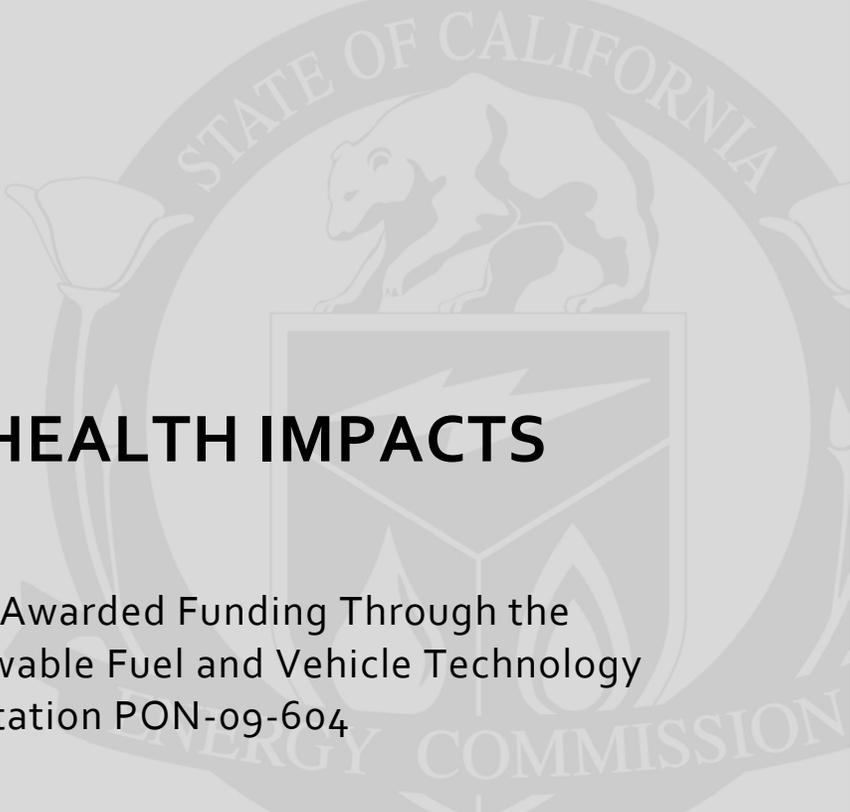


California Energy Commission

STAFF REPORT



LOCALIZED HEALTH IMPACTS REPORT

For Selected Projects Awarded Funding Through the
Alternative and Renewable Fuel and Vehicle Technology
Program Under Solicitation PON-09-604

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PREFACE

The increased use of alternative and renewable fuels supports the state's commitment to curb greenhouse gas emissions, reduce petroleum use, improve air quality, and stimulate the sustainable production and use of biofuels within California. Alternative and renewable transportation fuels include electricity, natural gas, biomethane, propane, hydrogen, ethanol, renewable diesel, and biodiesel. State investment is needed to fill the gap and fund the differential cost of these emerging fuels and vehicle technologies.

Assembly Bill 118 (Núñez, Chapter 750, Statutes of 2007) created the Alternative and Renewable Fuel and Vehicle Technology Program. This statute, amended by Assembly Bill 109 (Núñez, Chapter 313, Statutes of 2008) authorizes the California Energy Commission to "develop and deploy innovative technologies that transform California's fuel and vehicle types to help attain the state's climate change policies." The Energy Commission has an annual program budget of approximately \$100 million.

The statute also directs the California Air Resources Board to develop guidelines to ensure the programs complement efforts to improve air quality. The Air Quality Guidelines were approved in 2008. California Code of Regulations, Title 13, Chapter 8.1, Section 2343(c)(6) contains the requirement for the Energy Commission, being the funding agency, to analyze the localized health impacts of projects funded by the program that require a permit.

ABSTRACT

California Code of Regulations, Title 13, Chapter 8.1, Section 2343(c)(6) requires the California Energy Commission to consider the localized health impacts and environmental justice when selecting projects for funding. For each funding cycle, the Energy Commission is required to analyze localized health impacts for projects proposed for program funding that require a permit.

This report is a review of the projects submitted under the Biofuels Production Plants grant solicitation (PON-09-604) and proposed for funding under the Alternative and Renewable Fuel and Vehicle Technology Program for fiscal year 2010/2011. The report includes a description of the projects, criteria emissions data for the fuels associated with the projects and demographic data for the areas where the projects will be located, and an analysis of the impacts of these projects in communities with the most significant exposure to air contaminants or localized air contaminants. Future editions of this report and its aggregate location analysis will include information about projects approved in previous funding cycles including those projects for which specific location information was not previously available.

Keywords: California Energy Commission, AB 118, localized health impacts, environmental justice, biofuel production, funding cycle, emissions, criteria emissions, air quality, greenhouse gas emissions, reduce petroleum use, improve air quality, alternative fuel, electricity, natural gas, biomethane, propane, hydrogen, ethanol, renewable diesel, biodiesel fuels

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EXECUTIVE SUMMARY

The Energy Commission is required to assess the local health impacts of a subset of projects proposed for funding under the Alternative and Renewable Fuels and Vehicle Technology Program. This report focuses on the potential impacts biofuel production plants may have on a community, particularly those communities that are considered especially vulnerable to emissions increases within their community.

Environmental justice communities, low-income and minority communities are considered to be the most impacted by any project that could result in increased criteria and toxic air pollutants within an area because these communities typically have the most significant exposure to these emissions. Assessing these projects and the communities surrounding them is important because of the health risks associated with these pollutants. Preventing health issues from air pollution in any community is important, but it is especially important to minimize any negative impacts in communities that are already considered to be at risk because of their continued exposure to these contaminants. A total of 12 projects are proposed for funding under the ARFVTP Biofuel Production solicitation PON-09-604.

The following report analyzes the project locations and provides demographic information on each community. Background is provided on methodologies used to determine the most highly impacted communities, as well as the methods being used where impacts may exist.

Of the 12 projects, two were fully assessed for health impacts. The remaining projects are not fully assessed in this report because they are not expected to have negative impacts on the air quality in the surrounding community or they are not located in a community that is considered to be highly impacted by air pollution.

Based on this analysis, it is not anticipated that the implementation of any projects funded will have negative impacts on surrounding communities, specifically those communities that are considered most vulnerable. Additionally, information is provided on the benefits of each project, as many projects are expected to provide economic benefits to communities, as well as improved quality of life in some instances, and even potential air quality improvements in the near future.

CHAPTER 1:

Background

The California Energy Commission is preparing to fund a series of alternative fuel projects through the Alternative and Renewable Fuel and Vehicle Technology Program (Health and Safety Code Section 44272). The Energy Commission developed this report to comply with the Air Quality Guidelines.¹ The section applies to all projects that require a permit and reads:

(6) Localized health impacts must be considered when selecting projects for funding. The funding agency must consider environmental justice consistent with state law and complete the following:

(A) For each fiscal year, the funding agency must publish a staff report for review and comment by the public at least 30 calendar days prior to approval of projects. The report must analyze the aggregate locations of the funded projects, analyze the impacts in communities with the most significant exposure to air contaminants or localized air contaminants, or both, including, but not limited to, communities of minority populations or low-income populations, and identify agency outreach to community groups and other affected stakeholders.

