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July 27, 2012

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**Re: Scoping comments for HECA, EIS-0431, 08-AFC-08A**

Dear Mr. Worl:

Attached, please find Sierra Club's scoping comments which were filed with DOE today. Sierra Club requests that these comments also be filed in the CEC docket for this matter. Thank you.

Sincerely,

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July 27, 2012

Mr. Fred Pozzuto
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**RE: Scoping comments for HECA, EIS-0431**

Dear Mr. Pozzuto,

Thank you for the opportunity to submit comments on the Department of Energy's ("DOE") proposed award of $408 million dollars to the Hydrogen Energy California ("HECA") coal gasification power/fertilizer plant ("Facility") under the Clean Coal Power Initiative ("CCPI") program. The proposed gasification plant would burn a blend of 75% coal and 25% petcoke to produce and sell electricity, carbon dioxide ("$CO_2$"), and fertilizer. The Sierra Club appreciates the opportunity to participate in this process and requests that you provide us with notice, sent to the undersigned counsel, regarding all further action in this matter.

The Sierra Club is a national nonprofit organization of approximately 1.3 million members, and supporters dedicated to exploring, enjoying, and protecting the wild places of the earth; to practicing and promoting the responsible use of the earth's ecosystems and resources; to educating and enlisting humanity to protect and restore the quality of the natural and human environment; and to using all lawful means to carry out these objectives. Sierra Club has over 144,000 members in the state of California.

## Introduction

The National Environmental Policy Act ("NEPA") is our "basic national charter for protection of the environment." 40 C.F.R. § 1500.1. Congress enacted NEPA "[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; [and] to enrich the

understanding of the ecological systems and natural resources important to the Nation." 42 U.S.C. § 4321. To accomplish these purposes, NEPA requires all agencies of the federal government to prepare a "detailed statement" that discusses the environmental impacts of, and reasonable alternatives to, all "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332 (C). This statement is commonly known as an environmental impact statement ("EIS"). *See* 40 C.F.R. Part 1502.

The EIS must "provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment." 40 C.F.R. § 1502.1. This discussion must include an analysis of "direct effects," which are "caused by the action and occur at the same time and place," as well as "indirect effects which . . . are later in time or farther removed in distance, but are still reasonably foreseeable." 40 C.F.R. § 1508.8. An EIS must also consider the cumulative impacts of the proposed federal agency action together with past, present and reasonably foreseeable future actions, including all federal and non-federal activities. 40 C.F.R. § 1508.7. Furthermore, an EIS must "rigorously explore and objectively evaluate all reasonable alternatives" to the proposed project. 40 C.F.R. § 1502.14(a). In conducting its analysis, DOE must consider:

> [E]nvironmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented.
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> Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned.
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> * * *
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> Energy requirements and conservation potential of various alternatives and mitigation measures. Natural or depletable resource requirements and conservation potential of various

> alternatives and mitigation measures…. [H]istoric and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures.

40 C.F.R. § 1502.16.

**1. The EIS Must Broadly Define the Purpose and Need of the Project**

DOE asserts that the purpose and need of its action is to "provid[e] limited financial assistance to HECA's project…[t]o advance DOE's CCPI program by funding projects that have the best chance of achieving the program's objective as established by Congress." 77 Fed. Reg. at 36,521. However, the purpose and need for the Facility and should not be confined to addressing only how DOE's pre-selected project meets the narrow purpose of the Energy Policy Act of 2005. The EIS should define the purpose and need broad enough to include evaluation of other worthy projects that could receive federal funding, including more worthy projects like renewable sources of energy.

The Energy Policy Act of 2005 authorizes funding for a wide range of energy solutions, and alternative energy solutions must be considered. *See Friends of Se.'s Future v. Morrison*, 153 F.3d 1059, 1066 (9th Cir. 1998) ("An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action," because "the EIS would become a foreordained formality").

The Facility would generate electricity, fertilizer and $CO_2$. The Purpose and Need statement must encompass the need for these end-products. DOE should not provide funding to projects that produce electricity and products where there is no demand. Therefore, DOE must include an evaluation of whether there is a local demand for fertilizer and $CO_2$ around the project site, including information regarding the expected price of HECA's fertilizer and how this compares with the price of fertilizer typically sold in the region.

The EIS must also include an analysis of projected energy demand in the state of California and why a new large baseload fossil fuel facility is needed in the state. The California Public Utilities Commission ("CPUC") recently found that there is no need for new baseload facilities in the state through 2020.[1]

[1] CPUC, Decision on System Track I and Rules Track III of the Long-Term Procurement Plan Proceeding and Approving Settlement (May 6, 2010), http://docs.cpuc.ca.gov/PUBLISHED/AGENDA_DECISION/164031.htm.

The EIS should include a discussion of which utilities or other entities would potentially buy the power from HECA and estimate of the price of power from the Facility and compare it to the price of power of alternative forms of power, including natural gas and alternative energies. It should include an economic analysis discussing the economic viability of the HECA proposal. DOE should inform the public whether or not the project will be able to proceed without DOE funds.

The Facility is not an innovative solution to solve energy needs and thus does not meet the purpose of Title XVII of the Energy Policy Act of 2005. Congress did not intend funds from the Energy Policy Act to support a private project producing fertilizer from coal. The EIS should address how a private project producing fertilizer from coal fulfills the nation's future energy needs.

The EIS should also explain how this proposal is novel. The Energy Policy Act authorizes funds for CCPI projects that "advance efficiency, environmental performance, and cost –competitiveness well beyond the level of technologies that are in commercial service." The HECA project would not employ new or significantly improved technologies. In fact, Mitsubishi has been demonstrating the gasification technology proposed for HECA on a commercial scale at a 250-MW integrated gasification combined-cycle facility in Nakoso, Japan, since 2008.

