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October 16, 2012

VIA E-MAIL

Kern County Board of Supervisors
1115 Truxtun Avenue, 5th floor
Bakersfield, CA 93301

Re: Comments from Matt Hagemann regarding Air Quality

Dear Board of Supervisors:

The purpose of this letter is to respond to the comments submitted by Matt Hagemann in his letter dated September 25, 2012, on the air quality analysis in the Draft and Final Environmental Impact Reports (EIRs) for the Beacon Photovoltaic Project. As noted in Mr. Hagemann's resume that was attached to his previously submitted comment letter (August 22, 2012), he is a hydrologist and geologist. In comparison, I hold a Ph.D. in Environmental Engineering Science and have over 36 years of experience in air quality consulting. My specialties include air pollutant emission estimation, air quality impact analyses for California Environmental Quality Act (CEQA) documents, health risk assessments, data analysis, ambient monitoring, quality assurance and visibility studies. Additional qualifications are included in my resume (attached).

Below are my responses to the comments Mr. Hagemann provided on the quantification of particulate matter emissions and health effects from particulate matter emissions.

1. Particulate Matter Emissions

Mr. Hagemann notes that Eastern Kern Air Pollution Control District's (EKAPCD) Rule 402 does not provide control efficiencies for the dust control measures required by Rule 402. He then alleges that the control efficiencies in the Western Regional Air Partnership's (WRAP) Fugitive Dust Handbook (http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf) do not substantiate the 68 percent control efficiency that was determined through implementation of fugitive dust mitigation measures and compliance with EKAPCD's Rule 402. Mr. Hagemann suggests that the mitigation measures to reduce fugitive dust should be modeled or calculated to show that the 68 percent control efficiency can be achieved.

Although Mr. Hagemann is correct that control efficiencies for dust control measures are not provided by the EKAPCD, WRAP's control efficiencies, which are commonly used by air districts in California, such as the South Coast Air Quality Management District (SCAQMD), are substantial evidence of the types of efficiencies that can be expected for each required dust control measure. The efficiencies apply equally to dust control in EKAPCD as to dust control in basins regulated by other air districts. As noted in the air quality memorandum contained in Appendix C.1 of the Draft EIR prepared for this project, the 68 percent control efficiency is similar to the dust control efficiencies cited in other Kern County Planning Department CEQA documents, e.g., Rosamond Solar Project Draft Environmental Impact Report (July 2010). The County's responses to Mr. Hagemann's previously submitted letter (Response 7-M of Chapter 7, Responses to Comments, of the Final EIR) provide additional explanation of why the 68 percent control efficiency is appropriate. As discussed in Response 7-M, the 68 percent dust control efficiency used in the EIR was derived from the WRAP Fugitive Dust Handbook. Response 7-M includes a table of the dust control efficiencies achieved by common dust control measures, such as those required by EKAPCD's Rule 402 and as specified to be applied on page 4.2-30 in the Draft EIR.

Additionally, the SCAQMD has compiled tables of fugitive dust mitigation measures and their estimated control efficiencies, based primarily on the WRAP Fugitive Dust Handbook (http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html). A partial list of fugitive dust control measures that would be implemented during construction of the proposed project and the resulting control efficiencies, based on the tables compiled by the SCAQMD, are shown in the table on the following page.

As shown in the table, estimated control efficiencies from these measures range from 57 percent to 90 percent. Therefore, the 68 percent control efficiency used in the air quality analysis for this project is reasonable. Furthermore, even if the overall control efficiency were the lowest value shown in the table (57 percent), the maximum uncontrolled PM10 emissions shown in Table 4.2-5 of the Draft EIR (18.91 tons per year) would be reduced to 8.13 tons per year, which is substantially lower than the EKAPCD CEQA significance threshold of 15 tons per year.

Fugitive Dust Control Measure Efficiencies

Mitigation Measure	Control Efficiency
Apply water every 3 hours to disturbed areas within a construction site	61%
Apply chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days)	Up to 80%
Water storage piles by hand at a rate of 1.4 gallons/hour-yard^2, or apply cover when wind events are declared	90%
Require minimum soil moisture of 12% for earthmoving by use of a moveable sprinkler system or a water truck	69%
Limit on-site vehicle speeds (on unpaved roads) to 15 mph	57%
Source: http://www.aqmd.gov/ceqa/handbook/mitigation/fugitive/MM_fugitive.html	

2. Health Effects of Particulate Matter Emissions

Mr. Hagemann notes that his previously submitted comments included a discussion of potential health effects from particulate emissions. He then lists several health effects that are known to be linked to particulate emissions. Mr. Hagemann notes that several residences are located within a half mile of the site and an elementary school is located three miles north of the site. He requests that the Final EIR address potential health effects to sensitive receptors as a result of dust emissions during project construction and that a dust control plan pursuant to EKAPCD's Rule 402 be prepared and included in the EIR.