(B) Projects must be selected and approved for funding in a publicly noticed meeting.

The Air Quality Guidelines requiring this analysis were put in place to ensure that the Energy Commission analyzes the potential for public health effects benefits to communities with high levels of exposure to air contaminants, to avoid disproportionate health effects in communities with low-income or minority populations.

Based on the Energy Commission interpretation of the Air Quality Guidelines, this report provides information on the communities surrounding the project sites and assesses potential impacts to those communities as a result of the project. This report is not intended to be a detailed impact analysis of projects funded by the program, nor a replacement for California Environmental Quality Act (CEQA), which will require a detailed environmental impact assessment before construction of a project.

For the current program funding cycle (fiscal year [FY] 2010/11), there are 23 projects proposed for Energy Commission approval. For the projects discussed in this report, four of the projects are predevelopment or feasibility studies that will not include any fuel production, while the eight remaining projects involve the production and testing of alternative fuels.

¹ Regulation for the AB 118 Air Quality Guidelines for the Air Quality Improvement Program and the Alternative and Renewable Fuel and Vehicle Technology Program, California Code of Regulations, Title 13, Chapter 8.1, Section 2343(c)(6), 2008.

Table 1 provides a summary of the projects by solicitation (Program Opportunity Notice).

Table 1: Count of Awards by Solicitation for FY 2010/2011

Project Type	Program Opportunity Notice	Number of Projects
Biofuel Production	PON-09-604	12
Manufacturing	PON-09-605	11

Source: Energy Commission staff analysis

Thus far in the FY 2010-11, proposed awards were announced for two solicitations. The Biofuel Production Plants solicitation (PON-09-604) seeks to fund the development of new, California-based biofuel production facilities and enhance the operation of existing ethanol production facilities to increase statewide biofuel production and reduce greenhouse gas emissions. The Manufacturing Plants: Electric Vehicles, Alternative Fuel Vehicles, Vehicle Components and Batteries solicitation (PON-09-605) seeks to fund the development and expansion of manufacturing and assembly plants in California that produce electric vehicles, batteries, and component parts for alternative fuel vehicles.

The following is a discussion of the localized health effects of the projects being proposed for Energy Commission approval under PON-09-604. Energy Commission staff plan to present the proposed projects for approval at business meetings (subject to the Warren-Alquist Open Meeting Act), upon receipt of the appropriate CEQA documentation, in late 2010 or early 2011.

Assessment Approach and Definitions

Staff reviewed results from the Environmental Justice Screening Method (EJSM)² to identify projects that are located in areas with social vulnerability indicators (for example, race/ethnicity, income, proximity to sensitive land use, and exposure to air pollution) and the greatest exposure to air pollution and associated health risks. The EJSM was developed to identify low-income communities that are highly-affected by air pollution for purposes of assessing the impacts of climate change regulations, specifically Assembly Bill 32 (Núñez/Pavley, Chapter 488, Statutes of 2006): the California Global Warming Solutions Act of 2006.

The EJSM identifies the various levels of risk in regions throughout California, and high-risk communities are considered especially vulnerable to even the smallest impacts. The EJSM integrates data on exposure to air pollution, cancer risk, ozone concentration and frequency of high ozone days, race/ethnicity, poverty level, homeownership, median household value, educational attainment, and sensitive populations (populations under 5 years of age, or over 65 years of age). These results are available for Southern California. The Air Resources Board applied the method³ to the Bay Area, San Joaquin Valley, and Desert regions; however, the

² *Air Pollution and Environmental Justice, Integrating Indicators of Cumulative Impact and Socio-Economic Vulnerability Into Regulatory Decision-Making*, 2010. Manuel Pastor Jr., Ph.D., Rachel Morello-Frosch, Ph.D., James Sadd, Ph.D.

³ *Proposed Screening Method for Low-Income Communities Highly Impacted by Air Pollution for AB 32 Assessments*. 2010.

results only consider income among the list of social vulnerability indicators. For communities not yet assessed in the EJSM, the Energy Commission identified high-risk areas as those in non-attainment air basins for ozone, particulate matter (PM) (2.5), and PM 10, who have high poverty and minority rates, as well as a high percentage of sensitive populations.

The report provides a brief overview of all projects proposed for award under the solicitation for informational and transparency purposes. However, staff did not assess impacts for projects that are not located in one of the areas identified by the EJSM. Projects with detailed assessments represent the projects that are in a low-income community that is highly impacted by air pollution. Populations within these communities are presumed to be most susceptible to health risks because of their exposure to criteria and toxic air pollutants on a more continual basis than other regions.

For this assessment, the Energy Commission interprets “permits” to mean discretionary and conditional use permits because they require a review of potential impacts to a community and the environment before the permit is issued. Ministerial level permits, such as building permits, do not assess public health-related pollutants. Energy Commission staff does not assess projects requiring only ministerial level permits in this report. For air permits,⁴ local air districts conduct a new source review⁵ to determine emission impacts of the production facility. A new source review is an analysis conducted by local air pollution control districts to determine if a modification to an existing facility, or construction of a new facility will result in significant increased air emissions within the given region. Incremental increases in criteria emissions must be reduced or mitigated through Best Available Control Technologies (BACT), and possibly, Emission Reduction Credits (ERC). Immediate action must be taken by the appropriate party for any toxics released that exceed predetermined thresholds before a facility is reconsidered for a permit. An overview of the permit requirements for identified projects in at-risk communities is included in the project overviews.

Demographic data for the known or planned project locations is provided in Table 5. Energy Commission staff collected data on ethnicity, age, and income for the city where the project will be located to identify communities with higher minority populations, lower incomes, and higher sensitive groups based on age. For this discussion, program staff identified sensitive populations as fewer than 5 years of age and over 65 years of age.

Additionally, projects that do not include fuel production are not fully assessed, which also includes feasibility and predevelopment projects. Descriptions of these projects are still included in this report, but not fully assessed. The project descriptions, impacts, and benefits of those projects are for information only.

For criteria and toxic air emissions discussed in the following project overviews, the Energy Commission staff used the California Air Resources Board’s Guidance Document for Siting

4 Health and Safety Code Section 40918-40920.5.

5 Health and Safety Code Section 42300.

Biorefineries in California.⁶ The guidance document evaluated the following criteria pollutants associated with various biorefinery processes: nitrogen oxide (NO_x), carbonous oxide (CO), volatile organic compound (VOC), sulfur oxide (SO_x), and PM₁₀. The overview provided in each project description is not a detailed assessment of the emissions associated with that specific project; however, it is intended to describe criteria pollutants associated with the processes and equipment. The Energy Commission identified only criteria emissions associated with processes for pilot and commercial production projects, as bench-scale production is not considered a significant source of criteria emissions that could potentially affect local communities.

