

**Oregon Toxics Alliance Testimony on
Seneca Sustainable Energy (206470)**
Standard Air Contaminant Discharge Permit
(Number 206470)

Submitted 8/20/09

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1. INTRODUCTION

Oregon Toxics Alliance works for all Oregonians to expose root causes of toxic pollution and help communities find solutions that protect human and environmental health. The Alliance (OTA) takes a leading statewide role to address threats to human health and the environment caused by exposures to toxic contamination. We envision a future in which a child's health is the index applied for making decisions about how the public is exposed to chemicals. OTA's purpose is to protect communities and our environment from exposure to chemicals through the use of precautionary action and alternative assessment, a policy framework that advances long-term environmental health.

The Alliance raises objections to the construction of the Seneca Biomass Co-generation plant Biomass because it will adversely impact public health, diminish livability, pollute the environment through air and land deposits, and is not a sustainable energy resource. Basically, burning wood to generate steam is a dirty method of producing energy, and that is why this plant requires such an extensive air pollution emissions analysis. The community and LRAPA must consider how this proposed energy generation plant will affect the future residents of Eugene and the future of energy production in Oregon. Will the biomass plant be built in such a way to ensure that it will provide sustainable, clean and non-polluting energy 20 years into the future?

Compared to energy production using fossil fuels, per megawatt, woody biomass burning emits 1.5 times the carbon dioxide (CO₂), 1.5 times the carbon monoxide (CO, a toxic air pollutant), burdensome levels of nitrogen oxides (NO_x, a toxic air pollutant and greenhouse gas), significant amounts of volatile organic compounds and hazardous air pollutants (harming the populace downwind from exposure to nerve toxins and carcinogens) and particulate matter. The particulate toxic emissions cause cancer, asthma and respiratory ailments. The emissions of NO_x and CO and certain VOC's contribute greenhouse gases to the atmosphere in the critical near-term period that will not be reabsorbed for hundreds to thousands of years.

It is unjust that Seneca Sawmill will build this energy facility using tax-payer financed subsidies while concentrating the negative impacts of air pollution and global warming on West Eugene communities. OTA submits evidence in Section 3 documenting our contention that West Eugene neighborhoods have comparatively higher concentrations of families and individuals that are low-income, Latino and disabled. Thus, it is imperative that LRAPA require a full a Control Technology Determination analysis for all criteria pollutants as well as HAPs using federal policy and science. In this analysis, LRAPA must consider all impacts such as public health, environmental justice, visibility, weather inversions and ozone formation.

LRAPA's director, Merlyn Hough, stated at the public hearing on August 6, 2009 that the facility will be allowed to operate at full capacity for many months before the Title V air discharge permit is submitted for public comment. Based on his statement, it is clear that this phase of LRAPA's permitting determines the efficacy of Seneca's air pollution control technology and the degree to which LRAPA will require that Seneca protect public health and air quality. Thus, the issue of environmental justice impacts must be considered in the construction permit application review because the location of the energy plant and its construction will determine air contaminant discharge technology. It is also OTA's concern that this building permit process will yield regulatory results that allow Seneca to set daily emissions levels that are unresponsive to ever-tightening air quality regulations that will be more protective of health.

Section 2

AGGREGATE EMISSIONS

OTA contests Seneca's determination that the facility will not be a federal major source of air pollution. We state that it is necessary for LRAPA to require a Prevention of Significant Determination (PSD) and/or New Source Review (NSR) analysis for all pollutants exceeding major source or major modification thresholds as defined in the applicable LRAPA and/or Oregon air permitting regulations. According to the US Clean Air Act, emissions from the current sawmill operation and the proposed co-generation plant must be aggregated and evaluated as a single stationary source because the proposed energy production facility will be under common ownership and control; it will be co-located on contiguous and adjacent property; and, the operation of the energy production facility will be dependent on the activities of the sawmill. In fact, the two "activities" under operate under one roof and will be joined together by a conveyor belt that carries sawdust and milling by-products to the biomass boiler. In order to determine the impacts on air quality standards, LRAPA must aggregate emissions for the purpose of determining major source and the other applicable requirements and environmental impacts.

The current Seneca Sawmill ACDP permit allows Seneca Sawmill to emit these following pollutants and their respective amounts:

Sawmill Source	PM	PM10	SO2	NOX	CO	VOC
Totals	49	27	53	48	99	57

Combining the emissions as required, we see that the Seneca Biomass Co-generation plant will, at a minimum, require a New Source Review of CO because the total emissions will be 301 tons/year (99 tons from the Sawmill and 202 tons/year from the biomass energy boiler). NOx appears to fall just barely under the New Source Review trigger at 235 tons/year.

The application also states that combined HAP emissions of the existing sawmill and the proposed power plant would constitute a HAP major source. OTA contends that the entire aggregate operation should be evaluated as a single HAP major source.

The Lane County airshed is non-attainment for particulate matter has historically exposed residents problematic, excessive levels of this pollutant. The combined emissions of PM would be almost 54 tons/year, approximately double the proposed plant site emission amounts of the proposed cogeneration plant alone. This is significant because of the undisputable medical data drawing a direct causal relationship between PM exposure and poor lung development in children and pre-mature mortality.

PSD and NSR analyses are especially critical for this permit application because of the public health impacts of CO and NOx (see Section 4 on public health impacts) as well as the ability of these combined pollutants to contribute to the formation of Ozone, acid smog, acid rain and fog. All of these pollutants may pose a larger problem because of the Southern Willamette Valley's weather patterns, wind directions and tendency for winter inversions. The application needs to

show that the total emissions for the co-owned facility will not lead to a violation of air quality standards, degrade current air quality, or impact visibility in any of Oregon's Class I Areas.

RECOMMENDATION: LRAPA shall require Seneca to operate its sawmill and biomass cogeneration plant under one permit and aggregate CO, NO_x, PM and HAP emissions.

Section 3

ASH WASTE

Biomass burning to generate renewable electricity also generates toxic ash, and leads to problems of soil and water pollution because the applicant states that the ash will be used directly in local landscaping, agricultural and forestry applications. Per the Seneca application, the waste ash will contain manganese, chloride, sodium, barium, sulfur and mercury. These are contaminants that result in human exposures through contact with soil, water, edible produce grown in those soils or possibly air transport. The construction permit must include requirements for testing the ash for concentration of contaminants and labeling the product as such so that homeowners, landscapers, farmers and private timber owners are not unknowingly purchasing a contaminated and unlabeled product.

Due to the disproportionate impacts on neighborhoods that are downwind of the plant, and the fact that the region under LRAPA's jurisdiction is in non-attainment for PM, OTA requests that the excess pollution generated during the ten allowed startups and shutdowns be included in the calculation of number of pollutant tons per year covered by the permit. Pollution is particularly excessive during unplanned event and startup and shutdown events. The public must be protected during accidents, malfunctions, startups and shutdowns.

As clarified in "State Implementation Plans: Policy Regarding Excess Emissions During Malfunctions, Startup, and Shutdown," authored by EPA Administrator Steve Herman and dated 9/11/1999:

"In general, startup and shutdown of process equipment are part of the normal operation of a source and should be accounted for in the planning, design, and implementation of operating procedures for the process and control equipment. Accordingly, it is reasonable to expect, that careful and prudent planning, and design will eliminate violations of emission limitations during such periods." (page 8)

LRAPA must require a full emergency plan including how the public will be notified in the event of an ammonia or urea release, or excess pollution release. The draft permit must require Seneca to describe how employees, nearby residences, businesses or transportation routes will be evacuated or otherwise protected in the case of an emergency or malfunction.

RECOMMENDATION #1: LRAPA shall require that the excess pollution generated during the all startups and shutdowns be included in the calculation of number of pollutant tons per year covered by the permit.

RECOMMENDATION #2: LRAPA must require Seneca to file a full emergency plan including how the public will be notified in the event of an ammonia or urea release, or excess pollution release.

Section 4

Public Health Impacts

Statements have been made that the proposed power plant will generate energy and provide economic benefits. However, the bottom line is that this project will emit a large amount of pollutants that are known to cause human and environmental harm. Oregon Toxics Alliance urges LRAPA to make public and environmental health its highest priority when regulating the air emissions from the proposed power plant.

According to LRAPA's website and documents, the protection of human health and the environment is a primary goal.

“Protecting public health, community well-being, and the environment as a leader and advocate for the improvement and maintenance of air quality in Lane County, Oregon.”

Furthermore, LRAPA policy specifically states that they shall regulate polluters so that . . . “The permittee shall not discharge from any source whatsoever such quantities of air contamination which cause injury, detriment, public nuisance or annoyance to any persons or to the public or which cause injury or damage to business or property, such determination to be made by LRAPA. [LRAPA 32-090(1)]”

LRAPA is accountable to the public and thus, must act to protect the public from resulting health impacts from exposure to criteria air pollutants and air toxics from the proposed Seneca Biomass plant.

According to the draft version of Air Contaminant Discharge Permit (ACDP), Seneca's proposed cogeneration power plant will be allowed to emit 498 tons of Title V Criteria pollutants and Hazardous Air Pollutants (HAPs) per year. Credible sources such as the Environmental Protection Agency, the Department of Health and Human Services, the American Lung Association and the American Medical Association, have determined that these pollutants are known or suspected to cause cancer, increase respiratory illness, aggravate heart disease, and increase premature mortality rates.

A common belief is that the proposed plant is beneficial to the environment, because it will emit less pollutants than fossil fuel based power plants. That belief is not necessarily true. We draw the comparison to illustrate that the pollution from the proposed Seneca biomass plant is massive compared to other methods of producing energy. A natural gas plant with the same capacity (18.8 MW) would produce significantly less emissions. Furthermore, in addition to emitting more pollutants, only 5 – 25% of the energy in wood is converted to electricity compared to 60% from natural gas; in other words, more wood has to be burned to produce a similar amount of energy. This negates much of the perceived positive benefit from using wood biomass to produce electricity.

	Natural Gas Emissions			Natural Gas	Seneca Biomass PSEL
Pollutant	EPA Factor for Natural Gas Combustion (lb/10x6 scf)	lb/MMBtu	lb/year	ton/year	ton/year
CO	84	0.082352941	254514.0706	127.25	202
Nox	76	0.074509804	230274.6353	115.13	187
Lead	0.0005	4.90196E-07	1.514964706	0.00075	0.005
SO2	0.6	0.000588235	1817.957647	0.91	39
PM	7.6	0.00745098	23027.46353	11.51	14
VOC	5.5	0.005392157	16664.61176	8.33	39
Benzene	2.10E-03	2.05882E-06	6.362851765	0.003	0.185
Formaldehyde	7.50E-02	7.35294E-05	227.2447059	0.113	1.7

Air Pollution

The proposed power plant will be one of the single largest sources of air pollutants in Eugene and Lane County.

