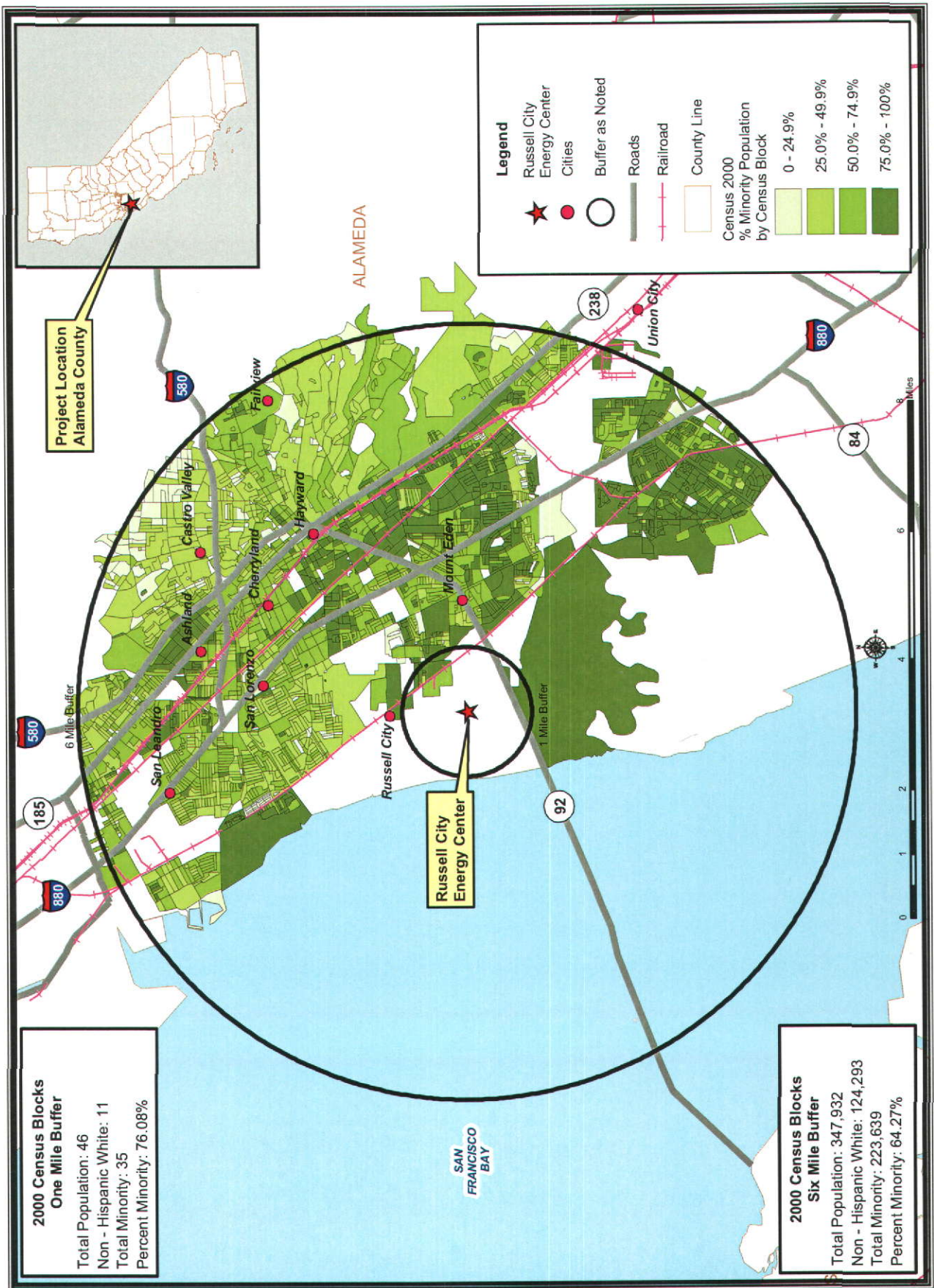


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SOCIOECONOMICS - FIGURE 1

Russell City Energy Center Project - Census 2000 Minority Population by Census Block - One and Six Mile Buffer



