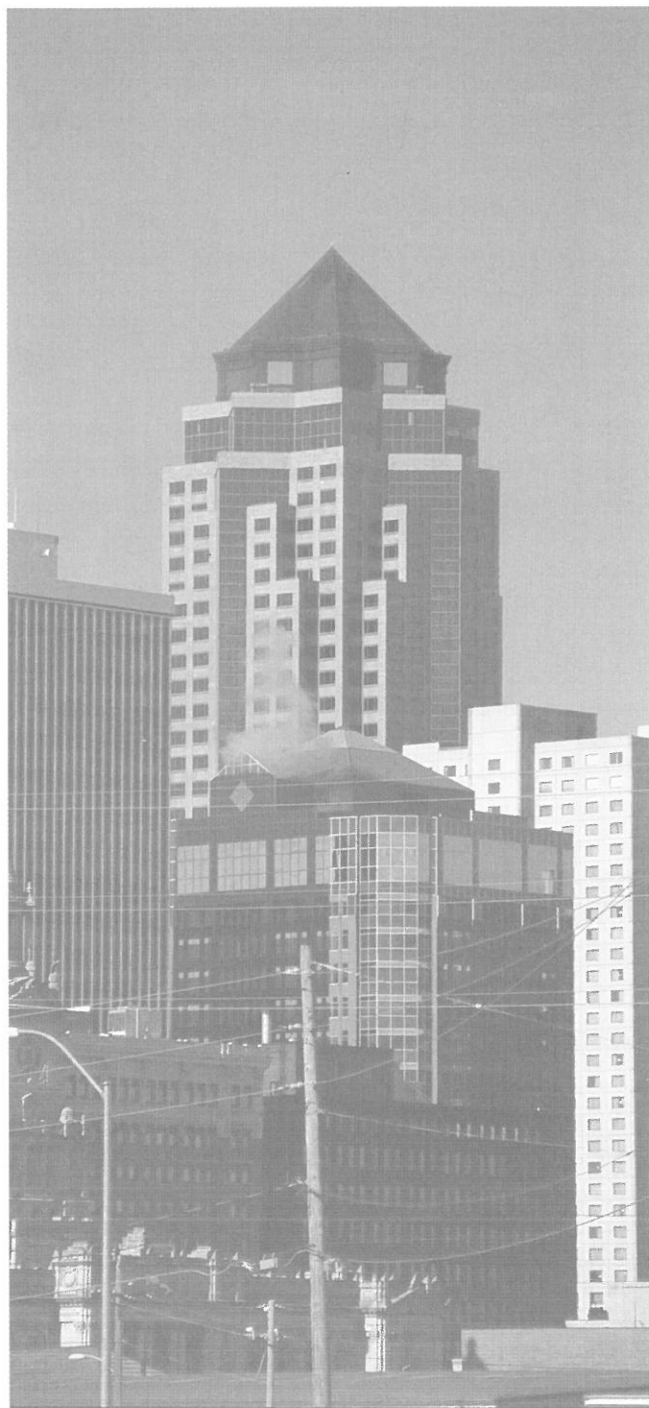


Perspectives

A newsletter covering the research, demonstration and education projects of the Iowa Energy Center

Natural Gas and Propane Costs on the Rise



Following the laws of economics, whenever there is a higher demand for a product than there is a supply, prices for that product increase. This law has definitely proved true for heating fuels.

In the past, natural gas has been considered the cheapest, cleanest and most reliable source for home heating energy. That perception may be challenged after this winter.

Prices Up, Winter's Coming

In Iowa, and across the nation, heating fuel costs are up sharply - the cost of natural gas to distributors has increased by about 50%. According to Ward Lenz, Iowa Department of Natural Resources Energy Data Analyst, Iowa households can expect their gas bills to increase by about 50%.

Energy analysts around the country are pointing to three main factors for this increase. The first factor is higher demand for natural gas. Utility companies have switched to installing electric generators that run on cleaner-burning, natural gas to meet rising electricity demands rather than building new coal fired power plants. The country's rapid economic growth and corresponding demand for electricity has out-paced natural gas production and distribution.