As DOE itself acknowledges, "[c]oal gasification electric power plants are now operating commercially in the United States and in other nations."[2] According to a RAND publication, "A recent survey documented the construction of 13 new coal-gasification facilities between 1993 and 2004 (NETL, undated)."[3] For instance, the Dakota Gasification Company's plant near Beulah, North Dakota has been operating for several years, as well as plants in Mulberry, Florida (Tampa Electric's Polk Power Station), and Wabash, Indiana (Wabash River Coal Gasification Repowering Project). The fertilizer aspect of the project is not novel. The Coffeyville plant in Kansas produced ammonia-based fertilizer from coal.

Nor are the carbon management aspects of the facility new and innovative. Carbon capture from coal gasification (and other gas plants) is existing technology that is deployed in the U.S. and abroad. $CO_2$ is currently transported via pipeline in Wyoming and elsewhere. Finally, the actual

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[2] DOE, Clean Coal Technologies, Gasification Technology R&D, http://www.fossil.energy.gov/programs/powersystems/gasification/index.html.
[3] RAND, *Unconventional Fossil-Based Fuels, Economic and Environmental Trade-Offs* (2008), at 41, http://www.rand.org/pubs/technical_reports/2008/RAND_TR580.pdf.

production of tertiary oil reserves through the injection of $CO_2$ happens in Wyoming and other states every day.

Thus, what HECA is proposing to do is already being done. The fact that there is only one commercial coal-to-gas plant and only two commercial coal gasification plants points more toward the economic impracticality of gasifying coal rather than the innovativeness of the technology. Recently, other coal gasification projects have been abandoned or severely delayed citing high capital costs and economic and environmental uncertainty.

DOE states that its overarching goal for Round 3 projects was to demonstrate technologies at commercial scale in a commercial setting that would: (1) Operate at 90 percent capture efficiency for $CO_2$; (2) make progress towards capture and sequestration at less than a 10 percent increase in the cost of electricity for gasification systems and a less than 35 percent increase for systems; and (3) make progress toward capture and sequestration of 50 percent of the facility's $CO_2$ output at a scale sufficient to evaluate the full impacts of carbon capture technology on a generating plant's operations, economics and performance. The Purpose and Need must also encompass these objectives and evaluate whether all three prongs are met. Specifically, DOE must evaluate how HECA's $4 billion dollar proposal meets DOE's cost criteria. When evaluating the third objective of HECA's facility-wide $CO_2$ output, the EIS must include the emissions from the coal mining activities, truck and rail traffic, as well as the lifecycle greenhouse gas emissions of enhanced oil recovery.

Another component of the CCPI program's objectives is to benefit the nation's economic stability.[4] Accordingly, the EIS must discuss its decision to provide $408 million dollars in taxpayer funds for a project whose main components are manufactured outside of the United States. HECA's amended proposal would use a gasifier and turbine manufactured by Mitsubishi Heavy Industries ("MHI"), a Japanese firm. The original HECA application planned to use gasifiers and turbines manufactured by General Electric ("GE"), a U.S. firm. DOE should evaluate whether this change in design meets the criteria of the Energy Policy Act and whether funding under the American Recovery and Reinvestment Act is justified

DOE must fully discuss why this facility should be a priority for using public resources, as compared with other worthy alternative projects, as well as how this facility meets the terms of its CCPI program. If DOE chooses to proceed with this action, in addition to addressing the overall programmatic

[4] DOE, National Energy Technology Laboratory, CCPI Program Facts, Clean Coal Demonstrations (Oct. 2008), http://www.fossil.energy.gov/programs/powersystems/cleancoal/ccpi/Prog052.pdf.

policy goals and demonstrating how providing funds for this facility will meet those goals, please also address the following NEPA requirements and environmental & socio-economic issues in your EIS.

## 2. The EIS Must Examine an Appropriate Range of Alternatives

In conducting its NEPA analysis, DOE has stated that it will look at the following alternatives: (1) the "no action" alternative; (2) the proposed project as modified by conditions (e.g., mitigation); and (3) alternatives to the HECA proposal that it is still considering (e.g., the right-of-ways for linear facilities). DOE claims it has a limited role in deciding whether to provide funding for the Project, but the $408 million dollar potential funding from the government will be a decisive factor in whether and how the project proceeds.

NEPA requires federal agencies to consider all reasonable and feasible alternatives to the proposed action "in depth." *Simmons v. U.S. Army Corps of Engineers*, 120 F.3d 664, 666 (7th Cir. 1997). "No decision is more important than delimiting what these reasonable alternatives are. That choice, and the ensuing analysis, forms the heart of the environmental impact statement." *Id.* (internal quotation marks omitted).

DOE should explore in detail at least the most promising alternatives which do not involve transporting coal more than 700 miles from New Mexico to California. We urge DOE to acknowledge that NEPA requires it to consider the alternatives discussed below.

### A. DOE Should Consider Renewable Energy Projects as Alternatives to the Proposed Project

If DOE finds there is a need for new electricity generation in California, the EIS must evaluate other means of generating electricity in a less environmentally harmful manner—such as use of renewable energy and conservation and efficiency programs. There are many forms of renewable energy that DOE should analyze including solar (photovoltaic and thermal), geothermal, wind (both on-shore and off-shore), small scale hydroelectric, biomass, and biogas. Kern County has 7000 MW of approved renewable energy projects, and a goal of 10,000 MW by 2015.

### B. DOE Should Evaluate Fertilizer Production Alternatives

HECA would produce 1 million tons of urea products every year. DOE must compare HECA's plan to ship in coal by rail from New Mexico to produce fertilizer with current methods of fertilizer production.

