NEW & SIGNIFICANT

James H. Lytle

Pennsylvania's Pioneering Program Of Inservice Education

One of the most significant recent developments in teacher certification and training has taken place in Pennsylvania during the past five years. In October, 1972, the State Board of Education, seeking to loosen up the certification process, authorized local school districts or intermediate units* to organize inservice programs that would provide the coursework necessary for permanent certification and for Master's Equivalency Certificates. The result is that colleges and universities in Pennsylvania no longer have total control of teacher certification and graduate training.

Responsibility for these programs is vested in local inservice councils whose members include representatives of districts, teacher organizations, administrators, students, school boards, intermediate units, institutions of higher education, and communities. The councils conduct continuing needs assessments, design inservice program proposals, submit the proposals to the state's Division of Teacher Education for approval, evaluate the programs, and maintain appropriate records. Program proposals must specify competencies to be developed; inservice credits are granted through demonstration of attainment of competence or for completion of a course or program (15 hours equal one credit). Councils may use school district personnel, consultants, college or university staff members, professional organizations, or government agencies as the source of faculty or for assistance in program design.[1]

Pennsylvania requires 24 semester hours of appropriate graduate coursework past the bachelor's degree for permanent certification. All of these credits can now be earned through approved inservice programs. The state also grants a Master's Equivalency Certificate, good for salary purposes, for a combination of 18 inservice credits and 18 graduate credits in an appropriate area from colleges and universities.

Two Pennsylvania Department of Education staff members, William Rhodes and James Porter, developed the idea for the program and set it in motion. Rhodes and Porter, who had had public school and college administrative experience before joining the department, felt that experienced teachers deserved inservice training that responded directly to their needs; they carefully developed support from teacher organizations, the Pennsylvania School Board Association, administrative associations, Department of Education review boards, the state superintendent, and the State Board of Education.

In the five years since the state board authorized these inservice programs, school districts in 28 of the state's 29 intermediate units have organized inservice councils and have received approval for their programs. According to George Sauer, head of the Division of Teacher Education, the state department has been "tremendously pleased" with the results. Sauer cites several advantages that have made the programs popular with teachers:

1. The design of graduate training is now directly in the hands of teachers.
2. Travel time to attend courses is greatly reduced, especially in rural areas, because courses are usually taught in local schools.
3. Costs are low; generally there is no tuition charge.
4. Cooperative arrangements with colleges have allowed inservice courses to be credited toward the master's degree.
5. Councils can develop courses more quickly than colleges.
6. Courses tend to be more intense and more responsive to local needs or problems.

Sauer is especially impressed by the fact that 35% of the teachers participating in the programs already have master's degrees and permanent certification and are taking courses for professional improvement.

The Philadelphia Inservice Council has been particularly active in developing its program. In the spring, 1977, term it offered 58 courses to Philadelphia teachers, including "Classroom Management," "Metric Math," "Photography in the Classroom," "Every Teacher as a Counselor," "Reading in the Content Areas," and "City Government as a Natural Resource." Twenty-two hundred teachers enrolled in fall term courses and 1,800 in spring term courses, an average of 15% of all teachers in the district.

One course consistently popular with Philadelphia teachers has been "Math: What Every Elementary Teacher Should Know." It emphasizes learning theory and concept formation among children. Teachers construct and experiment with teaching aids and materials in the classes, then try these out in their own classrooms. Ideally, the use of these manipulative materials helps their students develop mathematical concepts they have had difficulty in learning. Another popular course is "Classroom Management," usually taught by experienced principals. In this course role playing, simulation, case studies, and group dynamics training help teachers learn classroom control techniques. In these and most of the Philadelphia inservice courses the emphasis is on practical responses to problems teachers meet every day.

Faced with declining enrollments in many of their graduate education courses because of the success of this inservice program, six Philadelphia area teacher preparatory institutions have formed a University Inservice Teacher Education Network. All network courses are taught at a Philadelphia high school. Tuition is 50% to 80% below the regular rate. The institutions have agreed not to offer competing courses and to accept each other's credits (up to 12) for the master's degree. Regular faculty members teach the courses. Enrollment in network courses has increased from 55 in the fall, 1976, term to 150 in the summer, 1977, term.

This University Inservice Network is an example of the sort of adaptation that Joel Burdin, editor of the *Journal of Teacher Education*, argued for in a recent editorial on "The Doldrums in Teacher Education." In Burdin's view the very survival of many teacher education programs will depend on their

*Intermediate units are state-funded administrative subdivisions that mediate between the State Department of Education and local school districts; they coordinate such activities as vocational schools and special education services.

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willingness to move into the inservice area. He recognizes that this may require modification of credit/degree systems, more field-based work, and sharing of control with teacher groups. And he warns that local education agencies are seeking responsibility for teacher certification, a movement that could "lead to further cutbacks for colleges." Citing the recent federal teacher center legislation as a prime example, Burdin contends that initiative has shifted to local agencies and teacher groups.[2]

The enthusiastic response of teachers in Pennsylvania to locally developed inservice programs would certainly seem to verify Burdin's analysis.

A concern of critics of the inservice programs is that the courses are not as rigorous as university or college graduate courses. The State Department of Education has tried to anticipate this criticism by requiring a centralized review process. Any course or program must be approved by its Division of Teacher Education. Approval is contingent upon a careful description of the program, the competencies to be developed, the means for developing and evaluating these competencies, a determination of the need for the program, resources available to conduct it, and detailed résumés for those who will teach it. (The review is similar to that of college or university programs.)

This criticism ought also to be viewed from another perspective. Practicing tax lawyers, for example, are not interested in 15-week seminars on "The Philosophy of Taxation" or "Alternatives to the Income Tax." But they are very much interested in three-day seminars on "Implications of the Tax Reform Act of 1976." The difference is that professionals in practice generally want assistance that responds to immediate concerns, that can quickly be put into practice, and that minimizes the investment of personal time. They do *not* want a third party determining what their needs are. Pennsylvania's inservice councils have apparently been more effective than its teacher preparatory institutions in this regard.

1. "Guidelines for Approval of Inservice Education Programs," mimeographed bulletin of the Division of Teacher Education, Bureau of Academic Services, Department of Education, Harrisburg, Pa. (October, 1972).

2. Joel L. Burdin, "The Doldrums in Teacher Education: Inservice Can Help," *Journal of Teacher Education*, March/April, 1977, pp. 2, 45. □

Charles A. Bottinelli and Alan Curtis

Energy Education For Colorado Adults

The United States and other industrialized nations have entered a new energy era, but U.S. citizens have not yet adjusted their expectations and lifestyles to its requirements. Alternative energy technologies, buttressed by a strong commitment to energy conservation, must be sought to help meet exponentially increasing world and regional energy demands and to replace our rapidly shrinking reserves of conventional fuels.

What are Colorado's secondary schools doing to promote awareness, concern, and motivation to work toward solutions of energy/environmental problems? Forty-six percent of Colorado's 181 school districts did not offer any kind of environmental education during the 1974-75 school year. Of the 54% that did, three-fourths considered energy issues of moderate to major importance. Much work remains to be done in implementing viable energy education programs in Colorado's secondary schools.

In view of the seriousness of the energy/environmental decisions that must be made in the next five years, it is imperative that energy education programs be extended to include adults on a statewide basis. Adults must understand the fundamentals of energy/environmental issues; they must develop a healthy concern based on substantive knowledge; and they must be motivated to become involved in the determination of viable energy policies and decision making at both the local and national levels. A project of this kind is already under way in Colorado.

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In May, 1976, the University of Colorado School of Education and Bureau of Continuing Education were awarded a grant through the U.S. Office of Education to develop a model of energy/environmental education for adults throughout the nation. The project has three major goals: 1) to train leaders to stage a series of on-site programs in a variety of locations within the state of Colorado during the contract year; 2) to involve mature learners at all levels (but particularly adults) in an intensive study of energy/environmental issues, especially alternative sources of energy and conservation, and to encourage them to participate in political decision making; and 3) to provide citizen input into local, state, and national energy policy formulation.

Specific knowledge objectives for citizen participants include: 1) informing citizens of the energy dilemma and the pros and cons of alternative sources of energy and their environmental impacts; 2) encouraging mature citizens to recognize the need for viable national, state, and local energy policies; 3) helping citizens understand the relationship of world population, energy resource depletion, economic growth, and standards of living; and helping citizens relate economic and social problems to the supply and management of nonrenewable resources.

The project is expected to have immediate beneficial effects. Benefits should include:

1. *Availability of Information* – The project will serve as a means of spreading information about useful materials and strategies for adult energy education. An important element of the package is 13 films and videotapes, "Energy Sources: A New Beginning." Other components include environmental simulation games, energy handbooks, and resources available from governmental agencies.

2. *Establishment of Programs* – The project will develop major resource programs for community and adult education. While the programs will be altered to satisfy local needs, they should provide a useful model to anyone beginning an energy education program.

3. *Public Education for Change* – The greatest benefit to be derived from the project will result if the public can be made aware that the energy dilemma is *real*. Our elected officials need the support of their constituents in order to establish practical long-range energy policies. Society must understand that the welfare of the human race depends on efficient management of resources and that much more research is needed to develop viable alternative methods of energy production.

NECC NEWSLETTER

NATIONAL ENERGY CONSERVATION CHALLENGE

No. 2 October, 1977

NECCing Partners!

While the list of participating institutions in the National Energy Conservation Challenge is growing every day, and it is alwasy open to welcome new participants, we would like to list the NECC crowd as of October 1, 1977. We will list new additions in succeeding issues of the NECC Newsletter. Following are the confirmed NECC participants: Adams State College (Colo.); Colgate University (N.Y.); City Markets, Inc. (22 stores); Community Church (Gunnison, Colo.); Continental Airlines (Robert F. Six Center, Denver); Colorado Governor's Mansion; Colorado School of Mines; Colorado State University; Dartmouth College (N.H.); Emporia State University (Kans.); Fisherman's Inn (Gunnison, Colo.); Grand Valley Public Schools (Colo.); Gunnison High School (Colo.); Holy Cross High School (Ill.); City of Reston, Virginia (Reston Home Owners' Assn. and Community Assn.); Rock Island Arsenal (Ill.); Paonia High School (Colo.); Marietta College (Ohio); Oklahoma State University; Springfield College (Mass.); University of Idaho; University of new Hampshire; University of Colorado (Boulder Campus); University of Colorado (Colorado Springs Campus); University of Wisconsin (Madison Campus); University of Wisconsin (La Crosse Campus); University of Northern Colorado; University of Southwestern Louisiana; University of Southern Mississippi; Western State College (Colo.).

Presidential Telegram

On September 30, 1977, on the eve of the official NECC opening, the following telegram was received from the White House: "I commend all those who will be participating in the National Energy Conservation Challenge...The initiative you have taken in seeking solutions to one of the most critical issues of our time sets a splendid example. I wish you every success in this important endeavor."-Jimmy Carter.

Letters of Endorsement and Encouragement

NECC does not represent any position in regard to the solution to the energy problem except that we, as citizens, should cut down on the waste of energy, and that it need not be a painful experience. We are pleased to have endorsements and moral support to date from the following: Ray Marshall, U.S. Secretary of labor; Richard Lamm, Governor of Colorado; Paul Ehrlich, author of **Population Bomb;** U.S. Senators Gary Hart and Floyd Haskell; U.S. Representatives William Armstrong, Frank Evans and Patricia Schroeder; Exxon Corporation; Tenneco, Inc.; Standard Oil (Ind.); Mobile Corporation; David Hamil, National REA Administrator; Texaco, Inc.; Atlantic Richfield Corporation; Northern Natural Gas; People's Natural Gas; Federal Energy Administration; Rocky Mountain Center on Environment; the Oil, Chemical and Atomic Workers' International Union; American Trucking Associations, Ind.; Colorado Open Space Council; David Lavender, noted historian of the American West; Colorado State Representatives Ken Kramer, Sam Zakhem and Betty Ann Dittemore; Colorado State Senator Martin Hatcher; University of Colorado regent Sandy Kraemer; Robert Seamans Jr., of M.I.T., noted energy expert; Colorado Council of Churches; Colorado American Legion; Doug La Follette, Secretary of State in Wisconsin; Colorado Water Conservation Board; Colorado Health Department; Education Commission for the States; Merrill Lynch and Co., New York; Gunnison County Democratic Central Committee; Gunnison City Council; Gunnison County Commissioners and the Colorado Office of Energy Conservation.

Getting Going

We do not feel that we are in a position to tell each institution how to set up its NECC program, and encourage each participant to brainstorm, define its own concept of challenge (either with another institution or against its own previous record). A session among students or employees should provide some good leadership. Contests within institutions should build the spirit of conservation. An individual going it alone can get discouraged, but if groups are involved, there's a chance to see some real progress. We suggest a committee be set up to get projects going which are fun and help us laugh our way through this problem. We are opposed to programs which involve fines, nagging, hassels, humiliations, or excessive preaching. KEEP IT LOW AND LOOSE. We've found that brainstorming sessions bring about some delightfully creative ideas, many of which result in savings of energy output in ways no one has yet written about. These also save money for the institution and to the individual. Other ideas may not save much energy, but they can dramatize the idea. Some new stunt or approach every week will keep the steam up every week. Start NECC out new every time it seems to be bogging down, or old hat. Several of the participating institutions have had very successful energy conservation projects going; NECC is a chance to re-charge and supplement them.

To Get the Creativity Flowing

Following are a few ideas we've been getting to promote the idea, and some practical applications: Fly a NECC flag (see information elsewhere in this Newsletter); cartoons and posters; stickers on light switches and thermostats; roosters to wake people up; building a Great Trash Monster (for recycling); NECC ties and NECCerchiefs; study-ins to share lighting and heat; a long johns and sweaters dance; NECC courtesy cars (cards which commuters can use to show they're willing to pick up walkers destined for same place); wash-your-own-laundry-and-hang-it-out-to-dry day; sweat days (no air-conditioning); Saturday Night Cheap (get together for fun sharing equipment to make practical things and gifts from used materials); NECCwiches at local restaurants or cafeterias; research paper contests; speech contests; drama contests; art contests; music festivals; G.I. Shower Demonstration (get wet, turn off shower and soap off, rinse); beard contests; NECCing hour (turn off lights for a simulated black-out); ice sculptures; guest speakers' week; quilting parties; roll-up-your-pant-leg-and show-your-long-johns days; insulation testing contests; no-smoking areas to cut ventilation draw output; NECC drinks, hard or soft; NECC shopping bags to cut paper sack waste; you take it from there and let us know; we'll make this a regular feature.

Measuring Savings

Accounting systems vary, but a team of accountants or scientists should be able to figure out the BTUs' kilowatt hours and gallons used during the past year, and to calculate the expenditure month by month during the NECC year. Don't use dollar figures of cost, as those represent an inflation factor. If you'd like to average out several years, that may give a better measure for comparison. Then divide these figures by the number of employees or students enrolled at each time, for a per-person consumption count, to be used for the actual per-cent reduction rating. Institutions which have on-going programs may wish to use figures on waste which were extant prior to the beginning of the program. We'd like to know your savings here, as of April 30, 1978, but that's optional. If you want to challenge Western State College individually, we'll take you on. If you want to start your program later, or end it earlier or later, that's o.k. with us; just be sure to let us known what period is being measured. There are no prizes or check-ups; this is honor system, but we would like to publicize outstanding records and share with the nation the ideas which seemed to work. While NECC is based on energy-consciousness, we realize that some of you have made great strides in engineering and physical plant modifications. These cannot be separated from psychological attitudes in the figures, so we won't try. "More power to you," in a manner of speaking. Other institutions will keep pushing for those improvements, and NECC may help the cause.

It's YOUR NECC

We encourage each participating institution to take the leadership in getting NECC programs going in its own area. Call press conferences, give out news releases, send teams to other institutions, work with youth groups, local clubs or veterans groups, talk to children in elementary schools, create radio and television spots, get high school programs going. Please, though, keep it light and happy, and please ask each institution to notify us so we can include them in the Newsletter mailings and share information and ideas with them.

Unifying Through NECC

Three institutions have told us they are concerned about the problems among various age groupings, races, political factions, or sexes in the institution. We don't claim to be experts on problems with still defy the pros, but we'd suggest that the committees that control the NECC program be representative of different groups. One thing we can all agree on is that it's nice to have energy available, and that waste can really throw us into chaos. Our freedom rests partly on the fact that without our current sources of power, there would have to be 300 of us slaving away to serve the needs of any average free person today. Preserving this source of our freedom is essential to us. Without power and heat as we know it today, there could be little in the field of educational opportunity or upward mobility, no matter what sex, color, or political leaning we have. If we don't stop wasting, we'll be in for a lot of upheaval in all these fields of real or potential friction. At the Western State College campus, we think NECC has brought the various groups together more than anything that has occurred in years. It's worth a try, if only for that. However, there is more at stake in the nation.

Can NECC Cut Production?

We've been asked an interesting question by a major U.S. producer: He suggest that by cutting back 20 per cent in energy output, we'd cut U.S. production 20 per cent. Nothing could be further from the truth. NECC is talking about cutting the waste, which now represents about 23 per cent. Normal production and employment will be preserved in a much more secure position if there are no major heating, power, or gasoline outages in the nation. We'd better get NECCing or else! NECC is not after cuts in any output of energy which is considered necessary. We even have to figure the energy output of this Newsletter it had better not be waste. That depends, of course, on your attitudes. Please give us any suggestions as to how to make it more effective.

Slogans and Puns Department

These may be good for a T shirt here or there, a sign, or some other use. Send yours: Is it NECCessary? NECC in the dark. Stick your NECC out. Let's NECC! NECCers have more fun. NECCers get it done! *NECC: make it* or break it! Let's get America NECCing by Christmas. Time to NECC.

Want to NECC?

As you might have perceived, the NECC newsletter is a sort of jack-of-all correspondence for people who believe in this cause and believe it can work. We're students, not pros, and we think the idea is worth the effort. About a hundred students are working hard on NECC here, and about 400 others are helping in certain useful ways. You might want to join the ideal, and become a participating institution. It

Comparative Appliance Report

Paul Geddes, of the NECC research committee, has prepared the following article for practical use in energy conservation. We though you'd like to see it. We will try to get some short reports from all over in this, especially those done by NECC participating organizations. Send us the information.

A sixty dollar electricity bill! Outrageous!

Why can't those cold hearted people at the electric company give consumers a break for once instead of gouging them for huge profits?

A good question, perhaps, however the point to be raised is not the profit percentage of the power company, but was the full $60.00 worth of electricty actually needed? Where did it go? Was it used efficiently? Which appliances use the most, or the least amount of electricity?

To answer these questions, a standard method of systematically evaluating the power requirements of all power consuming devices was developed. The standard energy unit, developed is both easily understood and applicable to any form of energy consumption. The unit will be referred to as the G unit, and is equivalent to the energy consumed by one 100 watt light bulb for one hour. With the aid of standard conversion factors found in any physics text, any energy unit such as BTUs or horsepower can be converted into these G units.

Listed in the accompanying table are the power requirements, in terms of G units used for one hour of continuous use, for the majority of electrical appliances commonly found in the home. The raw data was gathered out of a 1976 Sears and a 1977 Ward's catalogue and averaged together. They are approximate values, not absolute.

The statistics basically speak for themselves. They should serve as a guide so you can decide where you personally use the most energy and how to arrive at an optimum balance between energy savings and a personal sacrifice of conveniences.