Air pollution facts:*

- As proposed, the power plant would be the 2nd largest emitter of NOx and the 3rd highest emitter of CO in Eugene
- The plant would be the 4th largest emitter of NOx and the 7th largest emitter of CO in Lane County.
- The power plant would be Eugene's single largest emitter of styrene (a carcinogen), acetaldehyde (a carcinogen), hydrogen chloride (causes respiratory illnesses), and naphthalene (a carcinogen). Furthermore, all of the existing sources of these four toxics are located in one neighborhood - West Eugene.
- At 1.7 tons, the proposed plant will be Eugene's 3rd largest emitter of formaldehyde (a carcinogen). All 9 existing sources of formaldehyde are located in West Eugene.
- At 1.4 tons, Seneca will be the 4th largest emitter of toluene (a carcinogen). 19 of the 21 existing Eugene's toluene sources are in West Eugene.

* Source: LRAPA Permitted Environmental Site Limits and Eugene Toxics Right to Know Database 2007

As conveyed below, the amount of air pollutants emitted by this project could be further reduced with existing technology.

Nitrogen Oxides (NO_x) – 187 tons per year

- As proposed, the power plant would be the 2nd largest emitter of NO_x in Eugene and the 4th in Lane County.
- According to the EPA, NO_x causes respiratory problems and aggravates heart disease. It can damage lung tissue and cause premature death.
- NO_x is a major component of ground-level ozone, acid rain and fog, and global warming.

Seneca intends to reduce NO_x emissions by 45% with Selective Non-Catalytic Reduction (SNCR), but they could reduce their emissions by 70% or more by using Regenerative Selective Catalytic Reduction (RSCR). This technology is proven and available. It is currently being applied on at least three other biomass boilers. These include:

- 15-MW Whitefield Power & Light, New Hampshire: Boiler uses whole tree chips as fuel and has operated since October 2004.
- 16-MW Bridgewater Power, New Hampshire: Boiler uses whole tree chips as fuel and has operated since October 2007.
- 19.7-MW Concord Steam Corp., New Hampshire: Boiler uses green woodchips, clean wood waste, recycled waste oil and natural gas. NO_x emissions permitted - 86 tons/yr.
- 50-MW Boralex Stratton, Maine: Boiler uses whole tree chips, waste wood, and construction and demolition wood as fuel and has operated since December 2004.

Seneca's Air Discharge Permit mentions RSCR, but dismisses it on the basis that it requires the use of natural gas which defeats the purpose of the project – to reduce fossil fuel dependence. Although the goal of reducing fossil fuel dependence is laudable, the decision to *not* reduce emissions based on that goal seems capricious - especially considering the project will be dependent on fossil fuels in other areas of operation (i.e. transportation for the off-site fuel sources and transporting ash waste). Furthermore, a decision to *not* install RSCR based on extra cost is unacceptable because it allows the facility to externalize their costs onto those exposed residents who already suffer from asthma, respiratory disease, heart disease and other illnesses, or will suffer from these in the future from cumulative effects of increasing air pollution in West Eugene.

Carbon Monoxide (CO) – 202 tons per year

- The power plant would be the 2nd largest emitter of CO in Eugene and the 7th in the County.
- According to the EPA, CO can trigger serious respiratory problems, and even at low levels is a serious threat to people with heart problems.

Seneca proposes to use good combustion practices to minimize CO emissions. The Air Permit considers CO catalyst systems, but because of a conflict with the SNCR system that reduces NO_x, and the resulting high cost to overcome it, Seneca dismisses further pollution control.

According to Babcock Power Inc. - the company that manufactures the RSCR technology - in addition to reducing NO_x, RSCR can be used to reduce CO emission by 50%. This would eliminate the Seneca's stated conflict and likely decrease costs substantially. Furthermore, RSCR may resolve the high CO emissions that result when LRAPA, as required by law, aggregates the current Seneca Sawmill ACDP permit and the proposed biomass permit (CO will be over 250 tons/yr).

Sulfur Dioxide (SO₂) – 39 tons per year

According to the EPA, SO₂ causes respiratory illness and aggravates heart disease. Also SO₂ and NO_x combine to form acid rain, acid fog and acid smog. The plant is to be located very close to the Eugene Airport. Air traffic will be significantly impacted by the formation of fog during inversion episodes, with the Seneca biomass plant contributing to an already problematic situation.

Particulate Matter (PM) – 14 tons per year

Particulates may be defined as solid or liquid matter whose effective diameter is larger than a molecule but smaller than approximately 100 μm. Particulates dispersed in a gaseous medium are collectively termed an aerosol. The terms smoke, fog, haze, and dust are commonly used to describe particular types of aerosols, depending on the size, shape, and characteristic behavior of the dispersed particles. On the other hand, particles on the order of 1 μm or less settle so slowly that, for all practical purposes, they are regarded as permanent suspensions. Despite possible advantages of scientific classification schemes, the use of popular descriptive terms such as smoke, dust, and mist, which are essentially based on the mode of formation, appears to be a satisfactory and convenient method of classification. In addition, this approach is so well established and understood that it undoubtedly would be difficult to change.

Particulate Matter/Adsorption: When ashes are emitted to the air as particulate matter, its properties and effects may be changed. As a porous particle, more of its surface area is exposed to the air. Under these circumstances, the particulate matter tends to adsorb, e.g., combine physically or chemically with other particles or gases in the atmosphere. The resulting combinations are frequently unpredictable. Particles less than 2 or 3 μm in size (about half by weight of the particles suspended in urban air) can convey harmful chemicals such as sulfur dioxide mucosa and desorb them on the nasal mucosa causing many injuries to community health. Another possibility is a desorption on the environment, when the particulate contacts the air moisture. This phenomena frequently results into acid rain.

Thermal Inversion: CO₂, NO_x and other gases can absorb radiant energy and rapidly conduct heat to the surrounding gases of the atmosphere. These are gases that ordinarily would be incapable of absorbing radiant energy by themselves. As a result, the air in contact with these gases can become much warmer resulting on the physical phenomena of the Thermal Inversion. Thermal inversion occurs when a layer of warm air settles over a layer of cooler air that lies near the ground. The warm air holds down the cool air and prevents pollutants from rising and scattering with possible adverse effects on health. The Great Smog, one of the most serious examples of such an inversion, occurred in London in 1952 and was blamed for thousands of deaths.

OTA incorporates by reference all comments from the American Lung Association. According to the American Lung Association in Oregon, the proposed increase in particle pollution is of concern for the following reasons:

Short-term increases (over hours to days) in particle pollution have been linked to:

- death from respiratory and cardiovascular causes, including strokes,
- increased numbers of heart attacks, especially among the elderly and in people with heart conditions;
- inflammation of lung tissue in young, healthy adults;
- increased hospitalization for cardiovascular disease, including strokes;
- hospitalization for asthma among children; and
- aggravated asthma attacks in children.

Year-round exposure to particle pollution has also been linked to:

- increased hospitalization for asthma attacks in children;
- stunted lung function growth in children and teenagers;
- significant damage to the small airways of the lungs;
- increased risk of heart attacks and strokes in older women;
- increased risk of dying from lung cancer; and
- greater risk of death from cardiovascular disease.

Priority Air Pollutants (HAPs 16.92 tons/year) & Volatile Organic Compounds (VOCs – 7.73 tons/year)

According to the US EPA, “toxic air pollutants are of special concern because of the concentration of people close to sources of emissions. The combination of toxic emissions from vehicles, industry and multiple area sources create an unhealthy mix. Toxic air pollutants can cause human health effects ranging from nausea and difficulty in breathing to cancer. Other potential health effects can also include birth defects, serious developmental delays in children, and reduced immunity to disease in adults and children.”

Under Section 112 of the Clean Air Act, the EPA goal (and that of LRAPA, as the designated authority to ensure compliance with the CAA) “is to reduce health risks” and conduct “enhanced monitoring.”

Seneca Biomass would emit at least thirteen of the 33 US EPA Priority Air Toxics for the Integrated Urban Air Toxics Strategy. These 33 air toxics present the greatest threat to public health in the largest number of urban areas. The 13 air toxics emitted by Seneca that fall under this category include:

- Acetaldehyde (Seneca is the #1 highest in West Eugene)
- Acrolein
- Arsenic
- Benzene
- Dioxin
- Formaldehyde (Seneca is the #3 highest in West Eugene)
- Lead
- Manganese
- Polycyclic organic matter (POM) or PAH
- Mercury
- Nickel
- Trichloroethylene
- Xylene

The cumulative impact of these toxics in addition to the existing multiple emission sources in West Eugene must be mitigated for the sake of minority populations and low income populations. The US EPA instructs that these populations in urban areas receive special consideration and concern.

Seneca Biomass will be one of the area’s largest emitters of these hazardous pollutants. Seneca must be required to reduce VOC’s and HAP’s in order to protect public health.

Oregon Toxics Alliance insists that Seneca be required to demonstrate, as part of any granted permit, how they plan to reduce these Priority Air Toxics throughout their period of operation.

Startup and Shutdown Events

Due to the disproportionate impacts on neighborhoods that are downwind of the plant, and the fact that the region under LRAPA’s jurisdiction is in non-attainment for PM, OTA requests that the excess pollution generated during startups and shutdowns be included in the calculation of boiler emissions per year covered by the permit. Pollution is particularly excessive during unplanned events and startup and shutdown events. Thus, startups and shutdowns should be limited, based on the design of the plant. Seneca should not be allowed to conduct startups during weather inversion events.

As clarified in “State Implementation Plans: Policy Regarding Excess Emissions During Malfunctions, Startup, and Shutdown,” authored by EPA Administrator Steve Herman and dated 9/11/1999, startup and shutdown should be considered part of normal operations:

“In general, startup and shutdown of process equipment are part of the normal operation of a source and should be accounted for in the planning, design, and implementation of operating procedures for the process and control equipment. Accordingly, it is reasonable to expect, that careful and prudent planning, and design will eliminate violations of emission limitations during such periods.” (page 8)

The public must be protected during accidents, malfunctions, startups and shutdowns. OTA urges LRAPA to require that startups and shutdowns be monitored with fence-line monitoring equipment, and to require extensive recordkeeping and timely reporting.

LRAPA must require a full emergency plan including how the public will be notified in the event of an ammonia or urea release, or excess pollution release. The draft permit must require Seneca to describe how employees, nearby residences, businesses or transportation routes will be evacuated or otherwise protected in the case of an emergency or malfunction.

Maximum Pollution Controls (RSCR) – the Cost

The RSCR technology will likely cost more than what Seneca already proposes, but the fact that it can be used to reduce both NO_x and CO emissions should merit reconsideration. Furthermore, if Seneca does not use more advanced technology, the costs will be absorbed by the public through health issues and further environmental degradation. Additionally, RSCR should be required in a New Source Review as required under federal law for aggregate sources that, when combined, emit more than 250 tons/year of any one pollutant. Seneca will pollute more than 250 tons of CO.