This assessment is not intended as a substitute for the comprehensive environmental review conducted by regulatory agencies during the CEQA process. CEQA is intended to provide a more detailed analysis to evaluate and mitigate the potential for adverse environmental effects of the proposed projects. Instead, this report collects available information about the potential air quality impacts of the projects that the Energy Commission is funding through the Alternative and Renewable Fuel and Vehicle Technology Program, and provides a collective, narrative analysis of localized health effects of those projects.

The Air Quality Guidelines mandate the Energy Commission to track each project's progress through the CEQA process and ensure there is a commitment in place from the project proponent to complete all mitigation measures required by the permitting agency before a project receiving the first funding allocation.

Project Overviews

The following is an overview, presented by fuel type, of the projects proposed for award. The overviews include a project description and information on the existing site. Where applicable, the overviews also include a discussion on the potential health effects related to air pollutants, and any outreach to be completed by the Energy Commission, grantee, or permitting agency. This outreach includes information on and requirements related to air district permitting, and information about efforts conducted by the recipient, which can include the posting of public notices, community outreach through public meetings, or newspaper articles.

The projects included in this report are:

- Mendota Advanced Bioenergy Beet Cooperative's "Advanced Bioenergy Center Mendota".
- Agricultural Waste Solutions, Incorporated's "San Jacinto Biofuel Production #1".
- Biodiesel Industries' "ARIES© Bioenergy Project".
- Great Valley Energy's "Feasibility Study of Fractionated Sweet Sorghum to Ethanol and Products".

⁶ "Air Quality Guidance for Siting Biorefineries in California." Preliminary Draft. California Air Resources Board. October 2010.

- G4 Insights’ “Thermochemical Conversion of Forestry Biomass into Biomethane Transportation Fuel”.
- City of San José’s “City of San José /Harvest Power Biomethane Production Demonstration Project”.
- Northstate Rendering Company, Incorporated’s “Anaerobic Digestion of Rendering Waste to Make CNG Vehicle Fuel”.
- Cal Poly San Luis Obispo’s “Low-Cost, Waste-Grown Biofuel Feedstock Production”.
- East Bay Municipal Utility District’s “Cost-Effective Fats, Oils, and Grease (FOG) to Biodiesel Production at a Wastewater Treatment Plant”.
- Clean World Partners’, LLC, “Sacramento Biorefinery #1”.
- West Yost Associates’ “Wastewater Algae Biofuel Feasibility Study”.
- BioStar Systems’, LLC “Sonoma County Biomethane Production for Transportation Fuel”.

The table below summarizes the findings of the project assessment. For high-risk communities, more detail is provided on the project in the appropriate chapter.

Table 2: Community Status and Project Overview

Project	At Risk Community	CEQA Completed	Air District Permit Status*	Attainment Status for Ozone, PM (2.5), PM(10)
Ethanol				
Great Valley Energy	X	X	NA	Non-Attainment (All)
Biomethane				
G4 Insights		X	In Progress	Non-Attainment (All)
City of San Jose		X	In Progress	Non-Attainment (All)
North State Rendering Co.	X	X	In Progress	Non-Attainment (All)
Clean World Partners	X	X	NA	Non-Attainment (All)
BioStar Systems		In Progress	In Progress	Non-Attainment (All)
Biomass Based Diesel				
Agricultural Waste Solutions	X	In Progress	In Progress	Non-Attainment (All)
Biodiesel Industries	X	X	NA	Non-Attainment (All)
Cal Poly SLO	X	NA	NA	Non-Attainment (Ozone, PM 10)
East Bay Municipal Utilities District	X	NA	NA	Non-attainment (All)
West Yost Associates	X	NA	NA	Non-Attainment (All)

* For projects that do not currently need a permit under portions of their project funded by the Energy Commission, “NA” is used to indicate that an air permit is not applicable to this project.

Source: Energy Commission staff analysis

CHAPTER 2: Biomethane Production and Predevelopment Projects

Project Name:

Northstate Rendering Company, Incorporated's, "Anaerobic Digestion of Rendering Waste to Make CNG Vehicle Fuel".

The impacts of this project were assessed in the *Localized Health Impacts Report*,⁷ published on May 18, 2010. This project is not expected to result in adverse health impacts to sensitive populations at the project site or in the city where the facility will be located. The localized health impacts information for this project was made available for the 30-day public review period. Therefore, the project may be presented at an Energy Commission business meeting for funding approval once the CEQA requirements are fulfilled.

Project Description

This project will build an anaerobic digester that will use animal rendering material and food waste at the privately owned Northstate Rendering facility. The biomethane produced will be used as a vehicle fuel for the company's fleet of delivery trucks. The Western United Dairymen will use the rest of the compressed biomethane in dairy trucks. In addition, the digester solids will be composted for agriculture.

Approximately 43 tons per day (more than 15,000 tons per year) of rendering waste will be fed to the digesters, along with food waste from surrounding agriculture-related industries. The gas will be used to replace approximately 10,000 gallons of diesel per month used by the rendering facility's trucks. The excess conditioned biogas will be injected into the Pacific Gas and Electric gas pipeline and sold as vehicle fuel to the compressed natural gas (CNG) fleets.

Project Site

The project will be located at the Northstate Rendering facility at 15 Shippee Road, Oroville, California, 95965. The project proposes to build anaerobic digesters to make biogas from the rendering material at their existing facility. The location is currently permitted for accepting the waste feedstock required for digestion and has the preprocessing and post digestion equipment necessary for relatively simple integration of the digesters with the existing infrastructure. A 500-pound-per-square-inch Pacific Gas and Electric natural gas pipeline runs through the property, minimizing the requirement for additional pipeline and making the integration of the biogas conditioning equipment relatively easy.

This facility is located in a non-attainment area for ozone, particulate matter (10 micron), and particulate matter (2.5 micron) pollutants. There are no schools, day care centers, or health care facilities within a mile of the project site.

⁷ Macias, Aleecia. 2010. *Localized Health Impacts Report*. California Energy Commission, Fuels and Transportation Division. Publication Number: CEC-600-2010-004.

<http://www.energy.ca.gov/2010publications/CEC-600-2010-004/CEC-600-2010-004.PDF>

Potential Impacts and Benefits

According to the California Air Resources Board's "Air Quality Guidance for Siting Biorefineries in California," there are criteria emissions associated with anaerobic digestion processes; however the emissions are considered minimal, and with the Best Available Control Technology (BACT), the most stringent emission limits for the criteria emissions can be achieved.

Anaerobic digestion of the waste eliminates the need to landfill the waste. By diverting this waste to digesters, significant emission reductions are realized. The production of biomethane requires heating of the digesters. This heat will be sourced from surplus heat collected from the rendering facility's existing boiler infrastructure. Therefore, no fuel will be used for heating the digesters, and no emissions will result. Since the biomethane will be used as CNG or injected into the gas pipeline, there will be no emissions as there would be if the biomethane were burned in an internal combustion engine to make electricity. The project will further reduce air pollutants and air toxics by supplying biomethane onsite to the customer's natural gas truck fleet. Pollutants are further reduced where the customer fleet is refueled at the home base rather than at a remote fueling station.

