Brian Matzke
4-11-04
L330 – Energy
Paper #4

**What's Going on in Your Own Backyard:
Bloomington's Energy Issues**

The world at large faces a myriad of energy and environmental issues, from global warming to depleted supplies of fossil fuels. Economic concerns such as rising gas prices, social concerns such as war and instability in the Middle East, and technological concerns such as the daunting task of making alternative energy sources viable all plague the minds of today's policy makers and activists. The sheer scope of the problem makes many feel daunted when trying to do their part to solve it, and environmentalists have tried to keep individuals from becoming discouraged by adopting the creed, "think globally, act locally." Because energy issues affect all of us, it is important that people be well-informed as to what the issues are and pay attention to the global environment, but by the same token, everyone is most directly responsible for their own backyards and their own local communities. In both the workings of city government and the spirit of the citizenry, Bloomington epitomizes this activist creed, doing what they can to foster environmentally friendly and energy efficient lifestyles even while the vast majority of the state of Indiana faces great difficulties in its energy policy.

A conscientiousness with regard to energy consumption is not a new thing for the city of Bloomington, which has a history of progressiveness, innovation, and environmental stewardship. As far back as 1977, when the town was significantly smaller than today, but already growing rapidly, there was already an activist presence

and a mind towards sustainability present in the town. In April of that year, a Bloomington-based group called Solar Earth Assimilators, Inc. retained Gordon Clark Associates, Inc. to prepare a comprehensive plan for an "energy progressive" housing community comprising 14 acres in the southeast quadrant of the town (Gordon). Gordon Clark found the plan feasible, and praised Bloomington as a place where a "total energy system will evolve."

You might have described what this community did. I've lived in Bloomington since 1958 and hadn't heard of it before.

Bloomington, however, is extremely anomalous with regard to its environmental situation when compared to Indiana as a whole. Most of the state does not show nearly the level of concern towards energy issues and is not as diligent about stressing conservation. Indiana is the second largest consumer of coal in the nation, behind Texas, with 97.7 percent of its electricity coming from coal in 2002 (Webber). In 2000, 70.2 tons of coal were burned in the state.

This can't be right. The first two houses I lived in on 17th St.(across the street from Assembly Hall) were heated by coal-burning furnaces, and as I recall I burned several tons of coal a year myself.

The justification for using coal rather than cleaner sources of energy are simple for some; Ed Simcox, president of the lobbying group Indiana Electric Association, believes that coal is "a good deal for Indiana," saying "it's available, it's plentiful, and it's right here" (Benman *Indiana*).

While the economic benefits of using Indiana coal to provide the state with power may be clear, so too are the health costs; Indiana has the second highest rate of asthma in the country behind Ohio (Webber). Eight point one percent of adults are afflicted with

the disease, or about 355,000, as well as 81,000 children. According to the American Lung Association, air pollution causes up to 260 premature deaths each year. Pressure from the American Lung Association as well as from environmentalists has led both the state and federal government to respond. The U.S. Environmental Protection Agency recently issued a mandate requiring large reductions in power plant emissions of nitrogen oxide, a prime ingredient in both smog and acid rain, and the Indiana Utility Regulatory commission is shepherding the state's power plants as they update to meet the new regulations (Benman *Indiana*). The total cost to consumers, however, will be around $1.4 billion.

Always need to put big numbers like this in perspective.

Surprisingly, in spite of the dirtiness of Indiana's electricity and the increased costs of consumption, the state has done little to promote conservation and actually expects energy needs to increase (Benman *Forecasters*). This increase will be as much as ten percent, or 2,400 megawatts, in the next five years and will likely be due to increases in both residential and commercial demand.

A single large nuclear or coal-burning power plant (like the one on the south side of Indianapolis near the intersection of highways 37 and 465) typically produces about 1,000 megawatts of electrical power, so two or three more of these will be needed in the next five years, if the above forecast is correct.

A large part of the increase among residential consumers is air conditioner use, as the past several summers have had sustained periods of extremely hot days. If this trend in climate stays the same, energy demands will increase even further.

This is a vicious circle: hotter weather → more air conditioning used → more coal burned to supply the electricity (Indiana has no nuclear power plants) → more CO2 produced → more global warming → more need for air conditioning.