Oregon Toxics Alliances urges LRAPA to ensure that the health of the public and the environment are impacted as little as possible by this project – by requiring Maximum Control Technology and not allowing Seneca to foist the costs of pollution onto the public. The most effective available technology for control of CO emissions is Regenerative Selective Catalytic Reduction. We contend that this technology should be a required condition for the permit.

Several considerations have to be taken into account in any meaningful economic analysis of a pollution prevention effort. What follows is a summary listing of these considerations:

1. Decreased long-term liabilities
2. Regulatory compliance
3. Regulatory recordkeeping
4. Dealings with the EPA
5. Elimination or reduction of fines and penalties
6. Potential tax benefits

7. Improved public image
8. Improved mental and physical well-being of employees and nearby/downwind public
9. Avoidance of rising costs of waste treatment and/or disposal
10. Reduced negative environmental influences by reducing contributions to air pollution, air toxics and greenhouse gases.
11. Building a plant that will comply with future, tighter air regulations, and not building a plant that barely complies with current regulations. AThe US EPA will be lowering certain emission limits based on new data about the health and climate effects of ozone, NOx, CO, PM, and air toxics – this is a “given” and not a supposition. We must plan for the future.

MONITORING

The permit does not contain sufficient monitoring to ensure continuous compliance with all applicable contaminant discharge requirements. Specifically, the permit does not contain adequate provisions to ensure that the fuel used during routine operations will be the same fuel used during stack emissions compliance tests. OTA has consulted with a wood fuels specialist and we understand that the type and quality of fuel source (moisture level, wood condition, wood species, etc.) can make a significant difference in pollution emissions.

To ensure continuous compliance with the emissions limits, LRAPA’s permit must require the installation and operation of continuous emissions monitoring equipment on the boiler stacks. Or, alternatively, LRAPA should require continuous monitoring and recording of all relevant fuel parameters such as fuel size, fuel moisture content, and fuel type (source material) to ensure emissions do not exceed permit limits. The public must have proof that fuel burned during routine operations is the same fuel that is burned during all source emissions testing. If Seneca is unable to ensure that fuel used during normal operation is identical to that used during testing (for purposes of determining continuous emissions), then continuous emissions monitoring equipment must be required.

Recommendation #1: OTA requests that LRAPA conduct a full BACT vs MACT Determination analysis for all criteria pollutants as well as HAPs using federal policy and science. In this analysis, LRAPA must consider other impacts such as public health, visibility, weather inversions and ozone formation.

Recommendation #2: Oregon Toxics Alliance urges LRAPA to require Seneca to use RSCR technology to control NOx and CO emissions from the cogeneration plant. RSCR will also serve to reduce greenhouse gas emissions.

Recommendation #3: Oregon Toxics Alliance urges LRAPA to require that pollution from startup and shutdown be included in emission totals, and accounted for in the air pollution permit. PM pollution from Startup and Shutdown should be monitored using “fence-line monitors.” LRAPA shall determine if this amount of pollution poses additional public health risks, and how Seneca will mitigate the impacts.

Recommendation #4: Oregon Toxics Alliance urges LRAPA to require Seneca to install continuous emissions monitoring equipment for as many pollutants as possible.

Recommendation #5: LRAPA must require continuous monitoring and recording of all relevant fuel parameters.

Recommendation #6: Oregon Toxics Alliance urges LRAPA to require Seneca to file a Toxics Emission Reduction plan every two years and document how they will reduce the criteria air pollutants and US EPA Priority Air Toxics emitted into the public’s airshed.

Recommendation #7: Oregon Toxics Alliance urges LRAPA to ensure daily, year-round ambient air monitoring for all criteria air pollutants and air toxics discharged from the Seneca biomass plant.

SECTION 5

Contributions to Greenhouse Gas Formation

The Alliance raises objections to the construction of the Seneca Biomass Co-generation plant Biomass because it adds additional greenhouse gases to the atmosphere and does not reduce the local contribution to climate change. The City of Eugene has pledged to lower its contribution to greenhouse gases through internal and external actions. Industries located within city limits are similarly responsible for reducing their contributions to greenhouse gases

Many pollutants emitted by the Seneca Biomass plant will combine to form greenhouse gases. According to standard formulas that calculate CO₂ from criteria air pollutant emissions, the Seneca plant will emit over 212,000 tons of CO₂ each year.ⁱ According to the US EPA, "After a thorough scientific review ordered in 2007 by the U.S. Supreme Court, the Environmental Protection Agency issued a proposed finding ... that carbon dioxide and greenhouse gases contribute to air pollution, that may endanger public health or welfare." The finding noted that low-income residents face a disproportionate burden from the potential impacts of climate change. The significant health effects from CO₂ that must be accounted for in the LRAPA permit.

Similar to energy production using fossil fuels, per megawatt, woody biomass burning emits 1.5 times the carbon dioxide (CO₂), 1.5 times the carbon monoxide (CO, a toxic air pollutant), burdensome levels of nitrogen oxides (NO_x, a toxic air pollutant and greenhouse gas), significant amounts of volatile organic compounds and hazardous air pollutants (harming the populace downwind from exposure to nerve toxins and carcinogens) and particulate matter. The emissions of NO_x and CO and certain VOC's contribute greenhouse gases to the atmosphere in the critical near-term period that will not be reabsorbed for hundreds to thousands of years.

It is unjust that Seneca Sawmill will build this energy facility using tax-payer financed subsidies and will profit from energy generation while concentrating the negative impacts of air pollution and global warming on West Eugene communities. OTA contends that this plant is not carbon neutral because it will emit 212,000 tons of carbon dioxide (CO₂) to the atmosphere on a yearly basis.

These emissions can be regulated under the Clean Air Act. In fact, the Oregon DEQ will require that Title V sources report their 2009 CO₂ emissions to DEQ in March of 2010. The sources will report all their GHG emissions including NO₂ and methane and convert them to CO₂(e). The Seneca plant, if permitted, will be operational in 2010.

Thus, in anticipation of this reporting requirement (compliance will also be required of Seneca), LRAPA must require that the Seneca biomass facility quantify and report all greenhouse gas emissions (including N₂O, NO₂ and methane) from its operations and associated activities such as trucking and hauling. Furthermore, it should be necessary to report CO₂ emission data from all startup and shutdown events, as well as malfunctions.

OTA submits our report on *Chemical Relationships between Greenhouse Gases and Air Pollutants in Biomass Energy Production* as our factual testimony. **See Exhibit 1.**

Recommendation #1: Oregon Toxics Alliance urges LRAPA to require Seneca to use RSCR technology to control NO_x and CO emissions from the

cogeneration plant. RSCR will also serve to reduce greenhouse gas emissions.

Recommendation #2: LRAPA should stipulate that all direct and indirect contributions to greenhouse gases will be reported to the public.

Recommendation #3: The permit should require Seneca to use only sawmill waste in order to diminish additional contributions to greenhouse gases caused by logging operations or using “virgin” trees.

Section 6

Environmental Justice

Section 1-101 of Executive Order (EO)12898 issued in 1994 calls on EPA (and all Federal agencies, and in this case, LRAPA) to make environmental justice part of its mission by identifying and addressing disproportionate and adverse human health or environmental effects on low-income and minority populations (EPA-452/R-01-001, January 2001, page 48).

The Environmental Protection Agency Office of Environmental Justice defines environmental justice as:

"The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including racial, ethnic, or socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies."

The US EPA has recognized that "The cumulative impact of multiple emission sources on minority populations and low income populations in urban areas is of special concern" (EPA Publication: "Air Toxic Emissions in the City," page 4). Furthermore, the EPA urges the problem of uneven exposure to be addressed in the permitting process.

Thus, LRAPA is required under the provisions of Clean Air Act Section 309, to fully comply with the spirit and intent of EO 12898 and assure that environmental justice goals are met. Furthermore, the EPA does require that permitting authorities consider environmental justice issues in permitting actions. In *CLEANCOALITION v. TXU Power* the court found that the EPA, in order to ensure an adequate and meaningful opportunity for public review and comment on all issues within the scope of the permitting decision, must including environmental justice concerns and alternatives to the proposed source.ⁱⁱ

The residents of West Eugene, in particular Bethel-Danebo, Trainsong, River Road and Santa Clara have appealed to LRAPA many times in the past to express their concerns about unhealthy air pollution due to industrial sources, rail yard activities and truck traffic. The Seneca biomass energy plant will increase or exacerbate existing toxic emissions loadings in these neighborhoods. Their prior complaints must be taken into account in the Seneca permitting process because "[S]ome communities are considered communities of concern, because they have historically experienced higher emission levels than other communities in the same locale. These higher emissions often result in less healthy air quality" (EPA-452/R-01-001, January 2001, page 48).

In an effort to ascertain the stance of West Eugene residents with regard to Seneca's proposed biomass cogeneration facility, door to door canvassing was conducted on six separate occasions between the dates of July 28, 2009 and August 12, 2009 in the Bethel Danebo, Trainsong, Santa Clara and Empire Park neighborhoods. These are neighborhoods that are adjacent to or proximal within a 2 mile radius south or southeast of the proposed Seneca facility. According to data and projections published in the *2005 Eugene/Springfield Consolidated Plan*, these neighborhoods report higher percentages of minority, elderly, disabled and poverty level residents than elsewhere in Eugene. Figures specific to the area include a minority demographic of as much as thirty eight percent compared to the statistic of fourteen percent for the total population; and a poverty level demographic of twenty six percent as compared with the statistic of seventeen percent for the total population. Oregon Toxics Alliance (OTA) is aware of conflicting data mapped by Lane Council of Governments (LCOG) and provided by Lane Regional Air Protection Agency (LRAPA) Executive Director Merlyn Hough on poverty, minority concentration and disability distribution. OTA challenges this data and requests the opportunity to demonstrate the inaccuracies of said maps to the permitting authority.

When asked, it was found that roughly sixty percent (60%) of residents were completely unaware of any plans to construct a cogeneration facility. Upon being presented with the Seneca draft permit and the data therein as published by LRAPA, roughly seventy six percent (76%) of West Eugene residents expressed serious concerns as to the negative affect this facility would have on their health.

Out of approximately 130 residents who were given the opportunity, 102 residents endorsed a statement calling on LRAPA to safeguard the air quality of these impacted neighborhoods by:

1. amending the Seneca permit so that it requires the absolute maximum pollution control technology;
2. amending the permit so that it requires Seneca to report *all* emissions, not simply the Title V category emissions;
3. encouraging Seneca to cooperate with other industrial emissions sources in West Eugene to fund an air toxics monitoring system.

On the basis of strong feelings that their interests and their health were not being properly considered by LRAPA during this permit process, many residents felt the need to augment this endorsed statement with express written testimony, examples of which are included in this packet.

It is conclusive upon speaking with families in these impacted neighborhoods that the general sentiment is *not* in favor of anything that will increase the already disproportionate burden of industrial air pollution borne by those who live there.