This project is not expected to result in adverse health effects to sensitive populations at the project sites or in the cities where the stations will be located.

The improvements to air quality will be significant, especially as more firms adopt the technology to generate vehicle fuel. The anaerobic digestion project will improve air quality significantly by reducing odors from waste material. The proposed anaerobic digester system will be an airtight system with minimal air pollutant or air toxic emissions. The reduction in diesel emissions from fleet trucks is expected to bring a net benefit to the region's air quality. It is anticipated that 54 million cubic feet of biomethane will be produced annually as a result of the proposed project, which would save about 3,820 tons of carbon dioxide (CO₂) emissions annually. Additionally, the project prevents the release of methane gas, bringing the total estimated greenhouse gas reduction to 15,000 tons per year.

Outreach Efforts

A key issue of rendering facilities is the odor impact on downwind neighbors. Every effort is made to minimize the impact of the facility on all neighbors, and an excellent relationship exists among all parties. Northstate Rendering has met with the only neighbor within two miles of the facility to apprise him of the project.

The Butte County Air Pollution Control District will determine if it needs to conduct a New Source Review at the existing facility which already has the appropriate permits, as modifications to the facility increase emissions. The air district will also adhere to federal and state regulations to notice residents within 1,000 feet of the site if the project will result in an increase in emissions above the threshold. The air district will also post notices to the Air Resources Board and Environmental Protection Agency websites and in local newspapers if the project is using emission offsets or emission reduction credits.

Project Name:

G4 Insights' "Thermochemical Conversion of Forestry Biomass Into Biomethane Transportation Fuel".

Project Description

G4 Insights will perform bench-scale fuel production involving a new low-temperature, thermochemical conversion of woody biomass to biogas for transportation fuel. The biomass being used during this phase of the project is biomass from pre-existing piles of slash from fuels treatment operations to reduce fire risk in Placer County forests. The project includes construction of a demonstration and test unit (DTU) and a benchtop unit. The DTU will be used for batch production of biomethane from Placer County biomass and support future testing of biomass from other areas. A variety of biomass feedstock will be used to identify high-potential feedstock types for future pilot plant and commercial plants. The project will also ensure pipeline access to major CNG wholesalers who will sell the CNG for transportation fuel. G4 will also investigate the feasibility of future pilot and commercial scale biomethane fuel production in California. G4 anticipates that, at future commercial production levels, statewide demand and supply estimates indicate an approximate displacement of petroleum of 1.5 billion gallon equivalents (GGE) in California, which is equivalent to 8 percent of California demand. G4 Insights projects eventual commercial-scale production costs for 1.5 billion GGE at \$1.20 per GGE.

The biogas produced from this project will be used to fuel Placer County's natural gas fleet vehicles (Honda Civics).

Project Site

The specific location is not identified in the proposal but will be determined during the feasibility study for this project. However, this project will be in Placer County.

Project Impacts and Benefits

The technology being used in this project will produce biomethane in a low-temperature, one-step process at high rates of conversion (~100 gallons/bone dry ton) and competitive commercial scale costs. The DTU will not use equipment to generate hydrogen and thus eliminate the flue gas stream, which is the G4 system's sole emission source. Instead, commercial hydrogen cylinders will provide the necessary gas for the DTU. As such, there are no emissions associated with operation of the DTU. According to the California Air Resources Board's "Air Quality Guidance for Siting Biorefineries in California," there are criteria emissions associated with pyrolyzers, which will be used in this project. The limits for criteria emissions for a pyrolyzer have not been determined, and because, this project will only involve bench-scale production, it is expected that the emissions will be low.

With access to a pipeline, this allows for low-cost transportation to transport fuel for sale in urban areas, far from remote plant sites. This also reduces emissions associated with the transport of the fuel. Additionally, this technology has no water consumptive needs and no

discharges. G4 Insights is also planning for onsite cogeneration for power needs and will use existing infrastructure to dispense the CNG for vehicle use.

Additionally, G4 Insights will study the feasibility of three commercial plants, which could generate an estimated 541 jobs in the state.

Rationale for Exclusion from Localized Health Impacts Assessment

This project is not located in a low-income community that is highly impacted by air pollution. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

City of San José's "Predevelopment Plan for City of San José Bio-Methane Fueling Station".

Project Description

This project entails predevelopment activities and development of a demonstration facility of a small-scale gasification technology that will use urban wood waste and organic biosolids for the production of transportation fuel quality biomethane. At the beginning of the project, a feasibility study will be conducted to determine the best location for a demonstration-scale gasification facility on the San José/Santa Clara Water Pollution Control Plant lands, along with an analysis of all permitting, engineering, and feedstock issues as they relate to the project. Then a demonstration facility will be constructed and commissioned, using urban wood waste and biosolids as feedstock. The facility will use gasification to produce synthesis gas (syngas), which will then go through a proprietary methanation process to produce biomethane. Once this project demonstrates these processes, the biomethane can be cleaned and compressed using currently proven methods (which will not be part of this project), resulting in natural gas.

Project Site

This facility will be located at the San José/Santa Clara Water Pollution Control Plant lands, about one mile east of Alviso and one mile north of the 95054 zip code, a residential zone. The facility would be one-half mile north of a commercial zone and one mile west of McCarthy Ranch, a retail shopping area. On the north, the area is bordered by open space.

Project Impacts and Benefits

Any direct air emissions from the facility will be from the fluidized bed combustion chamber in the gasification unit. There are expected to be small amounts of methane from incomplete combustion and fuel system leaks. Also, small amounts of nitrous oxide are emitted from combustion. Emission factors for both of these compounds are anticipated to be 0.0078 grams per megajoule.

This project will help transform the CNG market and will serve as a demonstration to other cities wishing to create transportation-grade biogas from municipal solid waste and convert their fleets to biogas. This process will also create net energy. Successful demonstration of small-scale biomass-to-energy could also transform market for waste-to-energy facilities. Waste-to-energy is a viable market in California, as small-scale facilities that are economical to construct and operate. The plant will use wastewater and recycle all or the vast majority of process water.

Rationale for Exclusion From Localized Health Impacts Report

This project is not located in a low-income community that is highly impacted by air pollution. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

BioStar Systems', LLC, "Sonoma County Biomethane Production for Transportation Fuel".

Project Description

BioStar Systems, LLC, is partnering with Sonoma County Water Agency and Sonoma County Transit to produce 240,000 cubic feet of biogas per day using a waste reception and blending facility, high temperature anaerobic digestion, and a biogas condition and compression facility. This project will produce 148,000 cubic feet per day of pipeline quality biomethane to be used by the area's public transportation vehicle fleets. Excess gas that is not consumed by the Sonoma County Transit fleet (45 NG vehicles) will be distributed to public CNG stations in other California cities. The feedstock used for this project will be dairy waste (75,000 gallons per day (gpd)) and food processor waste (66,000 gpd).