HOME APPLIANCES POWER CONSUMPTION (G Units)

Hot Water Heater	76G*
15.5 gallons for 100° F rise (3.5×10^4 BTU) over a 60 min. period.	
22.5 gal for 100 ° F rise (5.5×10^4 BTU) over a 60 min period.	110
Clothes Dryer (2.2×10^4 BTU)	56
Air Conditioner	
Heavy duty	60
Medium duty	42
Light duty	35
Electric Range	
Small burner	12-13
Large burner	20-22
"Bake"	24
"Broil"	34
"Self-clean"	75
Dishwasher	7.5
Microwave Oven	4.6
Vacuum Cleaner	
Large cannister	8-11
Small cannister	5.5-8
Standard upright	4-5
Color TV	
21"	1.5
19"	1.2
17"	1.1
9"	.8
B & W TV	
19"	.68
12"	.45
Stereo Amplifier (max. draw at max. volume)	
Small portable	.2-.4
Medium size component	1.0
Large size component	1.5
Cassette Deck	.1
Reel to Reel Deck	.4
Turntable	.2
Electric Typewriter	.4-.7
Electric Blanket	1-2
Clock Radio	
Standard Dial	.16
Led dial	.04
Electric Toaster	9

*All values are in G units for one hour of continuous use, 1 G unit = amount of energy used by one 100 watt bulb for one hour.

i.e., 24 one hundred watt bulbs burning for one hour is equivalent to one hour of baking in the electric oven cited above in terms of energy consumption.

costs nothing to try to save this way, and you may even save some on the budget. Just drop us a note at NECC, WSC, Gunnison, Colorado 81230, telling us you're in, and we'll try to write back right away. Below are a few of the telephone numbers which may help in keeping the communication flowing:

Chairman Jim Zulevich: 303-641-3903
Communications Chairman Jim Douglas: 303-641-0813
Political Chairman Mike Protsman: 303-641-3167
D.C. NECC Office Chairman Charles Kiefe: 703-860-3697
Institutional Coordinations, Jake Crossley: 303-641-1026
Special Relations Chairman Mark Rollert: 303-641-3886
Campus Projects Chairwoman Lin Wallach: 303-641-3926
Faculty Advisor Abbott Fay: Office 303-943-2039
Receptionist 303-943-2091
Home 303-641-0931
WSC Student Government Office 303-943-2185
WSC Public Information Office 303-943-3035

We are dedicated to holding in there and helping in any way we can to the absolute limit of our abilities. We may not have all the answers, but we'll try to help you with your program in any way possible. We are not financed through the college here, and have been going on funds we earn on campus and through donations received.

Speaking of Donations

Tenneco, Inc., has sent $5,000 to be used by the National Energy Conservation Challenge. This money will be used to defray some of the expenses of this newsletter and other costs of keeping the national program growing. It is most appreciated. The donation was given with no implication of any vested interest in NECC; in full support of its independent position. NECC is not a propagandist for any special position on the energy problem: governmental, energy producers, or major conservation groups. We hope they may reach a solution to this problem, and simply want to get on the way by trying to get America to cut down on the waste without seriously altering existing life styles. NECC is going to need more money to carry on, but is not asking participating institutions for such. No-strings-attached donations may be given to the Western State College Foundation, 120 North Boulevard, Gunnison, Colorado 81230, a tax-deductable foundation, with a request that the grant be earmarked for use of NECC.

About that NECC Flag

On October 1, the NECC Flag was unfurled. It is a white flag with a yellow sun, with a black seagull flying, and the blue letters NECC on it. If you'd be interested in having one, it was sewn for us in durable materials by the American Pennant Manufacturing Company, 3198 Speer Blvd., Denver, Colorado 80211. You might want to order one, and they have the specifications. You might also put your own NECC art committee into the design of your own flag.

Need Some Good Literature?

We understand the Federal Energy Administration has now been absorbed into the new Department of Energy, but the following address should still be able to get you a copy of their Energy Conservation and Environmental Publications, a good listing of inexpensive and useful materials to help with your program. Write Federal Energy Administration, Washington, D.C., 20461, for this free bibliography.

How About That?

We've been learning a few things we didn't realize when we started, a a result of questions. Among them are these:

It takes quite a charge to turn on a flourescent light, and if people keep turning them on and off, more power will be used than if they were left on. However, experts still tell us that the practice of turning them off will probably save more power in the long run. People may turn them on only when they are necessary. At the end of the day, turn them off for sure. Also, where there are multiple switches for banks of such lights, tiny labels on the switch plate helps to avoid turning on the wrong bank trying to find the right one. Might of guessed that one would come from a logic prof.

We've also learned that showers are not always a savings over baths, the way some people luxuriate in the shower. Translating values, taking a shower for ten minutes is the equivalent of burning a 100 watt bulb for 55 hours. That heat costs a lot!

Piling up sealed aluminum cans from beer or soft drinks in the sun-heated window, if they're filled with water, will give some extra heat boost to the room when the sun goes down. If you paint them black, they'll store even more heat to radiate at night.

A Note About WSC and NECC

If you were wondering how we got into all this, it's because we're about the coldest place in the nation every winter, except for Alaska. We challenged other institutions to match our savings, but it got such a good response, we broadened the challenge to include any institution of any area to set up its own concept of challenge. Gunnison, Colorado, is located in the heart of the Rockies at 7,700 feet elevation. Western State College is a liberal arts college of about 3,000 students, and has been very active in environmental issues and experimentation for some time, being surrounded by beautiful scenery which is also energy rich. We have a full realization that more energy will have to be produced, but we feel conservation in human habits may enable producers to fulfill the demand without critical shortages, which would be accompanied by social and economic chaos. Conservation is a state of mind, just as waste is a state of mind. We realize the job of changing thought patterns is a big one, but we're finding that lots of Americans are ready to do just that. We're merely serving as a coordination and information exchange center for an idea. We realize NECC is an experiment, but we believe it can succeed if all the NECC participants keep trying and thinking, working and renewing the efforts. When President Carter asked for a voluntary conservation program at grass-roots level on April 18, 1977, we volunteered.

NATIONAL ENERGY CONSERVATION CHALLENGE, Western State College
Gunnison, Colorado 81230 Sept. 16, 1977

OCTOBER SCHEDULE OF EVENTS ON THE WSC CAMPUS:

October 1 : 'Official launching of the NECC program nationwide with raising of the NECC flag. Preceded by big NECC parade in conjunction with traditional WSC Homecoming. Flag-raising at 11;00 A.M. in front of Student Union Building. Also, beginning of winter of teepee residence by students of WSC on campus.

October 3 - 8: Bicycle Week. Demonstrations, emphasis on bike use, bicycle maintenance instruction, bike races, klunker demonstrations, bike for health program.

October 6 - 7: Second NECC White Elephant Sale on campus to raise funds for NECC program.

October 7 - 8: Bicycle ride from Gunnison to Alamosa, Colorado, for WSC-Adams State Game (football). Distance one way is 122 miles, crossing Cochetopa Pass on the Continental Divide. Both Western and Adams are NECC participants. Dozens of participants expected.

October 10-14: Roosters on campus to awaken students...unplug the electric alarm clocks.

October 15: NECC courtesy car system begun. Students driving cars carry card in window to furnish free rides for cold walkers.

October 16-22: Skateboard events on campus.

October 26: NECC ing hour. Simulated blackout of campus.

Coming in November: Folksong Festival (songs about energy conservation)
Faculty Follies
Judging of styrofoam window panels decorations for conservation of heat at night.
Selling of raffle tickets on hand-woven NECC quilt.

Coming in December: Long Johns and Sweaters Dance with electronic music by rock band, energy produced by human energy.
Study-In for Fall Semester finals. Student Union open for study on 24 hour marathon basis.

Coming in January: Skiers walk from Crested Butte to ski area.
National Energy Conservation Conference, Jan. 18-21.
Snowshoe and Toboggan Race. (Winter Carnival)

Later: Ice Sculpture, Great Trash Monster, Ice W., Communal Bake-in, Research Paper Contest, Mountaineering Conservation Day, Home-laundry and hang out wash week, Beard Contest Finals, NECC Bash.

The project has been divided into four phases:

Phase I (completed July 31, 1976) – Preparation, planning, and organization constituted the bulk of Phase I. In addition, a steering committee composed of leaders in education and the energy field was formed and began to operate. Notices of project acceptance were sent to adult education agencies, boards of cooperative services, the State Department of Education, and other interested parties. Materials were ordered, prepared, and organized for Phase II. Applications for Colorado educators to serve on the instruction team were prepared and mailed to each of Colorado's 181 school districts. Upon receipt of applications, a teaching cadre of 16 educators was formed; selections were based on satisfaction of a stringent set of professional requirements.

Phase II (completed August 31, 1976) – The 16 carefully selected educational leaders, representing different geographical regions of Colorado, were trained at the University of Colorado to develop the programs and courses to be offered during Phase III. This two-week training period involved examination of information sources, participation in simulation exercises designed to increase energy and environmental awareness, field trips, listening to guest speakers, and viewing new audiovisual materials. In addition, each member of the instructional team was required to develop a program syllabus unique to the needs of his home community.

Phase III (completed April 30, 1977) – During this phase the educational leaders met regularly with interested citizens from their local communities. At these meetings, participants discussed "Energy Sources: A New Beginning" (presented by filmstrip, film, or TV broadcast), heard guest speakers, and participated in energy-awareness activities. These forums examined potential solutions and considered steps the consumer and the community can take. Considerable time was also spent on individual and group measures to conserve energy and save the consumer money without causing a sharp decline in living standards.

Phase IV (completion date, June 30, 1977) – During this phase data concerning changes in knowledge base and attitudes with respect to specific energy/environmental learning models were analyzed. A factorial design involving socioeconomic status, sex, age, and community type was employed. Attention was directed to evaluation of the project and attainment of project objectives.

In conclusion, we must point out that efforts to promote energy/environmental awareness are sorely needed – not just in Colorado but in all states. Given the immediacy and the gravity of energy/environmental decisions facing us, it appears prudent to increase emphasis on educational programs for adults. Without *active* citizen participation we can expect a steadily increasing deterioration and loss of control. The longer drift continues, the more difficult it is to regain control; our course tends to become irreversible. □

RESEARCH NOTES

Peggy G. Elliott and Donald C. Manlove

The Cost of Skyrocketing Teacher Absenteeism

In recent years teacher absences have increased dramatically in many U.S. school systems. The increased absences come with more generous sick leave policies bargained by teacher groups. When the regular teacher is absent, there are major costs, both instructional and financial.

Annegret Harnischfeger and David Wiley have demonstrated that cutbacks in school time bring cutbacks in student achievement.[1] A New York Metropolitan School Study Council (MSSC) report showed that substitute teachers are significantly less effective in classrooms than regular teachers.[2] If substitutes are so ineffective, would Harnischfeger and Wiley say they too constitute a cutback in schooling time and hence achievement? Are we bargaining away pupil progress with more and more "sick days"?

New York City's monumental cost for substitutes ($71.5 million in 1971-72) suggests that there may be a serious increase in dollar costs nationally. The data from a 1976-77 study of the situation in a Midwestern state clearly indicate that the problem is not unique to urban areas. The results of the detailed survey questionnaire distributed to every superintendent in the state of Indiana are reported here.

First, the number of total substitute days is increasing. Eighty-six percent of all the corporations reporting indicated steady increases over the last five-year period, even though the overall number of teachers and students declined.

The time allowed by contract for teacher absences is also increasing. In 1975-76 the total number of days teachers could be absent without loss of pay showed a mean for first-year teachers of 14.47 days, with a high of 25 days and a low of nine days. For teachers after their first year, the mean number allowed was 13.06; the range was nine to 24 days. Six superintendents indicated that there is no longer any limit to the number of paid absences teachers in their districts can accumulate.

Great numbers of substitute teachers are required for implementation of these contracts. The largest school corporation reporting used 1,365 different substitutes during 1975-76; the mean number of different substitutes used was 78 per reporting system.

Dollar amounts spent for substitutes varied predictably with the size of the districts; one district spent $889,050 in substitute pay during one year.

On the positive side, 96% of the districts indicated that some of their substitutes were employed so that teachers could engage in professional growth activities.

There has also been some improvement in the credentials of substitute teachers over the last five years. Ninety-five percent of the districts reported that more of their substitutes were provisionally or professionally licensed than was the case five years earlier. Fourteen percent of the superintendents even reported that they were able to provide their schools with certified personnel in all cases. Also, more than half the time substitutes were assigned in instructional areas in which they were

PEGGY G. ELLIOTT (Northwest Indiana Chapter) is assistant professor of education, Indiana University Northwest, Gary. DONALD C. MANLOVE (Indiana University Chapter) is professor of education, Indiana University, Bloomington.

specifically trained. But the problem of qualified substitutes was acute in rural areas. One superintendent said, "We just take what we can get. Not many are really qualified."

Superintendents reported that a little more than half of the time they believed there was continuity of instruction when a substitute was in the classroom. However, they went on to indicate that the principals were primarily responsible for such assessment. These opinions do not square with results of the New York MSSC study noted above. The accompanying table shows the ratings of classroom effectiveness by types of teachers in New York City.[3]

Mean Score of Observations By Type of Teacher Ranked By Classroom Effectiveness

	Mean Score	
	Elementary	*Secondary*
Regular teacher	6.12	5.01
Specialist	5.82	4.99
Student teacher	5.62	2.76
Substitute	1.98	0.27

Martin N. Olson, who was also working with problems of quality in classrooms when the MSSC study was made, reviewed the table thus:

> What clearly stands out . . . is the abysmal performance of the substitute teacher in contrast with that of the regular classroom teacher. . . . Either substitute teacher performance must be improved or alternatively less expensive methods of handling teacher absences should be initiated.[4]

In the Indiana study, less than 1% of the reporting corporations indicated that any money was spent in preparing substitutes. The few dollars that were spent went for handbooks, planbooks, and orientations.

Most schoolpeople believe that collective bargaining has increased paid released-time days, with the resultant increase in the use of substitutes. Yet one $150 contribution was the only attempt of any kind reported to have come from a teacher bargaining unit for assisting with the instructional problems resulting from increased sick leave.

Nearly 5% of the districts reported that when teachers were going to be absent they were required to do nothing. Another 13% reported that they had "no" or "not much" recourse when the absent contract teacher failed to provide either plans or materials for the substitute. A troubling 7% reported that when a principal was dissatisfied with the work of a substitute he had *no recourse.* All the districts reported that the principal is charged with the major responsibility for monitoring substitute and absent contract teachers.

A request for the criteria by which substitute teachers are evaluated elicited 27 different general responses. The largest category was "principal's recommendation." Among reasons for selection of a substitute teacher, more than twice as many respondents listed "availability" as a criterion as listed "successful teaching."

What do these responses as a whole indicate?

First, teachers are clearly spending more and more time away from their assigned classrooms.

Second, in many localities substitutes are probably providing more than the student sitting services historically accepted from them. Certainly, more of them hold professional credentials.

Third, there is evidence that nobody has taken a serious look at this important change in the qualifications of substitutes to determine how they could be more effectively used. The response seemed to indicate an acceptance of the New York City appraisal of the inadequacy of substitutes; at least operational policy is based upon similar assumptions.

Fourth, there is no evidence of any serious attempts to reverse the growing absence problem. In fairness to teachers, it should be said that by no means all of them misuse sick leave. However, the good examples of concern for student progress and the modeling of good attendance and responsible behavior have not prevented growing irresponsibility.

Fifth, the worsening situation should not be allowed to continue, for both instructional and financial reasons. We would certainly not suggest that sick teachers go to school or that teachers be denied time for serious family emergencies. We do say that there is strong evidence that teachers have abused their absence privileges, and something must be done about it.

Administrative procedures that necessitate more and better pre-absence plans for instruction will address the problem. Charging someone other than the already overburdened principal with the monitoring of absences will help. Demanding more documentation of need or reason for absences will make a difference. Linking any of these with whether or not there is payment for the absence would also be effective. Spending some time and money working with the substitutes themselves would certainly be productive.

Finally, perhaps the teachers themselves could monitor or even administer the use of sick leave. Reportedly, when William Wirt was superintendent of the Gary, Indiana, schools many years ago, the teachers determined who was paid for an absence. Funds for payment of substitutes were given to their committee in September; what was left was distributed to all teachers in June. The system had its flaws, but there weren't many absences. The point is that there are ways to deal with the problem; they must be discovered and used.

Taxpayers today demand 1) more accountability for the spending of their tax dollars and 2) more progress by the youngsters they are sending to school. Rocketing costs and falling test scores are not an acceptable combination. As Harnischfeger and Wiley's equation of school time and school progress becomes more widely known, hard questions will increasingly be asked about the conditions under which time is lost. The New York study certainly indicates that loss occurs when substitutes are in classrooms, and the data gathered here indicate not only that virtually nothing is being done to prevent such loss but that the amount of time lost is increasing.

Lawsuits demanding better instruction are not likely to lessen in number. We doubt if they should. Therefore, before more days are bargained away

The Editor's Page

Continued from page 225

turned to me. Results are presented on page 225.

What do these tabulations mean? It is tempting to speculate. I shall, however, leave analysis to the reader and present only a basic view I myself hold.

I believe that it is socially desirable to increase the participation of minorities in training for the professions. There are many ways of doing this, but it needs to be done without impairment of current professional standards. We have no very accurate way of predicting who will be most successful (or useful – a somewhat different matter) in medicine, law, or teaching. But our best present measures should be used to develop a pool of qualified applicants. At this point the democratic ethic, it seems to me, dictates a lottery of the military draft type to assure fairness. Minorities would thus be guaranteed acceptance in proportion to their share in the pool.

At the same time, public bodies ought to monitor entry to professional training. Given full control over entry, the professions themselves have trouble distinguishing between self-interest and the public good.

Most of the pundits currently writing about *Bakke* – and their name is legion – seem terrified of the choice that faces us. It seems to me, however, that a compromise is possible that will meet the legitimate demands of the minorities and still protect against so-called reverse discrimination. We must all search for that compromise. – SME

NEWS RELEASE

FROM

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

Called Cohen S.C. on 23 June to specify that would want to explore a speech 7–4:00 on July 25 to discuss S.C. position

June 26, 1978
For Immediate Release

Energy Policy Makers to Confer
in Small Rocky Mountain Town

Some of the most significant personalities in the fields of energy production, conservation, government, and education will get together this summer to discuss national policy at the Rocky Mountain Summit Conference on Energy, to be held in Gunnison, Colorado.

The conference is organized as a part of the National Energy Conservation Challenge, according to Michael Protsman, national executive chairman of the voluntary conservation program.

Already confirmed to take part in the conference, to be held July 24,25,and 26 at Western State College here, are Paul Ehrlich, famed population specialist from Stanford University; William Carpenter, senior vice-president of Tenneco Inc.; Albert Bartlett, president of the American Association of Physics Teachers; Ruth Carter Stapleton, author and well known speaker; Elaine Barbour, National Teacher of the Year; J.P. Hammond, vice-president of Standard Oil of Indiana; Roger Rasbach, a leading conservation and solar architect; W.J.D. Kennedy, executive director of the Rocky Mountain Center on Environment; Robert Brown, Under-secretary of Labor; Fred Gagne, Manager of Energy Affairs for Northern Natural Gas Co.; and others.

Expected to take part also will be a top official of the Department of Energy from Washington, D.C.. Shlesinger

These speakers will work with the representatives from more than 200 institutions from 48 states who are now taking part in NECC, a voluntary energy conservation program begun and operated by the students at Western State College.

NECC now represents more than a million people in the nation who have acconted for savings of an estimated $10,000,000 in energy output during its first year of operation.

(over, saving paper)

The program was organized in response to President Carter's request for voluntary energy conservation.

The conference is designed to get the most influential leaders together in a setting that is removed from urban pressures and ask them to "lay down their swords" and talk with each other about the needs of the nation in regards to the energy dilemma.

