Green Institute

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Comments on Midtown Eco-Energy Biomass Facility Permit Application

The following comments are in regard to the proposed draft Air Emission Permit No. 05301187-001, to be issued to the Midtown Eco Energy LLC for their proposed wood-burning (biomass) energy facility to be located at 2850 20th Avenue South in Minneapolis, as posted November 16th, 2007 on the Minnesota Pollution Control Agency (MPCA) website: www.pca.state.mn.us/news/data/index.cfm?PN=1

Green Institute is generally supportive of renewable biomass utilization, especially for combined heat and power applications where biomass can be most efficiently used and potentially displace other, more polluting fuels. However, we recognize that there are very limited quantities of biomass fuel available in urban areas, and in our opinion these limited resources should go towards projects that offer the maximum benefit and value. As with all sources of energy, biomass utilization is not without environmental impacts, even though it can result in a net reduction in greenhouse gas emissions. Some combustion technologies and fuel sources have greater impacts than others, so a careful consideration of environmental impacts is warranted. As Green Institute conducted initial feasibility for what is now called the Midtown Eco-Energy project, as well as by virtue of the fact we are located across the street from the proposed facility, we have a special interest in seeing that any facility meet the highest standards of environmental and social responsibility.

We believe there are still several significant issues that the project needs to address. Specifically regarding the permit application our recommendations are that:

- the project should conduct an Environmental Assessment Worksheet (EAW) to describe the project in more detail, clearly identify its environmental and social impacts and benefits, and the method of calculating those impacts and benefits;
- the project needs to better demonstrate a viable strategy to secure sufficient quantities of clean biomass fuels over the life of the project;
- additional sulfur dioxide (SO2) emissions reduction controls should be considered;
- additional mercury emissions reduction controls should be considered; and
- composite woods should be specifically excluded from the permit.

These issues are addressed in more detail below.

Project should conduct an Environmental Assessment Worksheet (EAW) to describe the project in more detail, clearly identify its environmental and social impacts and benefits, and the method of calculating those impacts and benefits

It is our understanding that the project is just under the 25 megawatt (MW) threshold for a mandatory Environmental Assessment Worksheet (EAW), and that the project has not offered to complete one. We strongly recommend completing an EAW. There have reportedly been misunderstandings about what the project is and what it is not. We are not sure that we completely understand all aspects of the project as proposed. The EAW provides an opportunity to identify for all interested the project's environmental impacts and benefits, and clearly lay out the assumptions for calculating those impacts and benefits. The public will then have the opportunity to comment on this document. An advantage of the EAW is that is will enable the formal consideration of issues that are not addressed in the more narrow air permit documents. The EAW process also determines if further environmental review is warranted. Given the dense urban location of the project, there are important issues for nearby residents and others to fully understand, including:

1. The net impact of the project on air emissions. The air permit documents provide for a potential to emit for the project. However, they do not estimate any potential emission reductions for a district heating system. In evaluating whether the project is justified, it is helpful to quantify what reductions will occur due to the district heating system. The air permit document likewise does not provide any benchmarks to understand what the incremental affect of the project will be on regional air quality.

2. The extent to which the full heat value of the wood fuel is utilized. One of the highlighted selling points of the project is that it will utilize the waste heat of electricity generation for a district heating system. Waste wood is a renewable resource in short supply in the Twin Cities area, and should be used to maximum benefit. Thus the extent to which the waste heat is captured for other uses is important, as it provides maximum utilization of a limited resource. Electricity generation alone in a project the size of the Midtown project can be expected to be about 23% efficient,[1] with over 75% of the heating value of the wood being lost. Combined heat and power, using the waste heat from electricity generation, can be over three times as efficient as electricity generation alone (efficiencies of over 80% are possible, typical efficiencies are 60-80%[2]). Yet a small heating load for the Midtown Project would mean total efficiencies would be closer to 23%, resulting in large amounts of heat being wasted. We should be informed of the total expected annual efficiency of the system, including winter and summer months.