Project Site

The site is located in Sonoma County at 22675 8th Street East, Schellville, California, 95476. The project site is a vacant lot zoned diverse agricultural. The site is surrounded by diverse agriculture and commercial zones with a residential area within 100 feet of site.

Project Impacts and Benefits

BioStar Systems estimates that only trace criteria emissions will result from the processes of thermophilic anaerobic digestion being used for fuel production in this project. Criteria emissions will result from the transport of this fuel and NOx and PM emissions are limited to 130.4 grams/mile and 6.69 grams/mile. The project team will ensure that criteria pollutants and weighted toxic air contaminants resulting from the project are less than the conventional baseline fuel.

The biogas generated by biogas digesters is composed primarily of methane (50-75 percent), carbon dioxide (25-50 percent), nitrogen (0-10 percent), hydrogen (0-1 percent), hydrogen sulfide (0-3 percent), and oxygen (0-2 percent). Using waste feedstocks that would otherwise cause major pollution problems, the BioStar system strips the biogas of carbon dioxide and hydrogen sulfide, leaving a high-quality biomethane fuel and improved air quality. These wastes cause surface and groundwater contamination and surface air pollution caused by odors, dust, and ammonia.

Methane recovery from manure can reduce odors by up to 97 percent, which is significant. Additionally, this project will both produce and use the biomethane in Sonoma County, resulting in fewer mobile source PM and NOx emissions by Sonoma County Transit, therefore improving air quality in the community.

Rationale for Exclusion From Localized Health Impacts Report

This project is not located in a low-income community that is highly impacted by air pollution. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

CHAPTER 3: Biomass Based Diesel Production and Predevelopment Projects

Project Name:

Agricultural Waste Solutions, Incorporated's "San Jacinto Biofuel Production #1".

Project Description

Agricultural Waste Solutions and Scott Brothers Dairy in Riverside County will assemble and operate a three-part, modular animal waste management system to produce renewable diesel for use as transportation fuel in existing ranch operations. The company and its partners will assemble and operate three skid-mounted, modular, pilot demonstration units to verify the results for the removal of 98 percent of the total suspended solids from the dairy wastewater and the conversion of those solids into renewable diesel at the rate of approximately four gallons of renewable diesel per hour from every 250 pounds of manure solids input. The facility will produce a high-quality biosyngas that will be converted into renewable liquid fuels, principally renewable diesel fuel, using the Fisher-Tropsch liquefaction process. The project will verify conversion efficiencies and prove whether commercial build-out can supply all of the Western Riverside County Agriculture Coalition members' (WRCAC) fuel needs.

Project Site

The project will be located in Riverside County at the Scott Brothers dairy farm at 18051 Gilman Springs Road, Moreno Valley, California, 92555. The site is within the 750-acre dairy farm and ranch. Only the Scott family residence is within one mile.

While the project address is in Moreno Valley, staff considered the project's close proximity to San Jacinto, which is a low-income area highly impacted by air pollution, and assessed the impacts as a precaution.

The facility will be located in the South Coast Air Basin, a non-attainment area for ozone, particulate matter (10 micron), and particulate matter (2.5 micron) pollutants. There are no schools, daycares, or health care facilities within a one-mile radius of the project site.

Potential Impacts and Benefits

Agricultural Waste Solutions anticipates that only small amounts of NO_x and NO₂ will result from the production of the biosyngas. Table 3 provides these emission numbers. The system modules operate within the permitting standards required by the Air Quality Management District (AQMD) and have twice previously been issued operating permits to gasify animal waste by South Coast Air Quality Management District (SCAQMD).

No transports of feedstock or fuel are contemplated for the site. The feedstock already exists on the dairy, and the project will produce 19,200 gallons of renewable diesel that will replace petroleum diesel used in the dairy's off-road equipment.

The project will demonstrate an approach to waste manure management that will result in an improvement in air emissions in the region.

The project will positively affect local community health because the project will demonstrate an approach to waste manure management that reduces adverse impact on the environment, including water and air. The renewable diesel will be produced by a process that meets SCAQMD air emission requirements and is a cleaner burning fuel than petroleum diesel, especially in off road non-emission controlled and older on-road diesel engines. Prior exhaust emission tests done with Fischer-Tropsch diesel fuels have demonstrated up to 42 percent reduction in particulate matter, 16 percent reduction in NO_x, 63 percent reduction in hydrocarbons, and a 75 percent reduction in carbon monoxide.

This project is not expected to result in adverse health effects to sensitive populations at the project site or in the city where the facility will be located.

Outreach Efforts

Scott Brothers Dairy and the members of WRCAC have a history of engaging in local outreach as demonstrated in the writing and release of the San Jacinto Watershed Integrated Regional Dairy Management Plan, a plan that was written with communication with, and support of, several local, state, and national agencies that are concerned with the long-term health of the San Jacinto Watershed. This project is intended and designed to be a community-based project that demonstrates the positive benefits that can result from a better approach to waste disposal. Significant effort will be made to demonstrate the project to all members of the San Jacinto area community.

Project permitting will include a SCAQMD permit for the entire system and an amended farm permit for lagoon water discharge from the Water Board. The SCAQMD will evaluate the facility emissions during permitting evaluation process and will adhere to federal and state regulations to notice residents within 1,000 feet of the site if the project will result in an increase in emissions above the threshold.

The air district will also post notices to the Air Resources Board and the California Environmental Protection Agency websites and in local newspapers if the project is using emission offsets or emission reduction credits.

While the Energy Commission is not planning any community outreach specific to this project, the Energy Commission determines program investments in a public process with input from the Advisory Committee. The Advisory Committee is a group of industry experts and stakeholders that are knowledgeable about the impacts and benefits of various fuels and vehicle technologies. The *Alternative and Renewable Fuel and Vehicle Technology Program Investment Plan* guides staff in selecting the projects that will help California achieve emission reductions that are expected to improve overall air quality in the state.

Project Name

East Bay Municipal Utility District's (EBMUD) "Cost-Effective Fats, Oil, and Grease (FOG) to Biodiesel Production at a Wastewater Treatment Plant".

Project Description

This project will focus on developing and demonstrating a cost-effective means of using brown grease as the feedstock for biodiesel production at the wastewater treatment plant. The grease is collected from commercial grease interceptors and will be brought to the FOG receiving station built under this project. Under this project, EBMUD will construct a FOG receiving station and demonstrate a cost-effective means of harvesting of brown grease, reducing sulfur content, and bench-scale conversion of biogas to methanol for use in the transesterification process. This project improves technologies and processes that can be applied to commercial production of biodiesel from waste feedstock while treating wastewater, and serves as a model for replication at wastewater treatment plants in California.

Project Site

The project will be located at the EBMUD Municipal Wastewater Treatment Plant (MWWTP) at 2020 Wake Avenue, Oakland, California, 94607.

Project Impacts and Benefits

This project is limited to bench-scale fuel production. Because the amount of fuel being produced under this project is low and will only be used for testing, there will be no significant resulting criteria or toxic emissions.

