for restoration should be set aside in an escrow account to guarantee the restoration plan will be funded at the "end" of the temporary use.

Alternative Projects:

No project alternatives have been presented. Variations of the preferred project have been included to suggest alternatives have been considered, but they are all the same project. True alternatives to this project would include some consideration of alternative placement of the solar panels within the customers (SDGE) service area and other locations within the County of Imperial. Additionally, true alternative considerations would look at Brownfield in fills, rooftop solar options and undisturbed lands which by HDR's own reporting constitute the bulk of land in Imperial County. I suspect the selection of agricultural land (disturbed land) was the easy way out and avoided the hard work of truly evaluation impacts with resource agencies.

9-5h

General Environmental Setting:

Please note, as stated in this DEIR, "two resources that are vital to past and future agricultural production are productive soils and adequate water availability". This project will damage productive soils and remove the water from the land with no plan or suggestion regarding opportunities to get it back!

9-5i

Environmental Analysis:

Aesthetics:

*Per this DEIR, "Mount Signal rises out of the southern Yuha Desert, extending south of the U.S./Mexico border, and is a prominent visual feature in the landscape of this portion the project study area".*

I find it ironic that after making the statement above, the photos used for the Visual Study included in this DEIR fail to capture Mount Signal in any one picture. Is this an omission by commission or simply the view of consultants who loath to set foot in the valley and see no aesthetic value in what many here would consider very significant. I suggest:

9-5j

- Mount Signal is an iconic image in the Imperial Valley and offer multiple local organizational logos and branding material to support this assertion. (Proper due diligence by HDR and/or the County would discover this!)
- Giving no consideration to agricultural land as scenic vista is short sighted and prejudiced by the agenda of the DEIR preparer and/or developer.
- Common sense would dictate that erecting miles of 8 foot chain link fence and multiple 140 foot towers would be significant to any relatively flat landscape. Failure to consider these impacts significant is offensive.

9-5k  
9-5l

County Planning staff, Commissioners and the Board of Supervisors (BOS), please use your common sense and review the assertions of your DEIR preparer in light of your experience in the Imperial Valley.

Agricultural Resources:

First, I think it is important to note that the County has been put in a position to have to choose between the agricultural use of this land vs. the "temporary" industrial use of this land. The DEIR does not comparatively address the values of each activity and define a benefit for one over the other. Decision makers should have this data to properly evaluate the changed use of this land.

9-6

*From this DEIR, "the project would temporarily convert Important Farmland on-site to non-agricultural uses, but the project's indirect impact reduces the need for IID to fallow irrigated lands elsewhere in the County to meet IID water conservation goals".*

You can't have it both ways! The Developer, HDR and the County would like to claim a benefit from reducing the water applied to the land and call it a secondary benefit to implementing the project. I contend however, that:

9-7

- As per water reports within this DEIR, amounts as high as 93% of the water applied to the agricultural land will be maintained in the system. County Planning staff, Commissioners and the Board of Supervisors (BOS), ask yourselves where that water will go? There is not adequate evaluation of this aspect of the project to know. I think you will agree, that IID must render some form of MOU, statement of intent or other comment to verify:
    - These projects will supplement or replace the following program? Who benefits?
    - The rights and or access to the water can be maintained for the duration of the CUP?
    - The water can be stored or banked? Or will it be sold? To who's benefit?
    - Will the water exist in the system in 40 years to restore irrigated agriculture?
- You should know this before you even attempt to render a judgment on the impacts of this project!

9-7  
Cont.

- The project will affect residents and neighboring farm operations in that it will:
- Alter the operational protocols for the canal or lateral. Eliminating significant numbers of deliveries to agricultural operations will reduce the gross water orders and will alter the frequency of water in the ditch. In some locations this will significantly impact residences which are dependent on agricultural flows to cover service pipes for landscape and livestock water. Some laterals may not have any remaining farm deliveries, only service pipes. The IID does not have operational protocols for supplying a lateral for service pipe (residential) delivery only. You should know where this may occur and how it will be mitigated.

9-8

Right to Farm Ordinance No. 1031:  
The Right to Farm Ordinance should be maintained to protect the farm community from being considered a nuisance to the industrial use. However, the residences in the project area should not be precluded from considering the industrial use as a nuisance. The rights of this ordinance should not be passed down to the industrial user.

9-9

Air Quality:  
Imperial County is classified as a "serious" non-attainment area for PM10.

