SEBESTA BLOMBERG
2381 Rosegate
Roseville, MN 55113-0020
Phone: 651-634-0775
Fax: 651-634-7400

August 29, 2008

Ms. Delaine Hiney
Executive Director, Physical Plant
Iowa Lakes Community College
19 South 7th Street
Estherville, Iowa 51334

RE: GREENHOUSE GAS BASELINE AND PLANNING CONSIDERATIONS - UPDATE
Sebesta Blomberg Project No. 609500.00

Dear Dee:

Sebesta Blomberg and Associates, Inc. (Sebesta Blomberg) has completed an update to our calculation of an initial greenhouse gas emissions baseline for **Iowa Lakes Community College (ILCC)** in accordance with guidelines of the Presidents Climate Commitment. This update incorporates new information that provides more detail on the renewable energy contents of ILCC purchased electricity. We are making the assumption that today's values for renewable content apply only in the 2006 reporting period. We suggest that ILCC may want to work with the utilities if more detailed emission data are to be developed for prior years 2004 and 2005.

We present below the detailed findings of the inventory process and then present some broad strategies for reducing the college footprint.

1.0 Emission Inventory Details

Table 1 provides a summary of gross GHG emissions from Iowa Lakes Community College operations for years 2004 through 2006.

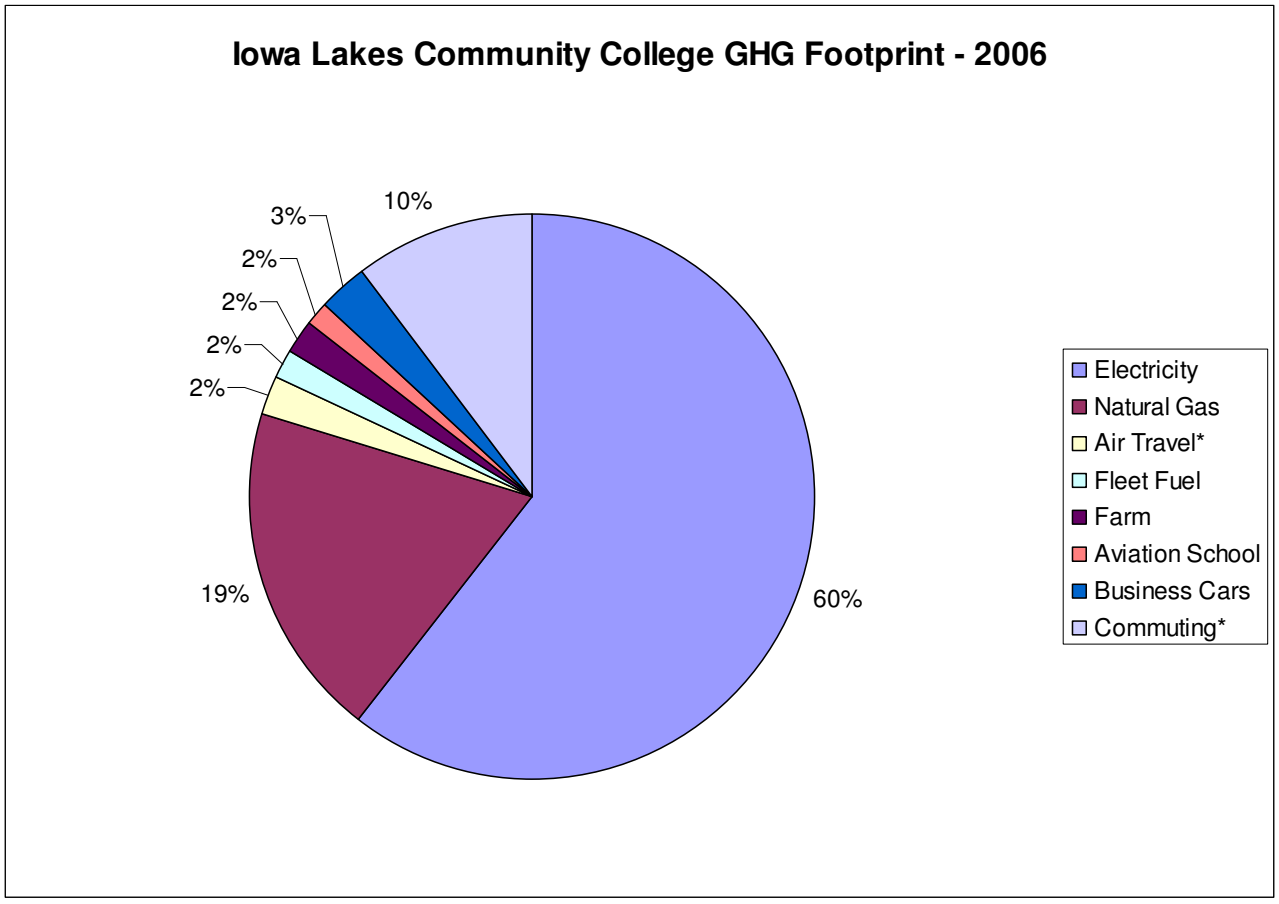
Table 1. Iowa Lakes Community College Gross Greenhouse Gas Emissions (metric tons CO_2-eq)

