
MEMORANDUM

December 5, 2006

TO: Mayor and Council

FROM: Brent MacGregor, Deputy City Manager

SUBJECT: David Suzuki Foundation Response Regarding NEU Heat Source Options

During the planning process leading up to the NEU Evaluation of Heat Source Options report to Council, City staff engaged local environmental NGO groups and the SEFC Stewardship Group for feedback on two base heat source options for SEFC - sewer heat recovery and biomass. Throughout the consultation process, feedback received from participating groups was decidedly neutral regarding the two heat source options. However, after the NEU Heat Source Options report was finalized, the attached communication was received from the David Suzuki Foundation (DSF), indicating a clear preference for sewer heat recovery.

The DSF communication raises a number of important concerns related to the environmental impact and public acceptability of a biomass facility in Southeast False Creek, and it is likely that DSF input will be included in the GVRD air emissions permitting process if Council chooses to authorize Recommendation A in the NEU Evaluation of Heat Source Options report. City staff have prepared a response to address some of the concerns raised in the DSF communication below:

Air Pollution

The DSF correspondence cites air pollution as a key concern related to the use of biomass, and notes that good air quality performance would be dependant on the quality of the biomass fuel used. To address this, NEU fuel supply contracts would specify high quality contaminant free wood pellet fuels. In addition, the City would conduct routine testing to assure the quality of emissions and fuel.

This section of the DSF memo also suggests that the stance of local governments regarding increased emissions of air contaminants from greenhouse operations could be substantially undermined if the largest municipality in the region saw fit to install a biomass facility in a densely populated area. It should be noted that City staff believe that, if using appropriate boiler and emissions control technology, the wider use of biomass could reduce regional GHG emissions with minimal impact to local air quality. However, it is acknowledged that the GVRD is currently experiencing difficulties regulating some greenhouse operators that use biomass fuel without adequate emission controls, and the use of biomass in Southeast False Creek could be viewed as negative by groups involved in this regional issue.

The DSF communication suggests that low capital cost is the key influencing factor in the City's interest in pursuing biomass technology. However, in the case of Southeast False Creek,

the biomass option is supported by staff due to its low greenhouse gas emissions and low technical risk/ease of implementation. The long-term cost for a biomass facility would be similar to sewer heat recovery.

Potential Effects to Biodiversity and Wildlife

The DSF memo notes a number of concerns related to the sourcing of biomass fuel, including habitat destruction from the dead wood removal, logging of pine beetle killed forests and fisheries impacts.

At this time, the generation of waste wood for pellet production is not driving the business case for the logging of beetle killed wood, and the cost of removing dead wood from forests greatly exceeds the market value of the wood pellets generated. Therefore, all wood pellets are produced from waste mill wood. Today, the volume of surplus waste mill wood that is either land-filled or incinerated greatly exceeds the volume utilized for pellet production. Therefore, staff believe that impacts to biodiversity and wildlife related to the use of wood pellet fuel are negligible. However, these concerns will need to be monitored carefully in the future as forest industry market conditions change.

GHG Emissions from the Collection and Transportation of Biomass

While GHG emissions associated with the production and transportation of wood pellet biomass fuel are accounted for in the staff report, GHG emissions associated with log harvesting activities are not accounted for in the analysis. This GHG accounting methodology is due to the fact that pellet fuel is a waste by-product of the milling process, and does not currently factor into the economic viability of log harvesting operations. However, with these activities factored in, the total GHG contribution would be less than 20 tonnes CO₂ equivalent per year, or roughly 0.5% of the total GHG production of the biomass facility.

DSF: Outstanding Questions

1. *Details of biomass technology:* At this time, engineering details are unavailable, because biomass design activities will not begin unless and until GVRD permit approval is probable. Staff have addressed this issue by developing target emission factors based on conservative values from other operating facilities. In the case of SEFC, best available boiler and emissions control technology would likely result in emissions significantly lower than the conservative values used in dispersion modelling.
2. *Emissions data:* The chemical composition of emissions is highly dependant on the nature of the source biomass fuel. To address this, no pellets would be used that have been exposed to salt water (which can lead to the formation of dioxins and other chlorinated organics) or other contaminants.
3. *Biomass sourcing details:* As part of the tendering process for pellet fuel supply contracts, the City of Vancouver would strive to ensure that fuels come from clean sources, and that sustainable forest management practices are used in the harvesting of the primary wood supply.

Despite the non-support from the David Suzuki Foundation, staff continue to recommend that the City pursue a GVRD permit to use biomass energy in Southeast False Creek, and allow the opinion expressed by the DSF to form part of the public input that will be included

in the permit process. If Council does not wish to support this recommendation, staff have provided the following alternative course of action for Council Consideration:

THAT Council not approve Recommendations A and B in the Neighbourhood Energy Utility Evaluation of Heat Source Options report;

AND THAT Council approve Recommendations C, D and E, with sewer heat recovery as the base heat source.

This course of action would expedite development activities for the False Creek Community Energy Centre, with sewer heat recovery as the base heat source. To minimize schedule delays that could impact on the timely delivery of heat to the SEFC and Olympic Village lands, it is recommended that Council provide staff with clear direction on which heat technology to pursue on December the 14th.

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Attachment



David
Suzuki
Foundation



briefing note

Issue: False Creek Neighbourhood Energy Utility: Sewer Heat vs. Biomass Option

RECOMMENDATION:

Based on our analysis of information provided by City of Vancouver engineering staff, the David Suzuki Foundation recommends that the Sewer Heat technology be pursued by the City of Vancouver due to its undisputed, well-quantified environmental benefits.