They will be sharing their ideas with students, businessmen, college and high school administrators and those among the general public who feel most strongly about the role of voluntary conservation as one step in meeting the nations energy problems. Organizations from Geogia to Alaska; from Maine to California are involved.

The three-day sessions are still open to any interested person, upon payment of a $30.00 registration fee. Housing is available on campus on a limited basis for $20.00 for the entire week. Part of the support for the conference has come from Tenneco and Exxon, major producers who are willing to support voluntary conservation, although the NECC program has not committed itself to any proposed solution to the energy problem: governmental, producer, or environmentalist.

(For further information call any of the following: Michael Protsman, National Executive Chairman, at (303) 641-3167; Larry Whiteside, National Assistant Chairman, at (303) 641-3777; Cristen Thomas, National Assistant Chairman, at (303) 641-0854; or the Director of Communications and Assistant to the President of W.S.C., J.W. Campbell, at (303) 943-3035.)

(Note to Editors: Gunnison, Colorado, is a small town located in the heart of the Colorado Rockies at an elevation of 8,000 feet. It is the site of Western State College, a liberal arts college of 3,200 students, where this program began. The NECC program is the most widespread voluntary energy conservation program in the nation at the present time. It is entirely grass-roots and entirely voluntary. It is run by students, and is strictly an amateur effort. Perhaps obviously.)

National Energy Conservation Challenge

Western State College

Gunnison, Colorado 81230

April 30, 1979

Dear Participant:

During last years' National Energy Conservation Challenge, we gained a great deal of insight into the "energy problem" as we hope you did.

This current school year has proven to be a time of re-vision for those of us at NECC.

What we are working on at this time is a new approach to NECC. We are planning, evaluating, and strengthening our program. Also we are becoming more student oriented with easier-going attitudes.

Due to the success of the first challenge and the continued favorable responses we have received, we are anticipating a nation-wide re-challenge to save energy, beginning in the fall of 1979.

You can help those of us at NECC considerably by filling out the enclosed questionaire at the earliest convenient time for you.

We apologize for our lack of communication with you. Now that we are getting our feet on the ground again, we would appreciate any comments and/or suggestions that would be of help to us.

Most sincerely,

Ann Hyde

Ann Hyde
President

1. Did you or do you currently have a conservation program at your institution?

2. Is your NECC program still active?

3. If so, approximately how many active participants do you have?

4. Has NECC accomplished what you would like? (Please elaborate)

5. How have you benefitted from the NECC Newsletter and what would you like to see included in upcoming issues?
   - letters to the editor
   - question & answer column
   - brainstorm
   - what's happening with your program
   - book reviews
   - conservation tips

6. Do you have some sort of system for evaluating your progress. If so, please elaborate.

7. What kind of help, if any, have you had from on-campus groups?

8. How much faculty support, if any, do you receive?

9. Has your school offered credit or work-study for energy conservation work?

10. Are there any other conservation groups that you have worked with in the past?

11. Has your program branched out to any other levels within your community? Please elaborate.

12. What kind of backing have you had from local or national organizations? Please elaborate.

13. What kind of fund raising projects have you been involved in, and were they worth your time and effort?

14. What kind of publicity did you find most successful? Was it high or low keyed?

15. What kind of workshops, conferences, extra curricular activities have taken place at your institution with regards to energy conservation.

16. What areas would you like to see covered in an energy saving tips booklet? (Please list in order of preferance)
   - auto effeciency
   - unique
   - money savers
   - recycling
   - benefits
   - feels good...fun
   - lighting; water; appliances, kitchen, bath
   - consumer
   - humble abode-heating, cooling
   - other

We would enjoy having mimentos from your institution's program (stickers, posters, newsletters, etc.).

NECC NEWSLETTER

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

NO. 3 **NOVEMBER, 1977**

NECC's On Its Way

With 38 participating institutions from Massachusetts to Alaska, the National Energy Conservation Challenge is now in its adolescence, and growing fast! For complete listings of participating institutions and endorsements of the program, see the last page of this Newsletter. We are deeply appreciative of the recent national publicity given us by the United Press International, Charles Osgood and the CBS Radio Network, Paul Harvey News, and several major newspapers and television stations. Each institution is encouraged to set up its own system of publicity for its programs, and please let us in on your ideas, so we can share them. We have several to include in this Newsletter, scattered here and there in this amateur production.

OOPS! Read This on Those Fluorescent Lights

Here we had a chance to do even more on national energy conservation consciousness and we blew it. Nobody we asked seemed to challenge the idea we stated that turning fluorescent lights off and on too frequently used more energy than leaving them on. We did report that turning them off was a good idea.

NOW HEAR THIS! Professor Albert A. Bartlett, Professor of Physics at the University of Colorado, writes to tell us that we've fallen for a myth. We quote from his letter:

"First, there is a confusion of power, energy and charge. It takes a little higher power to turn on a fluorescent light than it takes in normal operation. It is presumed that if they are turned on and off more energy will be used than if they are left on. The presumption is misleading. Measurements were made here a couple of years ago by students in the junior laboratory and these showed that in a normal 20 watt fluorescent tube the starting power was about 26 watts for less than one second, after which it dropped to a steady 19 watts. Thus an extra 7 watts was used for less than one second. This would be the consumption of about 7 extra joules of energy to start the lamp. When the lamp is burning normally it takes 19 joules per second. Thus the extra energy to start the bulb is about equal to the energy consumed in (7/19) of a second (approximately one third of a second). Thus if you don't need the light for more than 1/3 second, you probably save on your electric bill by turning off the light. If you take into account the energy required to manufacture the bulb and the fact that the life of the bulb is shortened by turning it off and on--then a longer time would result. I guess that one might get a reasonable answer by multiplying the 1/3 second by 100 to give 30 seconds. **Thus if you don't need the light for 30 seconds, you save energy in the total national economy by turning off the light. The net effect is that I think one should turn off any light any time it is not in use, and I do this."**

So carry forth the message in all the NECC centers. It is staggering to think of the electricity which can be conserved with this one habit alteration!

And Here Goes Another Myth

We had hardly recovered from that one when Professor Bartlett let loose with another comment. This one is for those of you who live in cold areas, like us mountain folks, who have believed that it takes more heat to get a building warm in the morning if the thermostats are turned down at night than leaving the thermostat up all night to keep the warmth. No so! Dr. Bartlett has a very simple argument:

"1. The heat flow in joules per second from the warm inside of a house and conducted through a wall to the cold outside is proportional to the temperature difference (T-inside-T outside).

"2. It follows that if we reduce the temperature difference by letting the warm inside temperature drop, we reduce the heat flow conducted through the wall to the outside.

"3. Reducing the heat flow to the outside reduces the energy loss and saves energy.

"As an example: It is 70° F inside and 30° F outside, we have a 40° F difference across the walls of the house. If we set the thermostat to 60° F the new temperature difference across the walls would now be 30° F or three quarters of its previous value. This would reduce the heat flow to three quarters of its previous value which would give a 25% saving. In the same way, a reduction of the inside temperature from 70° F to 69° F would reduce the temperature difference from 40° F to 39° F which is a 2.5% reduction in the temperature difference and a 2.5% reduction in the rate of conduction of thermal energy through the walls. The argument is so simple and so easy that I am simply astounded to learn of power companies and others advocating that one keep one's house warm at night in order to save energy.

"In this example, lowering the inside temperature from 70° F to 60° F give a 25% reduction in the heat flow during the time of the setback. If this is done for 8 hours each night (one third of 24 hours), the average saving would be equal to about 8%."

If There A National Nyctophobia?

We've been informed by the psychologists that the word for fear of darkness is nyctophobia. In some cases, people have severe fear of the dark, and are psychologically upset by absence of light. Consideration should be given to these people as we get into this national emergency and try to turn habits from waste to conservation. However, most of us are simple in the habit of having a lot of light

on all the time wherever we go; some reduction in this can be more relaxing, ease eyestrain, and serve the purpose of the light better than excessive brightness. We hope that we can avoid extremes. We'd be conscience-stricken if someone falls and hurts himself because there was no light in the hallway; on the other hand, there are few people who have to read the fine print in a contract in a hallway. Most hallways are about 100% overlit, and removing about half of the lighting units usually goes almost unnoticed.

Please keep in mind as we venture into this attempt to save energy and slide through a crisis that the word conservation means "wise usage;" it does not mean "No usage."

How Bad is the Energy Emergency?

We've maintained, based on information available, that there is at least a 23% waste in the energy output in the nation, although some sources tell us the waste is higher than that. Some of this waste is in energy conversion, some in major technological design, and some in human habits. It is that last factor that NECC hopes can be reduced through its efforts, but it is very anxious that thinking go on and improvements be made in all fronts. There are some delightfully encouraging signs of progress going on all over the nation. For instance, Deere and Company (we usually think of tractors when we think of them) tell us they have cut the energy output per ton of finished product by 25%!

Meantime, at a major energy symposium in Denver recently, energy producers estimated that between 1981 and 1983 the demand would outrun the production in the fossil fuel, and critical outages, with huge economic and social distruption would result. It's hard, but we must try to fight the national fatalism which seems to hold that no one is going to do anything until he's freezing in the dark. A few questions and answers might help here:

Q: What about imports?

A: At present, the United States is importing almost 50% of its oil, making it vulnerable to any number of possible ploys in international politics and economics. While it is possible that a crisis here could be covered by greater imports, it must be kept in mind that the fuel crisis is worldwide, and the question of supply from imports is highly doubtful, at best.

Q: What about solar energy?

A: Great things are happening on this front, but they are a long way off as far as any real use before the crisis time. Working at full effort and financing, it would still be about 1990 at the earliest before there could be some real effect in the actual national energy picture. For instance, a desert city of 35,000 in the Southwest might be electrified by about 40 acres of solar collectors, computerized to be aimed directly at the sun every minute possible. However, one dusty rain storm presents the problem of cleaning off 40 acres of glass for total efficiency in a water-short area. It will take time to solve such problems and technologists are working on them. Individual home solar collectors for existing homes are still so expensive as to be beyond the realm of practicality for the average home-owner. Then there is the eternal question of whether to sacrifice shade trees, so important in summer, for sunlight, so important in winter. The gang at the drawing boards are doing great, but they're asking us to tell the world that instant science can't always come through to save us. The problems are also there in wind, tide, geothermal and other forms of energy. We'll be on fossil fuels for a while, and there aren't enough available.

Q: What about changes in policies which would enable energy producers to go after vast amounts of fossil fuels still existing in the nation?

A: There seem to be plenty of reserve, underground fossil fuels available, but they will be more expensive to obtain. The "easy sources" have about been worked to a maximum, and now we can go for the harder and more expensive ones. The ear of cheap energy is over, period, for our lifetimes. However, assuming people will pay unlimited amounts for the fuel, it would still take several years to get this energy into full production; more time than we have before that crisis period. We **must** cut down on the waste!

Q: How are the environmentalists complicating this?

A: Environmental protections are costly, and add much to the cost of energy, but most producers have an enlightened view which holds that the air and water quality are very important, despite the fuel crisis. There are simply too many factors involved to simplify this problem, but with intelligent consideration for both the issues of environment and the energy shortage, there can be some rational solutions. NECC is committed to the idea that cross-blame by those involved is getting America nowhere, and that the time has come for calm study and discussion among energy producers, conservationists, and government officials.

Thanks, Fonzie!

We were pleased to get a fine letter of support from Henry Winkler, who wrote, in part:

"This letter is jam packed with encouragement. The encouragement comes from my deep seated understanding that if we don't take energy conservation seriously, life as we know it can never be passed on to coming generations."

The popular star of movies and television has done two television commercials under governmental auspices to promote energy conservation.

Success In Seattle

We have been informed of the success of an intensive energy conservation program at North Seattle Community College during the past several years. The all-electric campus of 6,200 students, under the leadership and inspiration of Joe Berling, Director of Services, was able to cut back the electrical output from 13,584, 600 kolowatt hours in 1972 to 9,166,200 kilowatt hours in 1976, a 33 per cent drop. Much of it was in the field of energy conservation consciousness. There was quite a wave of complaints and grumbling, but gradually the students and faculty got into the slight changes with a spirit of cooperation. Every institution, from what we are hearing and experiencing, is going to have to go through a bit of strain from those who fear they will freeze, roast, or go blind with the cutbacks, but tenacity, good humor, and patience should help in achieving results similar to those in Seattle.

Western State College of Colorado, which go into the energy conservation program later than many of the participating institutions, did some calculation for September of this year and found that NECC is working, with a 27.3% drop in electricity use and a 21.4% drop in gas usage per student attendance day, as compared with the average of the past six Septembers.

Write in and tell us how things are going at your institution.

Windows as Culprits

While windows are a blessing in receiving the sunlight which both warms and lights buildings in cold areas, our research staffer Paul Geddes has the following article for

us this month, applicable to both homes and institutional buildings:

The picturesque frosted window of the wintertime, attractive as it may be with its patterns of ice crystals, represents a primary source of energy waste.

Windows are a major weak spot in the instulation of any building. The fact is that over a 150 day period of 20 degrees F average temperature, a 25 square foot window loses the energy equivalent of 165 one-hundred watt light bulbs burning for 100 hours.

Two practical alternatives to wasting this energy are readily available. Clear plastic sheeting can be attached to either side of your window frame, a practice not uncommon in many serverly cold communities. It is cheap and easy although not terribly efficient and while attached it prohibits any ventilation through the window.

A better alternative is a removable panel of insulation material such as duct board that can be placed on the inside of the window from sunset til sunrise. Such material is 5 to 10 times as efficient and can be removed to allow sunlight and ventilation during the daytime.

Notes From All Over

Kim Kachemeyer, University of Wisconsin/Madison: "The apathy generated by students on our campus is a problem of overabundance; if we can get them to understand that there is only so much energy, they'll cut down."

Oklahoma State University, with its energy council led by H.J. Reed, is engaged in inter-form competition for energy conservation. They are also instituting a system called Ecology Plant Waste, weighing the food taken by students and not eaten, and setting up a challenge among the dining halls to reduce this, with a special steak dinner as the reward.

James Derosier, of the University of New Hampshire taskforce, reports a full-blown program with an energy crisis hot line number to inform students of the ways they can save. This idea on several campuses also includes a hot line to the maintenance plant so that defects and waste in the plant can be reported for immediate repair, or explanation if nothing can be done.

Katherine Roberts, University of Colorado/Boulder's Environmental Board Chairwoman, is working with her board to set up an extensive program including energy conservation display windows, temporary voluntary blackouts, and turning off unused lights. Their campus promotion program is "Do it in the dark!"

At the Colorado School of Mines, the weekly newspaper carries weekly energy conservation tips and cartoon figures of miners to demonstrate the idea. Paul Giusti there has designed a cartoon figure inspired by the Monte Python movies and based on "The Knights Who Say NECC." These have been printed up on hand-operated presses by students on stick-back paper to put up near light switches and thermostats as constant reminders. We have also heard that they took out half the light bulbs from their famed"M" on Lookout Mountain there at Golden, Colorado.

"CSM's Knight Who Says NECC is being drafted into energy conservation combat."

A reminder to all institutions: The NECC Challenge is not a challenge against Western State College, but against your own previous records, or against any similar institution, unless you specifically wish to take us on. We still stand ready to take on all comers! The important thing, though,is to get NECC going in your own area and, we hope, spread the idea in your locale. NECC is more of an idea than a specific contest. Use your imagination, and keep telling what works. (Thanks to Tom Murphy for much of the research for this column). We hope to include more reports in the next issue of the NECC Newsletter.

In On The Act

Following is the list of NECC participating institutions as of November 1:

University and College Division:

University of Alaska
Colgate University, New York
Dartmouth College, New Hampshire
University of Southwestern Louisiana
Oklahoma State University
University of Idaho
University of Wisconsin, Madison
University of Wisconsin, La Crosse
Wayne State College, Nebraska
Viterbo College, Wisconsin
Marietta College, Ohio
Emporia State University, Kansas
University of Southern Mississippi
Shippenburg State College, Pennsylvania
University of New Hampshire
Drury College, Missouri
Springfield College, Massachusetts
University of Colorado, Boulder
University of Colorado, Colorado Springs
Mesa College, Colorado
Colorado State University
University of Northern Colorado
Adams State College, Colorado
Colorado School of Mines
Western State College, Colorado

Communities:

City of Reston, Virginia
City of Gunnison, Colorado

Industries:

Rock Island Arsenal, Illinois
Texaco Plant, Los Angeles, California
Continental Airlines, Denver Operations Center

High School Division:

Paonia High School, Colorado
Gunnison High School, Colorado
Holy Cross High School, Illinois
Grand Valley Schools, Colorado

Other:

Governor's Mansion, Denver, Colorado

It's never too late to get into NECC! It costs nothing, and the participation should save a great deal of money for the participating institution. Energy saving is also financial saving! In the long run, energy is going to cost more, but promotion of saving can take some edge off that. For the immediate future, it can cut budget expenses significantly, and perform a needed role nationally. Just drop a note to NECC, WSC, Gunnison, Colorado 81230, and tell us you're in, and for what time. NECC will accept challenges for any time period, against other institutions. Start NECCing now.

Endorsements and Letters of Encouragement

We want to thank all of those who are writing in to endorse the National Energy Conservation Challenge and encourage this program in its national efforts.

U.S. Government:
- Jimmy Carter, President
- Walter Mondale, Vice President
- Gerald R. Ford, Former President
- Ray Marshall, Secretary of Labor
- David Hamill, REA Administrator
- John A. Harris, Executive Office of the President
- Federal Energy Administration (Now Department of Energy)

U.S. Senate:
- Thomas F. Eagleton
- Wendell H. Ford
- Bob Dole
- Floyd Haskell
- Ted Stevens
- Gary Hart
- Walter Huddleston
- Edmund S. Muskie
- Strom Thurmond
- Milton R. Young
- Hubert H. Humphrey
- John Melcher

U.S. House of Representatives:
- William L. Armstrong
- Frank E. Evans
- Timothy E. Wirth
- James P. Johnson
- Patricia Schroeder

Other Officials:
- Doug La Follette, Secretary of State, Wisconsin
- George Busbee, Governor of Georgia
- James R. Thompson, Governor of Illinois
- Washington State Energy Office
- Kentucky Department of Energy
- California State Energy Commission
- Minnesota Energy Agency

Colorado Government:
- Richard D. Lamm, Governor
- Buie Seawell, Office of Energy Conservation
- Colorado Water Conservation Board
- Mary Estill Buchanan Secretary of State
- Sandy Kraemer, C.U. Regent

Colorado State Senate:
- Dan D. Noble
- Martin Hatcher
- Ted Strickland
- Ray Kogovsek

Colorado House of Representatives:
- William F. Hilsmeier
- Gerard V. Frank
- Sam Zakhem
- James D. Reeves
- Betty Ann Dittemore
- Kenneth B. Kraemer
- Bob Leon Kirscht

Associations, Unions, Governmental Units:
- International Union of Oil, Chemical and Atomic Workers
- Forum for the Advancement of Students in Science and Technology
- The American Legion
- Colorado Open Space Council
- Colorado Council of Churches
- American Associationof Physical Plant Administrators of Colleges and Universities
- Energy Task Force, Association of State Colleges and Universities
- Rocky Mountain Center on Environment
- Sierra Club
- Club 20
- Gunnison, Colorado: Chamber of Commerce, City Council, County Commissioners, Democratic Central Committee

Business and Industry:
- Atlantic Richfield Company
- Northern Natural Gas
- People's Natural Gas
- Mobile Oil
- American Trucking Association
- N.W. Transport Services, Inc.
- Standard Oil (Indiana)
- Exxon Corporation
- Tenneco, Inc.
- Ralston Purina Company
- Continental Airlines
- Texaco, Inc.
- Kaiser Aluminum
- Deere and Company
- First National Bank of Denver
- Merrill, Lynch and Co., Inc.