Activity	2004**	2005**	2006
Electricity	3,566	4,598	4,559
Natural Gas	1,220	1,435	1,430
Air Travel*	166	166	166
Fleet Fuel	101	126	135
Farm	138	138	138
Aviation School	156	102	114
Business Car Travel	234	198	211
Commuting*	768	768	768
TOTAL	**6,348**	**7,532**	**7,522**

*Emissions were estimated from a survey for FY2007 and assumed the same in 2004-2006
**Values for 2004 and 2005 do not include renewable fraction contained in electricity purchases

As shown in figure 1 below, emissions from electricity consumption represent 60 percent of gross ILCC greenhouse gas emissions. Combustion of natural gas for building heat contributes 19 percent; employee commuting, air travel, fleet fueling, and business travel make up the remainder of emissions along with the farm operations and aviation school.

Figure 1. 2006 Iowa Lakes Community College GHG Emissions by Activity



2.0 Calculation Methods

The following methodologies were utilized to estimate GHG emissions from ILCC operations.

2.1 Electricity

Emissions from electricity consumption are typically the largest component of a college campus' footprint because of significant electrical usage, the carbon-intensive nature of inputs to electric generation, and the inefficient nature of electricity production and transportation. Emissions were calculated using emission factors representing the power pool average for kilowatt hours consumed in the MAPP sub-region. This approach is a standard method used by both the World Resources Institute (WRI) in their internationally acclaimed GHG Protocol, and by the U.S. Department of Energy in the recently revised 1605(b) Voluntary Reporting of Greenhouse Gas Emissions Program. The SecondNature GHG protocol that backs the Presidents Climate Commitment also utilizes this approach. ILCC obtained information from electric utilities serving the campus regarding the amount of renewable energy contained in their generation profiles. This information has been applied to 2006 energy consumption data to reduce overall emissions from electricity consumption from the value that was reported in our original report.