See Exhibit 2: OTA PowerPoint on Environmental Justice Impacts

See Exhibit 3a: OTA request to the US EPA Region 10 for stakeholder process (ADR)

See Exhibit 3b: American Lung Association of Oregon request to the US EPA Region 10 for stakeholder process (ADR)

See Exhibit 4: Petition to LRAPA from West Eugene residents

See Exhibit 5: Examples of written testimony from West Eugene residents

Recommendation #1: Address Environmental Justice issues by fully involving the public and residents of affected neighborhoods in a stakeholder process to discuss and find resolution(s) for adverse public health impacts.

Recommendation #2: LRAPA should engage Seneca and other industrial sources to assist with funding a fulltime air toxics monitor in West Eugene to collect data on air pollution exposures for low-income, disabled and minority residents.

Recommendation #3: Mitigate air pollution, protect public health and require all industrial point sources to implement toxic emission reduction strategies.

Recommendation #4: LRAPA should require Seneca to report all emissions from startup and shutdown operations and include these emissions in their total emissions calculations under the construction and Title V permit.

ⁱ From EWEB Staff packet to board (p104), or *Sustainability Assessment of SSE Biomass Cogeneration Plant* (p15):

"While the boiler would release an estimated 3,000 pounds of carbon dioxide (CO₂) per MWh.... "The estimated annual carbon dioxide emissions from the boiler were calculated using the carbon dioxide emissions factor from the NREL study, *The Value of the Benefits of U.S. Biomass Power*, and assuming 132,000 bone dry tons of throughput and 156,000 MWh of output per year.

These numbers give us: 3000 lb/MWh x 156000 MWh/year = 468000000 lb/year = **212281 metric tons/year**.

ⁱⁱ *CLEANCOALITION v. TXU Power*, 536 F.3D 469, 473 - 5th Cir 2008 Approval and Promulgation of Air Quality Implementation Plans; Commonwealth of Virginia-Prevention of Significant Deterioration Program, 61 Fed.Reg. 1880 (Jan. 24, 1996) (to be codified at 40 C.F.R. pt. 52)

EXHIBITS ACCOMPANYING OREGON TOXICS ALLIANCE TESTIMONY FOR THE
Seneca Sustainable Energy (206470)
Standard Air Contaminant Discharge Permit
(Number 206470)

Exhibit 1: *Chemical Relationships between Greenhouse Gases and Air Pollutants in Biomass Energy Production*

Exhibit 2: *OTA PowerPoint on Environmental Justice Impacts*

Exhibit 3a: *OTA request to the US EPA Region 10 for stakeholder process (ADR)*

Exhibit 3b: *American Lung Association of Oregon request to the US EPA Region 10 for stakeholder process (ADR)*

Exhibit 4: *Petition to LRAPA from West Eugene residents*

Exhibit 5: *Examples of written testimony from West Eugene residents*

What Green Biomass Truly Means: the Seneca Biomass Power Plant and Other Biomass Power Plants Contributions to Greenhouse Gas Formation

By Hannah Satein, for Oregon Toxics Alliance Testimony on
Seneca Sustainable Energy (206470)
Standard Air Contaminant Discharge Permit
(Number 206470)

Many proposals for alternative sources of energy have been put on the table as solutions to the climate change crisis: wind, solar, nuclear, natural gas, geothermal, hydroelectric, and biomass. However, not all of these sources are as clean and renewable as they claim to be; in particular biomass power plants emit an abundance of greenhouse gases that make them a part of the problem and not part of the solution. Indeed “biomass burning may be an important driver for global change in the atmosphere and climate” (Levine). The proposed Seneca biomass power plant will not be a new, green source of energy in Lane County and will instead contribute to climate change while negatively impacting Lane County residents’ health.

The pollutants emitted by biomass power plants that contribute to climate change can be divided into two basic groups: direct greenhouse gases and indirect greenhouse gases. The direct greenhouse gases are carbon dioxide (CO₂), nitrous oxide (N₂O), and methane (CH₄). The indirect greenhouse gases are non-methane volatile organic compounds (NMVOCs), nitrogen oxides (NO_x) comprised of nitrogen monoxide (NO) and nitrogen dioxide (NO₂), sulfur dioxide (SO₂), and carbon monoxide (CO). The direct greenhouse gases serve to increase global warming by absorbing infrared radiation radiated from earth’s surface and lower atmosphere, trapping it, and radiating it back towards the surface of the planet, therefore warming the earth (U.S. Global Change Research Program 14). The indirect greenhouse gases contribute to global warming by producing direct greenhouse gases through reactions with other chemical compounds, through their own chemical transformations, influencing the lifetimes of other greenhouse gases, and affecting the absorptive characteristics of the atmosphere such as by affecting cloud formation (United States Environmental Protection Agency, “Inventory” ES-2).

Carbon Dioxide

The contribution of carbon dioxide, the flagship greenhouse gas and largest source of U.S. greenhouse gas emissions, emitted from biomass power plants to climate change has been overlooked due to an assumption of carbon neutrality (United States Environmental Protection Agency, “Inventory” ES-7). In the natural carbon cycle, carbon dioxide is stored in sinks such as oceans and forests and is released by sources; naturally CO₂ stays roughly balanced between sources and sinks. Humans have altered this equilibrium primarily by burning fossil fuels, however “important contributions [come] from the clearing of forests” and other changes in forestry and land use practices (United States Environmental Protection Agency, “Inventory” ES-7; U.S. Global Change Research Program 9). Supporters of biomass power plants say that the CO₂ released from burning biomass is effectively carbon neutral because it would have been released naturally in the decomposition process, in a routine cycle from a sink to a source.

In fact, biomass power plants can be “either CO₂ neutral, positive or negative” (Azar 49). The incineration of woody debris collected off the forest floor that already is beginning the decomposition process or would have been burned as part of forest management is carbon neutral; although burning debris is effectively carbon neutral, it still releases CO₂ into the air much faster than through natural decomposition. It is assuredly not carbon neutral to log and burn mature, standing trees. The removal of these trees eliminates a carbon sink and upon incineration turns them into a carbon source; even if the trees are immediately replanted there is at a minimum 30 to 60 years, the time required for tree growth, in which more carbon has been released into the atmosphere than was previously being stored.

Logging and incinerating trees amplifies the greenhouse effect: “Forests hundreds of years old can continue to actively absorb carbon, holding great quantities in storage. Resprouting clear-cuts, on the other hand, often emit carbon for years, despite the rapid growth rate of young trees” (Levy 2). Deforestation also leads to soil disruption causing a release of the carbon stored in soils (Booth “Need help with carbon/biomass”). Indeed, 20 percent of human-induced CO₂ emissions over the last several decades are from deforestation and associated agricultural practices (U.S. Global Change Research Program 14). Casting off biomass plants that burn fresh trees as carbon neutral ignores this reality and those with Seneca have not guaranteed they will not use fresh trees. Furthermore, touting biomass power plants as carbon neutral and failing to report the transformation of the logs from sinks to sources violates the Kyoto Protocol’s requirement to report “ ‘net changes in greenhouse gas emissions by sources and removal’s by sinks resulting from direct human-induced land use change and forestry activities’ ” (Johnson 2).

Prior to combustion, the CO₂ contributions from the operations required to run the biomass power plants as well as the forestry practices being used for biomass fuel need to be evaluated: “the carbon impact of bioenergy systems also depends on the input of fossil fuels in the production, transport and conversion of the biomass” (Azar 49). The processes for growing trees used for biomass, such as spraying pesticides and fertilizing the soil, require a huge amount of fossil fuels for their creation and for their distribution and application, which typically requires the use of airplanes, helicopters, or tractors. Harvesting trees requires heavy equipment run on fossil fuels such as bulldozers and saws. Similarly, hauling all the biomass (e.g. slash, tree tops, branches, leaves) from the forests to the plants in inefficient trucks powered by fossil fuels is also a major source of CO₂ (Booth letter); one that is unarguably not carbon neutral. This transport generates more CO₂ than leaving the biomass on the forest floor and finding other ways to meet our energy needs.

Burning biomass reduces our ability to slow climate change through the sequestration of CO₂, and instead accelerates its progress by transforming sinks to sources and speeding up the release of CO₂ from natural sources such as woody debris: “when compared to coal, per megawatt, this [biomass] burning emits 1.5 times the carbon dioxide” (Ayers et al.). Furthermore, the longer we wait to reduce our emissions of CO₂ the smaller the effect our efforts will have (U.S. Global Change Research Program 9). Therefore, we must begin evaluating the true carbon reality of biomass and looking for new ways to meet our energy needs.

Nitrous Oxide

Nitrous oxide is another direct greenhouse gas that is produced from biomass burning (United States Environmental Protection Agency, “Inventory” 1-4); it is produced as a result of the combustion of nitrogen (Levine). While not as well known as carbon dioxide, “N₂O is approximately 300 times more powerful than CO₂ at trapping heat in the atmosphere” because of its long atmospheric lifetime of approximately 120 years (United States Environmental Protection Agency, “Inventory” ES-10; United States Environmental Protection Agency “Nitrous”). Nitrous oxide is also produced through the oxidation of nitrogen monoxide (NO), which is also released from biomass power plants (“NO_x” 15). The concentration of N₂O in our atmosphere has increased by 18% since 1750 and will continue to increase unless we reduce the sources emitting this gas such as biomass power plants (United States Environmental Protection Agency, “Inventory” 1-4).

Methane

Methane is another a direct greenhouse gas that is produced during biomass burning. Methane is produced during the combustion of woody biomass as a result of incomplete combustion of biomass material (Simon; Levine). Methane is always produced from biomass burning because “complete combustion is not achieved under any conditions” (Levine). This gas is “is more than 20 times as effective as CO₂ at trapping heat in the atmosphere” (United States Environmental Protection Agency, “Inventory” ES 9). Furthermore, the more methane there is in the atmosphere, the longer it stays in the atmosphere. This is because the quantity of the hydroxyl radical (OH) that removes methane from the atmosphere is reduced as the concentration of methane increases, lengthening the lifetime of methane (United States Environmental Protection Agency, “Inventory” 1-3). Methane is eventually converted into CO₂ and remains in the atmosphere as a greenhouse gas although in a less potent form (United States Environmental Protection Agency, “Inventory” 1-4). Reducing our emissions of methane would lead to a reduction in global warming “within weeks to decades” and it is crucial that we do not support another source of this potent greenhouse gas (U.S. Global Change Research Program 9).

Global Warming Potentials: Direct Greenhouse Gases

The Intergovernmental Panel on Climate Change (IPCC) created the concept Global Warming Potential (GWP) to compare the ability of different greenhouse gases to trap heat (United States Environmental Protection Agency, “Inventory” ES-2). CO₂ is used as the base gas, which the other greenhouse gases are compared to; therefore the GWP of CO₂ is 1 (ES-3). The GWP of methane is 21 and the GWP of N₂O is 310 (ES-3). Although there is less methane and nitrous oxide than CO₂ being released into the air, they are both much more powerful greenhouse gases than carbon dioxide.