### C. DOE Should Consider Whether the Gasifier Can Use a Higher Percentage of Petcoke and/or Biomass

HECA originally proposed to use 100% petroleum coke ("petcoke"), a byproduct of the oil refining process, as its predominant feedstock. HECA's new proposal is to use a blend of 75% coal and 25% petcoke. Since mining and shipping the coal from New Mexico has a number of environmental and socioeconomic impacts as described below, DOE must evaluate whether the project can use 100% petcoke, or a lesser percentage of coal than 75%.

DOE should also evaluate whether the gasifier can take a percentage of biomass. Biomass can be co-fired with coal to substantially reduce the emissions of pollutants, including carbon monoxide ("CO").

### D. DOE Must Consider an Air Cooling System

DOE must analyze an air cooling system as an alternative to water cooling, which would substantially reduce the amount of water the project requires. Use of an air-cooled heat exchanger would also mitigate air pollutant (particulate matter) emissions impacts of the proposed wet cooling towers.

### E. DOE Must Consider an Enclosed Ground Flare and a Flare Recovery System

DOE must consider alternatives to the elevated flare. The exposure to wind significantly reduces combustion efficiencies of elevated flares. This could be remedied by the use of an enclosed ground flare. The Bay Area Air Quality Management District in California, where five large petroleum refineries are located, identifies use of an enclosed ground flare as BACT for flare emissions.[5]

Flare gas recovery is another option which was not fully evaluated. Flare gas recovery systems are designed to recover and recycle back into the process gas that would otherwise be flared. The BP Whiting refinery in Indiana recently agreed to controls its flaring emissions by installing equipment on both its new and existing flares which will recover and reuse waste gases, cutting flaring emissions up to 90%.

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[5] See BAAQMD flare BACT, http://hank.baaqmd.gov/pmt/bactworkbook/default.htm, go to "Section 3: Petroleum Refinery," then under the category *Petroleum Refinery Fugitive Emissions* go to "Flare – Refinery."

### F. DOE Must Seriously Consider the "No Action" Alternative

DOE should also seriously consider the "no action" alternative. This alternative would leave CCPI funding available for projects that demonstrate a greater need and fulfill the objectives of the CCPI program and contribute to the intention of the American Recovery and Reinvestment Act.

## 3. The EIS Must Examine Air Pollution Impacts from the Rail and Truck Emissions Along the Entire 700 Mile Route

DOE must evaluate the air pollution from the project's connected actions, which includes emissions from the rail and trucks that will be used to provide fuel and ship out byproducts. These include diesel emissions from the railroad cars as well as the fugitive dust that emanates from the open-rail coal cars.

As currently proposed, the HECA project would ship coal more than 700 miles from New Mexico via railroad to California. Under one alternative, a new 5-mile railroad spur would be constructed that ties into the existing San Joaquin Valley Railroad ("SJVRR") main railroad line at Buttonwillow to deliver coal to the Project site. Under the second alternative, coal would be transported via rail to an existing coal transloading facility in Wasco, CA, and from there 27 miles by truck to the Project site. 400,000 short tons per year of petcoke would be transported by truck from refineries in the Los Angeles and Santa Maria areas.

Although the California Energy Commission ("CEC") will only evaluate impacts to California, DOE must evaluate pollution and impacts to communities along the entire length of this line. Coal is most commonly transported via open top rail cars, and these cars loose huge volumes of coal dust during transportation. Fugitive dust blowing off trucks and truck engine emissions are likely even greater.

Coal dust causes a number of well-known respiratory diseases, including pneumoconiosis (commonly known as Black Lung Disease), bronchitis and emphysema, and transportation of coal is identified by the Occupational Health and Safety Administration ("OSHA") as one of the methods for human exposure to coal dust.[6] Coal dust in all size fractions, also contains varying amounts of heavy metals, including lead, mercury, chromium and uranium. Fugitive emissions of coal dust from transportation also cause increases in levels of coarse inhalable particulate matter ("PM10") in the air, which also present significant threats to human health. Apart

[6] OSHA, Occupational Safety and Health Guideline for Coal Dust (< 5% SiO2), http://www.osha.gov/SLTC/healthguidelines/coaldust-less5percentsio2/recognition.html.

from the direct health threats, fugitive coal dust along rail lines and near terminals has caused nuisance conditions for neighboring businesses and residences, resulting in economic losses due to the need for frequent cleaning.

While surfactants and loading practices, if utilized and correctly applied, might reduce some dust, many companies are not employing these practices because there is no legally binding obligation for them to do so. Additionally, surfactants contain a myriad of unknown chemicals that have not yet been adequately studied. Surfactants could cause a number of potential harms, including: danger to human health during and after application; surface, groundwater and soil contamination; air pollution; changes in hydrologic characteristics of the soils; and impacts on native flora and fauna populations.[7]

Diesel emissions from transportation of coal, petcoke and products via both rail and truck also threaten to degrade air quality and impact human health. Fine particular matter ("PM2.5") emissions associated with diesel engine exhaust can cause lung damage, aggravate respiratory disease such as asthma and are thought to be a human carcinogen. Diesel emissions have a high potential to impact people who are sensitive to the health effects of fine particles (e.g. children, elderly, and those with existing heart or lung disease, asthma or other respiratory problems).