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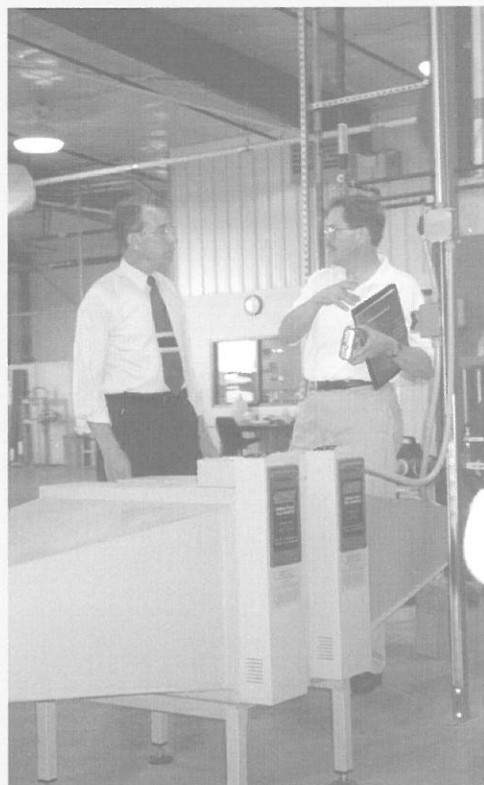
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Senator Grassley Visits BECON

The Iowa Energy Center's BECON (Bio-mass Energy CONversion) facility in Nevada captured the attention of Iowa's U.S. Senator Charles Grassley. Senator Grassley stopped by for a tour Saturday, October 14. He was most interested in the production of fuels and chemicals from biomass and the value-added products being investigated by BECON researchers. Updates on BECON research can be found on the Center's web site, www.energy.iastate.edu, keyword BECON.



Floyd Barwig, Iowa Energy Director (left) stands with Sen. Charles Grassley (right) near anaerobic digestion tanks at BECON.



Barwig (right) discusses a research pyrolysis unit at BECON with Senator Grassley.

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The Iowa Energy Center was created by the 1990 Iowa Energy Efficiency Act. Its mission is to help Iowans reduce their reliance on imported fuels and nonrenewable resources and to increase efficiency in all areas of energy use. This is accomplished in part through a competitive grants program which sponsors energy efficiency and renewable energy research and demonstration projects.

To be added to the Center's mailing list call 515-294-8819 or e-mail iec@energy.iastate.edu. Online versions at www.energy.iastate.edu.



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The second factor is that in the past decade, energy prices have been extremely low and natural gas companies haven't had the financial incentives to look for new natural gas reserves. This has led to a situation where the demand is now outpacing the supply. The third factor is that this winter temperatures in Iowa are expected to be colder than the past three unseasonably warm ones. Even if prices were not increasing, heating bills would still be higher than recent years just as a result of lower temperatures.

Propane costs will also be effected because natural gas is used to produce propane. Propane users can expect a 30% to 45% increase in their bills. There will also be cost increases for those Iowans who use heating oil. Heating oil reserves are only about half of what they should be for eastern states. As a result, those supplies of heating oil marked originally for Midwest states will be headed east and heating oil prices in Iowa will rise even higher.

While everyone seems to agree prices are on the rise, there is still widely varying debate as to how high those costs will be. For example, Alliant Energy featured the price rise in their customer news-

letter, *PowerHouse*. It stated, "For a typical Iowa household, natural gas prices are predicted to be approximately \$179 more annually." Lenz at the IDNR countered and said, "That sounds optimistic. A several hundred dollar increase is more than likely this year."

What can you do?

Unfortunately there isn't any new, magic technology that will solve this year's energy woes.

The tried and true method of increasing your home's energy efficiency is still the best way to cut heating and cooling costs. For the average home in Iowa, heating accounts for about 40% of the winter energy bill. Therefore, look at ways to reduce your home's heating load to save money.