**2000 Census Blocks
One Mile Buffer**
 Total Population: 46
 Non - Hispanic White: 11
 Total Minority: 35
 Percent Minority: 76.08%

**2000 Census Blocks
Six Mile Buffer**
 Total Population: 347,932
 Non - Hispanic White: 124,293
 Total Minority: 223,639
 Percent Minority: 64.27%

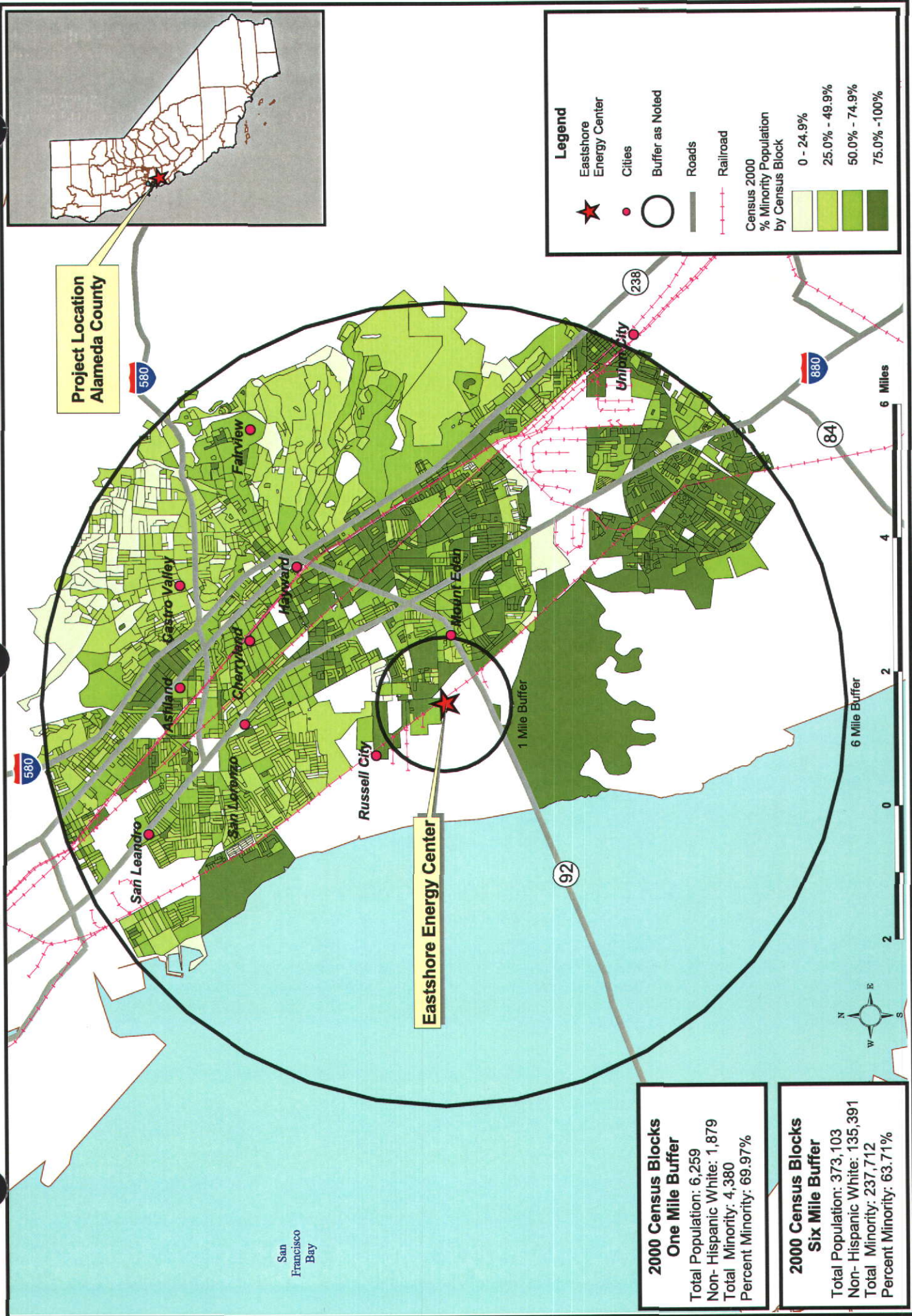
JANUARY 2007

SOCIOECONOMICS

CALIFORNIA ENERGY COMMISSION, ENERGY FACILITIES SITING DIVISION, JANUARY 2007
 SOURCE: California Energy Commission Statewide Power Plant Maps 2007 - Census 2000 PL 94-171 Data - Matrix PL2