Non-methane Volatile Organic Compounds and Nitrogen Oxides

Non-methane Volatile Organic Compounds (NMVOCs) and nitrogen monoxide and nitrogen dioxide (collectively known as NO_x) released from biomass combustion contribute to global warming by aiding the formation of tropospheric ozone (also known as photochemical smog), which is a greenhouse gas. NMVOCs are also released from the diesel trucks that are used to bring both woody debris and fresh logs to the biomass

plants. When NMVOCs combine with NO_x in the presence of sunlight they form tropospheric (ground-level) ozone. Ozone in the stratosphere (upper atmosphere) is helpful to humans by protecting us from too much ultraviolet radiation, but ozone in the troposphere is a powerfully destructive force: “Tropospheric ozone...is estimated to provide the third largest increase in direct radiative forcing [warming] since the pre-industrial era, behind CO₂ and CH₄” (United States Environmental Protection Agency, “Inventory” 1-4). Although “our potential for control of Tropospheric ozone lies in reducing the levels of atmospheric pollution arising from man-made sources, such as biomass burning, industry and transportation” newly constructed biomass power plants and their fleets of inefficient trucks will only serve to increase the amount of this potent greenhouse gas (Reay). As is, Lane County is precipitously close to exceeding the ambient ozone standards established by the United States Environmental Protection Agency, and the Seneca power plant’s predicted emissions of 7.73 tons per year of NMVOCs and 185.61 tons per year of NO_x will only bring the county closer to this point (Bridgewater Group Inc.).

Not only do NMVOCs and NO_x contribute to climate change, they also cause severe health problems. Some NMVOCs are Hazardous Air Pollutants (HAPs), which are pollutants that are known or suspected carcinogens or pose a serious threat to human health (United States Environmental Protection Agency, “About”). Exposure to NMVOCs can also cause “eye, nose, and throat irritation; headaches, loss of coordination, nausea; damage to liver, kidney, and central nervous system” (United States Environmental Protection Agency, “An”). NO_x reacts with other atmospheric gases such as ammonia and fine particles to form particles of nitric acid, which can deposit themselves in the lower lungs of human beings and animals causing respiratory problems like emphysema and bronchitis and can worsen heart disease (“NO_x” 14; United States Environmental Protection Agency, “Nitrogen Dioxide”). Current scientific evidence has shown even short term exposure, anywhere from 30 minutes to 24 hours, to NO₂ is linked to negative respiratory effects (United States Environmental Protection Agency, “Nitrogen Dioxide”). Furthermore, the end-product of NMVOCs and NO_x, ground-level ozone, “when-inhaled, even at very low concentrations,...can cause acute respiratory problems” (“NO_x” 14).

Carbon Monoxide

Carbon monoxide (CO) is well known as a human health threat and air pollutant. Carbon monoxide reduces oxygen delivery to the organs and tissues such as the brain and heart and at high levels of exposure CO can cause death (United States Environmental Protection Agency “Carbon”). However, there has not been much public discussion of the role CO plays as an indirect greenhouse gas. CO is classified as an indirect greenhouse gas because it does not absorb infrared radiation itself, but contributes to climate change through its interactions with tropospheric ozone, methane, and carbon dioxide.

Carbon monoxide is formed when carbon-containing fuels are incompletely burned and is released during biomass combustion (United States Environmental Protection Agency, “Inventory” 1-5). Carbon monoxide does not aid in the formation of tropospheric ozone or methane, but elevates concentrations of them in the atmosphere through reactions with other atmospheric chemicals such as the hydroxyl radical (OH) that would otherwise be able to help destroy these greenhouse gases (United States

Environmental Protection Agency, “Inventory” 1-5). Eventually CO is oxidized to CO₂ and continues contributing to climate change (United States Environmental Protection Agency, “Inventory” 1-5). Biomass burning “when compared to coal, per megawatt,...emits...1.5 times the carbon monoxide” (Ayers et al.). The proposed Seneca biomass power plant is predicted to release 200.89 tons of CO per year (Bridgewater Group Inc.).

Sulfur Dioxide

Sulfur dioxide, coupled with “elemental carbon emissions,” contributes to the formation of aerosols, which directly and indirectly affect warming and cooling in the earth’s atmosphere. Aerosols are exceptionally small particles or liquid droplets (United States Environmental Protection Agency, “Inventory” 1-5). They directly affect the climate by scattering the sun’s radiation and sending it back to space, and they indirectly affect the climate by increasing clouds’ lifetimes and thickness and decreasing water droplet size, while increasing water droplet concentration in the atmosphere (2-26). Sulfur dioxide produces “sulfate aerosols” and elemental carbon emissions produce “carbonaceous aerosols,” which are both created during biomass combustion (2-26, 1-5). It is believed that the net effect of aerosols is negative radiative forcing i.e. a cooling of the earth’s atmosphere (1-5). However aerosols’ contributions to global warming are difficult to quantify because they “have short atmospheric lifetimes, and have concentrations and compositions that vary regionally, spatially, and temporally” (1-5). Furthermore, aerosols formed from black carbon are believed to have a positive radiative forcing effect (1-5). Therefore the contribution of aerosols to global climate change is not definitive and “comparatively,...the level of scientific understanding of aerosols is still very low” (1-2). Therefore, preventative efforts should be taken to reduce the emissions of both sulfur dioxide and carbon.

Beyond sulfur dioxide’s environmental impact, this gas also is detrimental to human health. Long term exposure to sulfur dioxide in both its gaseous and particulate forms can cause breathing difficulties, respiratory illness, and aggravate existing heart disease. Sulfate particles can build up in the lungs and can cause premature death. Lastly, sulfate particles can impair visibility, reducing quality of life and posing a potential safety threat (United States Environmental Protection Agency “Sulfur”). The Seneca power plant will release 38.64 tons per year of sulfur dioxide (Bridgewater Group Inc.).

Global Warming Potentials: Indirect Greenhouse Gases

There is no agreed-upon method for which to determine the exact contribution of these indirect greenhouse gases (NMVOCs, NO_x, CO, SO₂) to global warming. This is due to the short lifetime of these gases in the atmosphere, their spatial variability, or their indirect effects that are hard to quantify. Therefore there is not a precise global warming potential for NMVOCs, NO_x, CO, and SO₂.

Wind and Solar Power

Biomass supporters also suggest that while biomass energy may have its flaws so do other renewable sources of energy such as wind and solar: mainly their required input of fossil fuels and their use of nonrenewable materials for their manufacturing. There is

some merit to this claim. These energy sources do require an input of fossil fuels, as well as other nonrenewable materials, for their production and transport, but they do not emit any other pollutants during their lifetime as energy producers (Good Company 9). Biomass on the other hand, also requires fossil fuels for both its production and transport and emits the above cornucopia of greenhouse gases during its lifetime. While wind and solar may also use nonrenewable, energy intensive materials for their production, such as silicon for solar energy and aluminum and steel for wind, there is a high chance that if the production of these energy sources is allowed to be scaled up, technology will advance and a new, more efficient manufacturing process will be discovered. In order for this to happen we must move away from the easy and convenient solutions such as biomass production and put society's resources towards these new energy sources.

Conclusion

Together these direct and indirect greenhouse gases work to increase global climate change, and it is crucial that we look for energy solutions that do not further increase their presence in the atmosphere. Putting a positive spin on biomass energy deflects attention from the need for our society to reduce our consumption, the waste it produces, and ultimately reduce our impact on the climate system and the earth as a whole. Biomass power plants such as Seneca are an easy answer that allows the same industries to continue to profit, while still releasing a plethora of toxins and pollutants that are harmful to our environment and our health. It is imperative that we act now to reduce our emissions of these greenhouse gases because the faster we act the greater effect our actions will have. Supporting the growth of biomass power plants and Seneca in particular takes us in the wrong direction in the quest for truly green and renewable energy.

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Environmental Justice in West Eugene

**Race, Poverty, Disability and
Exposure to Hazardous Air
Pollutants**

Presented by Oregon Toxics Alliance

(www.oregontoxics.org)

May 12, 2009

What is Environmental Justice?

A definition:

Inequitable environmental burdens borne by groups such as people of color, alter-abled, and economically disadvantaged.

Environmental Regulations and Fairness

- Environmental Justice (EJ) is a state and national priority.
- Governor Kulongoski formed the Oregon Environmental Justice Task Force in 2008.
- The Oregon DEQ and EPA Region 10 have EJ coordinators.

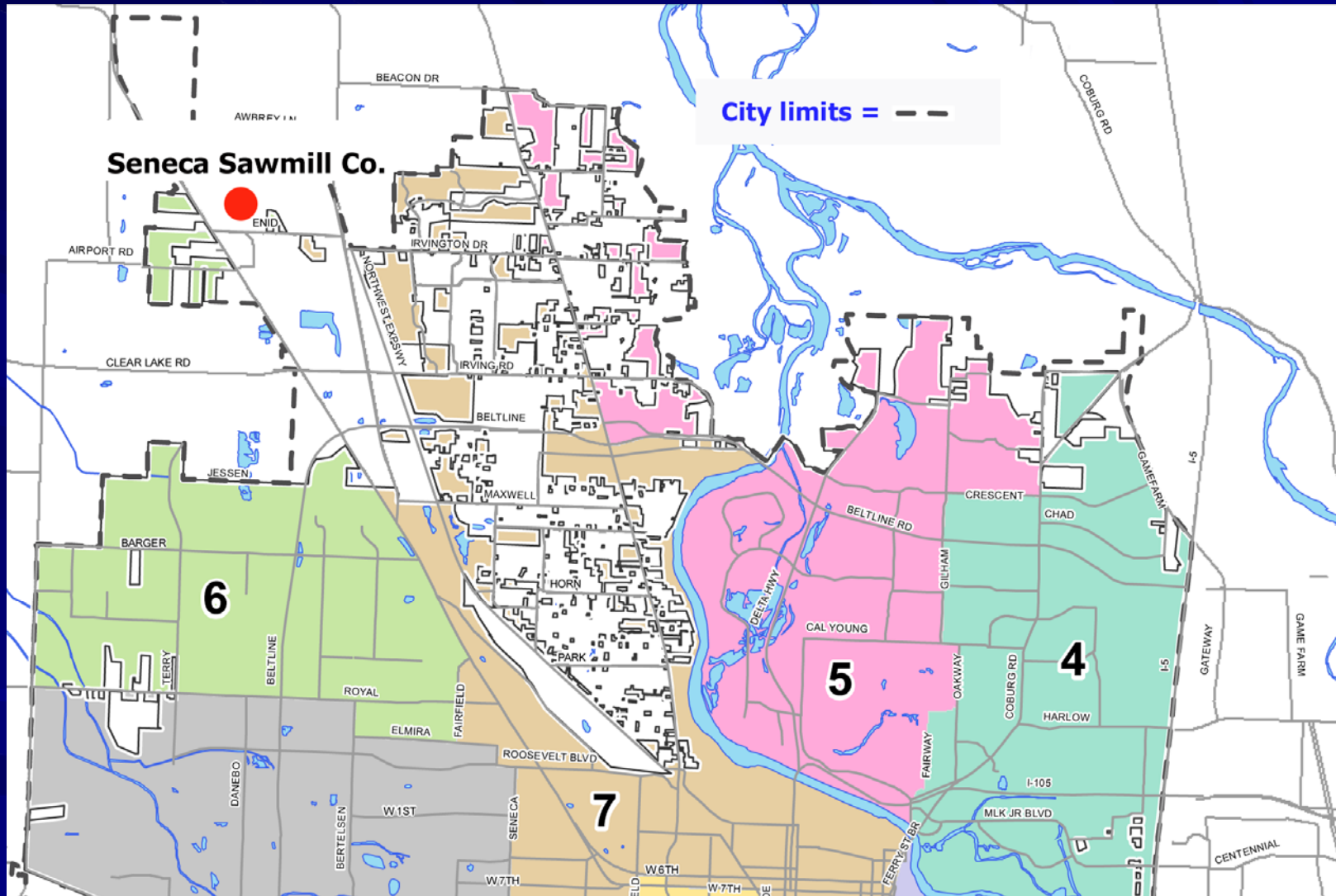
What contributes to Environmental Injustices?

