

Energy supplement

summer nebraska july 10, 1973

Hints save UNL thousands

By Ken Merlin
School of Journalism

Most people have heard by now there's an energy crisis or at least a shortage of the energy sources generally taken for granted.

If you read advertisements, you probably know how to conserve gas and electricity at home from the local utility ads. Or as a driver, you've learned from petroleum ads how to save gas on a trip and what's the best time to "fill 'er up."

Practical hints such as these are saving thousands of energy dollars for the University, according to Ron Wright, assistant UNL controller.

Saved \$20,000

Wright said a policy regarding the use of air conditioning in university buildings had reduced the operating cost of the power plant during the May-June

period \$20-25,000 over the same period in 1972. The policy adopted last spring set thermostats five to 10 degrees warmer than a year ago.

He said the Chancellor's Office approved a plan to maintain offices and classrooms at a constant temperature during the day and turn up the thermostats at night. Room temperatures are allowed to rise over the weekend during the summer to as high as 80 degrees, he said, and to fall during the winter to 60 degrees.

Down to 1 boiler

Part of the savings was due to an increase in the efficiency of the power plant's operation which in turn conserves its sources of energy—natural gas and fuel oil. Last summer plant workers fired two boilers, one a standby to operate the air conditioning chiller.

In view of the rising costs of natural gas and fuel oil, a 60-70 percent efficiency level was considered too costly, he said. Since the standby boiler was shutdown, the efficiency level has climbed to 85-87 percent.

Unfortunately, some inconvenience may be unavoidable. If the present boiler breaks down, air conditioning or heat, depending on the season, could be shut off for as long as five hours, he said.

Hints adopted

Hints on saving electricity also have been adopted. A long time argument between industrial engineers as to which was cheaper—leave the lights on or turn them out—has apparently become passe with the advent of high priced electricity.

A "Lights out" campaign will be

announced soon on bulletin boards, Wright said. The campaign suggests the last one to leave a room turn out the lights, if he or she plans to be gone for more than an hour, he said.

Begin July 1

Wright said the campaign scheduled to begin July 1 was delayed when decals for the University wall switches, reminding people to "Turn out lights!", didn't arrive.

"In the meantime, campus security and custodial staff have been asked to shut off any unnecessary lights they find on," he said.

Wright, who is personally pushing the "lights out" campaign from his darkened office, said dollar savings from practicing energy conserving tips could offset the anticipated cost increase of such resources during this fiscal year.

Windmills potential source of energy

By John Steffl
Reprinted from
Nebraska Blue Print

During the past two months we have been witnessing the arrival of the energy crisis that experts have been predicting for years. Each time the temperature has dropped to zero and below, the utilities have interrupted natural gas flow to large users. These customers would then switch to their secondary energy source which is normally fuel oil. But, in the midwest and other sections of the country, even oil is in short supply during long periods of cold weather. Recently, there were several large cities that had less than a twenty four hour supply of oil on hand. The shortage of all types of fuels has forced many schools and industries to close down completely until warmer weather returned.

It is becoming increasingly clear that our fixed supply of all types of fossil fuels is rapidly dwindling as energy consumption continues on the rise. Since any substantial amount of nuclear power generation seems to be many years away, we are lead to look at unconventional energy sources.

Used for centuries

One energy source which has been in use for centuries is the wind. Here is an apparently inexhaustible source of power which has been used to pump water, mill grain, and even generate electrical power. Over forty years ago many attempts were made to generate large quantities of electrical power from the wind. But, these attempts all failed because of efficiency problems which technology had not solved at that time. However, small "wind chargers" were wide spread in rural areas where REA was nonexistent.

Since technology has overcome some of the problems of wind generation of electrical power, we can investigate the efficiencies of wind turbines to see if substantial amounts of power are truly available.

Since the power generated is proportional to the cube of the wind velocity, the output is pitifully small at velocities below five miles per hour. But, a 100 foot diameter turbine would generate 16.4 KW in a ten mile per hour wind and 133 KW in a twenty mile per hour wind. Every time the wind velocity doubles, the power increases by a factor of

eight.

With modern materials and construction techniques, wind turbines with diameters of one hundred feet and over are possible. If such a turbine with a radius of 50 feet were placed in an area where wind velocities were consistently twenty miles per hour, it would generate about 1,000,000 kilowatt-hours of energy annually.

Very few areas

But, there are very few areas (mostly along both coasts) in this country where such conditions exist. What about the winds in Nebraska? According to statistics furnished by the Environmental Data Service of the National Oceanic and Atmospheric Administration, Nebraska winds rarely ever blow for less than eighteen hours a day. Unfortunately, there are many periods where velocities fall below ten miles per hour. This is the area where wind turbines can generate very little power. However, a rough calculation shows that the 100 foot wind turbine could generate over 100,000 kilowatt-hours annually in eastern Nebraska, and about double that amount in the extreme western part of the state.

Because power loads are relatively constant, and a wind generator's output is governed by the whims of the weather, this will never become a prime source of power. But, it is possible that the winds may become an important supplement to the energy provided by diminishing fossil fuel supplies.

Unlimited fuel

The most important attributes of wind power are the unlimited fuel supply, and the zero output of pollutants. Unfortunately, the wind turbine suffers from low output at slow wind velocities, and due to the nature of the winds in most areas, its output is not very consistent.

Will the wind solve the energy crisis? Probably not. But when we reach a point where we have trouble finding enough gasoline to fill the tanks in our precious automobiles, we may have to take the wind seriously.

Nebraska Blue Print