As the CEC staff has recently pointed out, air emissions from rail and truck transport in HECA's application are underestimated. These underestimated emissions, which only reflect California emissions and ignore emissions in Arizona and New Mexico, still show that emissions from the rail and truck transport add substantially to the Project's emissions. HECA has estimated that the facility will emit 275 tons per year ("tpy") of CO, 29 tpy of sulfur dioxide ("$SO_2$"), 164 tpy of nitrogen oxides ("NOx"), 90 tpy of PM10, 80 tpy of PM2.5, 35 tpy of volatile organic compounds ("VOCs"), and 535,278 tpy of $CO_2$. In comparison, the (underestimated) truck + rail emissions under coal transportation Alternative 1 and 2 would be 135/145 tpy of CO, 6/7 tpy of $SO_2$, 315/387 tpy of NOx, 17/15 tpy of PM10, 7/8 tpy of PM2.5, 19/23 tpy of VOCs and 57,619/57,717 tpy of $CO_2$-equivalents, respectively.

The air pollution impacts from the proposed facility should be compared with the impacts of the other alternatives.

[7] Dr. Thomas Piechota, Eds., et al., *Potential Environmental Impacts of Dust Suppressants: "Avoiding Another Times Beach,"* An Expert Panel Summary, Las Vegas, Nevada (May 30-31, 2002) at Section 3, http://www.epa.gov/esd/cmb/pdf/dust.pdf.

## 4. The EIS Must Consider Public Health and Economic Impacts from Increased Air Pollution in the Dirtiest Air Basin in the Country

Kern County in California's San Joaquin Valley has the worst air quality in the nation. It is designated as an extreme non-attainment area for the federal 8-hour ozone standard, nonattainment for PM2.5 under both federal and state standards, as well as a state nonattainment area for PM10. Jared Blumenfeld, EPA's Regional Administrator, acknowledged the gravity of the situation when he recently stated: "Four times more people die in the San Joaquin Valley from air pollution than they do from traffic fatalities."[8]

Residents of Kern County regularly experience air pollution levels known to harm health and to increase the risk of early death. In Kern County, each person was on average exposed to unhealthy levels of ozone on over 50 days a year. Ozone pollution can cause a range of impacts including school absences, hospitalizations, and even premature death. Exposure to fine particles is very dangerous and can lead to a range of impacts including loss of work days, chronic bronchitis, and premature death.[9]

There would be a direct and serious impact from increased levels of pollution that the HECA project would emit. Recent studies have found that asthma emergency room admissions are strongly linked to increasing fine particulate and ozone pollution across the region, with a higher risk in children.[10]

In addition to these negative health implications of high pollution levels, residents pay a high economic price for the region's poor air quality. A recent study found in the San Joaquin Valley overall, the cost of air pollution is more than $1,600 per person per year in health care costs, which translates into a total of nearly $6 billion dollars a year.[11] These numbers do not include other economic impacts that residents must bear. Residents must pay a surcharge on their vehicle registration every year because EPA has

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[8] Alex Breitler, *EPA plan keeps Valley front, center*, Recordnet.com, Jan. 25, 2012, http://www.recordnet.com/apps/pbcs.dll/article?AID=/20120125/A_NEWS/201250326&cid=sitesearch.

[9] Jane V. Hall, Ph.D., *et al., The Benefits of Meeting Federal Clean Air Standards in the South Coast and San Joaquin Valley Air Basins*, hereafter ("*Benefits of Meeting Federal Clean Air")* (Nov. 2008), http://business.fullerton.edu/centers/iees/reports/Benefits%20of%20Meeting%20Clean%20Air%20Standards.pdf.

[10] John Amson Capitman, Ph.D., et al., *The Impacts of Short-term Changes in Air Quality on Emergency Room and Hospital Use in California's San Joaquin Valley* (June 2011), at ii, http://www.fresnostate.edu/chhs/cvhpi/documents/aqr-web.pdf.

[11] *Benefits of Meeting Federal Clean Air*, at 5, http://business.fullerton.edu/centers/iees/reports/Benefits%20of%20Meeting%20Clean%20Air%20Standards.pdf.

imposed a $29 million dollar fine on the area because it is in nonattainment.[12] Farmers face some of the most severe regulations and costs for compliance in the nation.

## 5. DOE Must Evaluate Impacts on Sensitive Populations, Including Children at the Nearby Elk Hills School

One in six children in the San Joaquin Valley is diagnosed with asthma before the age of 18, an epidemic level.[13] Because of the poor air quality, children in Kern County are already restricted from playing outside many days of the year.

The Elk Hills School is located 5 miles away from the Project site. Children at Elk Hills already experience dangerously elevated levels of air pollution on a regular basis. DOE must elevate air quality impacts and other impacts the plant might have on the Elk Hills School, such as emergency evacuation procedures.

## 6. DOE Must Evaluate Impacts on Environmental Justice Communities

Adverse impacts of air pollution are not distributed equally in Kern County. Blacks and Hispanics experience somewhat more frequent exposures to elevated levels of fine particulate matter than non-Hispanic whites do.[14]

A March 2012 study on health inequalities in the San Joaquin Valley found that life expectancy varies by as much as 21 years depending on zip code. The rate of premature deaths (years of potential life lost before the age 65) in the lowest-income zip codes of the San Joaquin Valley is nearly twice that of those in the highest-income zip codes. Additionally, areas of the San Joaquin Valley with the highest levels of respiratory risk have the highest percentage of Hispanic residents (55%), while areas with the lowest level of respiratory risk have the lowest percentage of Hispanic residents (38%).[15]

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[12] Steven Mayer, *District sticks drivers with air pollution bill*, The Bakersfield Californian, Oct. 21, 2010, http://www.bakersfieldcalifornian.com/local/x1485766515/District-sticks-drivers-with-air-pollution-bill; *see also*, San Joaquin Valley Pollution Control District, Air Alert 2011, http://www.valleyair.org/AirAlert/AirAlertMediaOverviewandRecap.pdf.