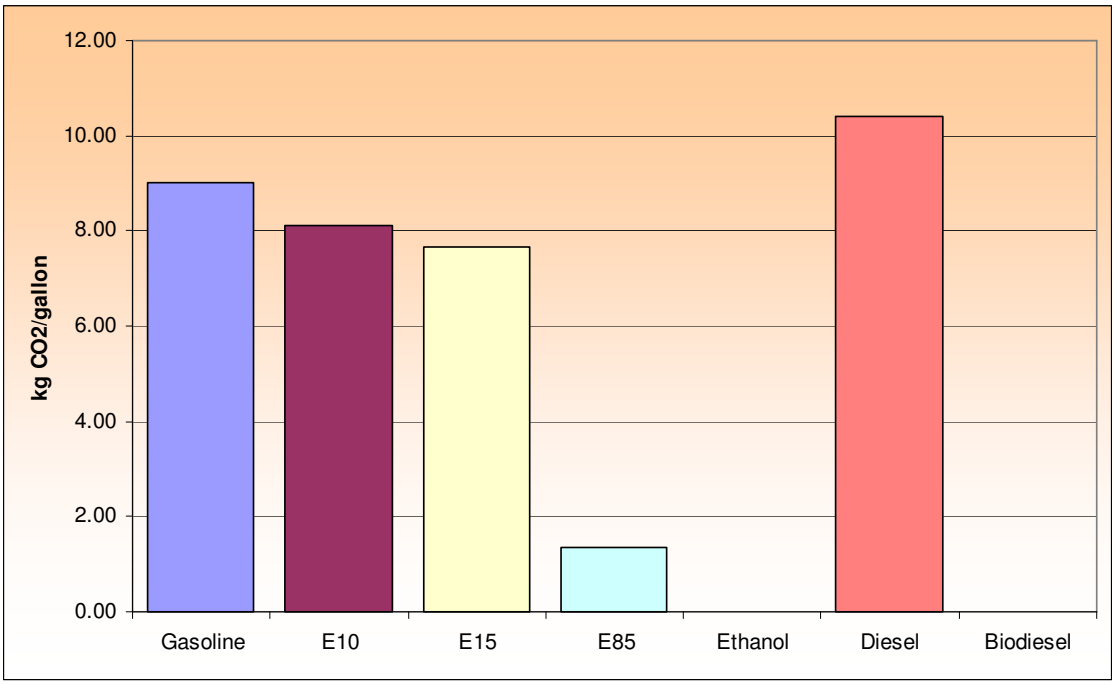
2.2 Natural Gas

Calculation of GHG emissions from natural gas consumption is straightforward. Emission factors are available for carbon dioxide (CO_2), methane (CH_4) and nitrous oxide (N_2O) through the WRI GHG Protocol, Stationary Combustion spreadsheet. Methane and N_2O emissions are converted to carbon dioxide-equivalents using the Global Warming Potential values for each gas from the IPCC's Third Assessment Report.

2.3 Commuting

The energy expended by faculty and staff as they commute to the college was estimated to contribute nine percent of the total emissions profile in 2006. ILCC surveyed faculty and staff requesting information on the commuting distances and vehicles used. Forty-one percent of faculty and staff responded and the results were scaled to reflect the total population. Vehicle choices have not yet been reported, but given the rural nature of the community served by ILCC it is likely that the vehicle mix is predominantly standard gasoline internal combustion engines, with a few diesel pickups as well. As shown in Figure 2, the choice of transportation fuel can have a significant impact on emissions. The fuel choices of commuters were not surveyed, so in calculating emissions from the standard gasoline vehicles we have assumed that 65 percent of the fuel purchased for those vehicles is fuel containing 10 percent ethanol (E10), which is in line with state-wide average motor fuel sales of E10. A default fuel efficiency standard of 19 mpg was assumed to convert mileage into gallons of fuel consumed. Commuting fuel consumption was multiplied by WRI GHG Protocol emission factors for gasoline combustion, and for E10 combustion. We have assumed that there is minimal loss of fuel economy with E10 as compared to gasoline.

Figure 2. Emission Rates per Gallon of Transportation Fuel (kg CO_2)



2.4 ILCC Vehicle Fleet

Emissions from operation of ILCC fleet vehicles were determined from vehicle mileage records. Vehicle fuel economy, in miles per gallon, was estimated using the calculator at www.fueleconomy.gov for each make, model and age of vehicle. Standard emission factors were employed from the WRI GHG Protocol mobile sources spreadsheet. All gasoline used by ILCC is E10 so WRI emission factors for gasoline combustion were adapted to include use of the renewable ethanol fuel. We have assumed that there is minimal loss of fuel economy with E10 as compared to gasoline.