Noted Individuals:
- Henry Winkler, TV and Movie Star
- Norman Cousins, ***Editor of Saturday Review***
- Paul Ehrlich, Author of ***Pupulation Bomb***
- David Lavender, Historian of the American West
- Robert C. Seamans, Jr., MIT Noted Energy Expert

Donations

NECC gratefully acknowledges those who have helped us along with financial contributions to pay the costs of printing and distributing the NECC Newsletter, carrying out the program on the national level, and increasing office expenses. These donations, large and small, are most deeply appreciated. We have received help from the Western State College Foundation; Robert C. Seamans, Jr.; Tenneco, Inc.; Ruth Krueger Miller, Dr. Charles Gaylord, and Barbara Euwer. All monies received will be used for materials in the promotion of NECC. If NECC is to continue on a long range basis, more money will have to be forthcoming, as we can't quite make it on quilt auctions and white elephant sales. As long as possible, none of the NECC workers and advisers on the WSC campus will receive any remuneration. NECC programs now involve 275,000 people in the United States, and the services in operation of the program from here have used no taxpayer funds. Information on all expenditures is regularly furnished to the Western State College Foundation, and will be supplied on request to anyone requesting such information. Anyone, individual, business or foundation, wishing to help in the NECC program financing may make a tax-exempt contribution by sending the money to the Western State College Foundation, 120 N. Boulevard, Gunnison, Colorado 81230, with a request that the money be used for the National Energy Conservation Challenge. (Note: Participating institutions are not being asked to contribute to the operationof the NECC program).

Antique Newsletters

We have on hand a few extra copies of NECC **Newsletter No. 1,** (September, 1977) and **NECC Newsletter No. 2** (October, 1977). We will be happy to send these at no cost upon request. A new **NECC Challenge** sheet, for the use of other institutions wishing to join NECC, will be published shortly.

NECC NEWSLETTER

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

NO. 4 JANUARY, 1978

DARTMOUTH SEEMS TO BE AHEAD

Dartmouth College, which seems to have the best record so far this year with a program they started way back in 1972, is leading the NECC participants in energy conservation so far. They report a saving of 36.93% in total BTUs per student enrolled in October, and 39.85% in November. The challenge there is being handled by the Environmental Studies Division of the Dartmouth Outing Club, with Paul Susca as chairman.

The Dartmouth program will be including $25.00 prizes to the social fund of winning dormitories in energy conservation. They also have given out tee shirts with the Dartmouth conserve motto to individually appointed energy representatives in each dorm

EASTERN ILLINOIS FORMING FRAT?

We have learned that there is a movement afoot at Eastern Illinois State University to form a fraternal organization throughout the nation for those who are interested in energy, its production and conservation, and the entire general field, both from a career and interest standpoint. Eastern Illinois has been a leader in the promotion of workshops and courses on the subject. To find out more, write John Griffith, Associate Director, Energy Management Program, Eastern Illinois University, Charleston, Illinois, 61920.

OKLAHOMA STATE U. SAVES IN DORM CHALLENGE

Oklahoma State University, with H. J. Reed in charge of their Residence Hall Association competition, reports that they held an inter-dorm competition which resulted in a savings of $4,200 in two weeks! They plan another competition for February.

CITY OF EDGEWATER, COLORADO, OUT TO KILL A CLOUD WHILE SAVING ENERGY, TOO

Edgewater, Colorado, which has joined the NECC program as a community, is also trying to fight the smog problem in the Denver metropolitan area. Mayor Bonnie Allison reports that a major thrust of their campaign is the issuance of bumper stickers to any car owners who request them, stating "I Never Drive on Thursday" or any other day of the week requested. The idea is to honk at any car driving on the forbidden day as designated on the sticker. It saves gasoline and they hope it will cut down on the smog, or at least establish a greater awareness in the area of the need to restrict driving. They've named their campaign "Kill A Cloud". Councilwoman Norma Daly reported that 200 people came in for stickers on the first day, after searching their souls a bit as to the commitment such a sticker involves.

UNIVERSITY OF ALASKA AT FAIRBANKS REPORTS ON ENERGY EXPO SUCCESS

Angela Liston, ASUA president at the University of Alaska at Fairbanks, estimated 500 people took part in the Energy Expo which was coordinated with Conservation Awareness Week and U.A./Fairbanks' entry into the NECC program. Fairbanks businessmen and students presented displays and information on energy production and conservation, including energy efficient stoves and toilets.

The students are also running energy tips in the *Polar Star*, student newspaper. Their thrust, as in many other colleges, is to include water conservation in the NECC program. We doubt that anyone will argue that Fairbanks has to be the coldest NECC participant; even here at Western State in Colorado we will concede to second place in the low thermometer sweepstakes. However, we aren't sure we're up to proposing what they are to car owners: unplug your car headbolt heaters and dipstick warmers. (For those of you in warmer climates, these are electric warmers to keep the cars from freezing up at night.) What temperature do they expect this winter? Probably 37 degrees below zero, and that could go on for some time! If you can pull that off, Alaskans, we salute you! They are also considering having walking days, even not using elevators to save electricity. Go for it!

NOW TO QUOTE KIM CORRECTLY

Our reporter had some fuzz on the long distance line when he interviewed Kim Kachemeyer of the University of Wisconsin at Madison for the last *NECC Newsletter*. What she said was that apathy was a matter of overabundance, and that when they realize there is only so much energy, they'll get even more greedy, and that is a major problem we're all going to have to face in this campaign? Did we get you about right that time, Kim? Our apologies, and we won't repeat how we garbled it the first time. Anyway, to the barracades! *All NECCers* have their work cut out for them.

WAYNE STATE REPORTS SOME TIMING IDEAS

Wayne State College, in Nebraska, is suggesting having all night classes in a single building so that they can cut the heat in the winter and the air conditioning in the summer. In the other buildings they're cutting everything down at 4:30 p.m.

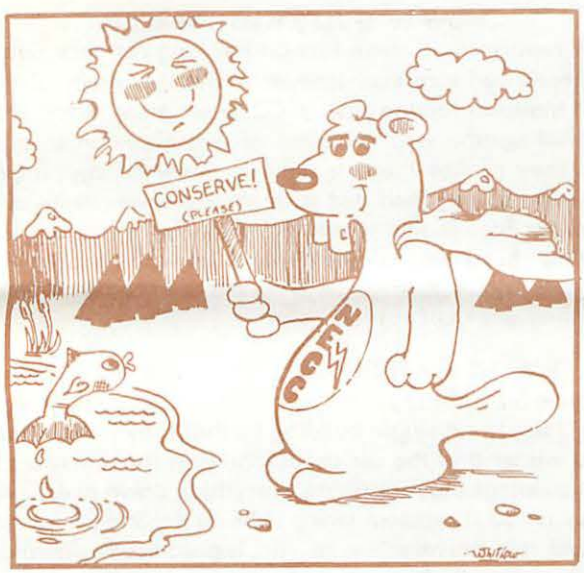
They raised a problem which is being reported in other state colleges and universities, to wit: legislative budgeting on a "use it or lose it" basis is destructive to conservation and to economy. Leonard Guzman at the University of Northern Colorado has been very concerned about this issue, also. We need to do some lobbying to get legislative bodies to reward, rather than penalize, conservation. In budgeting, one never can predict ahead how much the personnel in a state or federal institution may be able to cut back in consumption, and current procedures encourage budgeters to allow for more waste than may occur. Wayne State suggests that schools should be allowed to use the savings for additional books, and even that legislative bodies would do well to match the savings as a bonus for other educational needs.

MEANWHILE, BACK AT THE RANCH . . .

At Western State College, we've been holding at between 21% and 27% on savings of both electricity and heating (gas and oil). We found ourselves up in water consumption as they tried to get the lawns in good shape after last winter's drought. However, we've had about two feet of snow, so the lawns should make it. Our business manager reports that, if we can keep up as we have been, we'll save $45,000 in heat bills this college year, which ain't bad for a college of only 3,000 students.

Still experimenting with ideas, we had a successful original song contest, with great NECCing numbers. We also had our long johns and sweaters dance, with a great style show! Our efforts to produce electricity for the rock band with a 32 human turnstile didn't work out too well, as the contraption broke down early in the evening. Then, before Christmas, we had a very successful study-in in the Student Union ballroom, keeping it going on an around the clock basis, and we figure about 800 students took advantage of that to cram for finals and share heat and light.

On the docket for the new year are a three day energy seminar, and we've had some good support on that, with politicians, energy producers, scientists and conservationists showing up. Then we plan to bank the Student Union with snow to improve the insulation. We have two nutty NECCers braving it through the winter in a NECC tepee on campus, and the temperatures have hit -19° F. They've never been healthier, and they're both from New Jersey. Then we plan to have a skiers' walk to the Crested Butte ski area, to save gasoline in the weekend trek up to the hill. A number of students are writing papers, both academic and creative, on the energy situation for a contest. We have some other plans, too. Some of the students made a NECC quilt which will be raffled off to raise money for these Newsletters, and we are designing a big ice college letter, a great trash monster, and a do-your-wash-by-hand-and-hang-it-out-the-window week.



$200 PER STUDENT FOR ENERGY?

The Chronicle of Higher Education, December 5, 1977, carried a lead article by Jack Magarrell in which it was reported that the average spending by colleges and universities for energy this year could be $200 per student. He includes many efforts being made on campuses to reduce this figure, and the article is worth reading in regard to your NECC programs. It also carries some comments by Steve Hychka, the director of the Energy Task Force for State Colleges and Universities. Hychka probably has the best picture of what's up in energy conservation in higher education than any one person in the nation, and he told us last summer that NECC might do best to concentrate on the individual habits of students and faculty, as that has been the hardest obstacle to overcome in waste to date. We're getting the same reports from many of the NECC participating schools and businesses. Waste is really a creation of the mind, and to change the mind to conservation could be very much a matter of economy, too, so talk *dollars* and cents to people on this issue.

HIGH SCHOOLS JOINING NECC

One of the most significant additions to NECC lately has been the response of the nation's high schools as a result of several factors. We think the high school students may do even better than the colleges and businesses in this program. Charlie Kiefe wrote an article which was published in *The Student Advocate*, a magazine put out by the National Association of Secondary School Principals. We've had a number of inquiries on this article, and hope for quite a bit of participation.

In December, we decided to do a testing of Colorado High Schools as a pilot program for other states, and, counting the earlier participants, we now have high schools from this state enrolled in the NECC program, and they're showing lots of enthusiasm. Other states are represented by Holy Cross High in Illinois, Cherry Hill High in New Jersey, Buchanan High School in Mercersburg, Pennsylvania, Shawnee Mission West in Kansas, and Homestead High in Mequon, Wisconsin.

We have found that spreading the word to other institutions involves more students on college campuses doing some conservation and taking part in the program. We'd like to urge all NECC college level participants to consider trying to involve the high schools in their states. We have a feeling that the high school students will really get out and work, so we're asking them, in turn, to organize the junior highs and elementary schools. We'll be glad to send a supply of high school brochures on NECC to any college or university group, as long as the supply lasts, but you may want to design your own, with your school as the center of operations. When we get the elementary kids taking the word on saving energy home into the habits of the household, we think NECC could begin to have some effect on the nation's problems. We're going to be including more on the high school program in future issues of this newsletter.

WE'LL MISS HHH

The NECC workers join the nation in mourning the passing of Hubert H. Humphrey, Senator from Minnesota, and former Vice President. His letter encouraging us in our efforts was a real spur to our efforts, and his work in forming the Alliance to Save Energy, with Senator Percy of Illinois, was an outstanding contribution to the awareness of the energy problem in the nation.

AMERICAN LEGION AND NECC

At its national convention last summer, the American Legion decided to engage in a national program of energy conservation promotion, and it is developing that program now, with the issuance of *Energy Briefs*, a publication packed with information on conservation, supply-demand data, and other valuable facts. Also the Legion is setting up a number of state energy forums, the first of which will be held in Bloomington, Minnesota on February 3.

Among the earliest endorsers of the NECC program was the American Legion. Like their program, we are not fronting for some special interest, other than the desire to save energy. The March issue of the *American Legion Magazine* will contain a feature on NECC, and the recommendation that local

posts work with college, university, high school and community NECC programs. We think this could be a fine level of cooperation which will be an asset to both programs. You may want to get into a huddle with a nearby post of old and young vets to see what can be done in your community.

FREE AND RECOMMENDED FOR MAINTENANCE

There are many good energy conservation pamphlets coming out, and one of the better and more useful ones for institutions using oil for heat is *How to Improve the Efficiency of Your Oil-Fired Furnace*, which is available at no charge from the Consumer Information Center, Dept. 602F, Pueblo, Colorado, 81009.

CUTTING WINTER HEAT LOSS

(One of our top NECCers, Denise Chandler, has written a series of articles based on interviews with Jerry Kowal, of the WSC Industrial Arts Department, and one of the most knowledgeable persons in this area of the nation on energy conservation in construction and in practical home life. The following information is geared toward homes, but we've found that a great deal of it can apply to public buildings with windows, and to dormitories.)

Roughly speaking, uninsulated windows account for one-third of the heat loss within the home. The validity of the percentage claim will vary according to the size of the home, number of windows, and the materials used in the construction of the windows.

The average conventional home is constructed with walls containing three and one-half inches of fiberglass insulation. a single glazed window (one sheet of glass) looses approximately fourteen times more heat than the walls, but this can be greatly decreased if each window is properly insulated.

The extent to which one will go in window insulation will depend upon whether the person owns or rents a home. The owner of the home may consider increasing single glazed windows to double or triple glazed windows. The extra ambitious home owner may even consider entire window replacement.

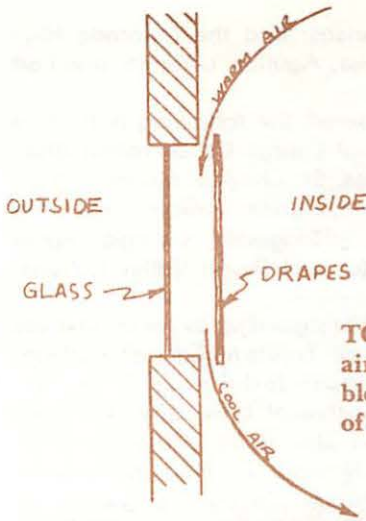
According to ASHRAE, renown for national standards concerning energy usage, window frames constructed of wood lose approximately 25 BTU's per hour with aluminum windows at the extreme end losing over 45,000 BTUs per hour. Steel windows represent a medium amount of heat loss, 9,000 BTUs per hour.

For those who do not wish to be so extravagant, there are simpler methods of window insulation. Styrofoam has been suggested for insulating, but is now impractical because it is highly flammable and does not hold up well if taken in and out of the windows daily.

Kowal suggests the use of a one-inch, foil-faced duckboard in every window. The fiberglass duckboard in combination with heat reflected by the foil accounts for a 350% heat saving. The duckboard should be placed in the window during the night, the time when heat loss is greatest, and removed during the day to allow solar heating to occur.

Draperies serve as good insulation if they are of the proper length to create dead air space and are made of thick or insulating materials. Draperies should reach to the window sill or the floor in addition to a fixed valence over the curtain rod.

The purpose of the fixed covering over the curtain top is to stop the flow of convection currents. If dead air space is not maintained between the draperies and the window glass, heat from the ceiling is drawn to the floor creating circulatory motion, resulting in a constant heat loss.



TO AVOID a cool air draft, a dead air space should be created by blocking the space between the top of drapes and walls.

Moisture condensation on window glass is often taken as a bad sign and the first impulse is to decrease the air's moisture content to stop ice from forming on the inside of the windows. According to Kowal, "Humidity is healthy, and moderate amounts of moisture allows one to be comfortable at lower temperatures."

The ideal moisture content of a home should be between 30° and 35°. Moisture condensation may occur due to showering or cooking, but should not cause concern unless water appears in exaggerated amounts. In this situation, it is necessary to reduce the difference between indoor and outdoor temperatures. Moisture content should not be decreased, but insulation should be increased by adding extra layers of glass.

FIGURING DEGREE DAYS

In the literature of energy conservation, the term "degree days" is often used in trying to make comparisons between winter conditions for exacting tabulation of conservation.

For computing degree days, the base figure is an average daily temperature reading of 65° F, and the number of degree days is equal to the number of degrees the average fell beneath that figure on any given day. As an example of this, on a given day the high temperature may have been 40° F, and the low 20° F, giving an average of 30°, or 35° below 65°. That would be computed as 35 degree days for that date.

This technique is very useful for those institutions wishing to make very exacting computations between winters. For those wishing to carry the idea further, they may figure BTUs relative to degree days, and then compute that relative to the number of people involved, and, if they wish to go completely into the picture, they can tabulate averages over a number of winters with varying numbers of degree days. At least, it's a challenge to your math departments or your accounting offices.

MORE NECCers

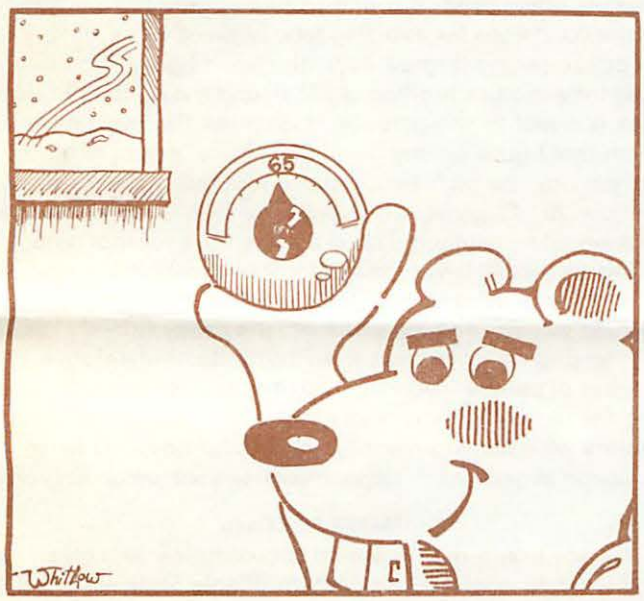
We got into a mail mess-up too complex to explain here, and want to apologize to Eastern Illinois State University for leaving them off the list of participants in the last *NECC Newsletter*. Then, again, we cannot blame our mail problems for the omission of the 22 store City Markets, Inc., which we also left out, bunch of amateurs that we are. However, we'd like to welcome the following new NECC partners: Luther College, Decorah, Iowa; Oklahoma State University Technical Institute; Alverno College, Milwaukee, Wisconsin; Memphis State University; Central Washington University; Angelina College in Texas; Reed College in Portland, Oregon; the City of Edgewater, Colorado; Cherry Hills High School in New Jersey; Buchanan High School, Mercersburg, Pennsylvania; Shawnee

Mission West High School, Kansas; and the Colorado High Schools of Las Animas, Hotchkiss, Aguilar, Littleton, and Fort Morgan.

At press time, we also received the following notices of new participants in the National Energy Conservation Challenge: The Lindenwood Colleges, St. Charles, Missouri; Marquette University in Milwaukee; Beaver College, Glenside, Pennsylvania; Georgia College, Milledgeville, Georgia; Agnes Scott College, Decatur, Georgia; and Skagit Valley College, Mount Vernon, Washington.