BACKGROUND:

Sewer heat technology

Overall, it is our opinion that the environmental benefits from the sewer heat technology are well quantified and credible. Although electricity must be used to power the heat pumps from the sewer heat technology, it is our opinion that due to the ever increasing and urgent need to address the threat of global warming the federal government will move in the foreseeable future towards setting a strong economic signal to reduce greenhouse gas emissions. The outcome of such a signal will shift B.C.'s electricity generation towards a low-carbon path and result in further emission reductions for the sewer heat project.

Biomass technology

There are several issues of concern regarding the proposed biomass facility:

1. Air pollution and potential precedent it sets for the region
2. Sourcing of the biomass and potential effects to biodiversity and wildlife
3. GHG emissions from the collection and transportation of biomass

Air pollution

The David Suzuki Foundation has expressed concerns regarding emissions and air pollutants from the biomass facility. There are still some significant uncertainties, questions, and concerns we have regarding the sourcing of biomass (discussed below) and the effect it may have on local air quality and human health. First of all, we note that this facility will be built within a neighbourhood of several thousand residents, itself located very near the central business district of a fast-growing metropolitan region of more than two million people. The site of the facility places it upwind of much of the current and anticipated future population growth. We acknowledge that information received from the city indicates that if the facility operates as currently intended, air contaminant emissions from the facility will be significantly lower compared to older, uncontrolled biomass-burning technologies. Despite this, we understand that the good air quality performance of the biomass facility is critically dependent on the quality of the fuel burned. Given the large population situated within the emission plume of the facility, and the expected long lifetime of the facility, we believe it is important that the project ensure only high-quality biomass fuels are used in the facility over its entire lifetime. We currently do not have information about how the project might ensure this.

The David Suzuki Foundation is also aware that the region is facing a growing air quality issue because a growing number of poorly controlled biomass heating units at greenhouse operations located within the ALR. Greenhouse operators are defending their actions on the basis of lower business costs. GVRD member municipalities are committed to reducing this source of emissions. We believe the stance of local governments regarding increasing emissions of air contaminants from greenhouse operations could be substantially undermined if the largest municipality in the region saw fit to install a biomass facility in a densely populated area (while rejecting a lower air pollutant alternative), on the basis of lower construction costs.

Potential effects to biodiversity and wildlife

The David Suzuki Foundation believes that though there are opportunities for reducing carbon emissions through the use of wood fuel from natural forests, forestry biomass must be procured from sustainably managed sources only (Forest Stewardship Council (FSC) certified forests). The negative environmental impacts of large-scale biomass removal (e.g., boles, bark, branches, treetops and small trees discarded after clearcutting) are widespread and affect biodiversity at both the stand and landscape scales. This includes:

- **Destruction of habitat used by forest-dependent wildlife**, including many species at risk in British Columbia. For example, at least 182 forest-dwelling terrestrial vertebrates breed within areas where large-scale salvage logging of mountain pine beetle infested forests is occurring. Widespread forest biomass removal for energy production is being promoted in these areas as a beneficial consequence of the salvage operations. However, a recent study by Bunnell et al (2004)¹ found that such logging may reduce the habitat available for six species at risk listed by COSEWIC (the Committee on the Status of Endangered Wildlife in Canada) (SARA). A further four species occur on the provincial list of “Identified Wildlife – 2004” (great blue heron, grizzly bear, wolverine, and caribou). The impacts of widespread biomass removal on non-vertebrates, including species at risk, are unknown.
- **Long-term declines in the availability of dead and decaying woody biomass** that are an important source of habitat and food for many species. For example, many wildlife species, such as raptors and cavity-dwelling small mammals, use dead trees and downed logs as their residence during all or critical periods in their life-cycle. Other species obtain their food from dead wood (e.g., insectivorous birds, such as black-backed woodpeckers) and decaying logs are an important substrate for the regeneration of forest fungi, lichens, plants and trees.
- **Biomass removal associated with salvage logging of riparian areas** can cause stream-bank collapse, removes riparian vegetation, and results in changes in water quality for aquatic biodiversity, including increased sedimentation, which is known to harm fish. Of the 29 species of freshwater fish found in the areas currently under salvage for mountain pine beetle, a quarter are at-risk of local extinction. Bunnell et al. (2004) found that more than half of the freshwater fish in the salvage regions are largely restricted to B.C., and consequently the province has a global responsibility for their protection. For example, the global range of four species – peamouth, pygmy whitefish, prickly sculpin, and sockeye salmon – is restricted to the province.

¹ Bunnell, F.L., Squires, K.A., Houde, I. 2004. Evaluating effects of large-scale salvage logging for mountain pine beetle on terrestrial and aquatic vertebrates. Mountain Pine Beetle Initiative Working Paper 1. Canadian Forest Service.

GHG emissions from the collection and transportation of biomass

Although city staff did supply a scenario for the GHG emissions associated with the transportation of the biomass, we are unclear if GHG emissions associated with the cutting and collection of biomass materials has been included in the analysis.

OUTSTANDING QUESTIONS

We note that although City staff have been very helpful in providing information regarding the proposed projects, there were several questions that we asked that have yet to be adequately addressed regarding the biomass option:

1. Details of the biomass technology including appropriate engineering details and any references from communities where these facilities are currently being used and operated. In addition it would be very useful to ensure that the vendor had a good history of operations.
2. All emissions data including emissions from the stack, as well as the fly ash and bottom ash including the presence of chlorinated organics here including dioxins, furans, PCBs, HCBs and heavy metals.
3. Biomass sourcing details.

CONCLUSION

Based on our analysis of information provided to date, the David Suzuki Foundation recommends that the Sewer Heat technology be pursued by the City of Vancouver due to its undisputed, well-quantified environmental benefits. Please feel free to contact us directly should you have any further questions regarding this matter.