*From this DEIR, "groundcover, in the form of salt grasses (or similar plant types), would be planted in between the solar arrays to provide dust suppression. This type of cover crop generally has minimal irrigation requirements and, thus, minimal vegetation management (e.g., mowing) is anticipated. An alternative to using a cover crop would include the use of permeable soil stabilizing polymers, which would also provide dust suppression and erosion control against wind and water. Likewise, a combination of the two control measures may be employed.*

9-10

Based on the site layout descriptions provided by this DEIR, the panels will need access roads, perimeter roads and maintenance corridors between panels. This doesn't leave much room for salt grass. The developer, HDR and the County do not know how they are going to control dust during the operations of these facilities. The operational descriptions suggest that the roads will be traveled frequently to wash and maintain the panels. These are all dirt roads. Some form of dust suppression should be clearly identified. Also, if a cover crop is planned, what access to water does the project have? Will existing deliveries be maintained with IID? What rate structure will apply to project water? No infrastructure for water access is discussed by the DEIR.

Biological Resources:  
*From this DEIR, impacts are significant if they; "have a **substantial adverse effect on any riparian habitat** or other sensitive natural community identified in local or regional plans, policies, regulations or by the CDFG and USFWS; Have a **substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means; Conflict with the provisions of an adopted **Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.** Also, "no IID drains or canals will be removed, relocated or **otherwise impacted** and no washes are found within this portion of the study area; therefore, no USACE, CDFG or Regional Water Quality Control Board (RWQCB) resources will be affected.***

9-11

Although the authors of this DEIR do a fair job of proclaiming no impacts to IID drains, I see significant impacts that must be addressed. Such as:

- *From this DEIR, "the farm drains would not be not considered USACE jurisdictional waters because they do not convey natural flows, were excavated in upland areas, are mostly concrete lined, and function as part of an active agricultural operation.*

Once again, the authors show their ignorance of the area, agricultural and IID operations. First, I challenge you to find a significant number of "concrete lined" drains. There's also a reason that map labels call out Gresson Wash. I contend that the flows have existed long enough to create year-round waterways and thusly riparian habitat. Also, the water released to these drains is a significant contributor to the overall flow of water to the Salton Sea and therefore should be considered as waters of the US.

- *From this DEIR, "Additionally, active agricultural uses surrounding the project study areas would still utilize the drainages and therefore would not result in habitat alteration associated with the drainage system.*

As stated elsewhere in this DEIR, the solar use of this area will remove approximately 93% of the water from the land. THIS AMOUNT IS SIGNIFICANT. Removals of water in such huge volumes will totally eliminate flows in some drains and significantly reduce available water in others. This will significantly alter the HYDROLOGY of these RIPARIAN HABITATS and impact sensitive species. This is not comparable to following in that this project (and similar projects in the area) is concentrated in the southwest corner of the valley. Following managed by IID is dispersed throughout the valley, thus limiting the impacts to any one waterway. This project is concentrated and therefore will impact the flows and habitat in the drainage system.

- *From this DEIR, "The IID drains and canals, which provide foraging habitat for these burrowing owls, will not be impacted by the proposed projects. These burrows are covered under IID's Draft HCP, and no mitigation would be required for impacts adjacent to these burrows.*

The solar panels will cover a significant amount of the forage habitat for owls and other sensitive species and the drying of the drains coupled with changes to the canal and lateral operations, will all but eliminate significant amounts of viable habitat for owls and other species. This project DEIR fails to adequately evaluate these impacts and appears to directly conflict with the IID HCP.

The project as currently evaluated does not adequately address the impacts to riparian habitat and sensitive species created by this project, as the DEIR has flawed logic regarding the hydrology of drains and operations of canals and laterals with regard to operational changes prompted by removal of 93% of the water from the project acreage.

Geology and Soils:

The DEIR does not adequately address the projects impacts on agricultural soils or infrastructure (cement ditches, tile lines, drainage sump pumps etc...). These issues are not adequately discussed in the restoration plan descriptions. If the preferred mitigation is contingent on implementation of the restoration plan, it is essential that the funding sources as well as specific details of the restoration process are available for evaluation. The restoration plan should either be evaluated as part of this DEIR, or it should be evaluated as a standalone project that should be vetted before approving the CUP or this project.

Land Use/Planning:

*From this DEIR, "the project study area is not within proximity to urban areas; surrounding land uses are generally agricultural in nature and therefore, the projects would not interfere with or result in incompatibility with residential land uses".*

The residents in the area will be concerned about availability of water to service pipes if this project is approved. If significant amounts of water are removed from canals and laterals as water is no longer needed for agricultural uses, the residents in the area will be dependent on "ponds" supplied by IID at uncertain intervals. IID does not currently have an operations protocol for covering service pipes. Will the water rate for residents in the area change? You should know this before you approve this DEIR.