SOCIOECONOMICS - FIGURE 1

Eastshore Energy Center - Census 2000 Minority Population by Census Block - One and Six Mile Buffer



Project Location
Alameda County

Eastshore Energy Center

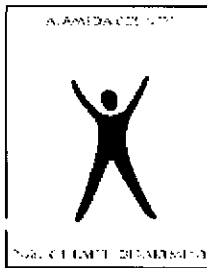
<p>2000 Census Blocks One Mile Buffer</p> <p>Total Population: 6,259 Non-Hispanic White: 1,879 Total Minority: 4,380 Percent Minority: 69.97%</p>	<p>2000 Census Blocks Six Mile Buffer</p> <p>Total Population: 373,103 Non-Hispanic White: 135,391 Total Minority: 237,712 Percent Minority: 63.71%</p>
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Legend

- ★ Eastshore Energy Center
- Cities
- Buffer as Noted
- Roads
- - - Railroad

Census 2000 % Minority Population by Census Block

- 0 - 24.9%
- 25.0% - 49.9%
- 50.0% - 74.9%
- 75.0% - 100%



ALAMEDA COUNTY HEALTH CARE SERVICES AGENCY
PUBLIC HEALTH DEPARTMENT

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**“RACE, CLASS, AND THE PATTERNS OF DISEASE DISTRIBUTION IN HAYWARD:
DECISION-MAKING THAT REINFORCES HEALTH INEQUITY”**

Testimony of Sandra Witt, DrPH, Director of Planning, Policy and Health Equity for the
Alameda County Public Health Department

My name is Dr. Sandra Witt, Deputy Director of Planning, Policy and Health Equity for the Alameda County Public Health Department. For the last 7 years, I have directed the Community Assessment, Planning, Evaluation and Education Unit of the Public Health Department. This Unit includes 8 epidemiologists and is responsible for monitoring the health status of all County residents. Over the past 3 years we have produced over 14 technical reports analyzing data from a variety of sources including mortality, births, hospitalizations, health survey data, communicable disease, and census data to identify broad areas of health concern and to monitor the health of our residents, particularly the most socially and economically vulnerable populations in our County. Several of these reports are cited as scientific evidence in the Eastshore Energy Center staff report.

“A condition of environmental justice exists when environmental risks and hazards and investments and benefits are equally distributed with a lack of discrimination, whether direct or indirect, at any jurisdictional level; and when access to environmental investments, benefits, and natural resources are equally distributed; and when access to information, participation in decision making, and access to justice in environment-related matters are enjoyed by all.”¹

In monitoring and analyzing health outcomes for Alameda County residents, one resounding theme stands out: poor health and premature death are by no means randomly distributed in Alameda County. Low-income communities and communities of color in certain specific geographic neighborhoods suffer from substantially worse health outcomes and die earlier. Studies reveal that these inequitable health outcomes are not adequately explained by genetics, access to health care, or risk behaviors, but instead are to a large extent the result of profoundly adverse social and environmental conditions. These adverse environmental conditions are too often an indelible reflection of the way decision-making power is shared with low-income communities.² Historical exclusion from decision-making venues has resulted in communities of

¹ European Workshop on Environmental Justice (Budapest, December 2003)

² Marmot MG and Wilkinson R, eds. 2003. *Social Determinants of Health: The Solid Facts*, 2nd ed. World Health Organization Regional Office for Europe, Copenhagen, Denmark.
Sampson, RJ. “The neighborhood context of well-being.” *Perspectives in Biology and Medicine*; Summer 2003; 46(3):S53.

color and low-income communities that are disproportionately burdened by an abundance of environmental hazards, including toxin-emitting power plants and other sources of noxious pollution. It is incumbent upon public health officials to analyze health data to validate pro-equity policies that will lower the disproportionate burden of pollution and improve health outcomes among all populations.