The information requested by Mr. Hagemann regarding health effects from particulate matter emissions is already provided in the Draft EIR and in the Responses to Comments section of the Final EIR:

- As noted in Section 4.2, Air Quality of the Draft EIR, and in Response 7-M of Chapter 7, Responses to Comments, in the Final EIR, particulate matter emissions during construction and operation would not exceed the County's thresholds.

- Impacts to sensitive receptors are specifically discussed under Impact 4.2-4 in Section 4.2, Air Quality, of the Draft EIR. As discussed under Impact 4.2-4, the proposed project would have a less-than-significant impact related to exposure of sensitive receptors to substantial pollutant concentrations.

I agree with the methodology and conclusions presented in the Draft EIR. In fact, the Beacon project may reduce fugitive dust in the region. A solar energy project must keep dust to a minimum through the use of dust control measures, as dust on PV panels reduces their efficiency for energy production. The mandatory dust control measures, along with water from the panel washing that runs off the panels and onto the ground and compaction of the driving surface over time would reduce the amount of dust in the air compared to current conditions. For these reasons, I would expect that implementation of the project would result in an overall incremental decrease in particulate matter emissions and associated potential adverse health effects in the region.

Mr. Hagemann correctly notes that the project falls into EKAPCD's category of a "Large Operation" and a dust control plan must be prepared for the project. This is already discussed in Section 4.2, Air Quality, of the Draft EIR. Contrary to Mr. Hagemann's claim, it is not necessary for the dust control plan to be included in the Draft EIR or Final EIR, as is suggested by Mr. Hagemann. In fact, dust control plans are rarely included in EIRs because such plans are usually prepared after the land use permits are granted and the design of the project is finalized. This is also the case for other plans, such as Stormwater Pollution Control Plans. Further there is no need to include the preparation of a dust

control plan as a mitigation measure because the project applicant already is required to prepare such as plan under Rule 402.

In conclusion, I disagree with Mr. Hagemann's allegation that the Final EIR and Responses do not sufficiently address commenter's previously submitted comments on air quality. The air quality analysis contained in the Draft EIR is technically sound and impact determinations are accurate. I find the County's responses to Mr. Hagemann's comments on the Draft EIR provide a good explanation of methodologies used in the Draft EIR analysis.

Please feel free to contact me if you have any questions about this letter.

Sincerely,

Steven L. Heisler

Steven L. Heisler, Ph.D., QEP

AECOM

Camarillo, CA
Environment
October 2012

Steven L. Heisler, Ph.D., QEP
Senior Program Manager

Education

BS, Chemical Engineering, California Institute of Technology, 1970
MS, Environmental Engineering Science, California Institute of Technology, 1971
Ph.D., Environmental Engineering Science, California Institute of Technology, 1975

Years of Experience

Years with AECOM: 37

Professional Affiliations

Air and Waste Management Association

Training and Certifications

Qualified Environmental Professional (QEP)

Dr. Heisler has 37 years experience in air quality consulting. His specialties have included air pollutant emission estimation for both stationary and mobile sources, air quality impact analyses for California Environmental Quality Act (CEQA) documents, health risk assessments, data analysis, ambient monitoring, quality assurance and visibility studies.

Representative Project Experience

UNOCAL, Air Emissions During Site Remediation, *San Luis Obispo County, California.* Estimated direct and indirect emissions that would occur during excavation and remediation of two large sites, including exhaust emissions from on-site construction equipment and off-site motor vehicles as well as fugitive particulate matter emissions from construction activities.

Southern California Edison, Proponent's Environmental Assessment for Falcon Ridge Substation Project, *Southern California*. Managed preparation of the Proponent's Environmental Assessment (PEA) for the Falcon Ridge Substation Project for Southern California Edison. Oversaw and conducted quality assurance review for all PEA sections, conducted air and quality greenhouse gas impacts analyses and prepared the air quality and greenhouse gas impacts section.

Southern California Edison, Proponent's Environmental Assessment for Lakeview Substation, *Southern California*. Participated in preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Lakeview Substation for Southern California Edison. Oversaw and conducted quality assurance review for several PEA sections, conducted air quality and greenhouse gas impacts analyses and prepared the air quality impacts section.