For a while, this increase in demand had producers worried that they would be unable to supply enough power, but with the building of several new plants and conservation efforts on the part of large, wholesale energy buyers, supply will both be able to keep up with demand and keep prices low (Charkabarty). Prices are in fact expected to decrease in the state over the next four years. *Surprising*

The other large issue that has recently affected the entire state is gasoline. In the summer of 2000, a nationwide gas shortage brought record high prices across all of the United States, and Indiana had some of the highest prices in the entire country.

See pp. 135-136 of the text. In real terms – adjusted for what we earn (how long we have to work to earn a gallon of gasoline) – the price of gasoline has actually been going down as far as U.S. consumers are concerned (see Fig. 5.2). ***[Note: the vertical axis in Fig. 5.2 should be labeled "Cents" – one of the few printing errors in the book.]*** *What are American motorists crying about? Taking inflation and purchasing power into account, gasoline prices are not historically high at the present time, according to Randall Baker. And they are very low compared to what most people in other parts of the world pay.*

Bloomington was hit particularly hard, with prices usually several cents higher than then rest of the state. At their worse, prices hovered at just under two dollars per gallon. Responding to the crisis, Governor Frank O'Bannon made national news by suspending the gas tax, which marginally decreased prices during the shortage and increased the governor's popularity tremendously (Kess).

It's a mystery why a gasoline tax of 5 cents a gallon is extremely unpopular in the U.S. when an increase in the price of gasoline of 50 cents per gallon hardly affects how much Americans drive.

Regardless of the trials and tribulations of the state as a whole, Bloomington still exemplifies a city that has done a lot of things right. The sense of community awareness and civic pride is evidenced in the wealth of information and great level of detail provided on the town's website, http://www.bloomington.in.gov/citygov.php, which outlines the government's departments, boards and commissions, as well as the work they are doing. A significant amount of attention is paid to the environment and environmental concerns, and the city has set up an Environmental Commission specifically to address this issue. The commission, chaired by Michael Litwin, describes itself as

> an advisory body composed of local citizens appointed by the Mayor and the Common Council. Established in 1971, the Environmental Commission is actively involved in projects concerning the local environment. As such, it provides information and recommendations on environmental matters to the City of Bloomington, other governmental agencies, developers and the public. (City)

While the function of the council is advisory in nature, it is still an extremely active group, and its longevity—having been in existence for more than thirty years—is yet another indication of the spirit of environmentalism present in the town.

The work of the commission seems primarily to be concerned with the beautification of Bloomington's may green spaces rather than issues directly pertaining to energy, but one major exception is the Alternative Transportation and Greenways Plan. The goal of this plan, one of the commission's several ongoing projects, is to promote the alternative means of transportation that are more environmentally friendly and less energy consuming. They commission hopes to achieve this goal through the building and upkeep of sidewalks and bike lanes, as well as posting signs marking bike routes. The

message of the plan is clear: Bloomington wishes to maintain a reputation as a pedestrian- and biker-friendly community.

Just because Bloomington is an environmentally friendly community, however, does not mean that everything that is good for the environment is good for the town. In 2001, new environmental regulations were put in place under the Clean Air Act, forcing General Electric (GE) to produce more energy-efficient refrigerators (Pete). This significantly drove up production costs for the company, which produces refrigerators in a Bloomington factory. As a cost-saving measure, the factory was forced to eliminate 1,400 jobs. The reaction of the factory workers being laid off, however, was not one of antipathy towards the environmental regulations, but rather one of anger at the company for choosing layoffs as their means of cutting costs. The workers' union, the International Brotherhood of Electric Workers Local 2249, went so far as to accuse GE of being guilty of "corporate greed."

While the reaction of the workers and the actions of the Bloomington city government both epitomize a spirit of environmentalism and positive attitude about energy conservation, both focus on issues affecting the town itself and not one of its largest segments, the Indiana University campus. According to Charles Matson, the energy manager at IU's physical plant, the university consumed 246,324,863 kWh of electricity in 2002/2003 at a cost of $9,671,207.

Need to put these numbers in perspective some way.