1. Illness and Death from Air Pollution Associated Conditions is Already Disproportionately Concentrated in the area of Hayward that is in Proximity to the Proposed Power Plant

An environmental justice framework requires examination of the specific impacts of the project on low-income communities and communities of color. In its cursory three-page Final Staff Assessment, the California Energy Commission (CEC) concludes that Eastshore Power Plant project will not contribute significantly to morbidity or mortality in any race or ethnic group residing in the project area, and therefore would not have a disproportional impact on an environmental justice population. However, this seemingly blythe conclusion neglects consideration of published and publicly-accessible Alameda County Public Health Department evidence of the geographic distribution of disease in the area of Hayward within proximity to the proposed power plant site.

In its environmental justice examination, the CEC staff also fail to reference any analysis of the existing burden of toxic pollution in the area of the proposed power plant site and thus effectively ignore the compounding effects of various sources of toxicity (including non-airborne sources) to which residents in the surrounding Hayward community are already exposed. When these two points are appropriately examined, as they are below, it becomes inescapably clear that by approving the Eastshore Power Plant at 25101 Clawiter Road, nearby predominantly low-income communities of color, disproportionately burdened by exposure to environmental toxicity and suffering from higher rates of premature death and chronic diseases known to be exacerbated by air pollution, the California Energy Commission is running the risk of exacerbating conditions that are fundamentally the legacy of discrimination.

• **Hayward is more ethnically diverse than Alameda County**

The City of Hayward is home to a significantly larger non-white population than Alameda County as a whole. Over one-third (34.2%) of Hayward residents are Latino compared to 19.0% countywide, and the proportion of Latino residents is even higher within a three-mile radius of the proposed plant (37.8%). Additionally, Hayward is comprised of 10.6% African Americans, 18.7% Asians, and 29.2% White. In Alameda County, Whites make up 40.9% of the population.

• **Within three miles of the proposed site are several high poverty, high minority, low life expectancy census block groups**

Overall, 10.0% of Hayward residents live in poverty, a slightly lower percentage than the 11.0% countywide. And within a three-mile radius of the proposed plant, 10.4% of residents live in poverty. However, within this three-mile radius, there are three low-income census block groups where at least 20% of residents live in poverty and 80% are non-white (see map in attachments).

The mortality rate within these three block groups was 50% higher in 1999-2001 than the rate of the remaining block groups in the three-mile radius of the proposed plant site: 1,328 per 100,000

compared to 865 per 100,000. In addition, the life expectancy at birth in these three block groups was 73.3 years, five years less than the 78.3 years observed countywide. These three low-income areas also receive a high level of Public Health Department services (see map in attachments).

- **Death rates from air-pollution associated diseases are substantially higher in the three mile radius around the proposed site**

There are numerous scientific studies that document the relationship between air pollution and human disease.³ Common acute non-cancer health effects include asthma, chronic obstructive pulmonary disease, and cardiovascular disease, particularly congestive heart failure. The exacerbation of these existing chronic conditions result in unnecessary morbidity, missed work days, preventable hospitalizations, and premature death. A disproportionate burden of the cost of these preventable hospitalizations, particularly among the uninsured, is borne by Alameda County government.

In order to examine mortality from specific causes, death rates within the three-mile radius around the proposed site were compared to Alameda County rates (combining the low-income block groups with the other block groups in the radius). Rates of death from all causes, coronary heart disease, and chronic lower respiratory disease were all significantly higher within the three-mile radius than those rates for Alameda County, representing an ongoing excess burden of mortality (see attached tables).

The rate of death from all causes within the three-mile radius was 888.4 per 100,000 from 1999 to 2001, statistically significantly higher than the county rate of 792.3 per 100,000. Similarly, the rate of death from chronic lower respiratory diseases was 54.8 per 100,000 within the three-mile radius, significantly higher (by 43%) than the county rate of 38.4. And finally, the coronary heart disease death rate was 216.4 per 100,000 within the three-mile radius, also significantly higher than the county rate of 185.7 per 100,000.