2.5 Air Travel and Business Use of Vehicles

Air travel and business use of vehicles were determined from expense reports and other campus records. Air travel emission factors from the WRI GHG Protocol mobile source emissions spreadsheet were applied to the reported mileage, using the average of short- and medium-haul flight emission factors. Emissions from car travel were calculated as described in the commuting section above.

3.0 Achieving Carbon Neutrality

The Presidents Climate Commitment requires signers to plot a course toward obtaining zero net greenhouse gas emissions at some point in the future. It is highly unlikely that a college operation could ever achieve a zero emission operation, but zero net emission is possible through a combined strategy of reducing energy consumption, utilizing renewable energy resources wherever possible, and purchasing environmental credits to make up the difference. The SecondNature protocol, developed by the group that backs the Presidents Commitment, discourages heavy reliance upon environmental credits as a means to achieve compliance with the commitment, but we believe that some use of credits will be inevitable. As SecondNature stresses in their objection to environmental credits, if credits are to be used the buyer must be very certain of the quality and longevity of such credits. The fact that ILCC owns the wind generating capacity in Estherville overcomes the program's concerns about paying someone else to make reductions – ILCC is doing it and therefore knows firsthand the quality and permanence of the credits.

4.0 Potential Strategies

Iowa Lakes Community College will face several strategic decisions when plotting your course to carbon neutrality. What level of reliance upon environmental credits will you be comfortable with? How much can you rely upon renewable energy sources to meet your needs? Is purchase of green power or a clean green natural gas possible through your utilities? Are community-based renewable energy projects available? Can the college influence fueling choices of commuters? Sebesta Blomberg recommends some combination of the following strategies for achieving carbon neutrality.

Electricity and Natural Gas

- Seek renewable electricity/heat sources
  - Pay a premium to contract for renewable power
  - Help develop a community renewable project (wind, biomass (wood or ag waste), landfill gas)
  - Investigate using solar thermal technology for domestic hot water
  - Investigate geothermal heating and cooling systems
- Launch a program of continuous improvement in building energy consumption:
  - Improved energy monitoring to pinpoint inefficiencies
  - Auditing and retrofitting program – reinvest savings
  - Retro-commissioning of problem buildings
  - Installation of Energy Star or better equipment for new and retrofit systems
  - Education and awareness programs for faculty, staff and students
  - Implementation of LEED building standards for new and renovated space

Commuting

- Provide incentives for employee car-pooling, efficient vehicle purchases
- Encourage use of renewable fuels
- Provide college-coordinated transportation

College Vehicle Fleets

- Improve efficiency of vehicle fleet
- Fuel switch to more-renewable E85 or biodiesel fueled-vehicles
- Move to electric vehicles (in concert with green electric purchasing program)

Air and Car Business Travel

- Hard to influence air travel – look to offset via credit purchases
- Could specify fuel efficient vehicles through car rental companies

Other alternatives

- Purchase of verified carbon credits to offset some level of emission
- Purchase certified RECs to offset emissions from non-green power
- Sequestration on college-owned land (not encouraged by SecondNature but can be done)

5.0 Cost of Achieving Carbon Neutrality

Ideally, Iowa Lakes Community College can institute a two-pronged program to address both energy demand and supply. On the demand side ILCC can institute a program to improve energy efficiency to provide cost savings while reducing GHG emissions. Such a program can typically reduce utility costs (and emissions) by 10 percent or greater. On the supply side, utilization of renewable energy sources will typically entail some additional cost; however, there may be grants and low-interest loans available to help defray capital costs for electricity, air conditioning, or vehicle fueling systems. Once capital expenditures are made, operating costs for renewable energy systems can be on par with those for non-renewable sources.

While investing in energy efficiency and renewable energy upgrades can require up front capital, the cost of inaction could be higher and doesn't provide payback. For example, if ILCC wanted to meet the net zero commitment without changing current energy consumption patterns, the college could simply purchase the necessary offsetting environmental credits. Carbon credits are currently valued in the market place on the Chicago Climate Exchange (CCX). Other avenues for purchasing credits are available through brokered, two-party deals, but the cost of carbon credits is most transparent via CCX where prices have ranged from $3.50 to $4.00 per metric ton CO_2-eq over the past year. If we assume a $4.00 price and that ILCC net emissions each year would equal those in 2006, the college would pay $21,400 annually for carbon credits to completely offset your emissions and achieve carbon neutrality. However, carbon credit costs can be expected to increase dramatically when a formal federal regulatory program is adopted, something that is expected within the next five years.