This electricity is purchased from PSI/Cinergy, which provides energy to much of central and southern Indiana. Not surprisingly, over 95 percent of PSI/Cinergy's electricity comes from coal, with most of the remainder coming from natural gas. This amounts to

the burning of 68,836 tons of coal for $2,401,000 and 2,338,394 therms of natural gas for $1,633,970. *What is a therm?*

As a major energy consumer in its own right, the IU has its own energy issues discreet from those of the city at large. One such issue is the age of the campus's electric infrastructure. Some of the campus's wiring is as much as forty years old, which raises concerns with regard to both efficiency and reliability (Salge). While repairing and replacing old infrastructure is an ongoing process, one immediate step the campus recently took has been to raise the temperature at which buildings' air conditioners were set and to remove every other light bulb in the main library (IDS). These steps drastically cut back on consumption with very little drawbacks. Few students even reported noting the change, and since the measures were taken in the summer of 2000, there has been no evidence of student discomfort as a result.

Matson outlines the major measures taken by the university as follows:

a. Improvement to building design (such as high performance windows).
b. More efficient lighting (this also helps to reduce the cooling loads).
c. More efficient motors and variable frequency drives.
d. More efficient heating & air conditioning systems.
    i. Improved chillers or the replacement of old building chillers with service from the central chilled water plant.
    ii. Variable-air-volume dampers
    iii. Heat recovery wheels
e. Seasonable set points for thermostats. (78 F in summer & 68 F in winter)
f. Night-time shutdown of most air handlers.
g. Repair & reinsulation projects for steam & condensate piping. (Matson)

These are all encouraging steps in the right direction, but more could always be done, and a number of activist organizations have arisen in the town and on the campus to ensure that both Bloomington and IU are doing all they can to conserve energy. On campus, one of the largest such organizations is INPIRG, which stands for Indiana Public Interest

Research Group. A part of a network of Public Interest Research Groups that wage wide-scale campaigns on campuses across the country, INPIRG reflects the "think globally" half of the "think globally, act locally" paradigm. Off of the campus, the Center for Sustainable Living has fosters sustainable living practices in the Bloomington area. Its most recent project has been a collaboration with Habitat for Humanity to build Bloomington's first straw bale house (Graham). This house uses straw bale as the insulation, a material that is considered beneficial both because it is a renewable resource and because it is an extremely efficient insulator.

It is clear that no one straw bale house is going to solve the nation's energy crisis, nor will any of the other measures taken by the city government, the university, or private citizens of Bloomington. All of the actions taken to foster conservation, however, are steps in the right direction, and if everyone took such small-scale steps, they would add up to potentially astronomical change.

This is a key point: how can people be motivated to take steps in the right direction when they know that by themselves they will have little effect?

It is in this manner that Bloomington has the right frame of mind with regard to energy; the city is aware of the fact that good energy policy must start in your own back yard.

Works Cited

Benman, Kieth. "Forecasters Say Indiana Electricity Needs Will Rise Ten Percent in Five Years." The Times (Munster) 19 Sept. 2003.

Benman, Kieth. "Indiana Electricity Consumers to Foot Bill for Clean Coal Mandates." The Times (Munster) 1 Jan. 2003.

Charkabarty, Gargi. "Projection Shows Dip in Indiana's Electricity Costs." Indianapolis Star 6 Dec. 2001.

City Government. City of Bloomington Indiana. 6 Apr. 2004. http://www.bloomington.in.gov/citygov.php

Gordon Clark Associates, Inc. A Comprehensive Planning Study for an Energy Progressive Community. Prepared for Solar Earth Assimilators, Inc., Bloomington. 1977.

Graham, Andrew. "Straw bale house construction under way." Herald-Times (Bloomington) 4 Apr. 2004.

IDS Editorial Board. "University's energy conservation efforts wise, fair." Indiana Daily Student 10 July 2000.

Kess, Stacy. "Gas prices continue to climb." Indiana Daily Student 22 June 2000.

Matson, Charles. Email Interview. 2 Apr. 2004. *Nice that you did this.*

Pete, Joseph S. "Hundred gather to protest GE layoffs." Indiana Daily Student 1 May 2000.

Salge, Kara. "40-year-old wire malfunctions, causes power outage across campus Friday." Indiana Daily Student 18 Jan. 2000.

Webber, Tammy. "Federal Air Quality Rule Changes Have Many Indiana Environmentalists Fuming." Indianapolis Star 21 Mar. 2003.

Good paper - 10