9-11  
Cont.

9-12

9-13

9-14

9-15

9-16

Hydrology/Water Quality:

This DEIR failed to recognize the hydraulic dependence between farming operations, habitat and waterways of the United States. The IID has been engaged for years with resource agencies regarding water in drains as waterways of the US with regard to the New and Alamo rivers as well as the Salton Sea. IID has an HCP for this reason, and as many of the ephemeral washes in the watershed connect with IID facilities as well. To suggestion that this Project (DEIR) can minimize these impacts by suggesting that the project is not touching IID facilities is absurd.

9-17

*From this DEIR, "The projects would temporarily convert Important Farmland on-site to non-agricultural uses, but the projects' indirect impact reduces the need for Imperial Irrigation District (IID) to fallow irrigated lands elsewhere in the County to meet IID water conservation goals".*

Do the authors wish to imply that IID will abandon their fallowing program once these solar projects are built? Is this project an alternative to fallowing? Is there an agreement between the County, IID and the Developer?

I'm sure the answers to these questions are incomplete at best. How the water once used for agriculture is accounted for, managed and how compensated is a huge impact brought on by this (and similar) projects and must be evaluated to have an informed opinion on the impacts to the land, residents and the economy in Imperial County!

9-18

As noted above, the authors have not done appropriate due diligence regarding the affects of removing the water from the land in the project area. These impacts must be known if the public trust is to be served and appropriate laws followed.

Utilities/Service Systems:

*From this DEIR, "Once the projects are operational, water would be required for domestic use, solar panel washing, fire protection, and irrigation. The projects would utilize water supplies currently delivered to the project study area by the Imperial Irrigation District (IID) and maximize the use of existing on-site water system(s)".*

I assume this to mean the project will use the existing irrigation infrastructure to deliver water to the control/maintenance buildings. Once again, the project is ill defined as to how much water would be used for what purpose. Methods for irrigating fence lines and cover crops are not defined, nor are acreages and locations. Will fire service water be available as a resource to area residents? The DEIR does not adequately address these impacts.

9-19

**Analysis of Long-Term Effects**

The removal of approximately 93% of the water from the land will alter the environment in the project area significantly as noted in detail above.

9-20

**Cumulative Impacts**

*From this DEIR, "A cumulative impact occurs from "the change in the environment which results from the incremental impact of the projects when added to other closely related past, present, and reasonably foreseeable probable future projects. **Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time"** (CCR Section 15355[b]).*

*"it is reasonable to conclude that the proposed projects' conservation of water reduces the need for IID to declare a SDI, aids IID in meeting its water transfer and mitigation water obligations, and is within the range of historic levels of fallowing within Imperial County and, therefore, the County concludes that no cumulatively considerable impact would occur.*

The suggestion that these projects have no more impacts than fallowing is flawed in that this project (and similar projects in the area) is concentrated in the southwest corner of the valley. Fallowing managed by IID is dispersed throughout the valley, thus limiting the impacts to any one waterway. This project is concentrated and therefore will impact the drainage flows, habitat and species in the project area.

9-21

The impact created by this project (noted above) will be further exacerbated by many similar project proposed for the area. The concentration of the project in an effort to marry up with the transmission corridor compounds the impacts of each project and creates an environmental "dead zone" in the area if all projects are approved and built.

9-22

**Alternatives**

See notes above in Executive Summary.

If you would like to discuss these comments in further detail, or have any questions please contact me at (760) 357-6623 or [forkemps@hotmail.com](mailto:forkemps@hotmail.com).

9-23



Michael and Julie Kemp  
105 Rockwood Road  
Calexico, CA. 92231

**Letter 9**  
**Michael and Julie Kemp**  
**December 13, 2011**

**Response to Comment 9-1**

Comment noted.

**Response to Comment 9-2**

Comment noted.

**Response to Comment 9-3**

In order to maintain objectivity and independent analysis, EIR preparation is conducted through a third-party contract directly with the County. CEQA does provide that applicants can prepare their own EIR's; however, the County of Imperial does not maintain this practice in an effort to avoid the appearance of a conflict of interest. The County has complied with the provisions of CEQA for the projects including the provisions of §21082.1(c) which state:

The lead agency shall do all of the following:

- Independently review and analyze any report or declaration required for this division;
- Circulate draft documents that reflect its independent judgment; and
- As part of certification of an environmental impact report, find that the report reflects the independent judgment of the agency.

