

Blue Ridge Environmental Defense League

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**TO: Vanneriah Hawks, Johnny Dougherty and the
Citizens for a Safe and Healthy Environment**
FROM: Louis Zeller, Science Director
RE: Green Energy Partners
DATE: May 31, 2011

I write to respond to the comments made by various parties about the analysis I produced for members of Citizens for a Safe & Healthy Environment. This response addresses the charge of inaccuracy regarding the amount of fuel to be burned and the question of gasification versus incineration. I would be pleased to provide further analyses if and when it serves the needs of your organization.

First, I believe the judgment of the Dekalb County Commission is in error because air pollution from the Green Energy Partners proposal for the site in Lithonia would certainly increase the level of pollution. As you know, the Commission has stated the following:¹

Based on this submitted information and the industrial character of the surrounding area, it appears that the proposed utility generation facility with recommended conditions would be compatible with adjacent and surrounding properties and would not result in adverse environmental impacts due to air, water, odor, or noise as required by Section 27-873 (B) and (G) of the Zoning Ordinance ((Special Land Use Permit (SLUP) criteria). Therefore, it is the recommendation of the Planning and Sustainability Department that this application be, "Approved" with...conditions.

Even legal increases in the level of air pollution have cumulative negative impacts on public health and the environment. That is largely how we have arrived at the current situation in which the greater Atlanta area is in non-attainment for ozone. It cannot be truly stated, as the Commission has, that "the proposed utility generation facility... would not result in adverse environmental impacts do to air [pollution]."

Second, I will address the comments made by Dr. Karla Drenner and Dr. Robert DeMott regarding my analysis of air pollution. Regarding annual fuel use, Dr. Drenner states:²

The September 19, 2007 Title V permit No. 2273-313-0001-V-02-0 incorporated the results of stack tests submitted to EPD on August 13, 2007 to establish emission factors for the purpose of calculating NO_x and PM₁₀ emissions. The BREDL emissions calculations significantly understate the total potential emissions based on the stack testing results. As shown below, the NO_x emissions alone would be 138 tons per year if only wood flour were used and the gasifier/boiler operated 8760 hours year at the boiler design rate. BREDL also incorrectly states that the Shaw gasifier would use

¹ DEKALB COUNTY ITEM NO. D.5, BOARD OF COMMISSIONERS, ZONING AGENDA / MINUTES May 24, 2011

² An Environmental Assessment of Green Energy Partners, LLC proposed 10MW Biomass Generations Facility, Karla L. Drenner, May 10, 2011, Section 5.0: Findings and Opinions, Page 16

27,780 TPY of wood flour. The correct number is 41,697 TPY or 50 percent higher. GEP proposes to process 63,600 tons per year not the 87,600 TPY BREDL indicates.

The 87,600 TPY figure used in the Blue Ridge Environmental Defense League's analysis is based on a public statement made by Patrick Ejike of the Aku-Bata Group. Ejike said that the Green Energy Partners plant would use 240 tons of wood chips per day.³ The annual figure is the product of daily tonnage times 365 days per year, here 240 times 365 for an annual total of 87,600 tons. Nevertheless, if indeed GEP has reduced its proposed throughput to 63,600 TPY, or approximately 174 tons per day, then 38% less fuel would be used. Based on this smaller fuel use, the air emissions from a GEP plant would be 129% greater than the 117.8 tons per year emitted by the Dalton Plant using wood fuel only, still more than double; in other words, 269.7 tons of pollution.

Curiously, Drenner does not address hazardous air pollutants (HAP) which must be considered apart from the criteria pollutants because HAPs are governed by separate, specific regulations. Hydrochloric acid is a HAP emitted by wood fueled power plants and is listed in the Dalton permit. Again, based on the Georgia EPD permit review cited in our report, 19.9 tons per year of hydrochloric acid could be emitted by a GEP plant using 63,600 tons of wood fuel per year.

Further, regarding the technology proposed by GEP, Drenner states:⁴

7 Gasification involves turning organic fuels (such as biomass resources) into gaseous compounds (producer gas or syngas). The D4 process generates syngas by feeding wood into a devolatilization unit where the temperature is 1100 to 1400 degrees F. The only emissions from this process are from the heating of the devolatilization unit using wither natural gas or syngas, which is similar to natural gas. The BREDL reports involve a burning process verses a heating process.

Our analysis of Green Energy Partners used the Shaw Energy's *gasification* plant in Dalton. The plant was used because Green Energy Partners sponsored a field trip there as part of their promotion to officials in Lithonia. Likewise, Dr. DeMott attempts to draw a distinction between the gasification and incineration. He states:⁵

I understand that the gasification process in the plant proposed by Green Energy Partners generates synthetic natural gas (syngas) by feeding woody biomass – not MSW – into a closed unit that operates at temperatures ranging from 1100 to 1400 degrees Fahrenheit. The high temperature causes the volatile materials contained in the wood to be released as a gas and collected (<http://d4energy.com/en/solutions/fag/>). The D4 gasifier produces gas by using heat without a flame coming into contact with the wood waste. The wood is not burned in a flame (combusted) but just heated, with very little oxygen present, to release the gases. This factor is

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³ "Community Council wants more discussion on plant" *Crossroads News*, http://www.crossroadsnews.com/view/full_story/11477457/article-Community-Council-wants-more-discussion-on-plant-?