- Disproportionate pollution of land, water, and air;
- Higher rates of disease;
- Inadequate health insurance and far higher rates
- Government policies and actions that fail to identify and address the needs of people with less resources and political access.

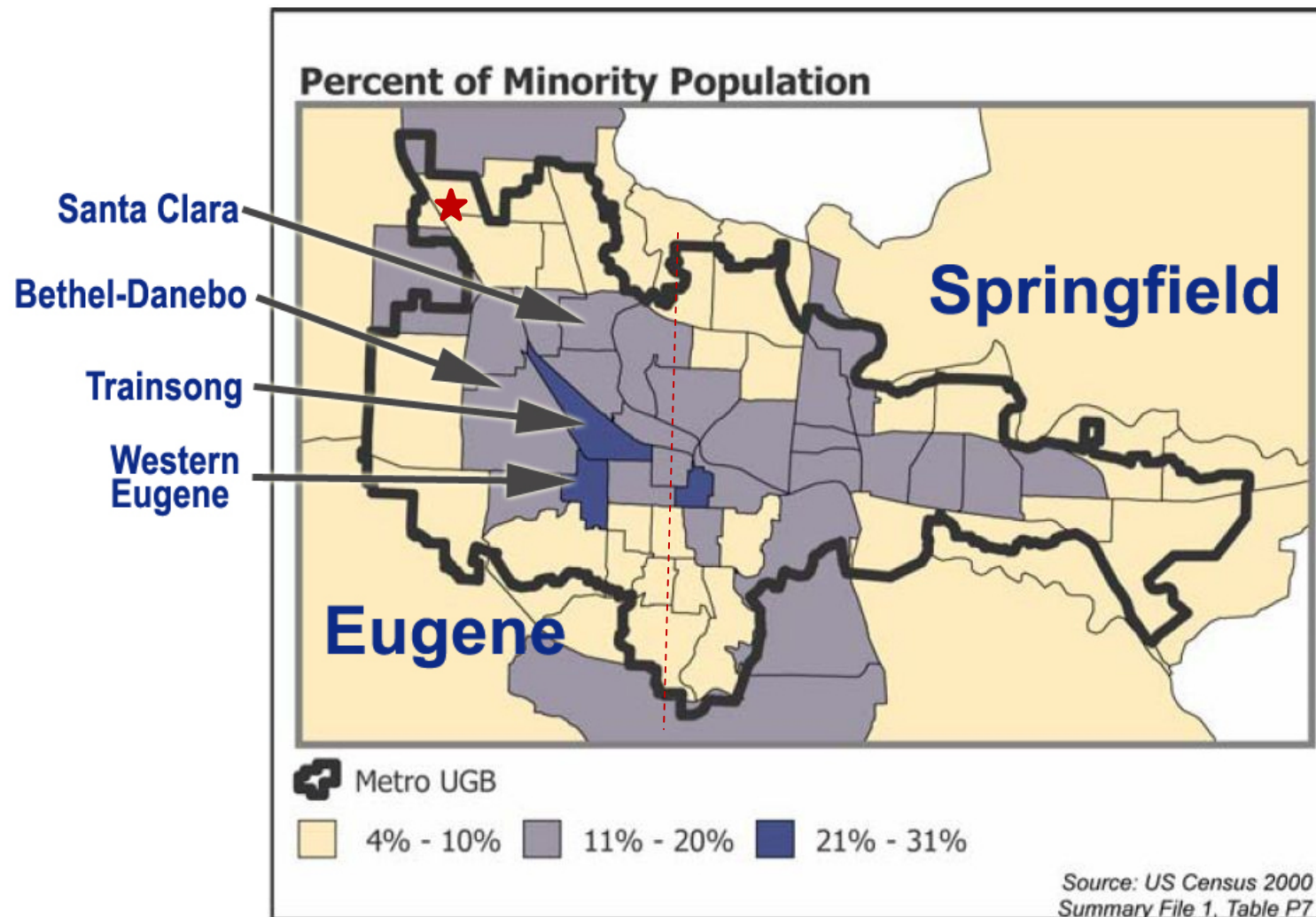
West Eugene

- The residents of West Eugene live in close proximity to a number of heavy industrial sites and Super Fund Sites. Examples:
 - Union Pacific Rail Yard
 - JH Baxter
 - Flakeboard America
 - Veneer Technologies
 - Forrest Paints
 - Forbo Adhesives

Location in West Eugene



Minority Populations in Trainsong, Bethel, Santa Clara



Latino Community Population

The Latino community in 2000 was:

- 5% of Eugene's total population
- 11% - 31% of the target area's population*

Projections for 2009 are:

- 14% of Eugene's total population
- (est.) 20- 38% of the target area's population*

• *target area* is within a 5 miles radius of Seneca

Source: *Eugene/Springfield Consolidated Plan 2005*

Latino Community Poverty

- Eugene's Latino community poverty level in the targeted area* is **26.7%**, compared with 17% of the total Eugene population.