[13] Place Matters for Health in the San Joaquin Valley: Policy Brief, hereafter ("Place Matters for Health") (March 2012) at 1, http://www.jointcenter.org/sites/default/files/upload/research/files/PM%20English.pdf.

[14] *Benefits of Meeting Federal Clean Air*, at 3, http://business.fullerton.edu/centers/iees/reports/Benefits%20of%20Meeting%20Clean%20Air%20Standards.pdf.

[15] Place Matters for Health at 1, http://www.jointcenter.org/sites/default/files/upload/research/files/PM%20English.pdf.

DOE must fully analyze the impacts that the HECA project would have on environmental justice communities surrounding the project site, the rail lines, as well as the areas around the roads that will experience heavy truck traffic. The project site is located close to the environmental justice communities of Tupman, Buttonwillow, and Wasco, and the coal trains would run through southeast Bakersfield and negatively impact the environmental justice communities of Arvin and Lamont.

For example, the small, rural community of Arvin in Kern County (south of Bakersfield) has 14,000 residents and the most ozone-polluted air in the United States. DOE must evaluate the impact of the rail's fugitive coal dust and diesel engine soot on Arvin's overburdened population, as well as other communities along the line from New Mexico to Wasco.

Residents of San Joaquin must pay a fine to EPA for the poor air quality in the region with their annual vehicle registration. This fine disproportionally impacts members of low income communities. DOE must consider how increasing air pollution and payment of this EPA-imposed fine impacts environmental justice communities.

## 7. The EIS Must Consider Impacts on Crops and the Loss of Prime Agricultural Land

DOE must consider that air pollution from the project might have a drastic impact on crops – a major component of the region's economy – that far outweighs any alleged economic benefits. The proposed project site is surrounded by highly productive agricultural land where pistachios, almonds, alfalfa, grapes, onions, tomatoes, wheat, cotton, and other crops are grown. Agricultural crops can be injured when exposed to high concentrations of various air pollutants. Injury ranges from visible markings on the foliage, to reduced growth and yield, to premature death of the plant. For example, alfalfa crops are susceptible to sulfur dioxide pollution that HECA would emit.[16] DOE must evaluate how increased air pollution from the HECA project would impact the high value crops in the area surrounding the plant, as well as along the transportation corridors.

In addition, DOE must consider the productive agricultural land that will be lost due to the construction and operation of the Facility. This project will convert 453 acres of prime farmland, under a Williamson Act contract, to non-agricultural use. The Williamson Act of 1965, also known as the California Land Conservation Act, was passed to preserve agricultural and

[16] Ontario, Ministry of Agriculture, Food and Rural Affairs, Revision of Factsheet, Air Pollution on Agricultural Crops, Order No. 85-002; Printed June, 2003, *available at*, http://www.omafra.gov.on.ca/english/crops/facts/01-015.htm.

open space lands. DOE must evaluate the cumulative impact of the loss of this prime agricultural land.

HECA will seek cancellation of Williamson Act contracts from the county prior to construction. The principal current method of mitigating for farmland conversion is by purchase of conservation easements on other farmland, easements that preserve the mitigation land in agricultural use in perpetuity. DOE must evaluate mitigation at a two-to-one ratio. In addition:

- Mitigation lands should be of at least equal quality as farmland; i.e., if farmlands that are considered prime by the California Department of Conservation are being converted, then the replacement land should be prime farmland also.
- Mitigation lands should be located in the southern San Joaquin Valley. A local land trust working with local land is much more accountable to the local public good than is one many hundreds of miles away. In addition, preservation of local farmland helps to protect our own area's very important agricultural economy and helps makes it possible for local consumers to buy fresher locally grown produce. Of course, the aesthetic worth of farmland as open space is something that we should value locally.
- Mitigation lands should have a similar conservation easement value as the lands being converted. Without such a condition, the proponent buy an unnecessary conservation easement on farmland that is so far away from urban areas that there is little or no development pressure on it, and, since it would be cheaper for the developer to purchase an easement on land not at risk of development, this is the likely outcome without such a condition. Preserving farmland that does not need to be preserved, that is under no development pressure and will almost certainly remain as farmland even without a conservation easement, does not compensate for the loss of these 473 acres of currently producing farmland. Replacement land should have considerable conservation easement value.
- Sequoia Riverlands Trust is the only land trust currently operating in Kern County. This land trust holds the only agricultural conservation easements in Kern County, is well regarded, and should be considered as the holder of easements resulting from this project.

## 8. The EIS Must Consider Mercury Emissions

Mercury is an extremely hazardous neurotoxin that is dangerous at very low levels. Coal-fired power plants are the single largest source of mercury air emissions in the nation, and deposition of these air emissions causes an accumulation of mercury in soils and water bodies. Coal-burning

plants can create mercury hotspots in the vicinity of the plant.[17] EPA has identified coal-fired utility boilers as the largest source of domestic anthropogenic mercury emissions to the atmosphere and has noted a causal link between these releases and the presence of methylmercury in fish tissue.[18] Mercury emitted from coal plants becomes methylmercury in the environment, where it becomes toxic even in minute amounts. Methylmercury is readily absorbed by living tissues, and can cause serious birth defects, central nervous system and brain damage, diminished intelligence, and as recent evidence suggests, autism. According to the Federal Drug Administration ("FDA") standard, it would only take one pound of methylmercury to contaminate 500,000 pounds of fish, which, when consumed by humans and wildlife, increases their mercury levels. EPA has found that one in six women has levels of mercury in her blood above the safe standard, putting her future children at risk for learning and behavioral problems associated with mercury poisoning.

These harmful health effects result in billions of dollars in healthcare and lost productivity costs. A Mt. Sinai Medical School study has quantified the economic impacts of mercury exposure, specifically on lost productivity due to reductions in IQ. The cost in lost productivity from methylmercury exposure (largely through the consumption of contaminated fish) is estimated to be $8.7 billion annually with $1.3 billion of this cost attributable to U.S. power plants.

