

BioMASS COMMUNICATOR



COOK COUNTY LOCAL ENERGY PROJECT

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Biomass feasibility study heating up

The Cook County biomass energy feasibility study moved into a new phase with a January 31 gathering of the full study team at the offices of LHB in Duluth. In addition to the original study team members, the group has now been joined by Chuck Hartley of LHB (see sidebar), Jon Klapperich and Andrew Smale. Jon is a UMN post grad working with Dennis Becker, and Andrew is a grad student in applied economics working with Steve Taff.

The principle objectives of the meeting were to review the study's parameters and factors to be analyzed, clarify the specific tasks to be addressed, designate responsible team members and agree on the next steps in the study process.

After a review of a dozen potential sites, it was determined that data gathered from one site each of a small, medium and large scale would supply data which can readily be applied to other locations in the county, either directly or through extrapolation. The results gained

from examining three sites in greater detail should also be more beneficial than expending limited resources on additional sites.

The sites selected for detailed study are Bearskin Lodge (small), Lutsen Resort (medium) and Grand Marais residential and commercial core (large). Each site will be analyzed and evaluated with respect to various biomass fuels (hog fuel, pellets and cord wood) and applicable technologies (stand alone or district heating systems, and combined heat and power.)

The study team is unanimous in their commitment that "all options should be thoroughly explored with no pre-assumed economic feasibility" and that wood chips/hog fuel should be analyzed in all configurations. This includes assessment of availability, cost, environmental impacts under different management scenarios, and socio-economic acceptability. While recognizing that wood waste is a major community concern and a principal justi-

fication for this study, a complete analysis of the pros and cons of different fuels in each application is fundamental to a complete study.

On February 10, site visits were made to Bearskin Lodge and Lutsen Resort to collect fuel and electrical usage data and to view existing heating plants and related systems. Similar data on Grand Marais residential and commercial core will be collected in the coming weeks and combined with information from the CCLEP 2009 Grand Marais District Heat study.

The current study timeframe calls for the preliminary engineering analysis to be submitted to the study team by early April 2011. Those results will be integrated with the economic, environmental and forest management components which are proceeding in parallel. A preliminary report should be to the CCLEP steering committee by August, 2011.

Ely district heat project ready for the next step

The City of Ely Alternative Energy Task Force has been studying the feasibility of a biomass-fueled district heating system since 2009, and at a recent session of the Ely Energy Symposium speaker series, the group presented the results of their efforts.

The project has already received funding from various sources to evaluate the technical, financial, and engineering aspects of the project. Advocates view it as a big step towards putting Ely on the cutting edge of 21st century energy systems.

The proposed system would, though combustion and a co-generation system widely used in Europe today, convert the energy in local biomass into hot water heat and electricity, significantly reducing Ely's fossil fuel demand and carbon footprint.

If the project proceeds as planned, economic studies to date suggest there would be a wealth of benefits. As many as 53 local job opportunities in construction, engineering, operations, maintenance, logging, and related businesses could result. There would also be a potential savings in energy costs of \$1.6 million per year while utilizing waste wood and reducing fire risk

in region. In addition, through the displacement of fossil fuels, an estimated 17,000 tons of CO₂ would not be added to the air we breathe, and the city of Ely would make significant progress away from dependence on imported fossil fuels.

The project is designed to first serve large heating customers including city and county facilities, the hospital, the Ely schools campus and Vermillion Community College. After the first phase, smaller businesses and homes within certain areas will be able to hook up to the system.

Approximate costs for the system, its design, infrastructure, and construction, would be about \$17 million. The city is currently pursuing federal and state grants to help offset construction costs. Another possible source of funding could be through municipal bonds paid back by project revenues.

For more information, visit www.ely.mn.us or www.eeely.org

Legislature considers funding for local biomass study

A bill, H.F. 400, has been introduced in the Minnesota Legislature to fund a study of the long-range sustainability of biomass energy in Cook County and Ely, Minnesota. The project - "Supporting Community-Driven Sustainable Bioenergy Projects" - is among 92 projects recommended for funding by the Legislative Citizen Commission on Minnesota Resources (LCCMR). Changes in the membership of LCCMR and of the Legisla-

ture following the elections of 2010 have raised some uncertainties about whether all recommended projects will remain in the final bill.

The project for Cook County is a partnership between the Cook County Local Energy Project, Dovetail Partners, the University of Minnesota, and numerous forestry and energy-related organizations to assess the long-term

from *LCCMR* – page 2

feasibility, impacts, and management needs of community-scale forest bioenergy systems in North Shore communities. It is part of a state priority to study expansion of renewable energy on the state's environment.

The projects contained in H.F.400 were selected by the LCCMR members following a rigorous process that included development of strategic priorities, soliciting project proposals, peer review of proposed research, ranking and finally voting on which projects should be recommended for funding. Money appropriated in H.F. 400 comes from the Minnesota Environment and Natural Resource Trust Fund, a constitutionally-dedicated fund made up of revenues from the Minnesota State Lottery. A percentage of the Trust Fund is expended each biennium for projects that preserve, restore, and enhance the state's environment and natural resources.