Other institutions who have just signed up as we go to press are: Lincoln University, Missouri; Truett-McConnell College, Ohio; Barstow College, California; Jacksonville State University, Alabama; Louisiana Technical University; Hartwick College, New York; Dennison University, Ohio; Daemen College, New York; Fremont-Newark Community College, California; Northwestern Michigan College; University of Vermont; Central Arizona College; Dakota State College, South Dakota; Northern Arizona College; Alma College, Michigan; Southwestern at Memphis; Marshall University, West Virginia; Missouri Western State College; Upper Iowa University; Nichols College, Massachusetts; Otterbein Col-% lege, Ohio; Iona College, New York; Tiffin University, Ohio; Ferrum College, Virginia; and Westminster High School, Colorado.

We want to re-emphasize that the NECC program is your own in each of the 60 participating institutions. It is not a structured organization, but a loose association of people aiming for the common goal of energy conservation, and NECC's main function is to promote interchange of ideas. Please feel free to develop NECC and expand it under your own name, and let us know what's working and what's not. Thanks.



SUMMER ENERGY CONFERENCE TO BE HELD IN THE ROCKIES

Plans are now under way for a major energy conference to be held in Gunnison, Colorado, this summer centered on the National Energy Conservation Challenge. The tentative dates are July 24, 25 and 26, when the mountains are at their most beautiful, and the cool climate most appreciated. All NECC workers throughout the nation will be welcome to attend the meeting, at which we hope to have some of the top representatives of the American conservation movement, energy producers, and government officials. We hope they may be able to meet in a cooperative spirit to discuss the entire picture of the energy problem. We will have more details about the conference in later NECC Newsletters.

In the meantime, be thinking about attending, and enjoying, at the same time, some of the best fishing anywhere, hiking in wilderness areas of the mountains, and having something of a vacation while getting the most complete picture of the energy problem available anywhere.

We have had the assurance of the Department of Energy in Washington that they are interested in the conference and will be cooperating in helping us line up a top notch slate of major speakers and panels.

MORE LETTERS OF ENCOURAGEMENT TO ALL NECC PARTICIPANTS

In addition to the letters of endorsement and encouragement we have reported in previous NECC Newsletters, we would like to thank the following for their moral support:

U. S. Senate members Richard G. Lugar, Clifford P. Hansen, Dennis De Concini, Orrin G. Hatch, Jim Sasser, Malcolm Wallop, Russell B. Long, Donald W. Riegle, Jr., and Henry M. Jackson.

Colorado House of Representatives member Robert G. De Nier has sent a good letter, as has the Adolph Coors Company, most noted for their beer.

We also want to thank the dedicated interest and advice of the Denver SCORE (Service Corps of Retired Executives) Chapter and the Denver Small Business Administration for their help and advice in regard to our operations.

The New York State Energy Office has also sent us a letter of encouragement, joining a number of other state agencies throughout the nation.

A PHILOSOPHIC NOTE FOR ALL OF US

Some institutions have expressed frustration at the huge amount of waste in energy that goes on, and the feeling that the situation will not be remedied until cataclysmic events start to occur. We understand and sympathize. We think every institution reporting some progress and savings had to go through a crash zone of discouragement. However, every NECC helper in your institution usually becomes aware of the serious nature of this problem, and that is one more advocate. Get on fire and tell the others in your school, business, or community, and hang in there with an Oriental sense of patience. Maybe we can't get American to cut back enough to make a difference, but your efforts are better than merely sitting back with a fatalistic shrug. As Ross Lockridge once wrote: "The victory is not in the consumation, but in the quest." Every mind changed to conservation habits of our energy is a triumph, and every light turned out when not being used is progress. Hang in there!

NECC NEWSLETTER

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

NECC Newsletter #5 **FEBRUARY, 1978**

NECC SNOWBALLS!

The National Energy Conservation Challenge has grown threefold since the calendar year began! There are now 168 institutions in 46 states involved in this voluntary movement, the largest number of them being higher education. For a complete listing of the participants, by state and category, see the last page of this Newsletter.

IDEAS FROM ALL OVER

We're beginning to get some concrete and useful ideas from the various participating institutions. In some of them, student or employee suggestions from brainstorming sessions have involved the entire group in the conservation-consciousness habit; in others, the programs are getting started on the minimal level; still others report complete flops **so far.** Well, we never thought it was going to be easy.

MONEY TALKS

At **Pacific Union College,** Business Manager R. A. Strickland is making a major pitch to the faculty and staff by pointing out the cost factors. His memos show a gradual decline in electrical consumption, and he furnishes graphs to show what the college did as a whole in regular memos. An accompanying graph shows the increase in cost of kilowatt hours, and showed a slight decline in the total bill for October and November. Money talks, especially to faculty members who are wanting funds for other purposes. We think the students ought to get involved in the game, and many would like to see those charts, too, as it might involve their tuition and fees to some extent.

CHAIN STORE NECCING

We haven't made much of a pitch to business and industry so far, but we think college and high school students would gain much valuable experience by trying to involve these firms in the program, and be better models themselves on campus. The **City Markets, Inc.,** with 22 supermarkets in Colorado, Wyoming and Utah, are going at this full swing, both in the technical and psychological field. A memo from Doug Frasier, their Director of Security, shows a decrease in the equivalent kilowatt hour consumption the past year as compared to 1976 of 665,000, or 16.1 per cent, resulting in substantial savings of money as well as maintenance of quality in performance. They were one of the first groups to get their act into NECC, and we hope the pride in their role in this effort will help them to even further savings. Some of this saving was brought about by technical improvement, but employee consciousness has had much to do with it, as turning off unused lights and preventing refrigeration loss depend to a large extent on awareness.

ENERGY EXPOSITION

The program at Colorado State University was not moving too well last semester, but the students in charge gave it a whole new push this time around. They started off with an energy exposition, drawing attention to the problems, needs and conservation measures. These programs, with exhibits, seem to dramatize the problem very well, especially if accompanied by displays on solar potential, wind potential and such. (The tides rarely reach Colorado.) However, it must be pointed out that the practical realization of these alternative sources is a long way off. The fossil fuel supply will run short before that time.

GETTING SOLID GOALS

Madalyn Quinlan wrote us from **Georgetown University** to say that their Student Senate Sub-Committee on Energy Conservation made good contacts with the maintenance and physical plant department to get the program going there. This seems to be a helpful measure, as some colleges and universities, especially the big ones, are not getting the various departments together very well. A group of 25 students volunteered to monitor and review gas, water and electricity consumption there, and this resulted in an Energy Task Force of students, engineers, administrators and maintenance personnel. As with many colleges, regulation of temperature in older buildings is a problem. At Georgetown, they're trying to explain to the users how the valves on radiators work, as much of the waste was because the faculty members and others simply did not understand pre-thermostat operations. They have set early specific goals, namely:

1. Reduce light levels inside and outside buildings by 15% in work areas and 25% in public areas (where safety standards permit) and the elimination of non-essential and decorative lighting.
2. Restrict domestic water flow by reducing shower head and wash basin flow from 8 to 4 gallons per minute in dorms.
3. Reduce hot water temperature to 125° F.
4. Reduce outside air intake where practicable when heating.
5. Weatherstripping repairs and added insulation.

There are other long-term projects included, but these may take more money and planning. We recommend to all NECC planners to make short-term, easily-realized and economical moves first, and then start on the big items.

HANDBOOK HINTS

Brett Borg has written a great little handbook for students and staff at **William Jewell College** in Liberty, Missouri, as chairman of the Halls and Grounds Committee there. This 12 page booklet is a gem, if we may pun on the college name. We've had many complaints that students aren't reading student newspaper articles on conservation tips, and seem to turn off mentally when these are given on the radio station. However, this guidebook, produced by the physical plant and student senate there, has an attractive paper binding, and is something that students might browse through in idle moments, especially with each one having his own copy. It is designed with the specific needs of William Jewell students in mind, and has more meaning than general publications of this type. It has tips on use of appliances in dorms, opening and closing of drapes, more efficient laundry use, gasoline conservation in driving, car maintenance, and even information on the wise purchase of new cars. It is interlaced with some good drawings, and ends up with a check list of conservation acts.

CAMPUS SEMINAR

At **Western State College**, we held a three day Energy Seminar which attracted about 425 of our 3,000 students. We led off with a speech by Albert Bartlett, University of Colorado physicist and President of the American Association of Physics Teachers, who shocked us all into the realization that, due to the exponential factor of growth in the nation, we simply cannot double the production of fossil fuels every 14 years (figure it out at 7 per cent growth per year); this means some dire decisions for the economy. This was followed by a talk by Clay Parsons, of Mobil Oil, who presented the interest of the producers in conservation. (If you are interested in a Mobil speaker in your area, please write Judy Lynn Prince, Mobil Oil Corporation, 150 East 42nd Street, New York, N. Y. 10017.) The second night our attendance was lighter, but we had Dr. John Cope, a pioneer in nuclear power, explain the problems and potential of that alternate fuel source, and then we had Jerry Kowal, of our industrial arts department, explain practical measures for conserving in dorms and classrooms. The third night was political, with state representative Sam Zakhem discussing the legislative problems of production and conservation in Colorado; and Sandy Kraemer, Colorado University Regent and solar energy law expert, explaining the legal aspects of use of solar collectors (trees shading your collector, who owns the air above your property, constrution codes, etc.). We feel it did much to increase awareness on the campus and in the town, and strongly recommend that your institution set up such a program. The total cost was about $200, which we hope to recoup through the sale of a student-made quilt raffle, at 25¢ per ticket.

-o-o-o-

The coal strike has brought instant energy crisis to a number of institutions in the Midwest, especially. We put NECCer Dave Roembach on the phone to **Purdue University** this week, and he came up with this story of how they're reacting to a drastic emergency:

STICK IT

SAVE MONEY by giving each faculty or staff member a stick, roughly four feet in length, with a water based marking pen taped on the end so that they can mark light bulbs that they feel are not needed. This idea came from Purdue University where they found their faculty and staff very excited and receptive to it, with some eliminating all but one light to an office or laboratory.

In talking with Mr. Ahlers, who is with the Physical Plant Department at Purdue, we found that they have removed somewhere between eighty and ninety thousand fluorescent light bulbs on campus. This involved removing every other fluorescent light bulb from classrooms and restrooms with outside lighting being cut to only thirteen percent of normal.

You will find that all of the vending machines on campus have been turned off along with all of the water coolers or drinking fountains except for those in the dorms. Also, the heating system on campus is operating on what they refer to as "Night Stats" which means they only turn on the heater blower fans when they need heat in the room.

It might seem as though Purdue is acting in a very radical manner but because of the length of the coal strike and the dwindling coal reserves they have found that they are forced into reducing their energy consumption by fifty per cent and they found that it is not that discomforting or critical to their operation.

ROBERT REDFORD WRITES

We were pleased to get a letter from the movie and TV great, Robert Redford, who tells all NECC participants:

"I totally agree that any solution for the energy problems facing our country must include an effective conservation program. Changing people's attitudes toward waste is not an easy thing to do. I am very pleased to know about the National Energy Conservation Challenge, and I strongly support your work.

"The Energy Conservation and Production Act of 1976 was a beginning. But we must continue to make people aware of the seriousness of the energy situation. I am grateful for an organization such as yours working to give people the facts."

We'd also like to thank Henry Winkler again for his continued encouragement, and add Corky Siegel's name to our list of celebrity endorsers. Coors Enterprises, of Golden, Colorado, famous for their beer, have also joined the industrial endorsers of NECC.

Two articles on NECC, in full color, appeared in the January-February issue of **Amoco Torch Magazine,** written by Tom Seslar, editor. The six page, full color stores included one about spending a night in the tepee on the W.S.C. campus, where Bill Kattner and "Crazy George" Thalman, both of Jersey City, New Jersey, are spending the winter learning survival without the normal energy sources. They have a wood-burning sheepherder's stove now, and have come through nights down to -25° F. and are still going strong.

COORDINATING WITH LEGIONNAIRES

Time for the generation gap to close! The **American Legion**, 2,700,000 strong, and averaging out at the age of 56, is now getting a powerful nationwide program in energy conservation consciousness going. We think their plans are great, and they have had tremendous success with commitments they've made in the past. We urge NECC groups throughout the nation to get together with local posts in their area and work out plans for community energy consciousness. It will be refreshing to see college students and Legionnaires learning from each other and working together to get some real service performed in the nation. There will be an article about the NECC program in the March **American Legion Magazine,** so don't hesitate to involve the young-thinking old-timers with your plans. Go for it! Your community needs this type of cooperation. (Incidentally, many of those Legionnaires ain't so old, but the older ones know a lot of good angles to help conserve.)

APRIL 19, 1978
NATIONAL ENERGY CONSERVATION DAY!

Want to put a real focus on your energy conservation program? Then make April 19 a special day, in which we are hoping NECC participating institutions throughout the nation will carry the word to ask people to get through one day with as little energy output as possible. Dramatize the event with special events. Try blackouts, brownouts, stunts and other promotions. Get the press, radio and TV in your area involved. Go see the Chamber of Commerce, the city fathers, the state leaders about this. Ask for proclamations. Get out special signs and recruit new workers for your programs. Brainstorm on National Energy Conservation Day. It will have been a year and a day since President Carter made his famous speech asking for Americans to cut back on energy consumption. Let him know we're on it! It also happens to be Paul Revere Day, and that must have some significance. Might make Paul Revere

your symbol. We hope you will take the lead in your area, and you may construe that area as broadly as you wish on this. Go for some promotion focusing on your program, as it will make your own students and workers more conscious of their need to be models in this national need. If you want to know other institutions near you or like you who are working in the NECC involvement, see the last page of this Newsletter. We'll do what we can from this end to promote it, but your campus or business is welcome to take the leadership, as you can probably do more to make people in your area conscious than any big hoopla out of Gunnison, Colorado, obviously. Get in the reporters, photographers, and announcers to let them know what you plan to do to promote conservation of energy, especially on April 19. Re-charge your program on this one, if it's lagging.

OF CANDLE AND CLOCKS

We should say, in spite of our symbol, that a candle uses more petroleum than a light bulb, and with less light. Sorry about that, but there is some poetry to the symbol, anyway.

As for clocks, we thought having roosters wake up students to save electricity used in alarm clocks was quite a gimmick, but only that. Dr. Albert Bartlett says that's not so much of a gimmick after all, according to his students, who have calculated that, if there is an average of one 4 watt electric clock for every American citizen, that represents an output of 100 carloads of coal per day in the nation!

GO FOR THE HIGH SCHOOLS!

At the advice of the Small Business Administration in Denver a couple of months ago, we set up a pilot program to involve secondary schools in NECC, and, in turn, ask them to involve junior highs, middle schools, and elementary schools. We sent out brochures to Colorado high schools and are getting back quite a few entrants. We think that the youth are the backbone of this movement, and high schools can reach on through the lower grades and get real enthusiasm generated which will eventually stretch into the home. So far, fourteen Colorado high schools have joined the program, along with one junior high. David Osborn is the director of our high school program, and if you'd like to write him at NECC, W.S.C., Gunnision, Colorado, 81230, he'll send you sample brochures and information on organizing a program in your state. Why not make your college or university the leader in this program statewide? It will involve your own students more, and we think this may be where the real results will start to come in actual savings.

A MOUNTAIN SUMMER MEETING FOR ALL NECC

Plans are moving ahead for a meeting of representatives of all of the institutions involved in the National Energy Conservation Challenge. The dates will be July 24, 25 and 26, 1978, and the place will be up here in the Rockies at Gunnison, Colorado. We are also making this, if we can, a Rocky Mountain Summit Meeting for national conservation leaders, energy producers, labor, and government officials to get together on the nation's problems in regard to energy in a setting removed from urban pressures and special interest groups. As you know, the NECC program has remained neutral on the matters of special solutions, but we'd like for the leaders to sit down and talk things over.

Paul Ehrlich, author of *Population Bomb* and *The End of Affluence*, has written that he will be willing to give a major address. J. P. Hammond, vice president of Standard Oil (Ind.), has confirmed that he will be here to speak to us. There is a lot of other positive interest from other policy level officials of energy producers in this conference. Albert Bartlett, President of the American Association of Physics Teachers, will speak on the "Forgotten Fundamentals of the Energy Crisis", one of the most impressive and thought-provoking presentations we know about in the entire world. We hope, also, to have top representatives of the Department of Energy on hand, as well as spokesmen for American labor.

Part of the conference will include a trip into some of the nation's most beautiful and spectacular mountain scenery. We'll also be working hard to help you find the best fishing and hiking areas, especially if you want to stay over a couple of days after the formal conference. We're working on the idea of some inexpensive package deals on that.

Aside from speeches and panels by some of the outstanding leaders in the nation, we will have meetings to compare notes on energy conservation programs, including leadership by students and employees, sessions for maintenance directors, and special meetings for administrators and faculty directors. There will also be short sessions on practical tips in both energy saving and promotion of energy programs.

Mark that last week in July on your calendar now, and plan to join us up here in the cool mountains of Colorado. The wild flowers should be in their most colorful display at that time. We'll have information for you in the next NECC Newsletter as to the specific program, housing on campus or elsewhere in the area, transportation, and other details. We promise you a good time and a real inspiration, as well as hundreds of practical ideas.

FOR INFORMATION ON NECC

We wanted to include the telephone numbers you may call here if you want more information on the program, or to let us know how your program is going or how we might help, as well as any suggestions you might have. Jim Zulevich, student chairman, can be reached at 303-641-3903. Mike Protsman, vice chairman, is at 303-641-3167. Abbott Fay, faculty coordinator, can be reached at 303-943-2039 (office), or 303-641-0931 (home). The Western State College Public Information number is 303-943-3035. You may also write NECC, WSC, Gunnison, Colorado, 81230, and we'll send a prompt reply to your inquiry.

If your institution is interested in joining the program, you are welcome There is no charge. We'll send you a bundle of old Newsletters and get you on the mailing list. These may help you in getting a solid energy conservation consciousness program going. NECC is not a big, highly-charged program. It's run by students and is as grass-roots as anything can be, and that's how we hope to keep it. Your own institution is on its own, but we hope you'll keep sharing ideas with us.

A NOTE ON FUNDING

National Energy Conservation Challenge is financed by private donations and student fund-raising activities. It does not use taxpayer money, except to the extent that it meets on state college property, and a few other very minor items, such as use of college duplicator machines. No one receives any pay whatsoever for the work on the national program; it is all voluntary and amateur. We do not ask for donations by participating institutions. Anyone wishing to donate any money may do so on a tax-deductable basis by sending the money to the Western State College Foundation, 120 North Boulevard, Gunnison, Colorado, 81230, with a request that it be used for the National Energy Conservation Challenge. NECC is not incorporated, and will not endorse any product, special

solution to the energy problem beyond simply cutting back on waste, or political movement. It seems always on the edge of bankruptcy, and is always in need of any funds to help with the cost of printing, mailing, and the conference this coming summer. We will be most grateful for any financial support, or any other type of support, for that matter.

PARTICIPATING INSTITUTIONS IN NATIONAL ENERGY CONSERVATION CHALLENGE

Higher Education Division

Alabama: Jacksonville State University; Birmingham-Southern University; University of Northern Alabama; Springhill College.

Alaska: University of Alaska at Fairbanks; University of Alaska at Anchorage.

Arizona: Central State College; Northern State College.

Arkansas: Southern Arkansas University.

California: Barstow College; Fremont-Newark Community College; Pacific Union College; University of California at Davis; American River College.

Colorado: University of Northern Colorado; Adams State College; Mesa College; University of Colorado at Boulder; University of Colorado at Colorado Springs; Colorado State University; Colorado School of Mines; Western State College.

Connecticut; Yale University.

Delaware: Wesley College; University of Delaware.

District of Columbia: Georgetown University; Catholic University of America.

Georgia: Georgia College; Agnes Scott College.

Idaho: University of Idaho; College of Idaho; Ricks College.

Illinois: Eastern Illinois University.

Indiana: Purdue University; Indiana University.