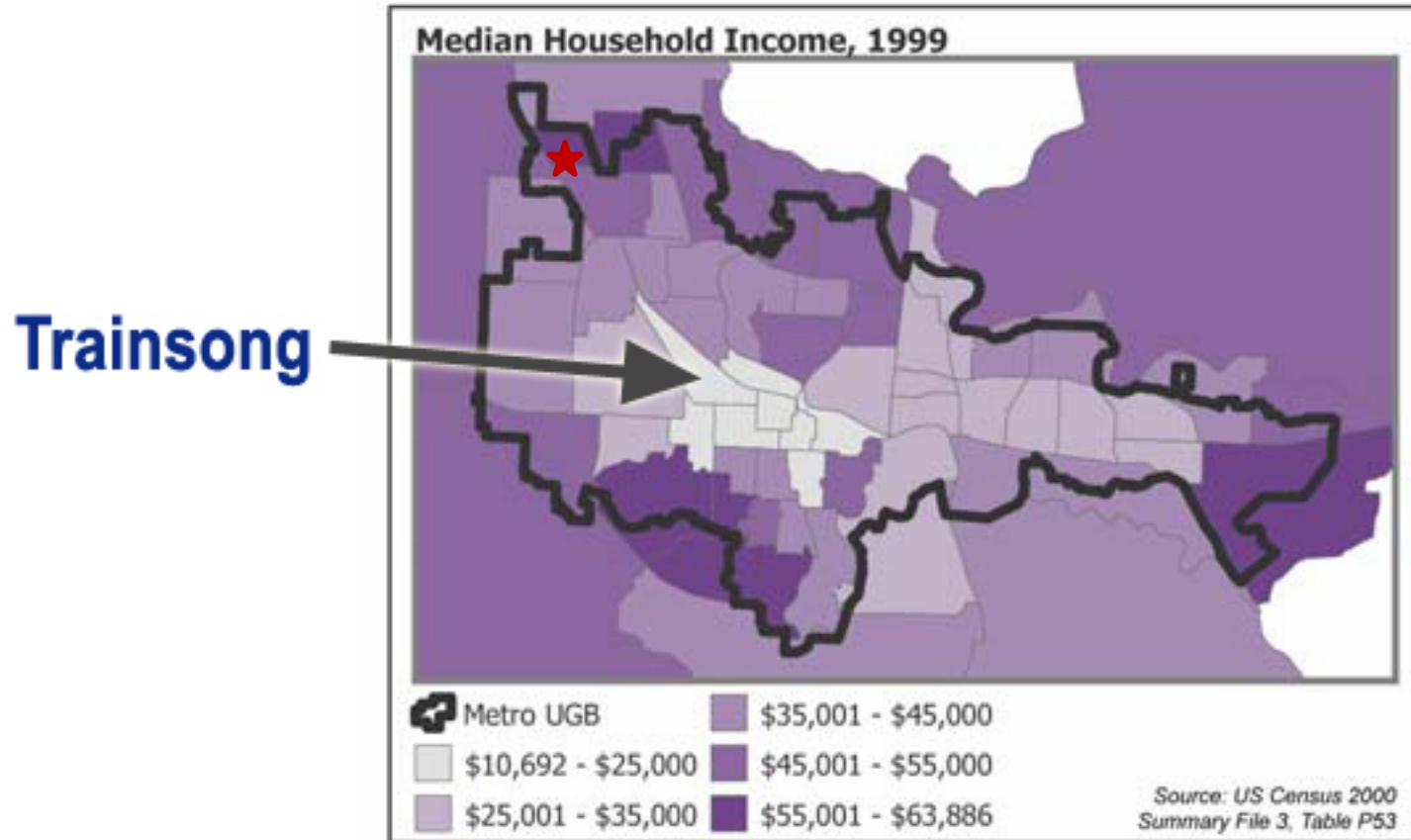
HUD Census 2000 Income Limits

Very Low- \$13,550 Low-Moderate- \$22,550

• *target area* is within a 5 miles radius of Seneca

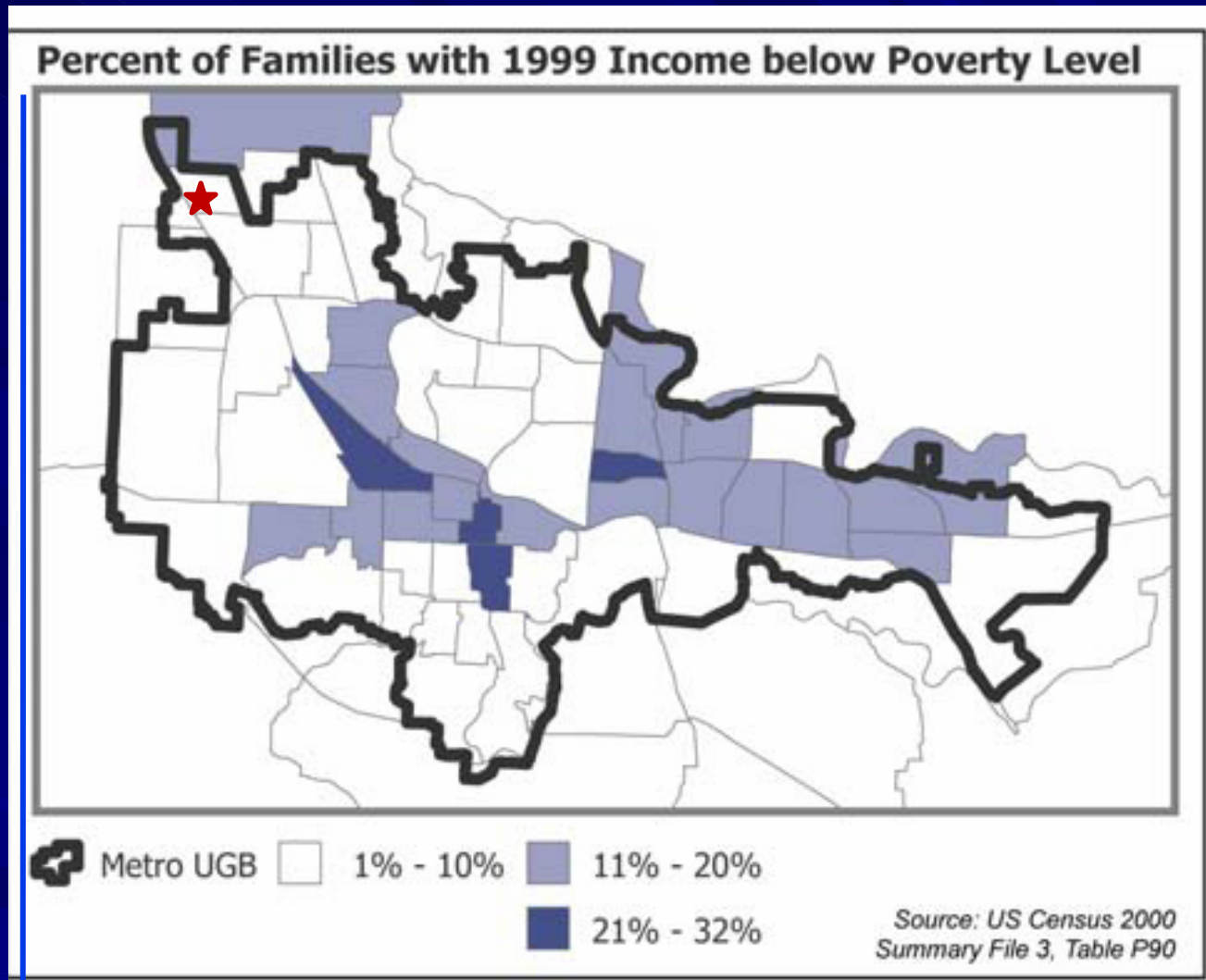
Source: *Eugene/Springfield Consolidated Plan 2005*

Poverty in Eugene - Springfield



Source: *Eugene/Springfield Consolidated Plan 2005*

Concentration of Residents Below \$13,550



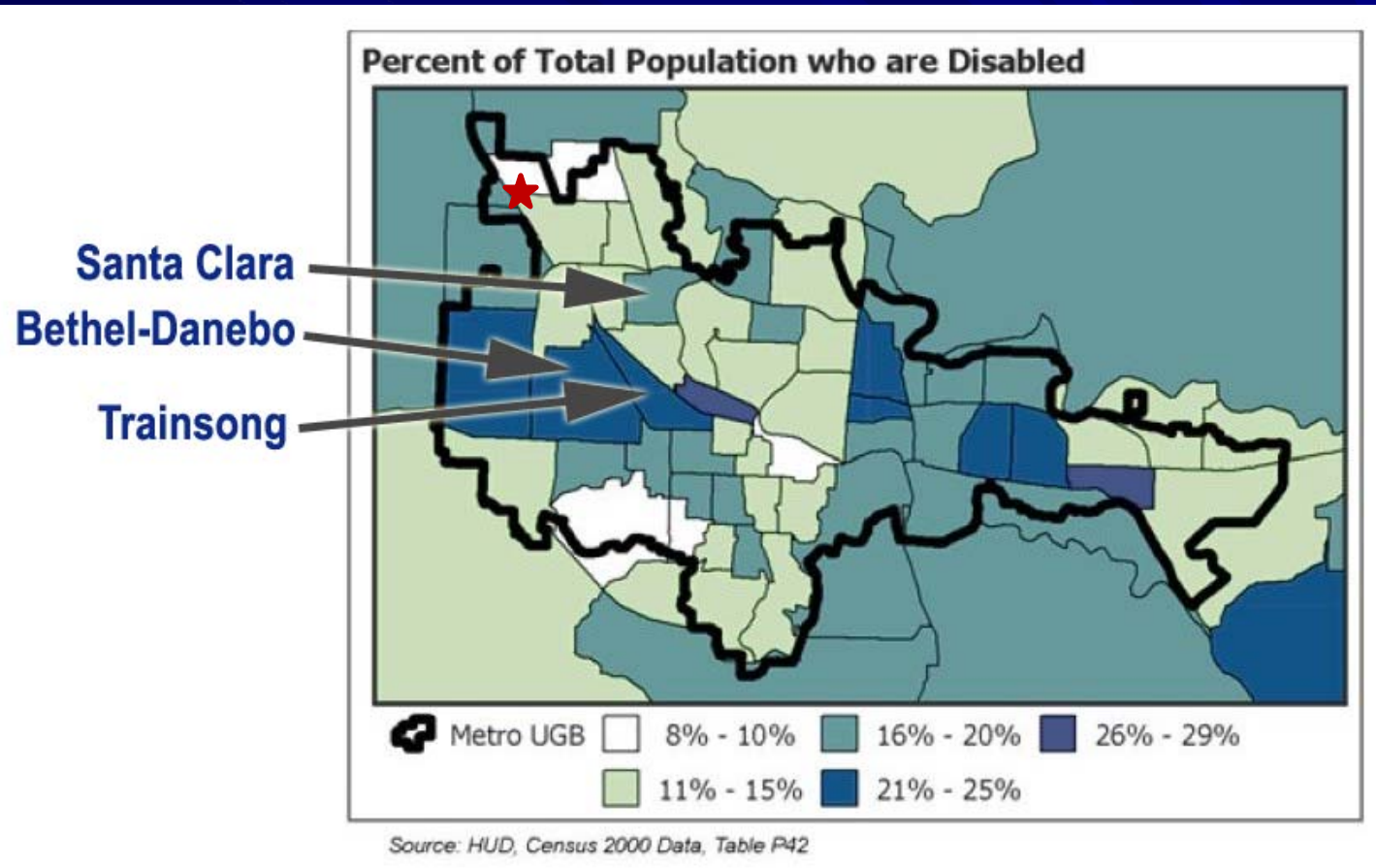
Source: *Eugene/Springfield Consolidated Plan 2005*

Trainsong Statistics

- 36% of the population is at poverty level
- 16% of the population is Hispanic

Source: DHS SHINE Report 2007

Eugene's Disabled Population



Bethel-Danebo, Santa Clara-River Road, Trainsong and Jefferson neighborhoods have higher percentages of disabled people and are adjacent to 17 industrial facilities listed by the EPA as polluters.

Exposure to Air Toxins in West Eugene

There is disproportional exposure for the people living in West Eugene to:

- **Acetaldehyde**
- **Formaldehyde**
- **Toluene**
- **Styrene**
- **Nitrogen Oxide**

Acetaldehyde/ethanol - Tons/year

Eugene 2007 Toxics Database

Proposed Seneca 1.28 = Seneca

- **Forbo Adhesives** 0.001 = West Eugene Source
- **States Industries** 0.417 = West Eugene Source

Acetaldehyde

The Department of Health and Human Services has determined that...

Acetaldehyde can reasonably be considered a carcinogen.

Formaldehyde - Tons/Year



= All West Eugene Locations

- Emerald Forest Products 8.2
- Flakeboard 32.3
- **Proposed Seneca 1.7**
- Veneer Tech 1.26
- States Industries 0.4
- Western Structures 0.05
- Lanz Cabinet 0.008
- Whittier Wood 0.0025
- Forrest Paint 0.0005

Formaldehyde

The Department of Health and Human Services has determined that...

“...it is reasonable to assume formaldehyde causes cancer.”

Toluene - Tons/Year



= West Eugene
Location

- **Forrest Paint 4.034**
- **Bulk Handling Systems 2.708**
- **Proposed Seneca 1.42**
- **King Retail Solutions 1.266**
- **Lanz Cabinets 0.868**
- **Henry Manufacturing 0.2815**
- **Atlas Cylinder 0.2815**
- **Western Pneumatics 0.232**
- **Whittier Wood 0.1845**
- **Griffith Rubber Mills 0.171**
- **Willamette Valley Company #2 0.1105**

Toluene

The Department of Health and Human Services has determined that...

Toluene is a nerve toxin.

Naphthalene - Tons/Year



= West Eugene
Location

- **Proposed Seneca 0.15**

- Newood Display Fixtures 0.03
- Forrest Paint 0.002
- Lanz Cabinets 0.001

Napthlene

The Department of Health and Human Services has determined that...

“...it is reasonable to assume
Napthlene causes cancer.”

Styrene - Tons/Year



= West Eugene
Location

- **Proposed Seneca 2.94**

- **Forrest Paint 0.004**

Styrene

The International Agency for
Research on Cancer (IARC)
has determined that...

“Styrene is a possible human
carcinogen.”

What are the criteria air pollutants?

- Nitrogen Oxide
- Carbon Monoxide
- Sulfur Dioxide
- Particulate Matter
- Volatile Organic Compounds

Putting it in Perspective

If Seneca BioMass is constructed in West Eugene as proposed, the power plant would be:

- 2nd largest point source of NO_x in Eugene...
- 2nd highest point source of CO in Eugene...
- 2nd highest point source of SO_x in Eugene

AND

- 4th largest point source of NO_x in Lane Co.
- 7th largest point source of CO in Lane County.

NO_x – Nitrogen Oxides

- Small particles can penetrate deeply into sensitive lung tissue and cause damage...
- Causes respiratory problems and aggravates heart disease...
- Causes premature death...
- Is a main component of ground-level ozone and contributes to global warming.

CO – Carbon Monoxide

- Is an odorless, toxic gas...
- Causes toxicity of the nervous system and heart...
- Can also have severe effects on the fetus of pregnant women...
- OSHA limits long-term workplace exposure levels.