Over the coming months, H.F. 400 and a yet-to-be-introduced Senate companion bill, will be reviewed by environmental and finance committees. Stay tuned for developments as the bill makes its way through the complexities of the appropriation process. If successful, funding for the Cook County study will begin in July, 2011.

Follow this link to learn who the commission members are.

<http://www.lccmr.leg.mn/Members/members.html>

Biomass – terms & technologies

Co-generation - Sequential generation of thermal (usually steam) and electrical energy. FCP for co-generation electric power electric is between 4000 and 5000 Btu/kWh. Co-generation is also known as Combined Heat and Power (CHP).

Chips - Chips are made from the bole (roundwood) and may or may not have bark, but have gone through a chipper to slice them into thin squares usually 2" x 3/8" thick or less.

Condensing Power - Electrical generation where the used steam is condensed, giving up a considerable amount of heat to an air or water cooled condenser. FCP for condensing power is between 13,000 and 17,000 Btu/kWh.

District Heating - Supplying multiple building heating systems (and sometimes cooling) from a centralized plant. While very common in Northern Europe, District Heating is not as common in the US. Minnesota examples with co-generation include; Virginia, Hibbing and St. Paul.

Duluth has District Heating without co-generation.

Fuel Chargeable to Power (FCP) - The incremental fuel for electric power generation. When only electrical power is produced, the FCP is equal to the NHR (net heat rate). US units are usually Btu/kWh.

'Hogged' or 'Hog' Fuel – A mix of coarse chips of bark and wood fiber usually produced from waste wood unfit for lumber or other uses. The word for chopped (hacked) in Norwegian is hogge (hogde past tense). Hogde fuel likely morphed into hog fuel. Hogged fuel can include chips, sawdust, bark, whole trees or any combination there-of.

mmBtu - 1,000,000 British Thermal Units (Btu's). 1 Btu is the energy required to raise 1 lb of water 1 degree. 1mmBtu is equivalent to the energy in 1000 cubic feet of natural gas. There are 9 mmBtu in a ton of wood waste (as received), 135,000 Btu's in a gallon of fuel oil and 91,600 Btu's in a gallon of propane.

Cook County Biomass Feasibility Study

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For more information on biomass energy and the Cook County feasibility study, visit:

www.cookcountylep.org

or

www.dovetailinc.org/cookcounty

or email

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What, who, why and how –

The Cook County Biomass Feasibility Study is a collaborative effort between Cook County Commissioners, the Cook County Local Energy Project (CCLEP), Dovetail Partners, Inc. and the University of Minnesota. CCLEP is a citizen-driven non-profit organization that began in April 2008 and whose mission is to facilitate energy efficiency and local renewable energy development in Cook County. Dovetail Partners, Inc. is an environmental firm based in Minneapolis, which has been contracted to oversee the study

The purpose of the study is to explore the feasibility of community-based biomass energy production. The emphasis will be on understanding the short and long-term environmental, social, and economic impacts of utilizing woody biomass in northeastern Minnesota.

Funding for the study is being provided by the Cook County Board of Commissioners using money from the Timber Fund. This is a county fund dedicated by law for use in improving timber stands. Additional funding for a broader study conducted jointly with Ely, MN is included in an appropriation bill currently before legislature. (See story on page 2.)

Brief items of interest...

Town Board presentations

George Wilkes and Gary Atwood were on hand at the February meeting of the Tofte town board to inform them of study site selections and answer questions. Similar presentations will be made to the Lutsen and Schroeder town boards during March. The Cook County/Grand Marais Energy Plan Project and how it relates to the biomass study will also be discussed.

Small-scale technology assessment

Dovetail Partners, Inc. is conducting a separate study focused on small-scale, residential heating (i.e., stoves, boilers, outdoor wood furnaces, etc). A portion of the next full project team meeting will be devoted to reviewing

how this effort develops and determining whether additional resources should be dedicated to this topic now or in the future

New email address for study

The biomass feasibility study now has a dedicated email address. It is biomass@boreal.org. All individual addresses are still valid. It's just an easy-to-remember way to communicate with the study team.

Separate Grand Portage study a possibility

Dovetail, UMN, and LHB are in discussions with Grand Portage about a similar study of biomass energy use in Tribal buildings. If contracted, information from the Cook County project will inform the Grand Portage study,

but each analysis will be independent examination of fuel supply, conversion technologies, financial feasibility, etc.

LHB contracted

LHB, Inc. of Duluth has been contracted by Dovetail Partners, Inc. to conduct the engineering portions of the Cook County study. In this role, they will be responsible for investigating the various technologies and fuels available, and for evaluating their application at various scales in Cook County. Chuck Hartley, project manager for LHB, has been the principal associated with other biomass projects in the region including the planned Silver Bay biomass energy/pellet plant and the Ely district heat project.