EBMUD will be using industrial process water or recycled water at the biodiesel test facility. At the EBMUD MWWTP, partially treated wastewater is commonly used for various applications and processes throughout the plant including pipe flushing, slurry preparation, and wet well cleaning. This project diverts waste feedstock from sewers, which reduces back-up, and results in the production of a low-carbon transportation fuel.

The renewable energy generated onsite, using biogas as the fuel source, will be used for the operation of the FOG receiving and biodiesel test facilities for this project, resulting in fewer emissions.

Additionally, the implementation of the Resource Recovery Program to accept high-strength organic waste trucked at the plant has substantially increased biogas production. EBMUD anticipates that MWWTP will be 100 percent energy self-sufficient and sell surplus power back to the grid in 2011.

The creation of new treatment facilities would generate additional areas for investment in the construction and design sectors, as well as long-term job creation for skilled plant operations staff. Treatment facilities contributing to economic development in low-income or distressed populations would be specific to plant location and hiring demographics.

Rationale for Exclusion from Localized Health Impacts Report

While the EBMUD FOG receiving facility will be located in a low-income community highly impacted by air pollution, only small amounts of fuel will be produced for testing purposes. Because significant fuel production will not occur, this project is not considered a source of emissions. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

Biodiesel Industries' "ARIES® Bioenergy Project".

Project Description

This project will use the waste materials and coproducts of conventional biodiesel production (raw glycerin and wash water) to provide feedstock for an anaerobic digester. The project will use the biomethane for combined heat and power (CH&P) and the effluent for algaculture nutrients. The algaculture oil will be processed into biodiesel. The project will also use yellow grease in production until algaculture is functioning. Volumes are estimated at one liter of biodiesel per day.

Project Site

The site is on a U.S. Naval Base National Environmental Test Site at the Northwest corner of Minersville Road and Cutting Road, Port Hueneme, California, 93043. The project is located on a five-acre asphalt containment area surrounded by a gated and locked chain link fence. The site is surrounded by a golf course to the west, Public Works storage to the north, and general vehicle storage to the east and west. A rail line intersects the southeast corner of the property.

Project Impacts and Benefits

This project is limited to bench-scale fuel production. Volumes of fuel produced under this project are limited to one liter per day, and there will be no significant resulting criteria or toxic emissions.

This project makes good use of production byproducts (glycerin and CO₂), which makes the project self-sufficient. This project will also be a net producer of energy and will use only reclaimed, non-potable water unusable for irrigation. Many water efficiency measures are also used throughout process.

Additionally, this facility is expected to result in 58 permanent jobs and 19 temporary jobs.

Rationale for Exclusion From Localized Health Impacts Report

Biodiesel industries will not be producing significant amounts of fuel, so the project is not considered a source of emissions. Additionally, Port Hueneme is not considered a low-income community highly impacted by air pollution. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

Cal Poly San Luis Obispo's (SLO's) "Low-cost, Waste-grown Biofuel Feedstock Production".

Project Description

This is a predevelopment project for Cal Poly SLO to create ultra-low-carbon biodiesel using a system called Reclamation of Nutrients, Energy, and Water (RNEW). RNEW will combine municipal wastewater treatment with biomass production and will be a low energy-intensive process. Algae will be grown in existing raceway ponds using wastewater nutrients with flue gas CO₂. Through the bioflocculation process, the oil-rich algae is separated from newly treated water. The project will yield approximately 1,200 gallons per acre per year and has the potential to produce millions of gallons annually.

Project Site

This project will be located on a vacant lot at 35 Prado Road, San Luis Obispo, California, 93401. The site is an existing small-scale pilot facility operated by Cal Poly at the City of San Luis Obispo Water Reclamation Facility.

Project Impacts and Benefits

This project will result only in the production of small amounts of fuel that will be used for testing. Because the amount of fuel being produced is low, this project is not expected to result in increased criteria pollutants.

Municipal wastewater treatment for use in biomass production has several benefits including water reclamation and biofuel production.

This project will be implemented at the wastewater treatment facility; however, it could also work with animal waste and some industrial water applications. This project will use renewable energy from an anaerobic digester, which will lower emissions for the existing facility.

Rationale for Exclusion From Localized Health Impacts Report

There is no production of fuel besides that at bench scale required for analytical processes; so the project is not considered a source of emissions. There is no transport of fuel, feedstock, or other material to the project site. Therefore the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

CHAPTER 4: Feasibility Studies

The following projects are feasibility and predevelopment projects and are not expected to generate any emissions. Energy Commission staff does not anticipate that these projects will require permits. The overviews are included in this report to provide information about the projects and demographic data for the project locations.

Project Name

Mendota Advanced Bioenergy Beet Cooperative's "Advanced Bioenergy Center Mendota".

Project Description

Under this project, the Mendota Advanced Bioenergy Beet Cooperative (MABBC) will determine the technical feasibility, economic viability, and environmental impact of designing and building the Advanced Bioenergy Center Mendota (ABCM). This project will demonstrate the viability of ABCM sufficient to attract investors for the commercial-scale facility. This project integrates four technologies in one facility to produce cellulosic ethanol, renewable biomethane, compost and fertilizer, and green e-electricity. The primary feedstocks are sugar beets and almond prunings. This integrated biorefinery combines the following renewable technologies: advanced ethanol production, anaerobic digestion, biomass gasification, water recycling, and wastewater treatment. When complete, the ABCM will convert 840,000 tons per year of locally sourced sugar beets and 80,000 tons of almond prunings and other agricultural waste into 33.5 million gallons of advanced ethanol; 6.3 megawatts (MW) of certified green-e electricity; 1.6 million standard cubic feet (SCF) of renewable biomethane for conversion into compressed natural gas, and high-nutrient compost and liquid fertilizer.

Project Site

The project is located at Site Assessor's Parcel Number 013-050-74, next to the border of the city of Mendota and within the bounds of a rapidly developing renewable energy park that already hosts Covanta's 25-MW Biomass Plant and Cleantech America's 5 MW Solar Park. The site is unoccupied, but gas and water infrastructure are nearby. This area is zoned industrial and is a designated Enterprise Zone, as well as a Recycling Market Development Zone.

Project Impacts and Benefits

Benefits of this project include decreasing the air quality impacts associated with burning agricultural waste, maintaining a carbon-and water-neutral footprint, operating at an annual net water balance of plus 365 acre-foot (A-F) per year, and reclaiming one million gallons per day of treated wastewater for biorefinery operations. All energy is cogenerated from almond prunings. Acreage needs are within the range of historical beet acreage when Spreckels Sugar plants were still operating. Beets use 2.1 A-F/acre, making it a low water user compared to alfalfa, tomatoes, orchard crops, vegetables, and grains, all above 3.0 A-F/acre. Sugar beets are one of the most saline-and boron-tolerant crops suitable for California. Saline-and boron-tolerant crops play a significant role in the San Joaquin Valley, as they are able to grow on land

that is not suitable for growing crops for food. Therefore, the crops being grown and produced for this project do not have an impact on crops grown for food in the San Joaquin Valley.

