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**Title: Energy Audit and Applied Research-based Recommendations for
Energy Efficiency and Renewable Energy at the University of
Minnesota, Crookston Campus.**

IREE Seed Grant-SG-P4b-2004 Final Report

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Description and Summary

The notion of embracing sustainable development at the University of Minnesota, Crookston (UMC) began in 2004 by the concept of a Center for Sustainable Development (CSD). The CSD would provide an umbrella connection for various campus programs which intersect with economics, environment, and social factors. This study marks a formal beginning of a sustainability perspective at UMC where an understanding of current and past energy use would allow the campus to identify opportunities to not only improve energy performance but gain financial benefits as well. This study and report was used by Fabien Pommier, a graduate exchange student from France, for partial completion of a Master's degree at l'Ecole Supérieure d'Agriculture d'Angers, in Angers, France.

Key Findings

UMC spends about \$425,000 each year (average of the last 4 years) for total campus energy which is the result of infrastructure maintenance needs but is affected by the attitude and behavior of students, faculty, and staff. Electricity accounts for over half of the total energy cost, followed by coal (about 30%), and natural gas (12%).

The potential to reduce lighting energy use by changing behavior was described. Shading of the outdoor compressors of air-conditioning units would reduce energy use by 10%. Computer use accounts for a significant portion of electrical usage. Reducing paper consumption through duplexing and buying green (recycling, toners, etc) is advised. Forty-four percent of students live off campus, many living outside the Crookston community. Forty-six percent of faculty and staff live within a 20-30 mile radius of Crookston, leaving a large fraction commuting longer distances. Because of UMC's rural setting, a concerted effort to coordinate shared transportation by faculty, staff and students could contribute significantly to the reduction of CO² emissions and thus global warming. Organized ride shares between local communities via vanpooling, or shared rides for longer trips (e.g. the Twin Cities campuses) is also advised. In addition to this report providing energy consumption data, it suggests sustainability practices at UMC where adopting a campus energy policy would provide the foundation for enhanced energy management.

Next Steps

The report makes the following recommendations as part of an action plan:

1. Survey student perspectives on sustainability (page 34)
2. Adopt an official campus energy policy (page 38)
3. Do a "UMC Sustainable Year" (page 42)
4. Develop a transportation survey for faculty and staff (page 64, 71, A21)
5. Develop long-term alternative(s) to coal (page 100)
6. Continue UMC energy audit project to measure progress (page 104)

An important factor for successful implementation of the action plan is gaining the support and cooperation of key people at different levels within the organization as well as the campus community. To this end, a recommendation is made to designate an energy or sustainability advocate/officer to prompt changes in campus operations and culture that would contribute to meeting the current needs of the campus without compromising the ability of future generation to meet their needs.