Stopping air leaks in your home will make the biggest impact. Studies have shown that when the average home's air leaks are tallied up it is equal to having a standard-size window open in your home. Reducing air leaks also stops drafts and makes your home *feel* more comfortable, even at lower temperatures, and curbs the urge to crank up the heat. After the air leaks have been stopped, the next step is to make sure your home has enough insulation. The recommend insulation value is R38 to R44 in ceilings and attics with cold spaces; R19 for the top of basement foundation walls; R10 or higher for interior or exterior basement walls and R19 or higher for above ground walls.

The *HomeSeries* booklets, produced by the Iowa Energy Center, are a guide for spotting and stopping air leaks, adding insulation and other home energy efficiency issues. Printed copies of these booklets are available by contacting the Center at 515-294-8819. The *HomeSeries* is also posted on the Center's web site, www.energy.iastate.edu, keyword *HomeSeries*. More energy saving tips can be found on pages 4-5 of this newsletter.

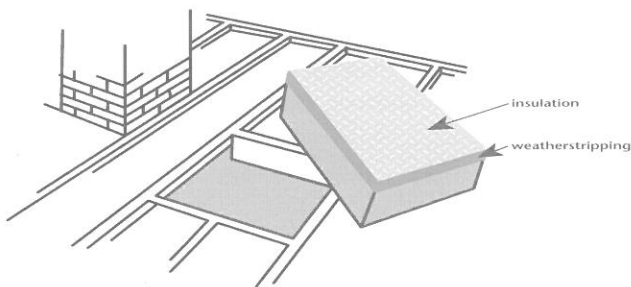


The Air Leak Checklist

Each year in the U.S. about \$13 billion worth of energy — in the form of heated and cooled air — escapes through holes and cracks in residential buildings. The checklist below will help you identify areas in your home that are likely to have air leaks.

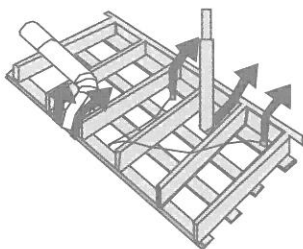
The Attic:

- **Doors and Hatches to the Attic** — Weatherstrip the edges and insulate the backside of the attic door. Fold-down stairs can be covered with a lightweight box made of rigid insulation board.



If you have an attic hatch, make sure it fits tightly. Do this by weatherstripping the edges of the hatch and insulating the backside of the door.

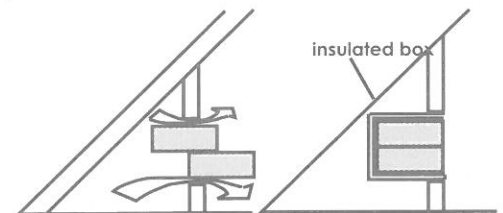
- **Holes in the Attic Floor** — Seal all holes, including openings for wires, pipes and vents in the attic floor with a general all purpose caulk.



Wiring, pipes and other openings in insulated ceilings can result in a tremendous amount of heat loss. These openings need to be caulked and sealed. Openings for recessed lights may also need to be caulked to seal out air leaks, but because of the variety of models and possible fire hazards, first check with an electrician.

- **Attic Knee Walls/Storage Drawers** — If storage drawers are recessed into the attic space, an airtight, insulated box should be built around the backside of the drawers.

Enclosed storage drawers in the attic should be insulated to prevent air leaks.



- **Around the Chimney** — Any gap that runs vertically the height of the house around the chimney should be sealed at both the basement ceiling and attic floor levels. Seal these with sheet metal. This job may be best hired out.

- **Other Holes** — Seal all other holes between the heated space in your home and the unheated space of the attic.

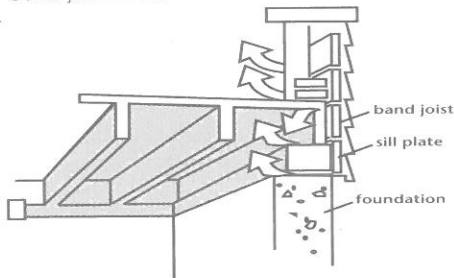
The Basement:

- **Ducts** — Caulk the large cracks or gaps where the ducts pass through ceilings, floors and walls.

- **Basement Windows** — Use the masonry caulk to fill any cracks where the frames of the windows are set into the walls. Windows that are not used for summer ventilation, or as fire exits, can be permanently caulked shut.