The EIS must evaluate potential mercury emissions from HECA and should analyze mitigation measures and alternatives that would reduce mercury emissions to the lowest possible level. Moreover, renewable energy sources, conservation and efficiency would produce *zero* mercury emissions. DOE should consider all of these options in its EIS.

## 9. The EIS Must Consider Water Issues

### A. The EIS Must Consider the Impacts of HECA's Proposed Water Use

The Project would require significant amounts of water (4,600 gallons per minute or 6.6 million gallons per day), mostly for its cooling water

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[17] *See generally*, David C. Evers, *et al., Biological Mercury Hotspots in the Northeastern United States and Southeastern Canada,* BioScience, Vol. 57 No. 1 (Jan. 2007), *available at*, http://www.aibs.org/bioscience-press-releases/resources/Evers%20final.pdf.

[18] Gerald J. Keeler, *et al.*, *Sources of Mercury Wet Deposition in Eastern Ohio, USA*, Environ. Sci. & Technology at A, (citing *Mercury Study Report to Congress*, EPA-452/R-97-005; Office of Air Quality Planning and Standards, Office of Research and Development: Washington, DC, 1997), *available at*, http://pubs.acs.org/cgi-bin/abstract.cgi/esthag/2006/40/i19/abs/es060377q.html.

system. According to HECA, the local water district would supply impaired brackish water that is not suitable for agriculture or potable use. However, brackish is a relative term and the water HECA would use is not waste water and could be used for drinking water and agricultural purposes. DOE should evaluate whether this water can be put to a more beneficial use, especially since HECA can easily reduce its use of groundwater by employing an air cooling system.

Brackish water can be used for pistachio crops which are grown in the project area. Local farmers commented at the public scoping meeting that they can utilize a mix of brackish water and fresh water on their crops. With some modifications to irrigation practices and/or with dilution, saline water has been shown to be effective for irrigating particular horticultural crops. Near Quorn in South Australia, crops such as olives, almonds, and pistachios have been produced for over twenty years whilst under irrigation with saline water.[19]

Brackish water can also be used for drinking water. Many communities in California rely on brackish water for drinking water after treating it with an inexpensive reverse osmosis process, including Alameda and Riverside county water districts.[20]

Water is a precious resource in the Central Valley, which is one of the world's most productive agricultural regions. Moreover, San Joaquin has been in the midst of a water crisis for many years. DOE must evaluate the impacts of HECA's use of such a large amount of water resources in this region. Water abundance is also directly tied to the economy and employment in the area and DOE must evaluate this angle of HECA's proposed water use.

HECA also claims that its water use will have a beneficial impact on the aquifer because it will enhance the westward flow of good quality groundwater. This claim raises a number of questions that DOE must address, including:

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[19] Agriculture, Fisheries & Forestry – Australia, Economic and Technical Assessment of Desalination Technologies in Australia: With Particular Reference to National Action Plan Priority Regions (Sept. 2, 2002), at 45, http://www.environment.gov.au/water/publications/urban/pubs/desalination-full-report.pdf.

[20] Alameda County Water District, Sources of Water Supply, Desalination, http://www.acwd.org/sources_of_supply.php5; *see also*, U.S. DOI, Bureau of Reclamation, Desalination of Brackish Groundwater (Jan. 20, 2012), http://www.usbr.gov/lc/region/programs/crbstudy/24_Desalination_of_Brackish_Groundwater_-_Yuma,_AZ_and_Riverside_County,_CA.pdf.

1. Is there evidence supporting this claim? DOE should provide an independent evaluation of this claim and evaluate the groundwater flow maps to ensure there is sufficient evidence to support this claim.

2. Where is the good quality groundwater coming from? Is it coming from an aquifer that is being used for drinking water or agriculture by some other district?

3. Is there enough brackish groundwater to supply HECA for its expected lifetime? If not, what will HECA do once the brackish water runs out?

DOE must analyze an air cooling system as an alternative to water cooling, which would substantially reduce the amount of water the project requires. Use of an air-cooled heat exchanger would also mitigate air emissions impacts of the proposed wet cooling towers.

### B. DOE Must Consider the Impacts on Local Drinking Water Wells

There are two drinking water wells on the proposed HECA project site and across the street from the property. DOE must evaluate the potential for contamination to local drinking water supplies through existing wells and through soil contamination. Groundwater monitoring should be conducted continuously during the operation of the facility and for 30 years post-closure.

## 10. The EIS Must Consider the Waste Disposal Issues

The EIS must analyze the disposal of slag, and other wastes. The Notice of Intent does not describe how the waste will be stored, only that "solids generated by the gasifier would be accumulated onsite and made available for appropriate recycling or beneficial use." DOE must require that HECA fully characterize the waste and its constituents to determine whether the waste will leach harmful constituents that may harm groundwater or surface water. The EIS should also carefully scrutinize any alleged beneficial uses because such "beneficial uses" can be potentially harmful.

## 11. The EIS Must Consider the Impacts of the Increased Coal Mining in New Mexico and Other Alternatives

DOE must analyze the connected action of mining coal that would be used to fuel this power plant. The plant is expected to use about 4,580 short tons of coal per day, or 1.6 million short tons per year, from Peabody's Lee Ranch Mine in New Mexico. Building the proposed coal-fired power plant

will, by definition, require that more coal be mined to feed the plant. As a preliminary matter, DOE should ensure that the Lee Ranch Mine is operating in compliance with existing permits and local, state, and federal law.

