Appendix 5.1G
Cumulative Impacts Analysis

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Cumulative Impacts Analysis

Cumulative air quality impacts from the Rio Mesa SEGF and other reasonably foreseeable projects will be both regional and localized in nature. Regional air quality impacts are possible for pollutants such as ozone and $PM_{2.5}$ which are formed through photochemical processes that can take hours to occur. Carbon monoxide, NOx, and SOx impacts are generally localized in the area in which they are emitted. PM_{10} can create a local air quality problem in the vicinity of its emission source, but can also be a regional issue when it is formed in the atmosphere from VOC, SOx, and NOx.

The cumulative impacts analysis considers the potential for both regional and localized impacts due to emissions from proposed operation of the Rio Mesa SEGF. Regional impacts are evaluated by comparing maximum daily and annual emissions from the project with emissions of ozone and PM precursors in Riverside County. Localized impacts are evaluated by looking at other local sources of pollutants that are not included in the background air quality data to determine whether these sources in combination with Rio Mesa SEGF would be expected to cause significant cumulative air quality impacts.

Regional Impacts

Regional impacts are normally evaluated by assessing the project's contribution to regional emissions. Although the relative importance of VOC and NOx emissions in ozone formation differs from region to region and from day to day, state law requires reductions in emissions of both precursors to reduce overall ozone levels. The change in the sum of emissions of these pollutants, equally weighted, is used to provide a rough estimate of the impact of the project on regional ozone levels. However, because of the rural and relatively undeveloped nature of the project area (southeastern Riverside County), the MDAQMD and ARB have determined that ozone concentrations in the area largely reflect the impact of transport from the South Coast Air Basin.[1] Therefore, in this instance a comparison of project emissions with emissions in the air basin is not particularly informative because regional air quality is not correlated with local or regional sources of emissions. However, this also suggests that the project emissions will have minimal impact on local ozone levels because the majority of ozone in the project area comes from outside the air basin.

A comparison of the emissions of PM_{10} and $PM_{2.5}$ precursor emissions from the project with regional PM_{10} and $PM_{2.5}$ precursor emissions can be used to provide an estimate of the impact of the Project on regional PM_{10} and $PM_{2.5}$ levels. As discussed above, emissions of NOx and VOC, which are PM_{10}/$PM_{2.5}$ precursors as well as ozone precursors, are relatively low. The majority of regional PM_{10} and $PM_{2.5}$ comes from directly emitted particulate matter in the form of unpaved road dust and fugitive windblown dust.

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1 CARB, "Second Triennial Review Of The Assessment Of The Impacts Of Transported Pollutants On Ozone Concentrations In California", Section III.G, November 1996.

Table 5.1G-1 summarizes these comparisons. Project emissions are compared with projected regional emissions in 2015. Riverside County emissions projections for 2015 were obtained using CARB's web-based emission inventory projection software.[2] Emissions from the project would result in very small increases in total emissions in the county. Because of the relatively small emissions contribution from the project and because regional air quality is heavily influenced by transport, we expect that the overall impact of the project on regional air quality will not be significant.

TABLE 5.1G-1
Comparison of Project Emissions to Regional Precursor Emissions in 2015: Annual Basis[a]

Ozone Precursors – Annual Basis	
Total Riverside County Ozone Precursors, tons/year	66,744
Total Project Ozone Precursor Emission, tons/year	18.9
Project Emissions as Percentage of Countywide Ozone Precursor Emissions	0.028%
PM_{10} Precursors – Annual Basis	
Total Riverside County PM_{10} Precursors, tons/year	98,187
Total Project PM_{10} Precursor Emissions, tons/year	25.2
Project Emissions as Percentage of Countywide PM_{10} Precursor Emissions	0.026%
$PM_{2.5}$ Precursors – Annual Basis	
Total Riverside County $PM_{2.5}$ Precursors, tons/year	74,492
Total Project $PM_{2.5}$ Precursor Emissions, tons/year	25.2
Project Emissions as Percentage of Countywide $PM_{2.5}$ Precursor Emissions	0.034%

[a] County-wide emissions calculated as 365 times daily emissions

Localized Impacts

To evaluate potential cumulative impacts of the project in combination with other projects in the area, we requested from the MDAQMD information regarding projects within a radius of 10 km (6 miles) of the project.

Within this search area, two types of projects were used as criteria for identification:

- Projects for which air pollution permits to construct have been issued since January 1, 2010; and
- Projects for which air pollution permits to construct have not been issued, but that are reasonably foreseeable.

Existing projects that have been in operation since at least 2010 are reflected in the ambient air quality data that has been used to represent background concentrations; consequently, no further analysis of the emissions from this category of facilities is required.