- **Sill Plates and Band Joists** — Fill any crack between the sill plate and foundation wall using a masonry caulk. Use a wood caulk to fill any cracks between the sill plate and band joist. Then insulate the band joist once this area has been sealed.

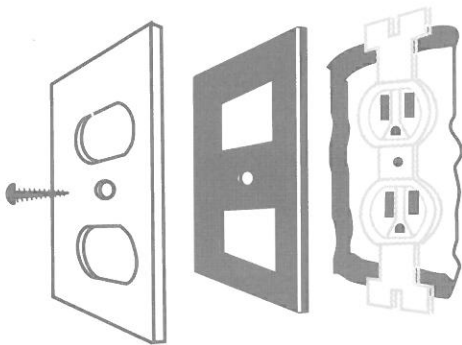
Get rid of drafts along the floor by caulking along the sill plate and band joist in the basement.



- Openings in Basement Ceilings — Seal the holes where any plumbing or electric wiring comes down into the basement with caulk or foam.

The Main Level:

- Electrical Outlets — Install foam gaskets at all outlets and light switches, even on interior walls. Then use child safety plugs to keep the cold air from coming in through the sockets.
- Air Conditioners — Remove window air conditioners. If you can't remove them, seal up the area around the unit with removable rope caulk then add an AC window insulation blanket.



Electrical outlet gaskets are installed between the outlet and the coverplate. Plastic child safety plugs will also prevent air from entering your home.

Online Home Energy Audits

There is a new tool for homeowners who want to get a better handle on their energy use — the online home energy audit. Home energy audit web sites are designed to help consumers identify the most effective ways to save energy in their homes and find the resources to make it happen.

The most comprehensive audit web site is *Home Energy Saver*. This self-directed home energy audit site (<http://hes.lbl.gov>) is the first web-based tool for calculating energy use in residential buildings. What sets *Home Energy Saver* apart from others is its online energy calculator that computes a home's energy use based on individualized user input. By changing one or more features of the modeled home, users can estimate how much energy and money can be saved, as well as how much pollution can be prevented by making home improvements. The *Home Energy Saver* web site is part of the ENERGY STAR Program and is sponsored by the U.S. Department of Energy and the U.S. Environmental Protection Agency.

When doing a web search for home energy audits, you will find a number of press releases and commercial pages advertising the services of professional home energy auditors. There are some web sites that offer valuable step-by-step instructions on how to perform an audit on your home, but do not offer the calculator feature of *Home Energy Saver*.

Homeowners may wish to pursue hiring a professional home energy auditor to inspect their home. An energy auditor assess how much energy your home consumes, identifies air leaks and trouble spots in a home and recommends measures to make your home more efficient. To find a home energy auditor, contact your local utility company to see if they offer this service or can recommend a local energy professional.

TWO LOCAL VIEWS ON HYBRID AUTOS

Toyota Prius Produces Amazing Fuel Economy and Comfortable Ride

By Rich and Marion Patterson

Only a few weeks ago we winced at paying nearly \$1.80 a gallon. Fortunately fuel prices have dropped, but who knows when they'll shoot up again?

Because we consider efficiency a critical feature when we buy a car, we've owned several Volkswagens and Toyotas that have squeezed many miles from each gallon. When Toyota announced its new Prius hybrid model promising phenomenal gas mileage we were instantly interested.

Cedar Rapids Toyota recently let us take a spanking new Prius on a test drive to see how it handled and if it produced the promised fuel economy. Our trip took us west on US 30 past Boone and on several paved county roads to Elk Horn, Iowa, where we toured the Danish Immigrant Museum. The return trip was on Iowa 44, Interstate 80 and U.S. 6. Overall, we totaled 442 miles of varied driving that included flat stretches, rolling hills, urban areas and both 55 and 65 mph speed limits.

Below, left, Toyota's gas/electric hybrid Prius. Right, a look under the hood of the Prius shows a markedly different view - including both a gasoline engine and an electric motor.

The Prius is one of the most unusual cars to hit the market in years. It is slightly smaller than a Corolla and bigger than an Echo. It has an automatic transmission and seats a driver and up to four passengers.