3. Impacts from truck traffic. It is our understanding that about 25 trucks/day will haul wood chips to the facility. Understanding the incremental impact of these trucks, including emissions and the route they would take to the plant, is important for employers in our building as well as the local community and is an issue not considered in the permit proceedings.

[1] A heat rate for electricity generation of 15,123 Btu/kWh for a fluidized bed boiler was estimated by Green Institute's engineering team (Black & Veatch, "Phillips Biomass Community Energy Facility, Conceptual Engineering Study, Phase 2," Oct. 2004). This heat rate corresponds to an overall efficiency of 22.5%.

[2] See U.S. Environmental Protection Agency, Combined Heat and Power Partnership: epa.gov/chp/basic/efficiency.html

4. Community benefits of the project. Because the project is located in a low-income community, it is our opinion that the project needs to be particularly sensitive to and provide allowances for considerations of environmental justice. A main concern of environmental justice is that communities that host projects with environmental impacts receive many of the ill affects but few of the benefits of those projects. Thus in our opinion the project should make special concessions to those that live nearest to the project. The project proposers have stated that the project will provide some entry-level jobs which is a good step, but have not stated what guarantees are in place to ensure those jobs go to low-income residents, nor what other benefits would be provided to the community by the project. Green Institute is strongly supportive of community ownership, and this was an important part of our initial project concept. This ensures that not only will the community receive some of the benefit of the project, but they will also exercise some control over the project. This would be particularly important for future decisions that might need to be made about the project; for example, about a permit amendment required down the road. Although community benefits could be provided without having community ownership, it would be helpful to clearly lay out all the benefits the project would provide, and how those benefits would be ensured in the event the current developers sell the project.

5. The environmental impacts of the project's fuel procurement activities. This would include an analysis of where the project will procure their fuel, including demonstration of sufficient available quantities (see below).

6. A broad range of other environmental impacts. The EAW provides 31 questions that must be answered, covering a broad range of environmental impacts. Some of these impacts may not be significant for the project, and the EAW process can help to rule out these issues as insignificant, while focusing on the issues that are significant.

Should the project decide not to voluntarily conduct an EAW, it should be noted that Minnesota Rules chapter 4410.1100 contains a provision to petition the Environmental Quality Board to request an EAW be completed.[3] We believe the public as well as the project will be better served by this additional level of environmental review for the project.

Project needs to clearly demonstrate a viable strategy to secure sufficient quantities of clean biomass feedstocks over the life of the project

The project should more clearly address the source of clean biomass fuel, and demonstrate a strategy to guarantee sufficient clean biomass supplies over the financing life of the project. To not do so presents a risk of several untenable consequences: (1) project would need to do a permit amendment to burn fuels that are less clean; (2) project would take fuel away from other existing biomass facilities that may then require permit amendments to burn fuels that are less clean; (3) project would go bankrupt and taxpayer dollars would be lost (our understanding is that the project will be backed by federal Empowerment Zone bonding). These risks should be addressed prior to building the plant.

[3] The petition process is outlined in section 1100 of Minnesota Rule chapter 4410, pg 15 of the document below: www.eqb.state.mn.us/documents/MNEnvironmentalReviewProgramRulesChapter4410.pdf. Further background is provided on the environmental review process at: www.eqb.state.mn.us/EnvRevGuidanceDocuments.htm.

Green Institute's own research, conducted for the Rock-Tenn paper recycling facility, shows that there are 300,000 wet tons/year of tree trimmings, and 150,000 wet tons/year of land clearing trees available in the Twin Cities metropolitan area, for a total of 450,000 tons/year.[4] However, annual fluctuations in availability can be significant, particularly for tree waste from land clearing activities. Additionally, our research shows the current fate of those quantities is as follows:

- 260,000 tons: District Energy St. Paul
- 125,000 tons: landscape mulch
- 15,000 tons: Lynn Busch Roses (biomass boiler in Plymouth)
- 10,000 tons: other biomass boilers

Thus, the available, non-utilized quantities are estimated to average 40,000 tons/year. This research is based on extensive survey work done over multiple years. It was verified against national studies conducted in other urban areas. It appears to be further validated by District Energy's experience this past winter, where it was necessary for them to extend their procurement operations hundreds of miles beyond the Twin Cities to secure sufficient wood quantities during a period of downturn in the housing industry (new homes construction is responsible for a majority of tree removal from land-clearing activities).