A copy of the information request for information about potential projects is attached. The MDAQMD responded that the only two facilities located within 6-miles of the Proposed Project are the Blythe Energy Project and Blythe Energy Project Phase II. Per the approach

[2] http://www.arb.ca.gov/app/emsinv/fcemssumcat2009.php, accessed August 2011.

discussed in the modeling protocol (Appendix 5.1H), these two projects were reviewed to determine whether the Blythe Energy Project or Blythe Energy Project Phase II have the potential to create a significant concentration gradient within the Proposed Project's modeled significant impact area. The Proposed Project's significant impact area is the area surrounding the project site where modeled impacts are above the corresponding EPA significant impact levels (SILs). Based on a review of the air quality modeling results for the Blythe Energy Project and Blythe Energy Project Phase II filed with the CEC during the permitting of these two projects, the only overlap between the significant impact areas of the three projects (Blythe, Blythe II, and the Rio Mesa SEGF) was associated with modeled 1-hr NO_2 impacts (EPA SIL of 7.5 $\mu g/m^3$). Therefore, only 1-hr NO_2 impacts were examined further for these three projects. A modeling analysis of the combined 1-hr NO_2 impacts for the three projects was performed using the same air dispersion model, meteorological data, and ambient background data as for the Proposed Project's modeling analysis (Section 5.1.5.5). The Blythe Energy Project and Blythe Energy Project Phase II NOx emission rates and stack parameters for this analysis were based on the air quality modeling files filed with the CEC. As shown in Table 5.1G-2, this analysis shows that the combined impacts for the three projects will not cause new exceedances of the state and federal air quality standards for 1-hr NO_2. Because there is no overlap between significant impact areas for the three projects with the exception of 1-hr NO_2 impacts and because the analysis of the combined 1-hr NO_2 impacts shows no exceedances of state and federal air quality standards, the localized cumulative air quality impacts are not expected to be significant for the Proposed Project.

Table 5.1G-2

Summary of Combined 1-hr NO_2 Results (Modeled Maximum Impacts plus Background)

Pollutant	Averaging Time	Combined Impact Three Projects ($\mu g/m^3$)	Background Concentration ($\mu g/m^3$)	Total Concentration (Modeled Impact plus Background) ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	CAAQS ($\mu g/m^3$)
NO_2	1-hr (max)	194[a]	92.4	286	--	339
	1-hr (98th percentile)	149[a]	78.0[c]	167[b]	188	--

Note:

[a] Highest 1-hour average NO_2 impacts occur during emergency engine testing at the Proposed Project.

[b] Total concentrations shown for 1-hour NO_2 are modeled project impacts combined with concurrent hourly NO_2 monitoring data (Tier 4 analysis in Section 3.6 of the modeling protocol). This value represents the five-year average of the annual 1-hr NO_2 98th percentile (modeled impact plus background) for each year (2006 to 2010) as required by June 28, 2010 EPA 1-hr NO_2 NAAQS guidance document.

[c] Background concentration shown is the three-year average of the 98th percentile values (2008 to 2010), in accordance with the form of the federal standard.

ATTACHMENT 5.1G-1

Correspondence Related To Cumulative Impacts Analysis

July 27, 2011

sierra research

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Mr. Eldon Heaston
Executive Director
Mojave Desert Air Quality Management District
14306 Park Avenue
Victorville, CA 92392

Re: Cumulative Impacts Analysis
BrightSource Energy Rio Mesa Solar Electric Generating Facility

Dear Mr. Heaston:

Rio Mesa Solar I, LLC; Rio Mesa SolarII, LLC; Rio Mesa Solar III, LLC; (collectively, the Applicant) will be submitting an application for a Determination of Compliance to the District and an Application for Certification to the California Energy Commission for the Rio Mesa Solar Electric Generating Facility (RMSEGF) during the 4th quarter of this year. The Applicant is proposing to construct a 750 megawatt solar thermal power plant in Riverside County just south of Interstate 10, about six to seven miles southwest of the Blythe Airport. A map showing the location of the proposed project is attached. As part of the project review, the CEC requires the Applicant to prepare an analysis of the project's cumulative air quality impacts. This is defined by the CEC as "a cumulative air quality modeling impacts analysis of the project's typical operating mode in combination with other stationary source emissions sources **within a six-mile radius** *which have received construction permits but are not yet operating, or are in the permitting process*." [Emphasis added.] We have interpreted this as follows:

- Projects for which permits to construct have been issued since January 1, 2010; and
- Projects for which permits to construct have not been issued, but are reasonably foreseeable.

We would like to obtain from the District a list of projects within six miles of the new power plant location for which permits to construct have been issued since January 1, 2010, and for which permits to construct have not been issued, but are reasonably foreseeable, along with sufficient emissions information and stack parameters so that we can include these sources in our air quality modeling. Facilities that meet these criteria but emit only VOCs can be excluded.

Thank you very much for your assistance. If you have any questions regarding the information we are requesting, feel free to call.