What makes the Prius interesting and fuel miserly is its hybrid power. Under the short hood is tucked a four cylinder 1.5 liter gasoline engine alongside a powerful electric motor. The engine produces 70 horsepower and the motor 44. Between the rear seat and a fairly spacious trunk is a large battery.

The car's sophisticated computers constantly determine the most efficient power plant to use. When starting off, and when driving at slow speeds, the electric motor moves the car almost noiselessly. When operating at highway speed the gas engine runs a generator that powers the wheels. When a burst of speed is needed, however, both the gas engine and battery add energy giving the car passing and hill climbing pep.

Coasting or braking (kinetic) energy, wasted by most cars, is recovered by the Prius and converted into electrical energy, charging the battery. During normal driving the car frequently and automatically switches from gas to electric power to regeneration mode. It happens so smoothly that a driver hardly notices.

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Insight Into Hybrid

By Keith Kutz

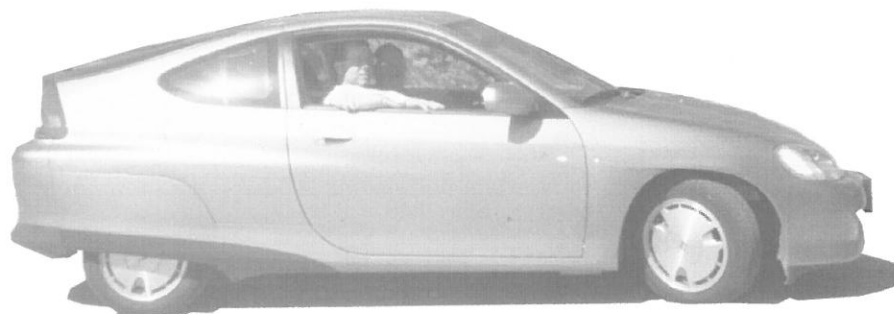
Every once in a while you do something and afterward wonder if it was the right move. My wife Brenda and I did exactly that this past summer when we bought our Honda Insight.

Our old car was larger than what we really needed and was starting to lose efficiency. We had been following the development of the Insight for a year or so and we were mildly interested. The efficiency claims for its hybrid gas-electric drive train were impressive, but the technology was new and, we felt, unproven. Besides, we felt the Insight was just plain ugly in all of Honda's press materials.

When we got an up-close look at the car in Ankeny, Iowa last spring we were instantly impressed and soon put our name on the waiting list at our local Honda dealer. A month later, we got a call that the dealer had two Insights on the lot and we could come down and test drive them. We honestly didn't know what to expect, but were pleasantly surprised by the car's performance. To make a long story short, we drove our new car off the lot a couple weeks later and have been very happy with it since then.

Our first real highway test involved a 500 mile round trip to the Northwest corner of Iowa. We averaged 69 mpg for the trip — just short of Honda's estimate of 70 mpg for highway driving. The trip combined interstate driving with secondary roads and some city driving. In our experience over three months, the best highway fuel economy (>70 mpg) seems to occur while cruising at speeds around 55 - 60 mph with it dropping off at higher speeds. For city driving, we are averaging about 57 mpg, again, just under Honda's estimate of 60 mpg.

We discovered quickly that getting the highest fuel economy from the Insight required a change in our driving habits. The instrument panel can show instantaneous gas mileage and the effects of even small throttle movements are striking. We are now



far more conscious about the benefits of steady driving, moderate acceleration, and gradual slow downs when coming to a stop. Of course, these habits can benefit any driver no matter what the vehicle.

Beyond the joy that comes from seeing our monthly gasoline costs plummet, the Insight is fun to drive. This is not a stripped-down, uncomfortable box on wheels. Honda built in all the normal amenities. It has plenty of power to zip around if you are inclined to do so; the passenger compartment is cozy, but not cramped; climate control is excellent; handling is superb and although the suspension is quite stiff, it gives you a good feel for the road without being annoying. When properly inflated, the low rolling resistance tires add some roughness and noise to the ride, but we view that as an acceptable tradeoff for the increased fuel economy.