SO₂ - Sulfur Dioxide

- Associated with increased respiratory symptoms and disease...
- Causes difficulty in breathing...
- Can contribute to premature death.

Particulate Matter

Year-round exposure to particle pollution has also been linked to:

- increased hospitalization for asthma attacks in children;
- stunted lung function growth in children and teenagers;
- significant damage to the small airways of the lungs;
- increased risk of heart attacks and strokes in older women;
- increased risk of dying from lung cancer; and
- greater risk of death from cardiovascular disease.

Data supplied by the Oregon Chapter of
the American Lung Association

Is the Seneca Biomass Plant Really “Green Energy?”

Seneca consultants state that the plant will emit *each and every year*:

212,281 metric tons/year of carbon dioxide, a potent greenhouse gas

Other direct and indirect greenhouse gases that contribute to global warming resulting from the Biomass plant

- Nitrous oxide (N_2O)
 - N_2O is about 310 times more powerful than carbon dioxide as a greenhouse gas
- Methane (CH_4)
- Non-methane-volatile compounds (NMVOC)

These chemicals have long atmospheric lifetimes and heat-trapping effects

Environmental Justice issues under the Clean Air Act

EPA and delegated entities (LRAPA) have
the authority to:

- Examine EJ implications for siting...
- Include additional pollution control in new source permits...
- Require certain production methods...
- Require special allocations such as air monitoring.

Seneca and LRAPA must address EJ issues in West Eugene

- 1. Seneca must operate under one Title V permit**
 - No “cheating” with 2 separate permits for one facility
- 2. Install “Maximum” emission control technology**
 - Accountability – “best” is not sufficient
 - Stack monitoring
- 3. Year-round Ambient Air Toxics Monitoring**
 - What is the cumulative pollution?
 - What are people really breathing?
- 4. Public Health Surveys**
 - Determine what diseases are more prevalent and why

An Environmental Justice Perspective

- Solve issues that aren't normally addressed in the air pollution permitting process;
- Look at environmental pollution through the lens of fairness and human rights;
- Assess the cumulative effects of air pollution on neighborhoods;
- Research how disease and quality of life are linked to pollution exposure.

Running-Grass, Environmental Justice Program Manager
US EPA Region 10
1200 Sixth Avenue. Ste. 900
Seattle, WA 98101

July 3, 2009

Dear Running Grass:

Please allow this letter to serve as a request from Oregon Toxics Alliance to the Environmental Justice Program within EPA Region 10. Oregon Toxics Alliance, on behalf of the residents of Eugene, request assistance to initiate an Alternative Dispute Resolution in the matter of the construction of an 18 MW biomass co-generation plant in West Eugene.

The Air Contaminant Discharge Permit Application submitted by Seneca Sawmill on 1/29/09 states that the plant will emit nearly 500 tons of criteria air pollutants and air toxics per year (based on modeling). These air pollutants will have a disproportional impact on the neighborhoods downwind of the plant. Our research shows that residents of Trainsong, Bethel, West Eugene and Santa Clara have higher rates of poverty, minority populations and disabilities than all other areas of Eugene. Oregon Toxics Alliance, on behalf of our members and residents of the impacted neighborhoods, contends that this matter is an environmental justice problem.

In early June 2009, Oregon Toxics Alliance communicated our concern about environmental justice infringements that may result because of the proposed Seneca Sawmill biomass co-generation facility. We presented these concerns to staff members of EPA, Mayor Piercy of Eugene and Councilwoman Andrea Ortiz, Lane Regional Air Pollution Agency, Lane County Commissioner Rob Handy, consultants and the manager for the Seneca Cogeneration Power Plant and representatives of impacted neighborhoods in West Eugene.

Our concerns include:

- Many of the pollutants emitted by the plant are known to cause cancer, heart disease, and respiratory illness.
- A number of industries in West Eugene already emit many tons hazardous air pollutants (HAP's) that create poor air quality for the residents in that area. However, the Seneca Cogeneration plant would add to the existing pollution by being Eugene's largest source of styrene (a carcinogen), acetaldehyde (a carcinogen), hydrogen chloride (causes respiratory illnesses), and naphthalene (a carcinogen).
- The Seneca Co-generation plant would be Eugene's 3rd largest source of formaldehyde (a carcinogen).
- The Seneca Co-generation plant will be the 4th largest emitter of toluene (a carcinogen).
- The Cogeneration plant will emit 186 tons of NOx per year. The power plant would be the 4th largest emitter of NOx in Lane County and the 2nd largest in Eugene
 - NOx is a main component of ground-level ozone and contributes to global warming.
 - According to the EPA, NOx causes respiratory problems and aggravates heart disease. It can damage lung tissue, and cause premature death.

- The plant will emit 200 tons/year of carbon monoxide (CO), making it the 2nd largest emitter of CO in Eugene.
 - According to the EPA, CO can trigger serious respiratory problems and even at low levels is a serious threat to people with heart problems.
- The Air Contaminant Discharge Permit Application for the Seneca Co-generation plant does not quantify the amount of methane or carbon dioxide (or carbon dioxide equivalents) that the facility will contribute to the local airshed. However, the consultants for Seneca have stated that the facility will contribute 212,000 tons of CO₂ to the atmosphere every year. These greenhouse gases will exacerbate global climate change.

The Seneca Co-generate plant will adversely and disproportionately impact the health, welfare, and quality of life for the residents of West Eugene. The Eugene community has serious concerns related to the exposure to air pollution which include maximum control technology, stack monitoring, ambient air monitoring, emissions reporting, verification of fuel sources, maximum control technology and the plant's contribution to emission of green house gases.

Furthermore, the U.S. Environmental Protection Agency (EPA) has declared heat-trapping greenhouse gas emissions are a threat to public health and welfare, setting the stage for potentially major air protection regulations to address climate change. EPA Administrator Lisa Jackson supports the finding that greenhouse gases endanger public health and welfare. Research supports the contention that people living in poverty will be disproportionately impacted by climate change. Thus, the Eugene community has the right to full disclosure of all greenhouse gas contributions attributable to the proposed facility.

The Mayor of Eugene, Kitty Piercy, has expressed her support for an Alternative Dispute Resolution session or series of meetings. Representatives of nearby neighborhoods are also supportive of the process. Oregon Toxics Alliance has not yet approached the owners or consultants of Seneca Sawmill, pending the response from the EPA.

The Lane Regional Air Protection Agency plans to hold public hearing on the Title V air permit on July 30 and close the public comment period in mid-August. Oregon Toxics Alliance suggests that an Alternative Dispute Resolution take place after the public hearing, but before the close of the public comment period.

We would appreciate your response and an indication of EPA Region 10's willingness to work together with us in the matter of initiating an Alternative Dispute Resolution (ADR). Stakeholders for the ADR process must include the impacted communities, Lane Regional Air Protection Agency, Oregon Toxics Alliance, the City of Eugene, Seneca Sawmill, and the Eugene Water and Electric Board.

Sincerely,

Lisa Arkin, Executive Director
Oregon Toxics Alliance
PO BOX 1106
Eugene, OR 97440

Copies via email to:

Eugene Mayor Kitty Piercy
Lane County Commissioner Chairman Peter Sorenson
Lane County Commissioner Rob Handy
Eugene City Councilor Andrea Ortiz
Merlyn Hough, Director, Lane Regional Air Protection Agency
Suzi Ruhl, US EPA Office of Environmental Justice
Ted Yackulic, US EPA, Attorney
Monica Kirk, US EPA, Special Counsel to the Regional Administrator
Deborah Dalton, US EPA Conflict Prevention and Resolution Center
Gloria Campuzano, Chair, Lane County Health Advisory Committee
Mikell O'Maely, Oregon DEQ, Environmental Justice Coordinator
Jessica Hamilton, Natural Resources Policy Advisor, Office of the Governor of Oregon
Robin Morris Collin, Chair, Oregon Environmental Justice Task Force
Lisa Goldman, Environmental Law Institute

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Portland

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Kamal Gem Shaker, MD
Portland

OHA

Member, Oregon Health Appeal

7420 SW Bridgeport Road
Suite 200
Tigard, OR 97224-7790

(503) 924-4094
1-866-661-5864
1-800-577-LUNG (in Oregon)
FAX: (503) 924-4120
info@lungoregon.org
www.lungoregon.org

**Improving Life, One
Breath at a Time**



July 17, 2009

Running Grass
EPA Region 10

Re: Biomass Development
Eugene, Oregon

Dear Running Grass,

This letter shall serve as a request from The American Lung Association in Oregon to have the EPA facilitate an Alternative Dispute Resolution in the matter of the planned construction of the Seneca Biomass plant in West Eugene.

The Lung Association has a growing concern with regard to the location of the facility and how it will negatively impact the residents of West Eugene. The increase in particle pollution is of particular concern for the following reasons:

The Health Effects of Particle Pollution:

Short-term increases (over hours to days) in particle pollution have been linked to:

death from respiratory and cardiovascular causes, including strokes, increased numbers of heart attacks, especially among the elderly and in people with heart conditions;
inflammation of lung tissue in young, healthy adults;
increased hospitalization for cardiovascular disease, including strokes; hospitalization for asthma among children; and
aggravated asthma attacks in children.

Year-round exposure to particle pollution has also been linked to:

increased hospitalization for asthma attacks in children;
stunted lung function growth in children and teenagers;
significant damage to the small airways of the lungs;
increased risk of heart attacks and strokes in older women;
increased risk of dying from lung cancer; and
greater risk of death from cardiovascular disease.

Who is at risk?

Anyone may be affected by particle pollution, but several groups are most at risk:

children under 18;

adults 65 and older;

anyone with chronic lung disease, such as asthma, chronic bronchitis, or emphysema;

anyone with a cardiovascular disease, such as high blood pressure, coronary artery disease, or congestive heart failure; and

anyone with diabetes.

The Lung Association is also concerned that the proposed facility will discharge significant amounts of nitrogen oxides (185.4 tons/year) and sulfur dioxides (38.6 tons/year). Both air pollutants are a cause of respiratory disease and are known to aggravate heart disease. Research indicates that these air pollutants can lead to premature death.

Additionally our research shows that there is a much greater prevalence of childhood asthma in neighborhoods that have higher rates of poverty and minority populations. These air pollutants will have a disproportional impact on the neighborhoods downwind of the proposed plant and likely increase the impact of decreased school attendance and increased emergency room visits for childhood asthma alone.

The Lane Regional Air Protection Agency plans to hold public hearing on the Title V air permit on July 30 and close the public comment period in mid-August. Oregon Toxics Alliance suggests that an Alternative Dispute Resolution take place after the public hearing, but before the close of the public comment period. The Oregon Chapter of the American Lung Association would be a willing stakeholder in an Alternative Dispute Resolution process.

Sincerely,

A handwritten signature in cursive script that reads "Dana Kaye".

Dana Kaye
Executive Director