**Response to Comment 9-4**

The County has complied with all applicable public notice provisions of the California Environmental Quality Act for the projects. This includes notification a public scoping meeting via mailing, newspaper and internet (posting of the NOP on the County's website), and holding a public scoping meeting to solicit comments from members of the public regarding the potential environmental impacts of the proposed projects, notice and circulation of the Notice of Preparation (NOP) for a 35-day period (whereas CEQA only requires a 30-day NOP review period), and notice via mailing, newspaper and internet regarding the circulation of the Draft EIR for a period of 50 days, whereas a 45-day Draft EIR public review period is required by CEQA.

Furthermore, the applicant has contacted the commenter regarding the proposed projects via telephone and e-mail. The applicant provided conceptual renderings of the projects to the commenter early in the EIR review process and potential issues of concern regarding the projects were discussed.

**Response to Comment 9-5a**

This comment characterizes the change to a solar use of the site as changing the site to an industrial park. However, the construction of a solar farm is substantially different than that of an industrial park, and the solar use is consistent with the General Plan and zoning designations of the project sites. See responses to comments 1-4 through 1-6. No large expanses of concrete, building pads and buildings, roadways and infrastructure would be required for implementation of the projects. For the vast majority of the project sites, ground conditions would not be surfaced with any type of impermeable materials. EIR Figure 3.0-7 depicts representative examples of optional solar panel configurations for the proposed projects. As shown, minimal ground disturbance is required for solar panel installation. Much of the underlying soils could remain in place. The projects will require very little import of rock and concrete for

the construction of footings. This will allow for full restoration of the site as is required by the County as part of project approvals.

#### **Response to Comment 9-5b**

Mitigation Measure 4.2-1 requires that a restoration plan be prepared for each of the projects, which would include the replacement of any damaged farm infrastructure, as necessary to restore the sites to their current agricultural use. The restoration plans are provided in EIR Appendix L.

EIR Section 3.5 (see page 3-48) provides a description of the restoration plans as follows:

The generating facility's total useful operating life, with appropriate maintenance, repair and component replacement procedures, is expected to be up to 40 years. After the useful life of the projects, the solar facilities would be disassembled from the steel mounting frames and the site would be restored to pre-project conditions.

When the projects are decommissioned at the end of its life span, the applicant or its successor in interest would be responsible for the removal, recycling, and/or disposal of all solar arrays, inverters, transformers and other structures on the site. The applicant anticipates using the best available recycling measures at the time of decommissioning. Further, the applicant would be required to prepare and implement an agricultural restoration plan for each site.

Project decommissioning would include the following activities:

- The facility would be disconnected from the utility power grid.
- Individual PV panels would be disconnected from the on-site electrical system.
- Project components would be dismantled and removed using conventional construction equipment and recycled or disposed of safely.
- Individual PV panels would be unbolted and removed from the support frames and carefully packaged for collection and return to a designated recycling facility for recycling and material reuse.
- PV Panel support steel and support posts would be removed and recycled off-site by an approved metals recycler.
- All compacted surfaces within the project study areas and temporary on-site haul roads would be de-compacted.
- Electrical and electronic devices, including inverters, transformers, panels, support structures, lighting fixtures, and their protective shelters would be recycled off-site by an approved recycler.
- All concrete used for the substation and underground distribution system would be recycled off-site by a concrete recycler or crushed on-site and used as fill material.
- Fencing would be removed and recycled off-site by an approved metals recycler.
- Gravel roads would be removed; filter fabric would be bundled and disposed of in accordance with all applicable regulations. Road areas would be backfilled and restored to their natural contour.
- Soil erosion and sedimentation control measures would be re-implemented during the decommissioning period and until the site is stabilized.

The project applicant is proposing to restore the sites with the same type of agriculture as is currently found in the site as part of the restoration of the project study areas. The success of establishment of the post-project vegetation would be evaluated in terms of percent coverage at two years after seeding with a performance standard of 80 percent or better. All permits related to decommissioning would be obtained, where required.

Please also refer to responses to comments 1-7 and 4-9.

#### **Response to Comment 9-5c**

A restoration plan is required as part of each of the project's approval, which would include the replacement of any damaged farm infrastructure, as necessary to restore the sites to their current agricultural use. Please refer to responses to comments 1-7 and 4-9.

#### **Response to Comment 9-5d**

Stockpiles of soil for the purposes of future restoration activities is not proposed as the projects will involve relatively minor grading in areas, limiting disturbance to existing agricultural soils.