The EIS must consider health impacts to local communities. Families and communities near blasting and mining sites suffer from airborne dust from blasting and mining operations, leading to respiratory illnesses, as well as from the noise impacts from blasting. Significant health risks of airborne dust and fumes from blasting result from inhalation of particulate matter and fugitive dust.[21] Blasting can also send boulders flying hundreds of yards into roads and homes. The EIS should consider the health effects that are caused by this blasting.

The EIS must also consider the impacts on communities from the threats of coal slurry impoundments used in strip mining. Coal slurry – the waste sludge left behind after washing coal to remove impurities so the coal easier to burn – is stored in large waste pits behind earthen dams known as impoundments. These impoundments threaten local communities. Toxic chemicals in the coal slurry, including chlorine, lead, nickel, selenium, arsenic and mercury,[22] can leak from the impoundments, turning nearby streams black and tainting local water supplies. The impoundments can fail, sending coal waste barreling down valleys, destroying property and lives in its path.

Surface mining uses environmentally destructive techniques. The EIS should thoroughly analyze the effects from these mining activities on streams, wildlife, forest cover and other biological resources.

## 12. The EIS Must Consider the Impacts of Truck Traffic

The EIS must consider the impacts on communities from the flow of large trucks hauling supplies and materials during construction and the continuous flow of large trucks on small roads hauling coal and other materials to and products from the plant during operation. Economic damage to roads, air pollution from the trucks, as well as quality of life issues from sharing narrow roads with large trucks must be considered. Impacts to emergency response vehicles and school buses that have to share the roads with large trucks should be considered.

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[21] U.S. Environmental Protection Agency, Mid-Atlantic Mountaintop Mining Draft Programmatic Environmental Impact Statement, 2003, at III.V-1, http://www.epa.gov/region3/mtntop/pdf/III_affected-envt-consequences.pdf.
[22]Appalachian Voices, Mountaintop Removal 101 (accessed on July 25, 2012), http://appvoices.org/end-mountaintop-removal/mtr101/.

## 13. The EIS Must Examine GHG Emissions and Climate Change Impacts

NEPA requires governmental agencies to consider impacts on the global environment, as well as local and regional impacts. For example, NEPA Section 102(F) requires that the federal government "recognize the world-wide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment." This includes global climate change. *See Ctr. for Biological Diversity v. Nat'l Highway Traffic Safety Admin.*, 538 F.3d 1172, 1215-17 (9th Cir. 2008) (holding that federal agencies must evaluate climate change impacts under NEPA).

Climate change, including global warming, is a significant threat to the global environment. The National Research Council ("NRC") of the National Academies[23] stated in a 2011 report, "Each additional ton of greenhouse gases emitted commits us to further change and greater risks. In the judgment of the [NRC] Committee on America's Climate Choices, the environmental, economic, and humanitarian risks of climate change indicate a pressing need for substantial action to limit the magnitude of climate change and to prepare to adapt to its impacts."[24] Action to reduce emissions is warranted because, as the EPA stated in its 2009 Endangerment Finding,[25] greenhouse gases ("GHGs") endanger the public health and public welfare of current and future generations. The anthropogenic buildup of GHGs in the atmosphere is very likely (90 to 99 percent probability) the cause of most of the observed global warming over the last 50 years.[26]

Although the Facility proposes to sequester a portion of its $CO_2$ emissions, DOE should count the total greenhouse gases produced by this project, including $CO_2$-equivalent emissions generated by fuel and byproduct

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[23] The National Academies comprise the National Academy of Sciences, National Academy of Engineering, Institute of Medicine and National Research Council.
[24] National Research Council, "America's Climate Choices", Committee on America's Climate Choices, Board on Atmospheric Sciences and Climate, Division on Earth and Life Studies, The National Academies Press, Washington, DC (2011), http://www.nap.edu/catalog.php?record_id=12781.
[25] U.S. Environmental Protection Agency, "Endangerment and Cause or Contribute Findings for Greenhouse Gases under Section 202(a) of the Clean Air Act", http://www.epa.gov/climatechange/endangerment/; *see also*, (74 FR 66,496; Dec. 15, 2009).
[26] Endangerment Finding at 74 FR 66,518, which notes that the 2007 conclusion of the Intergovernmental Panel on Climate Change was reconfirmed by the June 2009 assessment by the U.S. Global Change Research Program.

transportation and the lifecycle greenhouse emissions from the enhanced oil recovery operation.

The EIS must consider whether the $CO_2$ emissions will indeed be permanently sequestered underground pursuant to enforceable permits. Enhanced oil recovery ("EOR") is not sequestration, and at this time, it is unclear which agency and which permits will ensure that carbon emissions from the facility are not ultimately emitted into the atmosphere. DOE cannot assume that HECA will sequester 90% of its turbine emissions unless it has enforceable commitments to do so.

Even with sequestration, HECA is a large source of greenhouse gas emissions. HECA proposes to emit almost a half million tons of $CO_2$-equivalent emissions per year from stationary sources alone. DOE must also consider how the lifecycle greenhouse gas emissions compare on a megawatt basis to a natural gas plant, and other renewable energy alternatives.

HECA is proposing to use $CO_2$ generation for EOR would result in the extraction of an otherwise unrecoverable five million barrels of oil per year. Since the $CO_2$ is being used to extract more oil from the ground that will ultimately be combusted to produce further $CO_2$ emissions, DOE must analyze the lifecycle of the oil combustion including transport of the crude oil produced in the field, crude oil refining, and the combustion of the refined petroleum products. These actions are directly connected to the proposed project. Studies have shown that using $CO_2$ for enhanced oil recovery will not reduce lifecycle carbon emissions.[27]

The EIS should examine alternatives and mitigation measures designed to eliminate or minimize $CO_2$-equivalent emissions.