⁴ An Environmental Assessment of Green Energy Partners, LLC proposed 10MW Biomass Generations Facility, Karla L. Drenner, May 10, 2011, 5.0 Findings and Opinions, Page 16, Footnote 7

⁵ Letter to Neville Anderson, Green Energy Partners, from Robert P. DeMott, Environ, January 30, 2011, Page 1

Of course the two technologies—incineration and gasification—are not identical. But regarding air pollution, it is a difference without distinction. The website presented for D4 Energy contains little useful information about air pollution. In order to understand how much pollution is emitted by wood fuel in various types of industrial energy production, it is preferable to rely on an information source which is detailed, unbiased and in widespread use. Such an information source would be the *Compilation of Air Pollutant Emission Factors, Fifth Edition*, published by the US Environmental Protection Agency's Technology Transfer Network.

The US EPA Emissions Factors (also known as AP 42) is a database of air pollution emissions emitted from most known industries and mobile sources. It is the basis for the estimation of pollution by permitting agencies in most states, including Georgia. The database allows air permit engineers to predict how much pollution will be emitted from a given source based on the amount of fuel used or product manufactured. The AP-42 is based on actual testing in similar types of units and the results are compiled into the database. For example, it enables one to determine how much of a particular pollutant is released when wood, coal or natural gas fuel is used to produce energy. The list of pollutants is extensive and includes criteria pollutants, hazardous air pollutants and greenhouse gases.

The AP-42 for wood fuel, or residue, includes an overview of the different types of units, such as two-stage gasification and direct combustion:⁶

Various boiler firing configurations are used for burning wood residue. One common type of boiler used in smaller operations is the Dutch oven. This unit is widely used because it can burn fuels with very high moisture content. Fuel is fed into the oven through an opening in the top of a refractory-lined furnace. The fuel accumulates in a cone-shaped pile on a flat or sloping grate. Combustion is accomplished in two stages: (1) drying and gasification, and (2) combustion of gaseous products. The first stage takes place in the primary furnace, which is separated from the secondary furnace chamber by a bridge wall. Combustion is completed in the secondary chamber before gases enter the boiler section. The large mass of refractory helps to stabilize combustion rates but also causes a slow response to fluctuating steam demand.

In another boiler type, the fuel cell oven, fuel is dropped onto suspended fixed grates and is fired in a pile. Unlike the Dutch oven, the refractory-lined fuel cell also uses combustion air preheating and positioning of secondary and tertiary air injection ports to improve boiler efficiency. Because of their overall design and operating similarities, however, fuel cell and Dutch oven boilers have many comparable emission characteristics.

Here in the EPA summary we see that combustion in a two-stage gasification system and

⁶ *Compilation of Air Pollutant Emission Factors*, Fifth Edition, US Environmental Protection Agency, Technology Transfer Network Clearinghouse for Inventories & Emissions Factors, <http://www.epa.gov/ttnchie1/ap42/>

a one-stage incinerator have “comparable emission characteristics.” I would recommend that a thoroughgoing analysis of GEP emissions be done based on the air permit application submitted to Georgia EPD. This would be a sound basis for discussing the potential environmental and public health impacts of the proposed biomass unit.

Finally, one should not overlook the many types of fuel which may be used in the D4 Energy units. The company website lists the following fuels:⁷

The D4 Energy solutions will dispose of carbon-based feedstocks, including:

- Automotive Shredder Residue
- Municipal Solid Waste
- Tire Derived Fuel
- Animal Manures - Rendering plant remains
- Hulls from Nuts - All Types
- Coconut Shells
- Vegetable Seeds (Corn, Rice, etc.)
- Wood Residues (Saw Dust, Bark, etc.)
- Compost
- Papers - All Types
- Plastics
- Spent Activated Carbon (Reclaimed)
- Shredded Carpet
- Treated Wood Waste
- Packing Wastes
- Yard Waste - All Types
- Demolition Debris
- Roofing Materials
- Resins
- Contaminated Soils
- Spent Foundry Sand (Reclaimed)
- Spent Absorbents
- Sewage Grit
- Crop Residues - All Types

The concern here is that if a GEP energy unit were to be constructed, it would be relatively simple for the operator to apply to Georgia EPD to make changes in the types of fuel used.

I hope this response is useful to you. Please feel free to contact me if you have questions.

Sincerely,



Louis Zeller, Science Director

⁷ D4 Energy Group, Washington, DC, website at <http://d4energy.com/>