#### **Response to Comment 9-5e**

The applicant will need to coordinate with IID regarding water use. However, because the project sites would retain their agricultural zoning, and because underlying property owners would not be giving up a right to agricultural water service by building/operating temporary solar farms, it is understood underlying property owners are eligible for the right to agricultural water service post-project, subject to IID regulations in place at that time. Properties currently receiving water from IID for agricultural purposes pay the Water Availability Charge (WAC) in addition to the fee IID charges for agricultural water consumed. The WAC applies to lands within the IID service area that are entitled to water service. Once built and under operation, solar farms will procure industrial water from IID through the Interim Water Supply Policy (IWSP). IID will charge solar farms accordingly at the industrial rate as per the IWSP. In addition, solar farms will be required to continue paying the annual WAC, therefore underlying property owners would still be entitled to conventional/historical agricultural quantities of water upon completion of the solar projects and restoration of the land to pre-project conditions. IID is in the process of establishing a formalized policy for the restoration of agricultural water service to agricultural properties that are used on a temporary basis for renewable energy projects. It is expected that IID's formalized policy will continue the informal practice currently in place.

All new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP), and may be required to enter into a water supply agreement with IID. Payment of a water availability fee guarantees access to water in the future. Please refer to responses to comments 7-10 and 7-11.

#### **Response to Comment 9-5f**

The County requires mitigation in the form of either in-lieu fees for agricultural conversion, set-aside preservation of agricultural lands on a 1:1 basis (conservation easements) or restoration plans. As part of their approval, the applicant shall provide financial assurances/bonding in the amount equal to the site restoration cost estimate to return the land back to its agricultural conditions after the solar facility ceases operations and closes (see also responses to comments 9-5b and 4-3). Renewal of the CUPs after 40 years for the project areas would be subject to additional environmental review at the time that the CUP is set to expire.



**Response to Comment 9-5g**

The County does requires appropriate bonding as a component of the restoration plan to ensure that restoration activities will be properly funding. This requirement is included as a condition of approval of the projects.

**Response to Comment 9-5h**

CEQA establishes no categorical legal imperative as to the scope of alternatives to be analyzed in an EIR. To be legally sufficient, the consideration of project alternatives in an EIR must permit informed agency decision-making and informed public participation. The analysis of alternatives is evaluated against a rule of reason. Alternatives are suitable for study in an EIR if they meet all of the following thresholds: (1) substantially reduce or avoid the project's significant environmental impacts; (2) attain most of the basic project objectives; (3) are potentially feasible; and (4) are reasonable and realistic. (Guidelines §15126.6, subds. (a), (c).) Candidate alternatives that do not satisfy these requirements may be excluded from further analysis. An EIR need not consider alternatives that would change the fundamental nature of the projects or that cannot achieve the fundamental goals and purposes of the proposed projects. The EIR complied with these requirements and does provide a reasonable range of alternatives. Also, an Alternative Location to the proposed projects was evaluated, but rejected from further consideration (see EIR page 8-2). Please refer to responses to comments 1-16 through 1-18.

This comment also describes characteristics of what is known as distributed generation (e.g., rooftop solar options). Please refer to response to comment 1-18 regarding a distributed generation alternative.

**Response to Comment 9-5i**

Restoration plans are required as part of approval of the projects, which include the provision of adequate water to serve the site and restore agricultural activities to their existing condition. Also, water use agreements will need to be in place with IID. All new non-agricultural water project supply requests are processed in accordance with the IID's Interim Water Supply Policy for Non-Agricultural Projects (IWSP), and may be required to enter into a water supply agreement with IID. Please refer to responses to comments 7-10 through 7-21.

**Response to Comment 9-5j**

The EIR identifies Mount Signal as a valuable aesthetic resource in the Imperial Valley, stating, "Perhaps the most significant landmark in the County is Mount Signal, located along the International Border on the eastern edge of the Yuha Desert, west of Calexico. This feature is visible from the entire Imperial Valley."

Mount Signal is shown within the context of several of the visual simulations and corresponding views conducted for the proposed projects and provided in the EIR. Specifically, see EIR Figure 4.1-5 (Viewpoints G and H (CSF2(B) Site) and Figure 4.1-12 (Pre- and Post-Project Views at Viewpoint G (CSF2(B) Site), and Figure 4.1-17 (Visual Simulation of Proposed Off-site Transmission Facility within BLM Utility Corridor "N"). The EIR's conclusion that the proposed projects would not substantially disrupt the unity of the viewshed of Mount Signal is supported by these visual simulations.