DOE should also assess the impacts of global warming on different environmental receptors in Kern County—such as wildlife, vegetation, water resources, air quality, humans, and land, as well as how emissions from HECA might worsen these impacts. The EIS should analyze the local, regional, and global environmental impacts of $CO_2$-equivalent emissions from the HECA facility. The EIS should pay particular attention to the impact of global warming on California's and Kern County's water resources and existing air quality problems, which are expected to worsen with increased heat due to climate change.

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[27] Paulina Jaramillo, *et al., Policy Analysis, Life Cycle Inventory of CO2 in an Enhanced Oil Recovery System*, Environ. Sci. Technol., 43 (21), pp 8027–8032 (2009), *available at*, http://pubs.acs.org/doi/abs/10.1021/es902006h.

## 14. The EIS Must Consider the Potential Impacts from Carbon Sequestration

DOE must fully consider the potential impacts from HECA's proposal to sequester 3 million tons of $CO_2$ per year. DOE must analyze the potential for surface leaks, including leaks through the many existing wells on the Elk Hills Oil Field. DOE must also analyze the potential for induced seismic activity from injecting this large amount of carbon underground. Recent studies have indicated increased seismic activity from underground injection of carbon, which increases risk of leaks.[28] DOE must also analyze the risk of groundwater contamination, and the potential impacts to subsurface microbial ecosystems.

DOE must also ensure that Elk Hills has adequate financial mechanisms in place for long-term stewardship of the Elk Hills site. Financial assurance mechanisms ensure that facilities will have sufficient funds to properly close their permitted units and maintain the site for the duration of post-closure responsibility. These mechanisms are meant to prevent default to federal or state funds in the event that facilities are unable or unwilling to cover closure and post-closure costs. Effective financial assurance mechanisms are necessary to ensure that closure and post-closure site care, such as monitoring, are conducted. When an owner or operator becomes insolvent without an adequate financial assurance mechanism, significant delays could occur, increasing the likelihood of environmental contamination and adverse human health effects. Moreover, when these failures occur, federal or state governments (and ultimately the general public) would become financially responsible for the closure and post-closure site care costs.

## 15. The EIS Must Consider the Impacts from Electro-Magnetic Fields

Electro-magnetic fields and their impact on people who live in or near the path of a transmission lines, sub-stations, and transformers should be thoroughly analyzed.

## 16. The EIS Must Consider the Local Economic Impact of the Different Alternatives and the Increased Health Care Costs

Renewable energy sources, energy efficiency and conservation produce more local jobs than a highly automated plant burning imported fuel. DOE should consider whether an investment into alternatives would create more jobs than the proposed HECA plant.

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[28] National Research Council, "Induced Seismicity Potential in Energy Technologies", The National Academies Press (June 2012), http://www.nap.edu/catalog.php?record_id=13355.

DOE must also consider the economic burden local residents already bear due to existing pollution, described in detail above, and the increased burden HECA would bring to this area.

### 18. The EIS Must Disclose Information on the Proposed Rail Spur

The EIS must include maps showing where the proposed 5-mile rail spur will be located. If eminent domain will be used, the EIS should describe what entity will exercise that power. The EIS must evaluate what will happen to local landowners who refuse to sell their land for the rail line. Many landowners expressed concerns about this issue at the public scoping meeting.

### 19. The EIS Must Identify the Permits Needed for the Project

The EIS must include a list of all the local, state, and federal approvals that the HECA facility must obtain for the Project. The list should include information regarding the expected application and approval date, the responsible agency and contact information, and opportunities for public input.

### 20. DOE Should Hold an Additional Public Scoping Meeting

The July 12 Tupman scoping meeting was insufficient to gather adequate public comment on the proposed project. HECA, DOE and the CEC had the floor for the majority of the time. Many neighbors of the project and other concerned citizens in the area were not able to comment because they had to leave before they were given an opportunity to speak. The phone lines were cut off at 9 pm before the hearing officer even asked if anyone on the phone wanted to voice a comment. Moreover, though the applicant, DOE and CEC were given hours to present information to the public, and the commissioners had unlimited time for questioning, the public was limited to three minutes each for comments and questions. Many commenters stated that it was very difficult to convey all of their concerns in such a brief amount of time.

To fulfill the intent of the public participation aspects of the NEPA and CEC processes, DOE and CEC should hold another public meeting where members of the public are given a real opportunity to voice their concerns. This additional meeting should be held in Bakersfield, where many of the local landowners live, and transportation should be provided for residents of Tupman that wish to attend.

## CONCLUSION

Thank you for the opportunity to comment on the scoping process for the HECA EIS and please keep us informed of developments in this process. In addition, thank you for your attention to our concerns.

Respectfully submitted,

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***AMENDED APPLICATION FOR CERTIFICATION***
***FOR THE HYDROGEN ENERGY CALIFORNIA PROJECT***

**Docket No. 08-AFC-08A**
**(Revised 7/25/12)**

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## DECLARATION OF SERVICE

I, David Abell, declare that on July 27, 2012, I served and filed a copy of the attached Scoping comments for HECA, EIS-0431, Dated July 27, 2012. This document is accompanied by the most recent Proof of Service list, located on the web page for this project at:

http://www.energy.ca.gov/sitingcases/hydrogen_energy/index.html

The document has been sent to the other parties in this proceeding (as shown on the Proof of Service list) and to the Commission's Docket Unit or Chief Counsel, as appropriate, in the following manner:
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*OR, if filing a Petition for Reconsideration of Decision or Order pursuant to Title 20, § 1720:*

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I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct, that I am employed in the county where this mailing occurred, and that I am over the age of 18 years and not a party to the proceeding.

/s/David Abell
David Abell, Sierra Club