Southern California Edison, Proponent's Environmental Assessment for Alberhill System Project, *Southern California*. Managed preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Alberhill System Project for Southern California Edison. Oversaw and conducted quality assurance review for several PEA sections, conducted air quality and greenhouse gas impacts analyses and prepared the air quality impacts section.

Southern California Edison, Proponent's Environmental Assessment for Presidential Substation, *Southern California*. Managed preparation of several sections for the Proponent's Environmental Assessment (PEA) for the Presidential Substation for Southern California Edison. Oversaw and conducted quality assurance review for several PEA sections, conducted air quality impacts analyses and prepared the air quality impacts section.

Southern California Edison, Mitigated Negative Declarations for Five Peaker Plants, *Southern California*. Participated in preparation of Mitigated Negative Declarations (MNDs) for the construction and operation of five peaking power plants for Southern California Edison. Calculated air pollutant emissions during construction, including emissions from off-road and on-road equipment and vehicles, developed air quality impacts mitigation measures, oversaw impacts analyses for other environmental areas, prepared portions of Draft MNDs, prepared responses to comments on the Draft MNDs, prepared Final MNDs and Mitigation Monitoring Plans (MMPs) for four of the peaker facilities, and calculated actual emissions during construction of four of the peakers as required by the MMPs.

Chevron Products Company, EIR for Heavy Crude Project, *El Segundo, California*. Managed preparation of an Environmental Impact Report (EIR) for modifications to Chevron Products Company's El Segundo refinery to allow the refinery to increase its capacity to process heavy crude oil. Calculated air pollutant emissions during construction and operation of the proposed project, including emissions from off-road and on-road equipment and vehicles, developed air quality impacts mitigation measures, oversaw impacts analyses for other environmental areas, prepared Draft EIR, prepared responses to comments on the Draft EIR, prepared Final EIR.

South Coast Air Quality Management District, Air Emissions During Power Plant Modification Construction, *Southern California*. Provided support to the South Coast Air Quality Management District (SCAQMD) for the preparation of an environmental impact report (EIR) for modifications to three Los Angeles Department of Water and Power generating stations. Activities included estimating direct and indirect emissions from construction of the station modifications and preparation of the corresponding sections of the EIR.

South Coast Air Quality Management District, Emission Estimation for Proposed Fleet Vehicle Rules, *Southern California*. Provided support to the South Coast Air Quality Management District (SCAQMD) for the preparation of a Program Environmental Assessment for its proposed fleet vehicle rules. Activities included estimating direct and indirect emissions from construction of alternative fuel refueling stations and from operation of alternative fueled vehicles by public vehicle fleets in the California South Coast Air Basin.

BP/ARCO, Environmental Impact Report for MTBE

Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California.* Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to BP/ARCO's Los Angeles refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

Chevron **Products Company, Environmental Impact Report for MTBE Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California.*** Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to Chevron Products Company's El Segundo refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

Mobil Oil **Corporation, Environmental Impact Report for MTBE Phaseout/CARB Phase 3 Reformulated Gasoline Project, *Southern California.*** Oversaw air quality analyses for the preparation of an environmental impact report (EIR) for modifications to Mobil Oil Corporation's Torrance refinery and distribution terminals for the phase out of MTBE and the production of California Air Resources Board (CARB) Phase 3 reformulated gasoline. Specific activities included estimating direct and indirect air pollutant emissions associated with construction of the modifications and the development of air quality impacts mitigation measures.

Cadiz, Inc., **Support for EIR/EIS Preparation and Federal General Conformity Determination, *San Bernardino County, California***. Provided support to Cadiz, Inc. and the Metropolitan Water District of Southern California for revisions to a Draft Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) for construction and operation of a water storage and extraction project in the Mojave Desert. Activities included estimating air pollutant emissions anticipated to occur during construction and operation of the project, preparation of a Federal General Conformity Determination, and development of an air quality monitoring program.

Riverside **Cement Company, Health Risk Assessment, *Oro Grande, California.*** Served as the project manager for a health risk assessment (HRA) for the Riverside Cement Company's Oro Grande cement plant. The HRA was required by and submitted to the Mojave Desert Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software

package developed by the California Air Resources Board (CARB) for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

Riverside **Cement Company, Health Risk Assessment, *Riverside, California.*** Served as the project manager for a health risk assessment (HRA) for the Riverside Cement Company's Crestmore cement plant. The HRA was required by and submitted to the South Coast Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software package developed by the California Air Resources Board (CARB) for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

CalPortland, Health Risk Assessment, *Colton, California.* Served as the project manager for a health risk assessment (HRA) for CalPortland's Colton cement plant. The HRA was required by and submitted to the South Coast Air Quality Management District. Responsibilities included overall project management, calculating emissions of substances of potential concern, conducting the HRA utilizing the Hot Spots Analysis and Reporting Program (HARP) software package developed by the California Air Resources Board (CARB) for conducting health risk assessments in California under the Air Toxics Hot Spots Program, and preparing the final report.