The permit application suggests that 299,000 tons/year would be demanded by plant operations, which is well beyond what would seem possible to procure in the immediate Twin Cities area given current demand from other projects. No evidence was provided to support that the project could secure these quantities of biomass fuels, or the strategy for doing so, without severely hampering existing facilities utilizing that wood. Yet many of the environmental benefits of the project would seem to hinge upon this fuel source. Thus it is critical for the project to provide better evidence of its fuel supply strategy.

MPCA and the project should consider an additional sulfur dioxide (SO2) pollution control method; namely adding limestone or other sorbent to the fluid bed

In the BACT (Best Available Control Technology) determination, the only technologies considered for sulfur dioxide (SO2) reduction were wet scrubbers and use of low SO2 fuel. Because the boiler type is a fluid bed, a third control strategy is available that was not considered. Limestone sorbent can be directly added to the bed material in a fluid bed boiler to achieve SO2 reduction. It is our understanding that this is a common practice for solid-fuel fluidized bed boilers and a relatively cost-effective pollution control method. This method should be evaluated as part of the BACT or MACT (Maximum Achievable Control Technology) analysis. MACT analysis in particular requires that the permitting authority shall require pollution control to achieve the maximum degree of reduction of emissions, utilizing those control technologies that can be identified from the available information, while taking into consideration the costs of achieving such emission reduction (40 CFR 63.43). In our opinion this standard has not been met. If feasible, we would recommend requiring this control technology as a condition of the permit.

[4] "Renewing Rock-Tenn: A Biomass Fuels Assessment for Rock-Tenn's St. Paul Recycled Paper Mill," Carl Nelson (C.E.M.), Dr. Steven Taff, John Madole, Corey Brinkema and Doug Maust (P.E.), March, 2007. This report was also reviewed by a panel of state-wide biomass experts. www.greeninstitute.org/energy

MPCA and the project should investigate more thoroughly the potential for mercury pollution control equipment

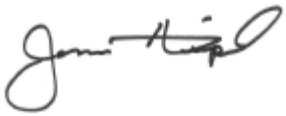
Although the estimated mercury emission rates from the facility appear to be well below those for coal plants and very low compared to total Minnesota emissions, this is a pollutant that can have long-term health impacts and for which pollution control options are improving. The BACT/MACT determination for mercury in our opinion was not thorough, and did not take into account recent advances in mercury pollution control technology. This was perhaps because mercury control is typically only required for coal-burning facilities, but this should not disqualify it from at least being considered for biomass facilities. We don't believe the permit documentation has provided sufficient evidence that the MACT criteria have been met. It may be that mercury control can be cost-effectively provided by the project, or it could be technologically and economically infeasible. However, the determination does not conclusively prove this. Therefore, a more through analysis is in order.

Composite woods such as plywood should be specifically excluded from the permit

Plywood, oriented strand board (OSB), medium-density fiberboard (MDF), wood with plastic laminates and other composite woods contain contaminants that can pose environmental hazards that are not addressed in the permit documents. It is assumed that these materials would not be allowed by the permit. However, it is unclear from reading the permit document that these materials are excluded, and it should be explicitly addressed. Composite woods and other wood with contaminant materials should be clearly listed as fuels not allowed by the permit, and should not be allowed to be tested under the "Alternative Biomass Fuel Testing Authorization" provision of the permit.

For all the reasons above, we believe additional information, further analysis, and amendments to the draft permit are required before the Midtown Eco-Energy permit should be issued. Thank you for the opportunity to comment.

Sincerely,



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