- **Hospitalization due to air pollution associated diseases is substantially higher in the zip codes close to the proposed site**

In order to examine measures of illness (morbidity as opposed to mortality) in the area of the proposed plant, rates of hospitalization for specific diseases in the combined zip codes, 94544 and 94545, were compared to Alameda County rates. From 2003 to 2005, the hospitalization rate for coronary heart disease in the two zip codes was 810.4 per 100,000 people, 60% higher than the county rate of 507.5 per 100,000. Similarly, the rate of chronic obstructive pulmonary disease

³ Epidemiology of chronic obstructive pulmonary disease: health effects of air pollution. Viegi G, Maio S, Pistelli F, Baldacci S, Carrozzi L, *Respirology*. 2006 Sep;11(5):523-32.

Particulate air pollution and hospital admissions for congestive heart failure in seven United States cities. Wellenius GA, Schwartz J, Mittleman MA. *Am J Cardiol*. 2006 Feb 1;97(3):404-8.

Identifying subgroups of the general population that may be susceptible to short-term increases in particulate air pollution: a time-series study in Montreal, Quebec. Goldberg MS, Bailar JC 3rd, Burnett RT, Brook JR, Tamblyn R, Bonvalot Y, Ernst P, Flegel KM, Singh RK, Valois MF. *Res Rep Health Eff Inst*. 2000 Oct;(97):7-113; discussion 115-20.

Identification of persons with cardiorespiratory conditions who are at risk of dying from the acute effects of ambient air particles. Goldberg MS, Burnett RT, Bailar JC 3rd, Tamblyn R, Ernst P, Flegel K, Brook J, Bonvalot Y, Singh R, Valois MF, Vincent R. *Environ Health Perspect*. 2001 Aug;109 Suppl 4:487-94

(COPD) hospitalization was 316.2 per 100,000 in the two zip codes, 20% higher than the county rate of 264.3. For congestive heart failure the hospitalization rate in the two zip codes was 397.7 per 100,000, 35% higher than the county rate of 295.3. Finally, the asthma hospitalization rate was 179.8 per 100,000, 14% higher than the county rate of 157.3.

All of these differences between the area of the proposed site and Alameda County as a background or reference were found to be statistically significant, which means they did not occur by chance. Based on Census 2000, the population of the two zip codes, as well as Hayward, had an age composition very similar to that for Alameda County—about one-fourth of the population was under age 18 and ten percent was over age 65. Thus the fact that rates of illnesses due to respiratory and circulatory system diseases (most often diseases of the elderly) are significantly higher in the proposed plant area than in the rest of the county suggests a level of vulnerability in this population that is not explained by age.

An environmental justice approach requires an analysis of the relative burden of disease in the population most directly affected by the decision to site this power plant. The presence of a disproportionate concentration of persons with asthma, chronic lung disease, congestive heart failure, and other chronic conditions that are exacerbated by air pollution must factor into the decision of where to site this power plant. These populations are the actual “sensitive receptors” referred to in the *Air Toxics Hot Spots Program Risk Assessment Guidelines*.² They are not distributed through the population randomly but instead are concentrated disproportionately in proximity to the proposed Hayward site. Siting the Eastshore Power Plant in Hayward will disproportionately impact a geographic area not only home to a comparatively high non-white population, but also already burdened by existing poor health outcomes.

2. The CEC environmental justice analysis does not adequately factor in the uneven distribution of exposure to various sources of toxicity in the area in proximity to the proposed power plant site

In its environmental justice examination, the CEC staff fail to reference any analysis of the existing burden of toxic pollution in the area of the proposed power plant site and effectively ignore the compounding effects of various sources of toxicity (including non-airborne sources) to which residents in the surrounding Hayward community are already exposed. CEC staff rely on established risk assessment models to predict health impacts from the proposed power plant. However, there is substantial uncertainty associated with the process of risk assessment. The uncertainty arises from lack of “real world” data in many areas necessitating a heavy reliance upon experimental animal models and a set of basic assumptions. Among the key assumptions underlying the health risk assessment are⁴:

1. Human toxicity from air pollution is additive rather than synergistic.
 2. Animal toxicity data can be readily extrapolated to humans.
- **Human disease due to exposure to multiple toxic pollutants may be synergistic**

⁴ Air Toxics Hot Spots Program Risk Assessment Guidelines. *The Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*. August 2003. California EPA.