Even with its lightweight aluminum construction, the Insight has a 4-star DOT crash rating and is designed to meet 2003 U.S. standards for side-impact and head-injury protection. Honda's own internal safety standards exceed those required by any country in the world.

We knew when we drove the car off the lot that it
continued page 8...

Keith Kutz, Iowa Energy Center Administrative Specialist, seated in his new Honda hybrid Insight.

continued from Toyota Prius, page 6...

We found the instrumentation fascinating. A small screen is located in the middle of the dash. One setting shows the miles per gallon the car is getting at the moment. Bar graphs show fuel economy in five-minute increments for the past half hour of driving. Watching the instant gas mileage is educational. Jackrabbit start and you visually see your mileage dip. Accelerate up to 55 to 65 and you see a miles per gallon cost. Turn on the air conditioner and the same thing happens. The other display uses pulsing arrows to show the direction power is moving between the electric motor, generator and gas engine. The display also shows such normal car functions as radio data.

Toyota claims the car will produce 52 miles per gallon in urban driving and 48 on the highway. City driving yields better efficiency because the car is generating more energy to drive its electric motor. Our overall trip average was 51.39 miles per gallon, exceeding Toyota's claim for both city and urban driving. It took \$11.00 worth of gas to cover the 442 miles for a fuel cost of 2.49 cents per mile. The car is best suited for people who do mostly urban driving and it would be an ideal errand or urban commuting car. However, it's also very efficient and comfortable on highway trips.

Overall, we are impressed with the car. It is fun and easy to drive. It has all the usual safety features and amenities drivers expect. These include anti-lock brakes, infant car seat restraints with anchor bracket, a good sound system, air conditioning, cup holders, intermittent wipers and visor mirrors. The guarantee is comprehensive. Front, side and rear visibility is outstanding, performance is very good and it's comfortable. It took a little while to get used to a gearshift lever that is a little like a boat tiller. The car engine is completely off at red lights and stop signs. That's a bit unnerving at first. We found it satisfying to start and drive noiselessly through neighborhoods solely on electric power, leaving no emissions behind.

The Prius list price is \$20,520. They can be ordered at Toyota dealers. There's a three to four month wait, but we'd buy one and be happy to wait.

Rich Patterson, is the director of the Indian Creek Nature Center in Cedar Rapids. Marion Patterson is an elementary PE teacher and freelance writer on environmental issues.

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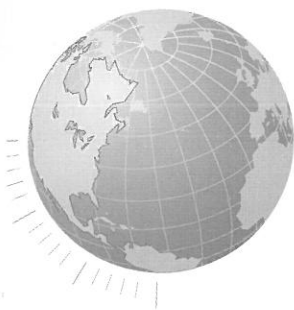
was going to attract some attention; however, we really weren't prepared for the amount. We actually started to feel a bit self-conscious as drivers and pedestrians would stare at the car. It was fun trying to guess what they were thinking by the expressions on their faces. Admittedly, with its rear wheels enclosed by a fender skirt, the Insight looks a lot like a Detroit concept car. Perhaps the best verbal comment we received was when we drove past a group of middle-school boys and we heard a unison, "Awesome!"

I can't begin to count the number of times we have explained the hybrid gas-electric engine concept to curious passersby and other motorists. I even had a car pull along side me, while traveling the busiest road in Ames, and try to engage me in a discussion while we were moving. By far the most common question has been, "Where do you plug it in?" Most people are quite surprised to hear that the car has no power cord and that the car recharges its batteries as it's driven. Ames is a small city and I think the novelty of seeing the Insight has worn off a bit. We still get stares and questions, but not as often.

Of course, we would be lying if we said that we were 100% satisfied with the Insight. As with any vehicle, there are some things that we would change if given the chance. The sun visors are rather flimsy, the wiper controls could use a greater range of intermittent speeds, and the levers to adjust the seat backs are oddly positioned. These are minor issues, though, and don't outweigh the plusses the car offers.

So, the question still remains, did we make the right move in buying our Insight? Upon three months of reflection, the answer is still yes. The car fits our lifestyle and transportation needs. It also confirms our belief that there are cost-effective, practical ways to reduce automotive fuel consumption without sacrificing safety, comfort and reliability. The Insight isn't for everyone, but it can fill a significant niche for those willing to take the plunge.