Iowa: Upper Iowa University; Loras College.

Kansas: Emporia State University; Marymount College; Baker University; Washburn University; Ottowa University; St. Mary College; Benedictine College.

Kentucky: Murray State College.

Louisiana: University of Southwestern Louisiana; Louisiana Technical Institute; Louisiana College.

Maine: University of Maine at Farmington.

Massachusetts: Springfield State College; Brandeis University; Nichols College; Suffolk University; Williams College.

Michigan: Northwest Michigan University; Alma College; Central Michigan University; Spring Arbor College.

Minnesota: Carleton College.

Mississippi: University of Southern Mississippi.

Missouri: Drury College; Luther College; the Lindenwood Colleges; Lincoln University; Missouri Western State College; William Jewell College; Northwest Missouri State University; Southeast Missouri State University.

Montana: Northern Montana University.

Nebraska: Wayne State College; Nebraska Wesleyan University.

New Hampshire: Dartmouth College; University of New Hampshire; Franklin Pierce College; St. Anselm's College.

New York: Colgate University; Hardwick College; Daeman College; Southampton College; Iona College; St. Bonaventure College; Manhattanville College; Alfred University; Five Towns College; LeMoyne College.

North Carolina: Chowan College.

North Dakota: Bismark Junior College.

Ohio: Marietta College; Truett-McConnell College; Dennison University; Otterbein College; Tiffin College; Notre Dame College; Rio Grande College and Community College; Bluffton College.

Oklahoma: Oklahoma State University; Oklahoma State University Technical Institute; Langston University.

Oregon: Reed College; Lewis and Clark College.

Pennsylvania: Shippensburg State College; Beaver State College; Messiah College; Mansfield State College.

South Carolina: University of South Carolina; Coker College; Limestone College; Columbia College.

South Dakota: Dakota State College; Northern State College.

Tennessee: Memphis State College; Southwestern of Memphis; University of the South.

Texas: Angelina College; Texas Lutheran College; Lon Morris College; University of Houston at Clear Lake City; Lamar University; Gulf Coast Baptist College; Abilene Christian University; St. Edwards University; San Antonio College; Concordia Lutheran College.

Vermont: University of Vermont.

Virginia: Ferrum College; Old Dominion University.

Washington: Central Washington University; Skagit Valley College; Big Bend Community College; University of Puget Sound.

West Virginia: Marshall University.

Wisconsin: University of Wisconsin at Madison; University of Wisconsin at La Crosse; Viterbo College; Alverno College; Marquette University; Northland College; Beloit College; Cardinal Stritch College.

Secondary School Division

Colorado: Paonia High School; Gunnison High School; Fort Morgan High School; Grand Valley Schools; Hotchkiss High School; Aguilar High School; Littleton High School; Westminster High School; Bayfield High School; Loveland High School; Douglas County High School; Heritage High School (Littleton); Durango High School; Wiggins High School; Ruland Junior High School (Gunnison); Elbert High School.

Illinois: Holy Cross High School (River Grove).

Kansas: Shawnee Mission West High School.

New Jersey: Cherry Hills High School.

Pennsylvania: Buchannan High School (Mercersburg).

Other Institutions

City Markets, Inc. (Colorado, Utah, Wyoming)
Texaco Los Angeles Plant, California.
Executive Mansion, Denver, Colorado.
Continental Airlines Robert F. Six Center, Denver, Colorado.
Community of Edgewater, Colorado.
Community of Gunnison, Colorado.
Community of Reston, Virginia.
Rock Island Arsenal, Illinois.

Note: Individual businesses, churches and other institutions working in community programs are not listed separately on the above list.

Total Institutions Participating: 169 States: 46
Estimated Total Population in
NECC Participating Institutions: 800,000+

REMEMBER NATIONAL ENERGY CONSERVATION DAY APRIL 19, 1978!

NECC NEWSLETTER

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

NECC Newsletter 6 **APRIL, 1978**

WHERE ARE WE NOW?

As we move into the end of this college year, the National Energy Conservation Challenge has grown to 179 participating institutions in 47 states plus the District of Columbia. Checking the most recent figures we can, that represents about a million people in the nation in institutions taking part in the challenge. From the data we've received so far, which is mostly in dollar figures rather than kilowatts or BTUs, we estimate that all participants have collectively saved about $10,000,000 since October 1, or an average of $10 per person represented. In some institutions, the savings have been as high as $20 per person.

For those of you who entered the original challenge, which was to be only from October 1 through April 30, we'd like to have your figures on percentage of saving as compared with the time when your conservation program began. By the time of the summer conference, July 24, 25 and 26, we'd like to tell the nation who did the best. As you know, the challenge will continue for another year, anyway, and there is nothing to keep you from keeping it going from now on as long as you'd like. Every indication is that we will do better the second year than the first. Almost every institution reporting in still maintains more could be done. The idea is to keep the conservation program self-renewing, with fresh approaches to the concept, even after people get tired of it.

APRIL 19
NATIONAL ENERGY CONSERVATION DAY!

While it is not a matter of Presidential Proclamation or anything that impressive, we think you can do a lot of good for your own program and have a lot of influence on the communities around you by making a special effort to impress people with how little energy output is actually needed, and how much is being wasted, focusing on a program of activities on April 19. That date is significant as Patriot's Day, and also it is a year and a day since President Carter asked Americans to begin cutting back volunatrily. Special events are being planned in many communities and on many campuses all over the nation on that occasion. If you are just beginning your program, we cannot think of a better time for the kick-off.

The city of Edgewater, Colorado, in the Denver metropolitan area, has a proclamation issued by Mayor Bonnie Allison to make a special emphasis on that day. It's not too late for others of you to request the same move to promote energy consciousness. Some ideas which are being planned on campuses are the following:

1. Food services will serve only cold lunches; weather permitting, they will serve outside. Evening meals will be served by candlelight.

2. Physical education department making a special promotion on the virtues of walking and biking as opposed to driving.

3. Demonstration of the GI shower out on the campus somewhere. A student will show how to get wet, soap up, and rinse off with only one pail (or even a helmet) of water. Emphasis is on taking shorter showers to cut down on both heat output and water usage, where that is a problem.

4. A camp-out in the stadium that night, with nature lovers trying to show how little energy needs to be expended. (Better check with the maintenance people before building fires on the turf, though.)

5. Issuing joking or phony "tickets" for leaving motors running, lights on when not in use, and such. Be sure to keep this on the light side, or it will be a backfire to your program. Throw in a few 'atrocities" against the innocent to let them know you're only kidding (sort of). You might find it a good idea to put your own leader in "jail" on campus for a few minutes for some ridiculous infraction. One campus plans a whipping post with spaghetti whip.

6. Put together a show dramatizing and even exaggerating the effects of a complete power outage.

7. Have a NECC-in. We'll not comment further on that one. Let your imagination flow.

8. Have some serious speakers, students or faculty, give brief presentations on the nature of the U. S. energy dilemma: the effects the huge import of oil has had on the balance of payments and the consequent devaluation of the dollar this year is a part of it; the reasons why we are going to have to depend on fossil fuels for some time is another part of it; the possible displacement of labor by energy shortages is still another. Many people have the idea that the only aspect is getting enough domestic supply, and as long as they can still get lights when they flip a switch, or get gasoline at the station for a low price (by world standards), they do not see the other meanings of the energy problem and its threat to move us into double-digit inflation this year, among other problems. Hitting home would be some analysis of what 23 per cent waste of energy output in your institution means in dollars and cents.

9. Have a NECCing hour, or some similar idea named after your program. The idea is to ask everyone on campus to turn off the lights for the same hour.

10. Have a sweat-in. Turn off all air-conditioning for an hour to show how hot it would be if there were a power outage. People may be willing to settle for a compromise of higher room temperatures than have been the custom, if you live in the heat belt.

Brainstorm up some of your own ideas, and we'd appreciate hearing from you.

NECC'S ROCKY MOUNTAIN
SUMMIT CONFERENCE ON ENERGY

Believing, having attended many conferences, that after all is said and done, more is said than done, we have put together a program which will involve NECC participants in the upper levels of policy making in the nation for the July 24, 25 and 26 conference here in Gunnison, and we hope it will be an enjoyable vacation at the same time.

Already confirmed to take part in the conference are Paul Ehrlich, the world's population expert, author of *Population Bomb, End of Affluence*, and other books on the world problem; Albert Bartlett, whose study "Forgotten Fundamentals of the Energy Crisis" is the most objective and clear cut statement of the issues we've seen anywhere (he's president of the Ameri-

can Association of Physics Teachers); William M. Carpenter, senior vice president of Tenneco, Inc.; J. P. Hammond, vice president of Standard Oil of Indiana; Douglas Graves of the U.S. Small Business Administration; Ed Mackins, director of the American Legion Energy Conservation Program; and others. We hope to have participating, also, John O'Leary, Deputy Secretary of Energy; A. F. Grospiron, President of the Oil, Chemical and Atomic Workers International Union; a top Sierra Club representative; a top official of the Labor Department; Roger Rasbach, the leading environmental construction expert in the nation; and several U. S. Senators and Representatives. We hope our next Newsletter will have the complete program.

These top people will be meeting with each other and with you, as leaders in the nation's voluntary conservation efforts. In addition, we will have meetings among administrators, maintenance engineers, business leaders, students on the college level, students on the high school level, and other representatives of NECC programs in the nation. There will be sessions on publicity, organization, quick tips, conservation guides, and maintenance savings techniques. We will also take you for an outing in the mountains, some of the most beautiful in the nation. There will be four receptions so you can meet others informally. We will also have, for those of you who are music lovers, a man who is considered by many to be the world's greatest clarinetist, John Denman, formerly principal clarinetist with the London Philharmonic, in concert on the last night, as a finale to three days of learning and enjoying.

We've also included a band concert at sunset, lots of small town hospitality, and the opportunity to stay over for more hiking, climbing, fishing, or other recreation if you wish. We hope that bringing you together with the nation's leading policy makers might help to get people into real communication in regard to some concrete solutions to the energy problem facing the nation.

The registration cost for the three day conference is $30 per person. Those of you wishing housing on the campus here may stay in the dormitories for $20 for the entire week--Sunday evening through Friday evening, if you'd like a couple of extra days. However, housing is limited in Gunnison and on the campus, so early reservations are advised. We have accommodations for about 200 people, without straining, we think. Gunnison is served by both Frontier Airlines and Aspen Airways, and also by Continental Trailways bus lines.

On the last page of this Newsletter there is a form you may send us so we'll save a spot for you. We're trying to save paper by not printing up another form. If you want to keep the Newsletter intact, just photocopy the form and fill it out, or write the information on any old scratch paper. We're not very bureaucratic around here, and we'll understand.

One thing is certain. We'll bend every effort to make sure you have an enlightening, useful and happy time while you're here. The high country is never more beautiful than at the end of July. We hope you can make it!

Another item should be mentioned for those of you who might be interested in a credit course. A two-week workshop, "The American Energy Dilemma," will be offered from July 17 through July 28, carrying two semester hours of graduate or undergraduate credit, and it will include participation in this conference at no additional expense. Those interested in college credit may write directly to Dr. Edwin Randall, Director of the Summer Session, Western State College, Gunnison, Colorado, 81230, for registration forms and other information; or else indicate on the form and we'll have them send details.

THE NECC STRETCHES

We'd like to welcome the following new institutions into the National Energy Conservation Challenge: **Lawrence University** in Wisconsin; the **U. S. Naval Academy** at Anapolis, Maryland; **Sioux Falls College** in South Dakota; **San Juan College** at Farmington, New Mexico, and **New Mexico State University** at Grants; **West Virginia University; Loma Linda University** in California; **Loretto High School** in Kansas City, Missouri; and **Central High School,** Grand Junction, Colorado, also **Friends World College**, New York.

PEAK LOAD ELECTRICAL CONSERVATION

Electrical distribution systems are set up to handle the maximum, or peak load, hours. Due to our habits, which change in accordance with the season, daylight savings time, and other factors, this is likely to vary from time to time. However, the heaviest electrical usage tends to be early in the morning, and about 5 to 7 in the evening. We urge you to check with your local public service company on this as it applies to your area.

If we can alter some habits for instance, to doing clothes and dishwashing during the middle of the day, or using electric ovens earlier in the day, it could do much to spread the peak load. We think it will eventually come to this anyway, either by edict or rationing, but voluntary re-arrangement of habits now would make such action less likely or delay it, or at least cut down the shock to our life styles when it comes to that. Are there any electrical usages in your institution that occur at peak load time that could just as well be done at other hours?

QUICK TIMING TIPS

If the car or truck motor will be idling for more than a minute, turn it off. If the light fixture will be off for more than 30 seconds, turn it off. Turn down the heat in buildings at night. Turn off the air-conditioning as soon as the heavy heat period is over, and turn it on as late as possible in the day. Keep refrigeration units closed except when putting something in or taking something out, and try to plan better on those acts.

WANT TO SAVE ALMOST HALF YOUR PAPER COSTS?

It's time for America to change its habits in regard to paper usage. Write letters on both sides of the paper. Spirit duplicators for memos and tests can be used for both sides of the sheet, if some drying time is allowed after the first run (depends on relative humidity). If your memo takes less than half the sheet, turn the stack around after using half the number of copies needed, and run them in reverse, then use the paper cutter. Instead of throwing surplus printings away, if you didn't use both sides, then save them for scratch paper. Keep a stack handy.

We're printing the NECC Newletters in black and white from now on, so that, if you wish, they can be duplicated more efficiently. This tip came from the Energy Task Force of State Colleges and Universities, Steve Hychka, director.

Let folks know why you're doing these things, and they will get the message that conservation of paper is also conservation of energy. We're trying to use as much economy in paper as possible even in these Newletters, which is why we're sacrificing the large headline possibilities and pictorial material, except when it's necessary.

GETTING CONSERVATION AID

Bill Perkins, Coordinator of the Office of Residence Management at **LeMoyne College** in Syracuse, New York, wrote to ask

us about application for federal funds for conservation projects for residence halls. We've passed the inquiry along to the Department of Energy, but so far we've had no reply. We suggest that institutions try to get into communication with their regional offices of the Department of Energy on this question. Also, some states have established conservation incentives, especially in insulation, for private institutions. Most states have some sort of energy conservation director, who may be reached in care of the governor's office. Innovative touches, such as having students help out on some of the minor projects, might help in trying to get funds.

LEGIONNAIRES GO FOR IT!

We mentioned earlier that the American Legion was establishing energy conservation programs on a national scale. We were delighted to see the second of their state-wide energy forums here in Colorado (the first was in Minnesota), and the enthusiasm of that group and their willingness to work with NECC participants was a real shot in the arm. We'd also like to mention that the American Legion Auxiliary, a group of dedicated women, is also working up a major national program under the leadership of Alice (Mrs. Ted) Galka, of Gary, Indiana. Get in touch with your local American Legion posts and work out the details of a joint program as soon as you can! Balls o' fire ... time's a wastin'! Incidentally, we apologize for stating in the last NECC Newsletter that the average Legionnaire was 56 years of age. We were misinformed. The average is about 48. Well, anyway, that's old enough to know the ropes on saving. The real waste habit in the nation really took hold after World War II; back in the Depression and during the war, saving was a habit, and it can become that again, as soon as we see the issue as significant as a war to our national economy.

SO WHAT'S NEW?

Incidentally, this fossil fuel crunch by 1980 was predicted as early as the forties. The only thing that caused us to not be alarmed seems to have been the prevailing belief that safe nuclear energy would be a widespread substitute by this time. We ought to be cautious about presumptions regarding solar and other magic answers in the future now, and try to tone down over-optimism while encouraging all the research and development on them possible. It really discredits the need when people keep coming out with headlines that the energy crisis is over and present a panacea which will take decades to develop into practical use. Some of the old-timers realize this better than we do.

STUDENTS WANT ACTION

A recent study by the University of California at Los Angeles based on nearly 300,000 college freshmen this year showed that 82% of them want the federal government to take stronger action to discourage energy consumption. We'd like to suggest that the action can be taken by students and the population now, voluntarily. It's as simple as turning off a light, dressing more appropriately, and planning more carefully. Such governmental action may be necessary in the long run, but there's no reason to wait for edicts. Let's get NECCing!

TOPEKA GARAGE RECIRCULATES FOR $316.15

One of our most cheery informants is Jim Pearson, a planner with the **Topeka-Shawnee County Metropolitan Planning Commission** in Kansas. He's sent us a lot of good ideas, and we hope to include more, but this one on an inexpensive way by which they saved a hundred bucks a month in heating the maintenance garage of the Topeka Street Department with an investment of only $316.15 is worth giving some thought to before next winter.

They worked out a system of sheetmetal pipes and small fans designed to move warmer air from inside the building's 35-foot high roof to the floor where mechanics work all day. "I know this system would work in almost any high-ceilinged building that had a problem with heat stratification," according to Jim. On the first day of operation with full sun, at noon, the outside temperature was 13° F.; the air in the collector was 180° F.; the office temperature was 72°. The office is 10 x 12 feet, with an 8 foot ceiling. A thermostat activates the collector when the air in the collector reaches 90° F.

ANOTHER GOOD IDEA FROM WILLIAM JEWELL

Brett Borg wrote us again from **William Jewell College** in Liberty, Missouri, still living up to their motto, "Campus of Achievement." They are establishing an "Energy Captain" sign-up table at the cafeteria entrance in the student union, with materials on energy conservation from the Department of Energy and others. Interested people sign their names to a sheet pledging to set thermostats at 65° or less, report maintenance problems, restrict appliance usage, turn off dorm bathroom lights and hallway lights when not in use, and giving attention to home insulation problems. He noted, "The psychological part of signing your name plays an important role in the success of this program. People naturally feel more responsibility for an idea when they have to sign their name to something." He also commented on the effects of the coal strike on the midwest... we found a lot of institutions really learned some good tricks with that one, and are looking forward to other ideas from the areas most threatened by that this winter.

SWITCHES GOING ON?

Please let us know if we should be sending the NECC Newsletter to someone other than you. We realize that many student governments have changed leadership; some NECC program leaders are graduating; some officials have designated others to lead the programs. We can add to the mailing list for any institutions if that's desirable, or we can change the name of the person to whom this should go.

WE'LL CALL IT THE JERSEY BOUNCE-DOWN

Now take a look at **Cherry Hill East High School** in New Jersey, where student council President Howard Magaziner has led the entire district in a successful energy conservation program resulting in a heat bill of $25.70 per pupil, compared with the state average there of $33 per pupil. However, faced with a less enviable record in electrical savings, the student energy conservation program has submitted the following plan, had it approved, and is getting it under way. The package includes removal of 50% of the fluorescent lights in halls so lit; 25% in halls with incandescent lights; 100% in halls with large windows on both sides; 25-50% reduction in cafeteria lighting when in use, 50% other times; same for auditorium and all-purpose rooms; thermostats at 68° maximum (no one-downmanship here, but if you live in an arid area, 65° should work with no complaints, we're learning; humidity has lots to do with the comfort factor); electric hot water heaters at 130°; night thermostat readings at 58°; closing of drapes, shades and blinds during summer air-conditioning season and open in the cool weather; use of lighter colors in decorating to reflect

light better; more frequent dusting of light bulbs and shades; replacement of high-watt bulbs with low-watt; gradual conversion from incandescent to fluorescent; closing of exterior doors and windows to a greater extent; freeing radiators of blockage; cleaning heating and air conditioning filters more frequently; introduction of environmental awareness into the curriculum.

We feel sorry for school districts lacking people like Howard and others on the council there. Ms. Charlotte Hjorth, chairman of the Environmental Commission is also one of the movers. Dr. William Shine, superintendent of schools there, is to be congratulated for his acceptance and encouragement of the program. How superintendents and other administrations and board members can omit such plans as this that obviously are saving Cherry Hills taxpayers big amounts of money is almost too much for us to understand, but maybe we're into this too deeply.