Additionally, the project is expected to result in 325 short-term full-time construction jobs, 50 full-time permanent technical jobs, 45-50 jobs in feedstock operation, 160 agricultural jobs, and \$90 million in revenue.

Rationale for Exclusion From Localized Health Impacts Report

While the Advanced Bioenergy Center Mendota is in a low-income community highly impacted by air pollution, no fuel production will occur in this project, so the project is not considered a source of emissions. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

Great Valley Energy's "Feasibility of Fractioned Sweet Sorghum to Ethanol and Products".

Project Description

Great Valley Energy is proposes a comprehensive program to identify technologies, identify and quantify product markets, and perform conceptual engineering to determine the feasibility of constructing a facility that will produce ethanol and other products from sweet sorghum grown in the San Joaquin Valley. The project will install a pilot facility to separate and analyze fractions of sweet sorghum for suitability as feedstock in other downstream processes to add value to each fraction above its conventional use as animal feed or process fuel.

Project Site

The final location for the commercial facility is not identified in the proposal; however Kings Industrial Park in Hanford is being considered for the pilot facility.

The larger demonstration and commercial site is also in the Kings Industrial Park, Hanford, California. The demonstration and commercial facilities will be located in the southern portion of the San Joaquin Valley on an approximately 111.75-acre site in the Kings Industrial Park located in Hanford, Kings County, California. The proposed commercial and demonstration project site consists of three parcels located near the southwestern corner of Iona Avenue and 10th Avenue.

The area supports a wide number of industrial uses many associated with agricultural products or agricultural support industries. Vacant land in the area is primarily agricultural.

Project Impacts and Benefits

For this feasibility phase of the project, Great Valley Energy will be testing and evaluating fractionization methods for sweet sorghum. The pilot facility is not expected to produce any emissions and will process small amounts of an agricultural crop in a location suitable for agricultural crop processing. The demonstration and commercial facilities will have conversion and product upgrading lines. These larger facilities will be permitted under the environmental impact report (EIR) that was completed in 2007 for a large-scale corn to ethanol plant that was not constructed. The emissions from this project are expected to be far less than those permitted under the existing EIR due to lower material throughputs, ethanol production, and a decrease in energy consumption by the facility.

Sorghum appears capable of filling two key niches in the San Joaquin Valley agriculture: replacing declining cotton acreages and recurring agricultural lands abandoned because of salinity contamination. This project proposes smaller-scale, distributed facilities, which would be replicable throughout the Valley. Sorghum also has low water requirements (two acre-feet/year), is tolerant to saline irrigation water, has a lower greenhouse gas than corn ethanol, and has even more favorable economic viability. Great Valley Energy envisions possible complementary cellulosic conversion of any unused plant biomass. The project will promote widespread adoption based on the small-scale modular design.

Additionally this project can have potentially beneficial economic impacts in an already distressed region.

Rationale for Exclusion from Localized Health Impacts Report

While this project is in a low-income community highly impacted by air pollution, no fuel production will occur in this project, so the project is not considered a source of emissions. For this feasibility phase of the project, Great Valley Energy will test and evaluate fractionalization methods for sweet sorghum. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

West Yost Associates' "Wastewater Algae Biofuel Feasibility Study".

Project Description

The study conducted under this project will determine if it is economically feasible to modify the ponds and constructed wetlands at the Stockton Regional Wastewater Control Facility (RWCF) to allow for the growth of algae species that yield enough lipids for biodiesel conversion. The oil from this project will be sold to a local biofuels producer (Community Fuels), which has the ability to produce approximately 20 million gallons a year of biofuels. If this project is successful and proves to be economically feasible, the RWCF has the potential to yield enough algal biomass to produce about 6 million gallons of biodiesel per year. The feasibility study will be conducted over a 10-month period.

Project Impacts and Benefits

If this feasibility study proves that algae at the Stockton RWCF can be used for biodiesel production, integration of algae cultivation into the treatment process also offers the potential to harness the algae's inherent capacity to remove nutrients in wastewater, thereby reducing the overall cost of wastewater treatment. Preliminary studies show the presence of cyclotella (fast growing algal species with high lipid content). Additionally, the residual algal biomass, remaining after lipid extraction, can likely be anaerobically digested to produce biogas for renewable electricity in the city's existing cogeneration facility.

Technologies developed at the Stockton RWCF could potentially be extrapolated to other wastewater treatment facilities in California – further expanding biodiesel production capabilities throughout the state.

The ponds and wetlands at the RWCF provide approximately 630 acres of surface area that can serve as open pond algae reactors. For this acreage, production of 6 million to 47 million pounds of algal oil is possible according to productivity data reported by the U.S. Dept. of Energy Aquatic Species Program. At the current futures price of soybean oil at 40¢/pound, the projected quantity algal oil translates to gross annual revenue to the city of \$2 million to \$20 million. Assuming production cost of 20 cents/pound, the net revenue from algal oil to the city would be \$1million to \$10 million.

Furthermore, the future development of the algae oil facility at the RWCF site and the associated production of the biofuel have the potential to increase the following types of job opportunities in the greater Stockton area: wastewater treatment plant workers and lab technicians and operators at Community Fuels.

Rationale for Exclusion From Localized Health Impacts Report

This project is a feasibility study and is not considered a source of emissions. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

Project Name

Clean World Partners' "Sacramento Biorefinery #1".

Project Description

Clean World Partners will conduct predevelopment work critical in designing the proposed Sacramento Biorefinery (SBR1). This work will include feasibility studies, performance tests, and materials assessments. Under the project, Clean World Partners will also improve waste collection procedures associated with biofuels production at the SBR1. Upon successful completion of the project, Clean World Partners will build the SBR1 at the Sacramento Recycling and Transfer Station to produce a high-quality biomethane transportation fuel from locally produced food and green waste, most of which is currently disposed of in landfills. Once operational, the plant will use an innovative, patented anaerobic digestion system known as the Anaerobic Phased Solids (APS).

Project Site

The site is located at the Sacramento Recycling and Transfer Station (SRTS) at 8491 Fruitridge Road in Sacramento, California. The SRTS is located in the federally designated Florin Perkins Enterprise Zone, a designation providing numerous incentives for job creation and investment in this low-income, high-poverty community.

Potential Impacts and Benefits

If the activities funded under this project result in the building of the biorefinery, the proposed biorefinery will be among the largest in the United States, and a significant marketing and public education campaign will be conducted as to the benefits of an organic waste digestion system.

According to the California Air Resources Board's "Air Quality Guidance for Siting Biorefineries in California," there are criteria emissions associated with anaerobic digestion processes; however the emissions are considered minimal, and with BACT, the most stringent emission limits for the criteria emissions can be achieved.

Additionally, this project will act as an example for other facilities on how such a project can operate and will create value for currently nonusable waste streams. All necessary energy needs are created internally for a combined heat and power system. There would be reclaimed water from the municipal solid waste, and the technology chosen will require no addition of extra water. This fuel will be used locally at the Yolo County Transit District. The feasibility study will detail emissions, if any, that would result from the eventual construction of SBR1.