Electric Power **Research Institute, Multimedia Health Risk Assessment for a Coal-Fired Power Plant, *California***. Managed the application of the Total Risk of Utility Emissions (TRUE) model to perform a multi-media health risk assessment for emissions from a coal-fired electric power plant.

Ventura Regional **Sanitation District, Air Permit Application, *Ventura County, California.*** Served as the project manager for an application for an air quality Permit to Construct for a biosolids drying system and a landfill-gas fired microturbines at the Ventura Regional Sanitation District's Toland Road sanitary landfill. Responsibilities included overall project management, conducting a health risk assessment (HRA) for the application of water recovered from biosolids drying for dust control at the landfill and responding to comments and requests for information from the Ventura County Air Pollution Control District.

CalPortland, Air Permit Application, *Rillito, Arizona.* Served as the project manager for development of an application for a major expansion at CalPortland's Rillito cement plant. The proposed expansion includes construction of a new cement kiln line and associated raw materials, clinker, and cement handling, milling and storage facilities. Responsibilities included overall project management, calculating baseline actual and future potential emissions from the facility, conducting New Source Review netting analyses, preparation of the permit application and coordinating responses to comments and requests for additional information

from the Arizona Department of Environmental Quality.

Arizona Department of **Environmental Quality, Hazardous Air Pollution Research Program, *Arizona***. Principal Investigator for a hazardous air pollution research program for the State of Arizona in response to a legislative mandate. The objectives of the research program were to evaluate health risks to the population in Arizona from hazardous air pollution and to identify options for reducing emissions. Four geographic regions of Arizona (Phoenix, Tucson, Casa Grande and Payson) were chosen for study based on population and geographical characteristics, and inhalation risk assessments were performed for all four regions.

Arizona Department of **Environmental Quality, Development of Hazardous Air Pollution (HAP) Research Plan, *Arizona***. Managed development of a plan for a statewide research program to evaluate existing risks to human health from hazardous air pollution. Coordinated and participated in development of approaches to identify HAPs of concern; monitor ambient HAP concentrations; estimate HAP emissions; model ambient atmospheric, soil and water concentrations; evaluate existing risks; evaluate residual risks following implementation of emission controls; evaluate feasibility of establishing HAP ambient air quality standards; and communicating results and progress to the public. Led preparation of a nationally peer-reviewed written research plan.

Electric Power **Research Institute, Exploratory Assessment of Regional Air Toxics Source-Receptor Relationships, *United States and Canada.*** Developed gridded estimates of emissions of mercury and particulate air toxics throughout the United States and Canada for regional source-receptor modeling. Reviewed available mercury emission factors and emission source operating data to develop approaches for estimating emissions. Reviewed estimates of emissions of air toxics from fossil-fueled power plants developed by EPRI and the US EPA as well as the quality of all particulate matter speciation profiles in the U.S. EPA's SPECIATE database to select most appropriate values for the emission calculations.

Electric Power **Research Institute, National Emissions Inventory, *United States.*** Managed the development of a national emissions inventory of 16 pollutants with seasonal, weekday/weekend, and diurnal resolution. The inventory includes data for more than 300,000 individual point sources and area sources in each county in the United States and in southeastern Canada. The project included development of a specialized database management system, extensive automated data quality checks, speciation factors to allocate VOC emissions to nine reactivity classes, and estimates of ammonia and alkaline particulate matter emissions from individual point sources and area sources in each county in the United States.

Mountain View **Power Company, Estimation of Potential Effects of Power Plant Expansion on Nitrogen Deposition, *San Bernardino County, California.*** Estimated the potential effects on nitrogen deposition of increased nitrogen oxide emissions from

increasing generating capacity at the Mountain View Power Plant.

Duke Energy North America, Air Quality Modeling Analysis of Effects of New Power Plants on Ozone in Maricopa County, *Phoenix, Arizona*. Oversaw air quality modeling analyses using the Urban Airshed Model (UAM) to evaluate the potential effects of emissions from three proposed power plants on ozone in the Maricopa County, AZ ozone nonattainment area. The analyses demonstrated that the emissions from the power plants would not have significant effects on ozone levels.