SIMPLE SOLUTIONS ARE NOT THERE

We want to re-iterate our position that energy conservation alone will not solve the problem. We need new forms of energy, increased production **and** full conservation. We liked the comments of Robert Goralski, director of information for Gulf Oil, who said in Denver recently that no easy answers exist, *despite the fact that many Americans are looking for simple solutions.* He quoted H. L. Mencken: "There is a simple answer for every complex question and it's always wrong." If the nation does not keep up a normal growth rate, many people will be displaced from jobs, the worst hit being the poverty groups and minorities. However, there are no simple answers. We would like to quote the late Hubert Humphrey though, when he said "Energy conservation is the cheapest, safest, most reliable, and least polluting source of energy we can tap for the next two decades." Hard to argue with that. However, keep in mind that our hopes for energy conservation will not solve the crisis by themselves. What we need are a lot fewer articles coming up with blanket panaceas entitled "There is No Energy Crisis", or, as the cover article in one prestigious magazine reported, "The Energy Crisis is Over", and then went on to report a new development in gas recovery that will take years to develop. While we're at it, we should point out that you'll run into many people who claim the gasoline producers are sitting on some secret formulae for cutting gas usage; we have not found a shred of evidence to verify that on their part or that of auto manufacturers. Both auto manufacturers and gas producers are among our most encouraging supporters.

ILLEGAL SIZE PAPER?

Professor Albert Bartlett of the **University of Colorado** at Boulder, one of our most practical informants, wants to designate 8½" by 14" paper as illegal, insted of "Legal Size". He notes that our desks, file cabinets, notebooks, etc. are planned for 8½" by 11" paper, and that the economy is under a real energy waste problem by having to design alternate equipment for the longer paper sheets. He suggests that we all stop buying the longer sheets and make better use of both sides of the regular sheets.

LINES FROM LETTERS

From Andy Hall, of Columbia, South Carolina, we had a good letter outlining a PEP program (for Physics, Economics, and Public Information) which we'll share with you later. For the time being, we'd like to give you his "practicality definition" of science: "Science is that area of human knowledge, understanding, and wisdom which allows humankind to live wisely in, and compatibly with, our natural environment -- the land, oceans, earth, solar system and universe--including, most importantly today, all resources therein.... we are part of nature as much as any other facet of creation. As we conserve our hydrocarbons and other energy forms, we conserve **ourselves.**" Andy is a Marine veteran of Vietnam who learned of the NECC program through the American Legion Magazine.

NEWSLETTER FREQUENCY

You may have noticed that we are not trying to publish a NECC Newsletter every month. Both finances and conservation practice dictate to us that it should be published only as we have enough material to share. As we are now in the last month of the regular school year here, we will not do the next NECC Newsletter until June, by which time we hope you will all write us to share your ideas. It boggles to think what could happen this summer, also, if we could get most of you together to share ideas face to face. So we'll end this issue with a form for you to consider sending us.

Cut out, duplicate, or send us the information from this form and we'll save you a spot in the National Energy Conservation Challenge meeting at Gunnison, Colorado, July 24, 25 and 26:

Name: _____ Male_____ Female_____

Position: _____

Institution: _____

Your address this summer: _____

_____

Telephone number(s): _____

I plan to arrive in Gunnison: Sunday, July 23_____ Monday, July 24_____ Later:_____
Gunnison is served by both Frontier and Aspen Airways, and Continental Bus.
Let us know later if you are coming by any of these and we'll meet you.

Please enclose $30 registration fee with this form. *(Make checks payable to National Energy Conservation Challenge.)*

Check here if you want campus housing, and enclose an additional $20. (Good for Sunday through Friday nights, July 23-28). _____

Check here if you want a list of Gunnison hotels and motels sent: (As July is the height of the tourist season, very early reservations are recommended.) _____

Check here if you would like further information on the Western State College Workshop April 17-28, "The American energy Dilemma", for Graduate or Undergraduate Credit. (Housing will be handled separately and the conference is free if you choose this program; we will refund your payment if you choose to attend as a student.) _____

MAIL TO: NECC, WSC, Gunnison, Colorado 81230.

NECC

NATIONAL ENERGY CONSERVATION CHALLENGE!

Dedicated to the idea that waste consciousness is a state of mind that can be changed to conservation consciousness, and that simply by changing our habits we can save up to 20 per cent in energy output, the students of Western State College of Colorado, in Gunnison, have challenged any other institution in the nation to save as much energy output as they can from October 1, 1977 until April 30, 1978. Gunnison is a town of about 5,000 population, located high in the Rocky Mountains, and the college has about 3,200 enrollment. The liberal arts college has already begun to show savings by simply turning off unused lights and turning down thermostats, and the student support has been outstanding. Gunnison frequently has the coldest temperatures in the contiguous 48 states, so the real test will be during the winter months.

The challenge was stated in a telegram to President Carter following his April 18 energy speech. Several institutions soon responded with plans to try to beat Western's record.

NECC is in no way opposed to further development of energy resources, and is located in a potentially rich area for such development. However, the college community is convinced that personal saving habits on the part of people, without hassels, fines, rations, or humiliations, would cut the amount of energy needed, and perhaps bridge the gap to prevent outages. They feel strongly that the idea that conservationists and energy producers should be opposed is a convenient myth, and hope to see both groups work out the problem in a mutually satisfactory manner.

They intend that the NECC program be fun, and are not asking that people make huge sacrifices in their living styles. Brain-storming sessions on the campus have produced hundreds of ideas as to how conservation can be practiced without loss of normal convenience. Necessary energy usage will be maintained; it is only unneccessary usage that we are trying to stop. Awareness of such waste can cut the output tremendously, and since embarking on the program we have seen many of our habits which are essentially wasteful and add nothing to the pleasures and conveniences of life. This creative self-discipline idea can lead to new patterns of thinking which have characterized the American tradition, and which we think have been overlooked in the proposals for dealing with the energy crisis.

On campus, we are having weekly projects ranging from research paper contests and a speakers' week to having a dance with band instruments powered by human energy, a walking demonstration to a nearby ski area, huge ice sculptures and a great trash monster, as well as many other "spectaculars" to launch the consciousness anew during each phase of the challenge. Each institution could devise the program best suited to its size and location in meeting the challenge. Western State College will be a clearing house for the challenge; and each participating institution will keep its own records. We would like to know the BTUs, kilowatts, and gallons saved by each institution per person enrolled or involved in the operation. Western will also furnish information to the press and other media as to the participation plans and events throughout the nation.

We take seriously the President's suggestion that this peacetime goal be treated with the effort of a war, and are totally dedicated to the belief that it can be done within institutions, with ourselves as one example. We are tired of hearing "they oughta"; we're gonna!

Any encouragement will be sincerely appreciated; most nay-saying will be largely ignored, unless based on solid evidence. All participation is entirely voluntary, and no public funds are being used, and there is no payment for any services. If you or your institution are interested, simply write to NECC, Western State College, Gunnison, Colorado, 81230. Jim Zulevich is the student director, and his number is (303) 641-3903. Abbott Fay is faculty coordinator, with phone numbers (303) 943-2039 (office), and (303) 641-0931 (home).

NATIONAL ENERGY CONSERVATION CHALLENGE
Western State College
Gunnison, Colorado 81230

ENERGY FORUM '82

June 4-6, 1982

GLOSSARY

Acid precipitation - precipitation with a pH of less than 5.6. Precipitation becomes acidified when it passes through an atmosphere polluted with sulfur and nitrogen oxides. The earth has the capacity to buffer small amounts of these oxides which occur naturally. But man-made sources like industries, power plants, auto emissions and fossil fuel combustion produce them in such volume that nature's balance is upset and many problems result. This type of pollution can be felt thousands of miles from the source of emissions.

Acre foot - the amount of water that would cover one acre of land one foot deep.

Anvil Points - a research oil shale facility owned by the Dept. of Energy and, until recently, operated by Parahoe Oil Company.

Aquifer - an underground formation containing water

Bench - a shelf or ledge made for a mining operation when an upper section is cut back. Union Oil is building their retorts on a bench above East Parachute Creek.

Best Available Control Technology (BACT) - the most advanced control technology that can be used for new sources of pollution taking into account economic, energy and environmental costs of control. Required by the Clean Air ACt as amended in 1977 for new pollution sources in clean air areas.

BLM - Bureau of Land Management. The angency charged with managing federal lands where oil shale reserves are found. A division of the Dept. of Interior.

Bonus bid - a competitive cash bid, usually sealed, for the priviledge of leasing mineral bearing federal land. The highest bidder wins the right to develop this property. One half of the collected bid revenue goes to the state, primarily to pay for the impact of the new operation.

BPD - barrel per day

Ca - a 5,090 acre tract of federal land in the Piceance Basin leased to Rio Blanco Oil Shale Company (Gulf Oil Corp., Standard Oil) under the prototype leasing program.

Cathederal Bluffs - see Cb

Cb - a 5,094 acre tract of federal land in the Piceance Basin leased to the Cathederal Bluffs Oil Shale Company (Occidental Oil Shale, Tenneco Petroleum) under the prototype leasing program.

CITF - Cumulative Impacts Task Force. A cooperative effort of industry, State and local governments to assess the wide range of social and economic impacts from major energy, mineral and industrial developments in Northwest Colorado, and to provide a planning tool for the participants. Through a consensus approach, a computer program will be generated to provide an assessment of the elements of growth. A computer model is being developed to assess impacts,project revenues, etc.

CJRP - Colorado Joint Review Process. A voluntary management system that coordinates Federal, State and local regulatory procedures in order to minimize duplication, overlaps and timing difficulties for major energy and mineral resource development projects. Established by the Colorado Dept. of Natural Resources, it provides industry with a new approach for seeking governmental approvals, and provides the public with opportunities for participation.

Class I, II, or III - Air quality classifications established by the PSD (Protection of Significant Deterioration) program of the Clean Air Act, allowing different levels of additional air pollutants depending on geographic locations:

Class I - Areas with the best existing air quality and where only minimal amounts of deterioration are allowed. National Parks and areas designated as wilderness before 1977 have Class I protections.

Class II - The rest of the country is designated Class II where industial pollution is allowed to increase to an increment of 25% of the level of the National Ambient Air Quality Standard. A state may change the classification of any of its Class II areas.

Class III - Areas with the dirtiest air currently and where air can get 50% dirtier.

Coking - one of the processes used to upgrade shale oil and improve its transportation properties. The oil is thermally decomposed at high temperatures (900-980°f) forming coke as a solid but lighter product.

Colony Oil Shale - An oil shale development once owned by Exxon and Tosco on private lands up Parachute Creek. Now soley owned by Exxon. Project on indefinite hold.

Criteria pollutants - five pollutants regulated under the Clean Air Act to reduce and prevent air pollution. They are: particulates, sulfur oxides, carbon monoxide, nitrogen dioxide, and photochemical oxidants (ozone and hydorcarbons).

Dawsonite - the mineral dihydroxy sodium aluminum carbonate. Often found in oil shale deposits. It is a potential source of alumina, which can be converted to aluminum.

Diligence - the requirement that a lease be developed within a specific time frame.

DOE - Department of Energy. The US cabinet-level department responsible for energy and related environmental research. Until the SFC (see below) took over supervision of the synfuels program, DOE also was responsible for subsidies granted to Union and Tosco.

DOI - Department of the Interior. The cabinet-level arm of the US government with ultimate authority over federal oil shale reserves.

EIS - Environmental Impact Statement. The "full disclosure" document required by the National Environment Policy Act which evaluates the environmental, social and other effects of major actions proposed by the federal government and alternatives to the proposed action.

FLPMA - Federal Land Policy and Management Act, 1976. A law requiring the management of public lands according to the principles of multiple use and sustained yield; a fair market return must be received for the use of public resources (renewable and nonrenewable); unique natural values must be considered.

Fugitive dust - airborne particulate matter originating from excavations, roads, etc.

Green River Formation - a geological formation deposited in the Eocene era, 40 million years ago, under a large lake which covered parts of Colorado, Wyoming and Utah, which holds the nation's riches oil shale resources.

Halite - the natural mineral form of sodium chloride (NaCl - salt). Present in some deep oil shale deposits in Colorado.

Hydorcarbons - organic compounds containing principally carbon and hydrogen.

Increments - maximum allowable increases of pollutants, as delineated in the Clean Air Act's PSD program.

In situ retorting - (see mining)

Integral vistas - a panorama where the visibility is protected from deterioration by the Clean Air Act.

JRP - (see CJRP)

Kerogen - the solid, waxy hydorcarbon present in oil shales. Its composition varies from one shale to another. Heat of about 900°f is required to decompose the kerogen, producing oils and gases which are released from the rock.

Lease sale - the offering of a federal lease by the Dept. of Interior. Interested parties submit bonus bids and the lease goes to the highest bidder once certain other requirements are met.

Lease size - currently, federal oil shale leases are limited to 5,120 acres. Legislation being debated in Congress could change this, especially in states other than Colorado where deposits are not as rich.

Marlstone - a silt stone containing dolomite. Kerogen is combined with marlstone to form Green River oil shale in Colorado, Utan and Wyoming.

MFP - Management Framework Plan. A land use planning method by which the BLM analyzes site-specific ramifications of one particular resource. Now bing replaced by Resource Management Plans.

Mining - Block caving - sections of the ore being mined are undercut and then allowed to cave in.
Continuous - a machine cuts and loads ore from a mine face in a continuous operation, without the use of drills and explosives.
In situ retorting - retorting oil shale in place without prior mining of the shale. Except for one process which involves explosive uplifting of the shale and thin overburden to create permeable rubbled oil shale (not unlike modified in situ) which is then retorted, this approach has not succeeded. Theoretically, solution mining of halite and nahcolite could also prepare a porous bed of rock for in situ retorting, but the process has not yet been proven.

Long-wall - the ore seam is removed in one operation along a working face that may be several hundred yards long. The main roof collapses as the working face advances through the ore body.
Open pit - the overburden is drilled and blasted loose over a large area and removed to expose the oil shale beds. These are then drilled and blasted.
Room and pillar - some shale is removed to form large rooms and some is left in place, as pillars, to support the mine roof.
Solution - the injection of fluids into the formation to dissolve soluable salts from among the oil shale layers, thereby creating a honeycomb pattern of voids.
Strip - the overburden and deposit are removed with a dragline.
Subsidence - the mine roof is allowed to collapse into the working area after the ore is removed.
Modified in situ - after mining and fracturing shale to create a chimney of broken rock, the oil shale is retorted in place. Burners are set in place at the top of the retort (the chimney of rock) to start the retorting. Once started, air and steam are drawn from the top to the bottom of the retort, maintaining combustion and heating the shale below to retorting temperature, releasing oil and gas which is collected at the bottom of the retort. Retorting leaves behind a carbon residue. It is this residual carbon which is burned to provide the heat for the retorting. The retorting front, followed by the combustion front move down the retort as in a smoker's pipe or a cigarette.

The mining techniques presently proposed for oil shale development are room and pillar, open pit and modified in situ.

MLRB - Mined Land Reclamation Board and Division (MLRD). A State agency in charge of approving and monitoring reclamation of mine sites. Part of the Dept. of Natural Resources.

Mucking - removal material broken up in the mining process.

Multi mineral processing - a processing technology which integrates nahcolite recovery, oil shale retorting, plus dawsonite and soda ash recovery in some shale which holds these minerals in the north central portion of the Piceance Basin.

Multi mineral lease - a lease where dawsonite, nahcolite, trona and halite may be mined as well as oil shale.

NAAQS - National Ambient Air Quality Standards. A limit on the amount of pollution allowed in ambient (surrounding) air. Primary standards are intended to protect human health. Secondary standards, which are more strict, are intended to protect public welfare by preventing injury to agriculture, deterioration of materials and property, and adverse impacts on the environment.

Nahcolite - a sodium carbonate mineral chemically identical to commercial baking soda (sodium bicarbonate). This is a potential source of soda ash and can be used to clean sulfur and nitrogen oxides from industrial stack gases.

NEPA - National Environmental Policy Act, 1969. This act requires EIS preparation for major federal actions significantly affecting the quality of the human environment.

Nonattainment area - a region where the air does not satisfy the National Ambient Air Quality Standards of the Clean Air Act.

Nonpoint source - a site from which there are uncollected emissions, such as a mining operation, construction site, or agricultural area.

NOSR - Naval Oil Shale Reserve. Oil shale reserves on federally owned land in Utah and in the Piceance Basin. Administered by the DOE as a strategic military reserve of shale oil.

Overburden - the material overlying a deposit that must be removed before surface mining.

Particulates - minute airborne particles, one of the criteria pollutants under the Clean Air Act.

pH - Potential Hydrogen. A means of expressing the acidity or alkalinity of a solution. At normal temperatures, pure water has a pH of about 7 (neutral). The pH of a strong acid is about 1 and that of a strong base about 14.

Plume blight - Air pollution from a point source that maintains its form and interferes with visibility downwind.

Prototype leasing program - a program which resulted in the leasing of two federal tracts of oil shale in Colorado and two in Utah in 1974 to test the technical,economic and and environmental feasibility of oil shale development and provide DOI with oil shale lease administration experience. Interior once proposed to expand the program in 1976, but abandoned the idea. More recently it has proposed expanding it again with up to two additional leases to test in situ or multi-mineral processing.

Permanent leasing program - the BLM is currently working on an EIS for a permanent program that will regulate leasing of oil shale reserves in the future.

Piceance Basin - the geographic area which, together with the Roan Plateau and Battlement Mesa holds Colorado's rich oil shale resources. Also refers to the geological structure which includes the oil shale of this geographic area and the hydrological structure which holds the aquifers and surface streams of most of the Piceance Creek and its tributaries.

PSD - Prevention of Significant Deterioration. A statutory program of the Clean Air Act aimed at preserving the existing high air quality in those areas having the cleanest air.

Quad - a thousand trillion BTU (British Thermal Units)

Regional haze - visibility restricitons occuring over an entire region. Natural and man-made sources contribute to this problem.

Rental - a fixed payment for an oil shale lease that is supposed to cover the administrative costs of that lease. Set by law in 1920, the rental rate for shale is only 50¢ per acre.

Retorting - the process of heating raw oil shale to about 1000^{0}f (540^{0}c) to obtain crude shale oil. Aboveground (AGR) - in this process, the retorting vessels are large, steel containers. The retorting systems, which differ widely with respect to technical and operating characteristics, fall into four classes based on the mode of transferring heat through the oil shale: 1. by conduction through the retort wall, 2. by flowing gases generated from the carbonaceous material and hot gases created in the retort, 3. by gases heated outside the retort, and 4. by mixing hot solid particles with the oil shale. Also see mining.

Rio Blanco Oil Shale - an oil shale venture by Gulf and Standard of Indiana on federal tract Ca in the Piceance Basin.

RMP - Resource Management Plan. A new planning process by which the BLM will account for cumulative multiple and long-term use of lands. An RMP requires an integrated approach to all land-use decisions.

ROST - Regional Oil Shale Team. An advisory organization responsible for assuring continuing federal/state coordination on all oil shale issues throughout the federal oil shale management program. It is comprised of state and BLM officials. This team will determine the amount of and time frame for leasing of federal lands.

Royalty - a payment set in oil shale leases and based on actual production of the resource.

RSP- Respirable Suspended Particulates. The smallest airborne particulate matter. These pose a significant health threat because they can bypass the body 's defense mechanisms and become imbedded deep in the most sensitive areas of the lungs. These fine particles are frequently toxic or at least can act as carriers for harmful pollutants.