**Response to Comment 9-5k**

The EIR does consider that agricultural lands provide aesthetic value. Specifically, EIR page 4.1-4 states, "The visual character of the agricultural lands within the study area is of generally moderate quality and contributes to the unity and intactness of the larger Imperial Valley." However, no formally designated scenic vista is located within the project area, and the projects would not affect a formally designated scenic vista located off of the project sites. The replacement of agricultural fields with solar fields has been determined to not constitute a significant aesthetic impact based on a variety of factors

and criteria as is provided in detail in EIR Section 4.1 Aesthetics. Furthermore, the conclusion regarding aesthetic impacts related to this issue is consistent with other recently prepared and certified EIRs in the County for other solar projects.

**Response to Comment 9-5I**

The EIR addresses the aesthetic impacts of transmission towers and chain link fencing associated with the proposed projects. EIR Figures 4.1-6 through 4.1-16 all depict the project sites fencing, and include transmission towers in the instances where these towers would be visible from the particular viewpoint and view angle. The EIR states on page 4.1-21 that the proposed security fencing would obscure views of adjacent open fields, scattered trees, and residences and, to a lesser extent, agricultural structures. The EIR also notes on page 4.1-21 that taller structures, such as the electrical distribution and transmission lines and O&M facilities would remain visible above the security fencing. The EIR then concludes that “when considering these project features in the context of the low levels of vividness and intactness for the study areas as documented in Section 3.1.1, these changes to the visual character of the study areas are considered less than significant.” The EIR conclusion that the projects would not result in an aesthetic impact is based on many factors, including the Thresholds of Significance identified on EIR page 4.1-19. With respect to aesthetics, it is concluded that the proposed projects would not have a substantial adverse effect on a scenic vista, substantially damage scenic resources (e.g., trees, rock outcroppings, and historic buildings), or substantially degrade the existing visual character of the site or surroundings. These conclusions are consistent with the CEQA analysis and conclusions of other large solar projects in the general project area and which the County Planning Commission and Board of Supervisors have adopted and certified the environmental documents in compliance with CEQA §21082.1(c).

**Response to Comment 9-6**

The EIR provides an analysis of the baseline (existing agricultural uses) as compared to the proposed projects; therefore, a comparison is provided between existing agricultural uses and proposed solar uses. Furthermore, EIR Section 8.0 Alternatives provides an analysis of the No Project/No Development Alternative, which compares existing agricultural operations with the proposed solar use.

The County Planning Commission and Board of Supervisors will also weigh the decision whether or not to approve the projects in concert with fiscal and economic factors that are not within the purview of the environmental analysis.

The County will consider approval of agricultural restoration plans in conjunction with consideration of approval of the projects. As part of their approval, the applicant shall provide financial assurances/bonding in the amount equal to the site restoration cost estimate to return the land back to its agricultural conditions after the solar facility ceases operations and closes. This mitigation approach is consistent with the Department of Conservation’s recommendation that restoration plans be prepared for solar projects located on agricultural lands (please refer to response to comment 1-7).

**Response to Comment 9-7**

A Water Supply Analysis has been prepared in accordance with SB 610 for the projects and is provided in EIR Appendix K. This WSA indicates that water will be available to serve the projects. All new non-agricultural water project supply requests are processed in accordance with the Imperial Irrigation District’s (IID) Interim Water Supply Policy for Non-Agricultural Projects (IWSP). In order to obtain a water supply from IID for the projects, the project applicant will be required to comply with all applicable IID policies and regulations and may be required to enter into a water supply agreement with IID. Such policies and regulations require that all potential environmental and water supply impacts of the projects have been adequately assessed, appropriate mitigation has been developed, and appropriate conditions have been adopted by the relevant land use permitting/approving agencies.

**Response to Comment 9-8**

The IID does not allow agricultural water delivery gates and small parcel water service pipes to be used for the solar projects, except for those designated in the water supply agreement. At the December 27, 2011 Board of Supervisors Hearing, IID stated that it will continue to provide water to adjacent property owners regardless of whether the proposed solar projects are approved and developed. Please refer to responses to comments 7-10 through 7-21.

**Response to Comment 9-9**

The County's Right to Farm Ordinance No. 1031 would be maintained and the provisions of this Ordinance are applicable to the proposed projects.

**Response to Comment 9-10**

The solar panels would cover a large majority of the project sites. Panel washing and maintenance will be limited, currently anticipated approximately two times per year. The typical operations involve a very limited staff at each facility.

As stated in the EIR, salt grasses (or similar plant types) which have minimal irrigation requirements would be used as groundcover. Alternatively, a combination of groundcover and permeable soil stabilizers would be used, as appropriate. Implementation of EIR Mitigation Measure 4.3-2b (ICAPCD Standard Measures for Fugitive Dust (PM10) Control" and "ICAPCD Discretionary Measures for Fugitive Dust (PM10) Control" is also required which would reduce dust emissions from project construction and project operation, including from unpaved roads and other unpaved areas that would be traversed by work vehicles.