Alternatively, renewable energy credits (RECs, or Green Tags) could be purchased to offset emissions from your electricity consumption. RECs vary by price from 0.5 cents to more than 5.0 cents per kilowatt hour, depending upon the source of the RECs and certifications. Applying these costs to ILCC net annual electricity consumption of 3.9 million kWh would predict costs of $19,500 to more than $195,000 annually. Premiums paid to contract from specified renewable electricity sources appear to be similar to REC costs if you choose to pursue green power through your utilities. Carbon credits to offset the remaining, non-electricity emissions could cost an additional $12,000 to achieve net zero GHG emissions.

These gross costing methods offer a range of potential costs that Iowa Lakes Community College would incur to meet the Presidents Climate Commitment through credit purchasing and are presented for illustration purposes only. The ability to determine cost-effective efficiency improvements, to find opportunities for local development of renewable energy sources, and behavior modification through education and awareness programs to improve conservation on campus will help mitigate the costs of purchasing carbon credits or RECs to provide offsets, and will offer additional, non-carbon-related long-term benefits. The combination of approaches that ILCC ultimately selects to work toward carbon neutrality will significantly impact the overall cost of achieving that goal.

6.0 Additional Considerations – Improving the Inventory

Accurate measurement of ILCC GHG emissions will be important for tracking your progress toward carbon neutrality. The protocols for computing GHG emissions provide a preference ranking for the most accurate methods to the least accurate methods, as shown in Table 2.

Table 2. Hierarchy of Emission Estimation Methods and Data Quality

Method Description	Rating
Carbon Dioxide Emissions from Highway Vehicles	
Mass balance based on fuel volume burned, or bulk purchase data adjusted for stock change used with measured density or heating value and carbon content or with default emissions factors	A
Mass balance based on bulk fuel purchase not accounting for stock change used with default emissions factors	B
Mass balance based on distance traveled and fuel economy data, or hours, horsepower-hours, or ton-distance shipped and fuel consumption per unit activity data used with default emissions factors	C
Mass balance based on fuel price or expenditure data used with default emissions factors	D

Table 2 was taken from the U.S. Department of Energy's 1605(b) Voluntary Reporting of Greenhouse Gases program. The table provides the government's rating of the quality of an emission estimate based upon the form and content of the underlying data. The best method relies upon a measurement of fuel quantity burned. When we have to rely upon other activity data, such as vehicle miles traveled, the quality if the estimate goes down because we have to make assumptions regarding the efficiency of the vehicle being driven. In completing this initial ILCC inventory, we had to utilize some of the lower rated estimation methodologies to match the nature of the data collected. We recommend that ILCC begin to work toward putting data collection processes in place to obtain the higher rated data. An example would be to record the amount of fuels purchased for fleet vehicles, rather than totaling the mileage on the odometer each year.

Generating accurate calculation of emissions from commuting provides the greatest challenge, and is an area where all members of the Presidents Climate Commitment are on a tremendous learning curve. We will continue to work to gain knowledge of processes that others have used with success to try to improve the ability to accurately represent the commuting emissions, particularly since it is an important emission category for your college.

Thank you for this opportunity to be of service to Iowa Lakes Community College. All calculations used to assemble this report will be forwarded to you electronically. If you have any questions regarding this summary report, please don't hesitate to contact me at (319) 294-5590 or via email at rney@sebesta.com.

Respectfully,
SEBESTA BLOMBERG & ASSOCIATES, INC.

Richard A. Ney, Ph. D.
Manager, Iowa Operations
Senior Environmental Consultant

cc: File 609500.00