Rubbling - Shattering by explosives of a portion of an oil shale deposit so that it can be retorted underground by a modified in situ process.

Scoping - a process to determine issues to be addressed in an EIS and to identify significant issues related to proposed projects. An opportunity for public involvement.

Severence tax - a tax on non-renewable energy and mineral resources that are removed from the State.

SFC - Synthetic Fuels Corporation. A quasi government corporation to provide financial assistance for development of the synthetic fuels industry. Set up in 1980 under the Energy Security Act, the $15.8 billion to spend on loan guarantees, purchase commitments, price guarantees, direct loans, or joint ventures. In 1984 Congress may chose to authorize an additional $68 billion for the SFC's operations.

Shale oil syncrude - a synthetic crude oil produced by adding hydrogen to crude shale oil, comparable with the best grades of conventional crude.

Spent shale - the retorted residual material after the oil and gas products are removed.

Syncrude -synthetic crude oil, produced from any source other than conventional petroleum.

Trona - a hydrated mixture of sodium carbonate and sodium bicarbonate.

TSP - Total Suspended Particulates. Solid particles or liquid droplets that become airborne.

Upgrading - the treatment of crude shale oil to improve it to a transportable refinery feedstock, including coking, hydrotreating, additives - partial or refined.

NATIONAL ENERGY CONSERVATION CHALLENGE
Western State College, Gunnison, Colo. 81230

Status Report
6 p.m. Sept. 23, 1977

Participating Institutions:

1. Adams State College, Colorado
2. City of Reston, Virginia (Home Owners' Assn.; Community Assn.)
3. City Markets, Inc. (22 stores)
4. Colgate University, New York
5. Community Church, Gunnison, Colorado
6. Colorado State University
7. Colorado School of Mines
8. Dartmouth College, New Hampshire
9. Continental Airlines, Robert F. Six Center
10. Colorado Governor's Mansion
11. Emporia State University, Kansas
12. Fisherman's Inn, Gunnison, Colorado
13. Grand Valley Schools, Colorado
14. Gunnison High School, Colorado
15. Holy Cross High School, River Grove, Illinois
16. Marietta College, Ohio
17. Oklahoma State University
18. Paonia High School, Colorado
19. University of Colorado / Boulder
20. University of Colorado / Colorado Springs
21. University of Idaho
22. University of Northern Colorado
23. University of Southern Mississippi
24. University of Southwestern Louisiana
25. University of Wisconsin / La Crosse
26. University of Wisconsin / Madison
27. Rock Island Arsenal, Illinois
28. Western State College, Colorado

Endorsements and Letters of Encouragement:

Ray Marshall, U.S. Secretary of Labor
Richard Lamm, Governor of Colorado
Gary Hart, U.S. Senate
Floyd Haskell, U.S. Senate
William Armstrong, U.S. House of Representatives
Frank Evans, U.S. House of Representatives
Patricia Schroeder, U.S. House of Representatives
Paul Ehrlich, Author of Population Bomb
David Lavender, Western Historian
Exxon Corporation
Mobil Corporation
Atlantic Richfield Corporation
Standard Oil of Indiana
People's Natural Gas (Div. of Northern Natural Gas)
Oil, Chemical and Atomic Workers International Union
Rocky Mountain Center on Environment
Colorado Open Space Council
Colorado Office of Energy Conservation
Colorado Council of Churches
White House Energy Planning and Programming Office (John Harris)
American Trucking Associations, Inc.
American Legion, Colorado Department
Martin Hatcher, Colorado Senate
Sam Zakhem, Colorado House of Representatives
Ken Kramer, Colorado House of Representatives
Education Commission of the States
Colorado Health Department
Sandy Kraemer, U. of Colorado Board of Regents
Gunnison County Democratic Committee
Colorado Water Conservation Board
Robert Seamans, Jr. (MIT energy expert)
Gunnison County Commissioners
Gunnison City Council
Merrill Lynch & Co, Inc.

At the present time, the most conservative estimate of the number of people involved with institutions participating in NECC is 200,000. At present, the program is still being supported entirely by student fund-raising projects at WSC and contributions to citizens. No taxpayer money is being used. NECC is independent of any energy production group, conservation group, or governmental interests.

NATIONAL ENERGY CONSERVATION CHALLENGE
Western State College, Gunnison, Colo. 81230

Status Report
6 p.m. Sept. 16, 1977

Participating Institutions

Higher Education:
University of Northern Colorado
Adams State College, Colorado
Dartmouth College, New Hampshire
University of Idaho
Oklahoma State University
University of Colorado / Colo. Spgs.
Marietta College, Ohio
Western State College, Colorado
University of Southwestern Louisiana
University of Colorado / Boulder
University of Wisconsin, / Madison
University of Southern Mississippi
Colorado School of Mines

Industries:
Rock Island Arsenal, Illinois
Denver Oper. / Continental Airlines

Businesses:
City Markets, Inc. (22 stores)
Fisherman's Inn, Gunnison, Colo.

Communities:
City of Reston, Virginia

Churches:
Community Church of Gunnison, Colo.

High Schools:
Paonia High School, Colorado
Gunnison, Colo. High School

Endorsements:

Ray Marshall, Secretary of Labor for the United States
Richard Lamm, Governor of Colorado
Gary Hart, U.S. Senate
Floyd Haskell, U.S. Senate
William Armstrong, U.S. House of Representatives
Frank Evans, U.S. House of Representatives
Patricia Schroeder, U.S. House of Representatives
Paul Ehrlich, Stanford University, Author of Population Bomb
David Lavender, author, historian of the American West
Rocky Mountain Center on Environment
Buie Seawell, Director, Colorado Office of Energy Conservation
Robert Watters, Commander, Colorado Department of American Legion
Martin Hatcher, Colorado Senate
Sam Zakhem, Colorado House of Representatives
Sandy Kraemer, Colorado University Board of Regents
Colorado Council of Churches, Energy Task Force
Colorado Water Conservation Board
Air Pollution Control, Colorado Health Department
Oil, Chemical and Atomic Workers International Union
Exxon Corporation
Standard Oil (Ind.)
Mobil Corporation
Atlantic-Richfield Corporation
Peoples Natural Gas (Div. of Northrn Natural Gas)
Robert Seamans, Jr. noted energy expert, M.I.T.
Donn McMorris, Chairman of Board, American Trucking Associations
James Peterson, Education Commission of the States
John Harris, White House Energy Planning and Programming Office
Gunnison City Council, Gunnison, Colorado
Gunnison County Commissioners, Gunnison, Colorado

National Energy Conservation Challenge was begun by students as Western State College, Gunnison, Colorado, on April 7, 1977. At present, there are more than 150,000 Americans involved in institutions which are committed to the NECC program. More than 500 students on the WSC campus are involved in the operation of NECC. No taxpayer money has been used, and the students of NECC are in a neutral position regarding the problems of energy production, conservation, and regulation. NECC seeks to promote amicable dialogue among conservationists, energy producers, and government officials. If the current level of waste continues, there will be very serious shortages of energy in the next few years, and it waste of energy that NECC is trying to fight through institutional involvement. Changing attitudes from waste to conservation can reduce the more than 23 per cent of energy which is wasted in the nation by human habits. NECC seeks to make energy conservation an enjoyable experience, free from hassels, fines and nagging. It asks all participating institutions to create their own concepts of the challenge, and to utilize their own personnel in the creation of programs which will lead to conservation chnsciousness.

NEWS RELEASE

FROM

NATIONAL ENERGY CONSERVATION CHALLENGE

WESTERN STATE COLLEGE • GUNNISON, COLORADO 81230

October 25, 1977

For Immediate Release

What started out as a dare by the coldest college in the nation outside of Alaska has quietly mushroomed into student and community movement throughout the nation to get energy conservation moving in a lighthearted manner, now involving more than 275,000 people in 18 states. When Western State College, in the little town of Gunnison, Colorado, high and isolated in the Rocky Mountains, decided to answer the request for a voluntary conservation program issued by President Carter last April, they brainstormed up the National Energy Conservation Challenge, or NECC for short, and ran advertisements asking any other institution in the nation to beat their energy savings this winter.

Western State College is a liberal arts college of 3,000 students who, attracted to the mountains, have been involved in many conservation projects in recent years. Temperatures in Gunnison often register the lowest in the contiguous 48 states, with winter readings as low as -40 degrees. Shunning the Spartan and masochistic approach, the students decided that saving energy was a matter as simple as getting people to turn off unneeded lights, dress more warmly, and keep smiling their way through. Realizing that more than 20 per cent of the energy consumed in the nation is wasted, they figured that by a series of re-charges to keep the idea going, they might be able to get people to think savings, rather than waste, and thus edge by a national crisis.

This has led to weekly events on campus, such as roosters waking up the students so they could dispense with alarm clocks, bicycle promotions, and a series of upcoming whimsies, such as NECCing hour in which there is a simulated blackout on the campus, a long-johns and sweaters dance with electric music powered by human energy, a great trash monster construction, a skiers' walk to the nearby Crested Butte resort, and dozens of other happenings, both frivolous and serious.

Meantime, the challenge was broadened to the idea of any type of institution anywhere challenging any other institution or its own previous consumption record, and the movement has snowballed from Massachusetts to Alaska. With the aim of getting America NECCing by Christmas, 40 other institutions have already joined in the fun, with measurable savings already being shown in the output of kilowatts and BTUs. Many of these institutions have created their own NECC programs and are reaching out in their local areas at a rate no one ever dreamed could occur.

Already involved are two dozen colleges and universities, a chain of supermarkets, the Continental airlines operations in Denver, the Texaco Los Angeles plant, high schools, a church, and a number of small businesses. Although the program is run entirely by students, it has received the endorsement and encouragement of energy producers, leading environmentalists, the American Legion, the Oil, Chemical and Atomic Workers International Union, and, after a five month hesitation, the White House itself. Every day there are more letters of endorsement by major U.S. corporations, national legislators, and environmental groups, as well as increasing letters of participation by all types of institutions. Strictly an amateur effort, Western state students have been working at full steam to keep the program coordinated, and to publish a monthly newsletter in which ideas are shared throughout the nation as a result of creative thought and experimentation in the participating groups, or "NECCing partners" as the latest newsletter called them.

Can it work? No one claims that laughing its way into saving is guaranteed to prevent a major American crisis, but more people are betting on NECC and its possibilities. The students started out raising funds through on on-campus White Elephant sales, then got a $248 grant from a local foundation, followed by a $1,000 anonymous boost, and then $5,000 from Tenneco Corporation, as seed money to handle the materials needed. All work on NECC has been entirely voluntary, with some students putting in up to 40 hours a week, and no taxpayer money or college funds have been used. One faculty member maintained he had never seen such a "gut effort" among students nationwide in three decades. At Western State, there are about 60 "hard-core" NECCers and 500 helpers, with the ranks growing weekly.

Institutions participating throughout the nation include the University of Alaska, the Madison and LaCrosse campuses of the University of Wisconsin, Dartmouth College in New Hampshire, Colgate University in New York, Springfield College in Massachusetts, Oklahoma State University, Drury College in Missouri, the University of Southern Mississippi, the University of Idaho, Shippenburg State College in Pennsylvania, Marietta College in Ohio, Wayne State College in Nebraska, Emporia State University in Kansas, the University of New Hampshire, and seven Colorado campuses. In addition, the entire city of Reston Virginia, is on a NECC campaign; the Rock Island Arsenal in Illinois is taking part, and four high schools are involved. Interest by high schools is increasing, and leaders at the Gunnison campus think that this could be the most significant spread in the NECC movement.

While the original challenge period was to be from October 1 through April 30, students are already saying that any institution can start and end its challenge when it wishes, with the time periods pro-rated for comparison; NECC plans to continue if it keeps growing. The leaders are determined to keep it grass-roots all over the nation, if possible, and not allow it to be a front for any special interest in the energy debate. They hope that conservationists, governmental leaders, and producers might get together and iron out their differences while the nation gets on with conservation-consciousness. Where do the students think this cool discussion could best take place? Well, they simply said it gets mighty cool in Gunnison, Colorado, in January. However, that matters less to them than seeing the nation get together on the problem, so the drive continues to work with all volunteers in the nation to "get America NECCing by Easter."

For further information, write NECC, WSC, Gunnison, Colorado 81230, or call Chairman Jim Zulevich at 303-641-3903, or Faculty Coordinator Abbott Fay at 303-943-2039 (office), or 303-641-0931 (home).

costs nothing to try to save this way, and you may even save some on the budget. Just drop us a note at NECC, WSC, Gunnison, Colorado 81230, telling us you're in, and we'll try to write back right away. Below are a few of the telephone numbers which may help in keeping the communication flowing:

Chairman Jim Zulevich: 303-641-3903
Communications Chairman Jim Douglas: 303-641-0813
Political Chairman Mike Protsman: 303-641-3167
D.C. NECC Office Chairman Charles Kiefe: 703-860-3697
Institutional Coordinations, Jake Crossley: 303-641-1026
Special Relations Chairman Mark Rollert: 303-641-3886
Campus Projects Chairwoman Lin Wallach: 303-641-3926
Faculty Advisor Abbott Fay: Office 303-943-2039
Receptionist 303-943-2091
Home 303-641-0931
WSC Student Government Office 303-943-2185
WSC Public Information Office 303-943-3035

We are dedicated to holding in there and helping in any way we can to the absolute limit of our abilities. We may not have all the answers, but we'll try to help you with your program in any way possible. We are not financed through the college here, and have been going on funds we earn on campus and through donations received.

Speaking of Donations

Tenneco, Inc., has sent $5,000 to be used by the National Energy Conservation Challenge. This money will be used to defray some of the expenses of this newsletter and other costs of keeping the national program growing. It is most appreciated. The donation was given with no implication of any vested interest in NECC; in full support of its independent position. NECC is not a propagandist for any special position on the energy problem: governmental, energy producers, or major conservation groups. We hope they may reach a solution to this problem, and simply want to get on the way by trying to get America to cut down on the waste without seriously altering existing life styles. NECC is going to need more money to carry on, but is not asking participating institutions for such. No-strings-attached donations may be given to the Western State College Foundation, 120 North Boulevard, Gunnison, Colorado 81230, a tax-deductable foundation, with a request that the grant be earmarked for use of NECC.

About that NECC Flag

On October 1, the NECC Flag was unfurled. It is a white flag with a yellow sun, with a black seagull flying, and the blue letters NECC on it. If you'd be interested in having one, it was sewn for us in durable materials by the American Pennant Manufacturing Company, 3198 Speer Blvd., Denver, Colorado 80211. You might want to order one, and they have the specifications. You might also put your own NECC art committee into the design of your own flag.

Need Some Good Literature?

We understand the Federal Energy Administration has now been absorbed into the new Department of Energy, but the following address should still be able to get you a copy of their Energy Conservation and Environmental Publications, a good listing of inexpensive and useful materials to help with your program. Write Federal Energy Administration, Washington, D.C., 20461, for this free bibliography.

How About That?

We've been learning a few things we didn't realize when we started, a a result of questions. Among them are these:

It takes quite a charge to turn on a flourescent light, and if people keep turning them on and off, more power will be used than if they were left on. However, experts still tell us that the practice of turning them off will probably save more power in the long run. People may turn them on only when they are necessary. At the end of the day, turn them off for sure. Also, where there are multiple switches for banks of such lights, tiny labels on the switch plate helps to avoid turning on the wrong bank trying to find the right one. Might of guessed that one would come from a logic prof.

We've also learned that showers are not always a savings over baths, the way some people luxuriate in the shower. Translating values, taking a shower for ten minutes is the equivalent of burning a 100 watt bulb for 55 hours. That heat costs a lot!

Piling up sealed aluminum cans from beer or soft drinks in the sun-heated window, if they're filled with water, will give some extra heat boost to the room when the sun goes down. If you paint them black, they'll store even more heat to radiate at night.

A Note About WSC and NECC

If you were wondering how we got into all this, it's because we're about the coldest place in the nation every winter, except for Alaska. We challenged other institutions to match our savings, but it got such a good response, we broadened the challenge to include any institution of any area to set up its own concept of challenge. Gunnison, Colorado, is located in the heart of the Rockies at 7,700 feet elevation. Western State College is a liberal arts college of about 3,000 students, and has been very active in environmental issues and experimentation for some time, being surrounded by beautiful scenery which is also energy rich. We have a full realization that more energy will have to be produced, but we feel conservation in human habits may enable producers to fulfill the demand without critical shortages, which would be accompanied by social and economic chaos. Conservation is a state of mind, just as waste is a state of mind. We realize the job of changing thought patterns is a big one, but we're finding that lots of Americans are ready to do just that. We're merely serving as a coordination and information exchange center for an idea. We realize NECC is an experiment, but we believe it can succeed if all the NECC participants keep trying and thinking, working and renewing the efforts. When President Carter asked for a voluntary conservation program at grass-roots level on April 18, 1977, we volunteered.

Comparative Appliance Report

Paul Geddes, of the NECC research committee, has prepared the following article for practical use in energy conservation. We though you'd like to see it. We will try to get some short reports from all over in this, especially those done by NECC participating organizations. Send us the information.

A sixty dollar electricity bill! Outrageous!

Why can't those cold hearted people at the electric company give consumers a break for once instead of gouging them for huge profits?

A good question, perhaps, however the point to be raised is not the profit percentage of the power company, but was the full $60.00 worth of electricty actually needed? Where did it go? Was it used efficiently? Which appliances use the most, or the least amount of electricity?

To answer these questions, a standard method of systematically evaluating the power requirements of all power consuming devices was developed. The standard energy unit, developed is both easily understood and applicable to any form of energy consumption. The unit will be referred to as the G unit, and is equivalent to the energy consumed by one 100 watt light bulb for one hour. With the aid of standard conversion factors found in any physics text, any energy unit such as BTUs or horsepower can be converted into these G units.

Listed in the accompanying table are the power requirements, in terms of G units used for one hour of continuous use, for the majority of electrical appliances commonly found in the home. The raw data was gathered out of a 1976 Sears and a 1977 Ward's catalogue and averaged together. They are approximate values, not absolute.

The statistics basically speak for themselves. They should serve as a guide so you can decide where you personally use the most energy and how to arrive at an optimum balance between energy savings and a personal sacrifice of conveniences.

HOME APPLIANCES POWER CONSUMPTION (G Units)

Hot Water Heater	76G*
15.5 gallons for 100° F rise (3.5×10^4 BTU) over a 60 min. period.	
22.5 gal for 100 ° F rise (5.5×10^4 BTU) over a 60 min period.	110
Clothes Dryer (2.2×10^4 BTU)	56
Air Conditioner	
Heavy duty	60
Medium duty	42
Light duty	35
Electric Range	
Small burner	12-13
Large burner	20-22
"Bake"	24
"Broil"	34
"Self-clean"	75
Dishwasher	7.5
Microwave Oven	4.6
Vacuum Cleaner	
Large cannister	8-11
Small cannister	5.5-8
Standard upright	4-5
Color TV	
21"	1.5
19"	1.2
17"	1.1
9"	.8
B & W TV	
19"	.68
12"	.45
Stereo Amplifier (max. draw at max. volume)	
Small portable	.2-.4
Medium size component	1.0
Large size component	1.5
Cassette Deck	.1
Reel to Reel Deck	.4
Turntable	.2
Electric Typewriter	.4-.7
Electric Blanket	1-2
Clock Radio	
Standard Dial	.16
Led dial	.04
Electric Toaster	9

*All values are in G units for one hour of continuous use, 1 G unit = amount of energy used by one 100 watt bulb for one hour.

i.e., 24 one hundred watt bulbs burning for one hour is equivalent to one hour of baking in the electric oven cited above in terms of energy consumption.