The potential for multiple and varied air pollutants to act synergistically, rather than additively as assumed by the CEC health risk assessment, requires that an analysis of the overall toxic burden associated with this Hayward location be performed. Low-income minority populations have historically been exposed to a much higher burden of environmental toxicity. The brief CEC environmental justice analysis does not quantify or otherwise assess the cumulative burden of toxicity in the vicinity of the proposed site.

- **Animal toxicity data may be a poor proxy for human health effects**

There are very few in vivo studies that are designed to establish a safe threshold for human exposure to air pollution, in fact, a recent study by Harvard cardiovascular researchers looking at seven U.S. cities documents a direct association between particulate air pollution and acute hospitalizations for congestive heart failures.⁵ *This effect is seen below the current levels set by US EPA.* Relative exposure limits established in animal models must be interpreted with a great deal of caution when deciding whether new sources of pollution should be sited in low income minority communities.

- **Detailed, publicly available and published data exists with which CEC staff could conduct a more complete and appropriate environmental justice analysis**

Alameda County Public Health Department maintains and publishes detailed age- and race-specific geographic morbidity and mortality data on asthma, chronic obstructive pulmonary disease, cardiovascular disease, and lung cancer for the county, the city of Hayward and for smaller geographic areas including zip code and census tract. CEC staff did not contact Alameda County Public Health Department to obtain critical data on chronic obstructive pulmonary disease, cardiovascular disease, or congestive heart failure. CEC staff did cite Alameda County Public Health Department data on asthma in its public health section, however, the CEC staff report ignores data related to these other serious respiratory and cardiovascular conditions that are known to be associated with ambient air pollution and help more fully characterize the vulnerability of the population residing in the shadow of this proposed site.

“An environmental injustice exists when members of disadvantaged, ethnic, minority or other groups suffer disproportionately at the local, regional (sub-national), or national levels from environmental risks or hazards, and/or suffer disproportionately from violations of fundamental human rights as a result of environmental factors, and/or denied access to environmental investments, benefits, and/or natural resources, and/or are denied access to information; and/or participation in decision making; and/or access to justice in environment-related matters.”⁶ The CEC staff analysis largely ignores profoundly important questions of environmental justice and in so doing contributes to the unfortunate and widely repudiated legacy of racial and class-based discrimination that continues to shape the pattern and burden of disease that compromise the quality of life of residents in the vicinity of the proposed power plant site. Alameda County Public Health Department strongly opposes decision-making based on such an inadequate analysis of critical environmental justice considerations.

⁵ Particulate air pollution and hospital admissions for congestive heart failure in seven United States cities. Wellenius GA, Schwartz J, Mittleman MA. *Am J Cardiol.* 2006 Feb 1;97(3):404-8.

⁶ European Workshop on Environmental Justice (Budapest, December 2003)

Attachments

Mortality rates, 1999-2001
Within a 3-mile radius of proposed site with Alameda County comparisons

Cause of Death	Area	3-Yr Count	Rate**
All Causes	3 Mile Radius	2,492	888.4 *
	Alameda County	29,525	792.3
Chronic Lower Respiratory Disease	3 Mile Radius	155	54.8 *
	Alameda County	1,387	38.4
Coronary Heart Disease	3 Mile Radius	589	216.4 *
	Alameda County	6,769	185.7

*Statistically significant difference at the $p \leq .05$ level.

**Rates are age adjusted by the direct method to the 2000 US standard population.

Hospitalization Rates, 2003-2005
94544 and 94545 combined with Alameda County comparisons

Primary Diagnosis	Area	3-Yr Count	Rate**
Coronary Heart Disease	94544 & 94545	2,133	810.4 *
	Alameda County	20,780	507.5
Chronic Obstructive Pulmonary Disease	94544 & 94545	891	316.2 *
	Alameda County	11,116	264.3
Congestive Heart Failure	94544 & 94545	1,024	397.7 *
	Alameda County	11,914	295.3
Asthma	94544 & 94545	531	179.8 *
	Alameda County	6,792	157.3

*Statistically significant difference at the $p \leq .05$ level.

**Rates are age adjusted by the direct method to the 2000 US standard population.

Poverty Rate



Public Health Department Service Rate