Arizona Department of Environmental Quality, Metropolitan Phoenix Voluntary Early Ozone Plan, *Phoenix, Arizona*. Managed contract to support ADEQ in development of a state implementation plan for the metropolitan Phoenix ozone nonattainment area. Coordinated activities of regulatory agencies and subcontractors for the development of emissions inventories, Urban Airshed Model (UAM) application, control strategy development, and evaluation and technical analyses of UAM performance.

Electric Power Research Institute, Operational Evaluation Network Program, *Eastern and Midwestern United States*. Deputy project manager with overall responsibility for all development, testing, and implementation of filter and instrumental methods for daily measurements of HNO_3, NH_3, NO_2, PAN, O_3, and particulate mass and composition at 25 sites throughout the Eastern and Midwestern United States over a 2-year period. Directly managed the development of testing facilities to generate known concentrations of gases and the application of those facilities to develop and test new measurement methods.

U.S. EPA, Acid Model Operational and Diagnostic Evaluation Study, *Eastern United States*. Deputy project manager with overall responsibility for daily sampling and analysis of HNO_3, NH_3, SO_2, NO_2, and particulate mass and composition at 75 locations in the Midwestern and Eastern United States over a 2-year period.

American Iron and Steel Institute, Analysis of Costs to Comply with PM2.5 NAAQS in the Pittsburgh-Steubenville Area, *Washington, DC*. Project Manager for an analysis of the costs of emission reductions to comply with proposed levels and forms of revised national ambient air quality standards (NAAQS) for particulate matter smaller than 2.5 microns (PM2.5). The study estimated the effects of emissions of both primary PM2.5 and gaseous PM2.5 precursors on atmospheric concentrations in the Pittsburgh, Pennsylvania/Steubenville, Ohio area and estimated costs for controls to reduce those emissions. The results provided curves of compliance cost as a function of the level of the standard for both 24-hour and annual averages.

Arizona Department of Environmental Quality, Development of Limited Serious Area PM Attainment Plan, *Phoenix, Arizona*. Participated in the development of an Attainment Plan for the Phoenix, AZ serious non-attainment area. Activities included

identification and evaluation of the effectiveness of control measures to reduce fugitive PM10 emissions.

Arizona Department of Environmental Quality, Data Analysis and Source Attribution for Selected Arizona Visibility Monitoring Sites, *Arizona*. Analyzed visibility and particulate matter data from Phoenix and Tucson, Arizona and from Arizona Sonoran Desert Class I areas. The analyses characterized the spatial and temporal nature of visibility impairment and evaluated the contributions of atmospheric constituents and emission source categories. Presented results for Phoenix to the Arizona Governor's Brown Cloud Summit, which was an effort to develop strategies to reduce visibility impairment in Phoenix.

Southern California Edison Company, Extent of Visual Impairment in California, *California*. Managed a study of the extent and causes of visual impairment in California. Acquired and analyzed visibility, air quality and emissions data available for California from 1988 through 1996. The analyses included investigations of temporal and geographic patterns, estimation of the sources of ambient particulate matter and light scattering, evaluation of historical trends and the role of emissions from the energy sector, a survey of models available for estimating source-receptor relationships, and recommendations for improvements to visibility and aerosol measurements.

Arizona Department of Environmental Quality, Tucson Urban Haze Study, *Tucson, Arizona*. Managed a study of the nature and sources of Tucson's winter haze. The study included optical, aerosol and meteorological measurements at four locations during a two-month period. Led analysis of the data to describe the haze and its characteristics, attribute the haze to atmospheric constituents, and apportion the haze to emission source categories.

United States Environmental Protection Agency, Project BRAVO Atmospheric Tracer Quality Assurance, *Texas*. Conducted field and laboratory quality assurance audits of perfluorocarbon tracer release and laboratory analysis activities for Project BRAVO. The atmospheric tracer release and measurement program was intended to quantitatively evaluate transport of emissions from various source areas to Big Bend National Park in Texas.

Southern California Edison Company, Project MOHAVE Quality Assurance, *California*. Managed field, laboratory and data quality assurance and method evaluations for a multi-institutional study of visual air quality in the Grand Canyon area. Prepared field performance and system audit procedures, conducted field audits of aerosol sampling systems and system audits of laboratory analysis. Audited the central data management for the study. Developed and implemented laboratory approaches for intercomparing SO_2 measurement methods implemented by two of the participating organizations.