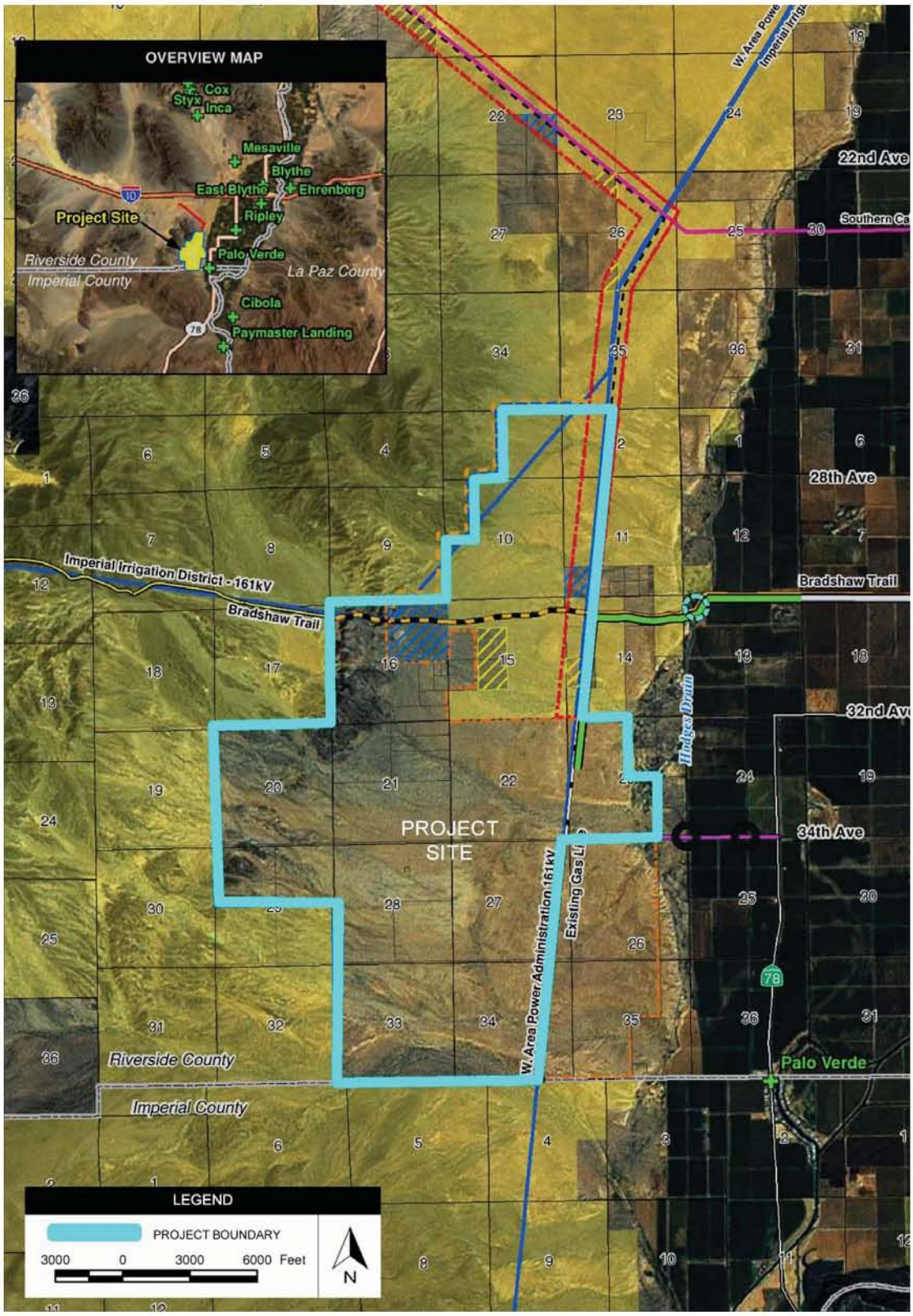
Sincerely,

Tom Andrews

Attachment

cc: Todd Stewart, BrightSource Energy, Inc.
Andrea Grenier, Grenier & Associates, Inc.
Chris Ellison, Ellison Schneider & Harris

Location of the Rio Mesa Solar Electric Generating Facility Project Site



Mojave Desert Air Quality Management District
14306 Park Avenue, Victorville, CA 92392-2310
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Visit our web site: http://www.mdaqmd.ca.gov
Eldon Heaston, Executive Director

August 29, 2011

Mr. Tom Andrews
Sierra Research
1801 "J" Street
Sacamento, CA 95811

Subject: MDAQMD Projects Within 6 Miles of Rio Mesa Solar Project

Dear Mr. Andrews:

Pursuant to your request, the Mojave Desert Air Quality Management (District) has prepared a list of projects for which the District has issued permits (or in the process of issuing permits) and are located within 6 miles of the proposed Rio Mesa Solar Electric Generating Facility. All projects located within the 6 mile radius are approved California Energy Commission (CEC) Projects. The list below provides for each project- name, address, and CEC docket number. The District will provide under a separate cover sufficient emissions and stack data for these identified sources. Actual emissions data will be provided for facilities which are currently operating.

Blythe Energy Project; Hobsonway & Buck Boulevard, Blythe, California. CEC Docket number 99-AFC-8.

Blythe Energy Project, Phase II; BEPII site boundary is located on approximately a 76 acre site immediately adjacent to the operational Blythe Energy Project (BEPI). CEC Docket number 02-AFC-1.

Should you have any questions please contact Mr. Christian Anderson, (760) 245-1661 extension 1846.

Sincerely,

Christopher A. Collins
Supervising Air Quality Engineer

cja