Please also refer to response to comment 9-7.

**Response to Comment 9-11**

This text referenced in this comment is a general description of farm drains within Imperial County, many of which are concrete-lined, or connect to other concrete-lined facilities. The EIR identifies a small amount of cattail marsh as being present in one of the IID irrigation canals within the project areas. Broad-leaved cattail is identified as the dominate species in this area; however, tamarisk is also present throughout. Because the projects do not propose to remove, relocate, or otherwise impact IID canals or drains, these facilities are not considered as part of the project site's vegetation communities. Please refer to responses to comments 7-10 through 7-21.

**Response to Comment 9-12**

Please refer to responses to comments 7-10 through 7-21 which address any potential changes to IID facilities, including drainages and irrigation/delivery canals. Alterations to these facilities must be approved by IID. The issue related to the change in water use at the project sites and the potential impacts to IID drainages and the Salton Sea are addressed in EIR Sections 4.4 Biological Resources and 6.0 Cumulative Impacts, respectively. This issue is also discussed in response to comment 7-11.

**Response to Comment 9-13**

The EIR identifies a potentially significant impact to burrowing owls and mitigation measures are required to reduce the impact to a level less than significant. Two active burrowing owl burrows were observed within the active agricultural fields, within the limits of grading for the proposed solar fields. An additional 42 active burrows were observed adjacent to the proposed solar fields, within IID easements (berms, drains, canals, etc.). The IID drains and canals, which provide foraging habitat for these burrowing owls,

will not be impacted by the proposed projects. These burrows are covered under IID's Draft HCP, and no mitigation would be required for impacts adjacent to these burrows. With respect to on active burrowing owls on-site, the following mitigation measure is required:

**4.4-1f Burrowing Owl Compensation.** The project applicant shall compensate for impacts to burrowing owl habitat through the following measures:

1. CDFG's mitigation guidelines for burrowing owl (1995) require the acquisition and protection of replacement foraging habitat per pair or unpaired resident bird to offset the loss of foraging and burrow habitat on the project sites.

The project applicant(s) shall landscape small pockets of land along the perimeter of the solar fields, and/or within the solar fields themselves, with saltgrass or other native vegetation that will provide suitable foraging habitat for burrowing owls, pursuant to a Mitigation and Monitoring Plan that is reviewed and approved by CDFG prior to the commencement of construction. Although the site plans show almost 100% coverage of solar panels, it is anticipated that due to the nature of solar panel configuration, there will be spaces at various locations, such as between the edges of the agricultural fields (i.e., outside of IID easements) and the solar project footprints. Sufficient open areas shall be set aside for burrowing owl habitat and burrow relocation for the lifespan of the solar projects. Due to County of Imperial requirements that the solar fields be returned to active agriculture after the life of the solar projects, it is assumed that when the land is returned to active agricultural crops, it will continue to provide habitat for burrowing owl. If the vegetation that is planted does not succeed, sufficient areas cannot be provided onsite, or planting is not feasible, alternative mitigation shall be provided, which CDFG determines provides equivalently effective mitigation. Such alternative mitigation may include off-site preservation of the required amount of foraging habitat through a CDFG-approved conservation easement, or an in-lieu fee in an amount approved by CDFG that is sufficient to acquire such conservation easements, or some combination of the two.

#### **Response to Comment 9-14**

Please refer to response to comment 9-11.

#### **Response to Comment 9-15**

Restoration plans, including bonding mechanisms, are required as a condition of approval for the proposed projects. The project site restoration plans are provided as EIR Appendix L. The restoration plans identify the details of proposed restoration activities. Please also refer to responses to comments 1-7, 4-9, and 9-5b.

#### **Response to Comment 9-16**

Please refer to responses to comments 9-7 and 9-8.

The County is not aware that water rates would be changed in the area of the projects, for other water uses.

**Response to Comment 9-17**

Comment noted. The IID's HCP is currently a draft. This issue is raised in preceding comments and responded to in the corresponding responses. See also EIR Section 6.0 Cumulative Impacts (EIR pages 6-20 through 6-21) and responses to comments 7-10 and 7-11.