This project also has the potential to support economic growth in an economically distressed area.

Rationale for Exclusion from Localized Health Impacts Report

This project is for predevelopment activities and, as such, creates no air emissions and has no transport needs or feedstock requirements. Therefore, the project is excluded from the assessment of localized health impacts and the corresponding 30-day public review period.

CHAPTER 5: Aggregate Location Analysis and Community Impacts

Energy Commission staff used data gathered from recipients via project proposals and follow-up surveys. The information presented in this table reflects total expected emissions from each project based on anticipated fuel production and feedstock blends. These emission numbers include emissions from fuel production, plant operation, and fuel/feedstock transport.

Table 3: Emission Increases Associated With Plant Operation, Fuel Production, and Feedstock/Fuel Transport

Project	NO ^x	PM (2.5)	PM (10)	NO ₂	SO ₂	Lead	H ₂ S	Formaldehyde	DPM	Benzene	Acetaldehyde	1,3 Butadiene
North State Rendering Co.	0	0	0	0	0	0	0	0	0	0	0	0
Agricultural Waste Solutions	.094 lbs/day	0	0	0.28 lbs/day	0	0	0	0	0	0	0	0

Source: Project Grantee Survey

An Air Resources Board fact sheet⁸ describes the health impacts of exposure to air pollutants. In particular, ozone and particulate matter exposure is the cause of approximately 210,000 cases of asthma and 8,800 premature deaths each year.

The proposed biofuel production facility projects will increase the widespread use of alternative fuel vehicles in place of their petroleum counterparts. Table 3 indicates that one project, Agricultural Waste Solutions' "San Jacinto Biofuel Production #1," will result in a small increase in emissions in NO_x and NO₂. According to the SCAQMD's Rule 212, the daily maximum allowable amount of emissions for new or modified sources is 40 lbs/day for nitrogen oxides.⁹ While there is an increase in these emissions through the production of biomass-based, renewable diesel, the amount of emissions for the Agriculture Waste Solutions project is well below the SCAQMD's standard for nitrogen oxides, with NO_x emissions reaching only .094 lbs/day, and NO₂ emissions reaching only .028 lbs/day. Overall, the projects proposed for funding will result in net criteria pollutant reductions, including those identified as the cause of asthma and premature deaths. While most of the projects are not fully assessed in this report, Energy Commission staff found that several of the projects are in areas that are identified as

⁸ *Health Effects of Particulate Matter and Ozone Air Pollution*, November 2007.

⁹ South Coast Air Quality Management District Rules and Regulations. Rule 212, "Standards for Approving Permits and Issuing Notices."

environmental justice communities with social vulnerability indicators and high exposure to air pollutants associated with health risks. While these projects are in at-risk areas, it should be noted that several of these projects will not be producing fuels yet, as they are in preproduction phases or conducting feasibility studies. For projects that will produce fuel and are located in at-risk areas, the benefits for potentially impacted communities are notable and will likely contribute to improved health and environments in the long term.

Some of the notable benefits from the projects include improved air quality from more efficient processing of dairy waste, conversion of fleets to use cleaner alternative fuels, and more efficient and cost-effective water reclamation. Additionally, the projects explore the use of otherwise inhospitable land by food crops for biofuel feedstock production, and efficient processing of waste products to produce biofuels. Several of the projects will generate renewable energy, reducing the impacts of the projects in their respective communities. These projects are anticipated to improve the environments and result in socioeconomic benefits by generating jobs and revenue for local communities that would otherwise not be available.

Considered with the other projects funded in this funding cycle, no communities are disproportionately affected. The projects are generally spread across the state, some located in more remote regions, and most do not yet produce fuel at a level that would result in emission increases.

Table 3 summarizes cities where two or more environmental justice indicators¹⁰ exist. Table 4 provides city-level data for the proposed projects to give additional insight on the community demographics where the projects will be located.

10 For this analysis, staff used the following criteria: unemployment rate exceeds the state unemployment rate (12.6 percent), statewide percentage of persons below the poverty level (13.3 percent), a minority subset represents more than 30 percent of the city population, and population under 5 years or over 65 years is 20 percent higher than the State average (7.4 percent <5 years, and 11.2 percent >65 years).

Table 4: Cities With Environmental Justice Indicators

City	Minority	Poverty Level	Unemployment Rate	Age
Hanford	X	X	X	
Mendota	X	X	X	
Moreno Valley	X		X	
Oakland	X	X	X	
Placer County			X	X
Port Hueneme	X		X	X
Sacramento			X	X
San Luis Obispo		X		X
San Jose	X	X	X	
Schellville	X	X		
Stockton		X	X	

Source: Energy Commission staff analysis

The emissions reductions associated with the projects are anticipated to lead to improved air quality in these communities. While overall air quality depends on a number of factors, the Energy Commission expects that air quality will improve over time with the increased use of alternative fuels, including in disadvantaged communities and those communities with the most significant exposure to air contaminants.

In summary, the proposed projects will reduce emissions, exposure, and health risk at a local level based on the assumption that the vehicles deployed and operated in concert with the projects are cleaner than the gasoline vehicles they will replace.

Table 5: Demographic Data for Biofuel Production Plants (PON-09-604) Projects

(Percentage of total population)

City	Hanford	Mendota/ Fresno*	Moreno Valley	Oakland	Oroville/ Yuba City*	Placer County	Port Hueneme/ Oxnard*	Sacramento
Below poverty level	17.3	26.2	14.2	19.4	18.1	6.7	15.1	20.0
Ethnicity								
Black	5	8.4	19.9	35.7	2.8	1.8	3.8	15.5
American Indian or Alaskan Native	1.4	1.6	.9	.7	1.8	.9	1.3	1.6
Asian or Pacific Islander	3.1	11.3	6.4	15.7	9.3	5.6	7.8	17.5
Hispanic	38.7	39.9	38.4	21.9	24.6	11.9	66.2	21.6
White	64.1	50.2	46.8	31.3	67.0	88.8	42.1	48.3
Age								
< 5 years	8.7	9.1	8.8	7.1	8.1	6	8.9	7.1
> 65 years	10.3	9.3	5.5	10.5	12.2	15.3	8.1	11.4
Unemployment rate	14.0	41.0	16.7	17.2	19.2	11.6	12.4	14.7

City	San Luis Obispo	San Jose	Schellville/ Napa*	Stockton
Below poverty level	26.6	8.8	13.3	23.9
Ethnicity				
Black	1.5	3.5	6.7	11.2
American Indian or Alaskan Native	.7	.8	1.2	1.1
Asian or Pacific Islander	5.4	27.3	12.9	20.3
Hispanic	11.7	30.2	36.6	32.5
White	84.1	47.5	76.6	43.3
Age				
< 5 years	3.1	7.6	7.4	8.6
> 65 years	12.1	8.3	11.2	10.2
Unemployment rate	10.9	12.5	8.5	19.8

*Nearest city with data statistics

Source: Unemployment Information, EDD Labor Market Information Division; Age/ethnicity demographics, U.S. Census