**Response to Comment 9-18**

The comments regarding how water will specifically be managed by IID in the future and how compensation will occur is beyond the scope of this EIR. The EIR does evaluate potential water supply in compliance with CEQA and SB 610, including future water demand and availability. A Water Supply Analysis has been prepared for the projects and is provided in EIR Appendix K. This WSA indicates that water will be available to serve the projects. Specifically, the WSA assessment examines the following water issues:

- Water availability during a normal year
- Expected water availability during multiple dry years
- Water availability for a 42-year projection
- Agricultural consumption and project water demands
- Foreseeable planned water demands to be served by IID

The WSA has determined that IID's water supply in association with the IWSP is sufficient to meet project needs. Imperial Unit water availability has been assessed for a 42-year projection (2012 - 2054), which is concurrent with the proposed construction and operational life of CSC. Applicant seeks to utilize solely IID IWSP water to operate CSC. Since Industrial water users in the Imperial Unit have the 2nd highest apportionment priority for water supply available for equitable distribution during years of supply-demand-imbalance, the project's water supply from IID is considered to be reliable.

EIR Table 3-2 Project Water Supply Demands, identifies the proposed projects water use. EIR Section 4.15 Utilities/Service Systems evaluates the potential impacts associated with the project's water use. Therefore, to the degree potential environmental impacts associated with water use are known, these impacts have been analyzed in the EIR. As stated in response to comment 9-7, all new non-agricultural water project supply requests are processed in accordance with the Imperial Irrigation District's (IID) Interim Water Supply Policy for Non-Agricultural Projects (IWSP). In order to obtain a water supply from IID for the projects, the project applicant will be required to comply with all applicable IID policies and regulations and may be required to enter into a water supply agreement with IID. Such policies and regulations require that all potential environmental and water supply impacts of the projects have been adequately assessed, appropriate mitigation has been developed, and appropriate conditions have been adopted by the relevant land use permitting/approving agencies.

**Response to Comment 9-19**

EIR Section 4.15 Utilities/Service Systems provides a detailed analysis of existing and proposed water usage for the project sites. Also, as provided on EIR page 3-35:

**3.3.7 Water Supply, Treatment and Storage**

Once the projects are operational, water would be required for domestic use, solar panel washing, fire protection, and irrigation. The projects would utilize water supplies currently delivered to the project study area by the Imperial Irrigation District (IID) and maximize the use of existing on-site water system(s). Total annual average water demands for project operations (post-2015) are estimated at 1,310 acre-feet per year (AFY); a substantial reduction in current agricultural water use. Maximum water use would occur during concurrent construction and

operations in 2012 and is estimated at 2,415 AFY (see Table 3-2). Water use for each component of the projects is described further in Table 3-2.

**Table 3-2. Project Water Supply Demands**

Site Location	Construction Water Use (AFY)	Operational Water Use (AFY)	Total (AFY)
MSSF1 (2012)	2,200 (2012)	215	2,415
MSSF1 (Post 2013)	--	430	430
CSF1(A) (2013)	500	232	732
CSF1(A) (Post 2014)	--	232	232
CSF1(B) (2013)	500	--	500
CSF1(B) (Post 2014)	--	198	198
CSF2(A)(2014)	500	288	788
CSF2(A)(Post-2015)	--	288	288
CSF2(B)(2014)	500	--	500
CSF2(B)(Post-2015)	--	162	162
<b>Total Project Operations (Post-2015)</b>			<b>1,310</b>

Source: DD&E 2011.

Panel washing would require approximately 80 acre feet (AF) per year (approximately one quart of water for each panel per month) for each of the five projects. On-site water would be stored in above-ground steel tank(s) located in proximity to each of the O&M buildings with a storage capacity of up to 40,000 gallons. Of this total storage capacity, 10,000 gallons of water would be dedicated for fire protection for the O&M building(s). A small Point of Entry (POE) Water Treatment System may be required to reduce sediment levels prior to panel cleaning use and, if required, would be placed at the O&M building(s). The point of entry system requires filtration and disinfection treatment or an alternative treatment technology such as reverse osmosis. The remaining water supply would be used for irrigation to maintain a suitable crop cover (salt grass or similar).

Fire service requirements of the proposed projects are intended to serve the project sites, and in the event of a fire, suppress any structural fires so as to avoid impacting any nearby uses or structures.

**Response to Comment 9-20**

This comment raises the same issues as have been responded to in preceding responses. Please refer to response to comment 9-18 regarding the removal of agricultural land and the decrease in water use.

**Response to Comment 9-21**

This comment raises the same issues as have been responded to in preceding responses. Please refer to responses to comments 9-7, 9-11, and 9-18.

**Response to Comment 9-22**

The general statement regarding the impact of the proposed projects is acknowledged; however, please refer to preceding responses which address each of the specific comments raised in this letter. Cumulative impacts are addressed in EIR Section 6.0, which also addresses potential impacts of conversion of agricultural lands to solar use and the effects of this change in water use on IID drains.

**Response to Comment 9-23**

Comment noted.

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