Keith Kutz, is an Administrative Specialist for the Iowa Energy Center.



National News Updates

Foam-Core Panels Used in Manufactured Home Construction

For the first time, a manufactured home was constructed entirely out of energy efficient foam core panels. According to a press release from the U.S. Department of Energy, the demonstration home, constructed by Champion Enterprises in Silverton, Oregon, is expected to have half the heating and cooling costs of a manufactured home built to the minimum housing code. Homes built with this technology will also allow their owners to save \$550 to \$690 each year on their electricity bills. Homeowners who heat with natural gas are expected to save \$146 - \$181 annually. Manufactured homes make up about 20% to 30% of new home sales in the country.

Foam-core panels, often referred to as structural insulating panels or SIP, consist of an insulating layer of foam between two structural panels. SIPs are used as floors, walls and roofs on all types of buildings. The insulation in the SIPs is a component of the building system, rather than an addition and have excellent thermal efficiency. To learn more about SIPs visit the Structural Insulating Panel Association's web site at www.sips.org.

Gasoline Use Down in U.S. Slightly

Increased gasoline prices have been labeled the cause of the drop U.S. gas consumption. There was a 4% drop in the average daily gasoline consumption during a four-week period ending on July 28, 2000, when compared to the previous year. The average daily consumption for the calendar year has fallen by 1%. The impact of this is more significant if you consider that the economy is still robust and that since about 1995 gasoline consumption has increased by an average of 2.5 %

annually. For more information on gasoline and other energy prices and trends, visit the U.S. Energy Information Administration Weekly Petroleum Statistics web site at www.eia.doe.gov.

Sub-CFLs Feature Short Design

A new subcompact fluorescent (sub-CFL) is now on the market that is easy to install into sockets and fixtures that many other compact fluorescent lamps are just too long to fit. In the past, CFLs have had difficulty winning over new customers because of their large size and high cost. This new sub-CFL is practically the same size as a typical incandescent lamp. They are 4.56 inches long, just 0.1 of an inch longer than a 60 watt incandescent lamp. Prices range from about \$5.00 to \$6.25. An additional bonus is that sub-CFLs use up to two-thirds less energy and they last up to ten times longer than comparable incandescent lamps.

Office and Network Equipment Consumes Only 2% of Electricity in U.S.

A recent report by DOE's Lawrence Berkeley Laboratories found that the electricity use by office and network equipment was only about 2% of what is currently used in the U.S. — approximately 74 terawatts of electricity annually. Power management technologies including software that puts computers in "sleep" mode when not in use, are saving about 23 terawatts of electricity per year.

The report states that if everyone were to use these power management tools, an additional 17 terawatts of electricity could be saved. It is important to note that even if you have these power management tools you should turn off your computer, printer, etc. when you are finished working with them. More information on LBL's study on the impact of the new digital economy can be found on their web site www.lbl.gov/Projects/InfoTech.html.

Report on Potential for Biomass Ethanol

Advances in the technology use to produce ethanol from cellulose could reduce the cost and increase production 40% to 160% by 2010, according to a report recently published by the U.S. Energy Information Administration.

The report, *Outlook for Biomass Ethanol Production Demand*, finds that while cellulose-based feed stocks would be less expensive than grain, the cur-

rent production costs of cellulose-ethanol is much higher as the materials are more difficult to convert to ethanol.

"Advances in feedstock processing and biotechnology could, over the next two decades, reduce cellulose-based ethanol costs to between 69 cents to 98 cents per gallon, partly by using genetically engineered bacteria in the fermentation process," states the report. The full report can be found on the web at www.eia.doe.gov/analysis/2000anal08.html.

Up and Coming . . .

Creating Value for Agricultural Resources

When & Where: November 13-14, Manhattan, Kansas

Hosted By: Kansas State University Research and Extension, the Agricultural Product Utilization Forum, the Kansas Department of Commerce and Housing — Agricultural Product Development Division and the U.S. Department of Energy

Focus: This conference will present topics relevant to product development, commercialization and marketing of innovative products and technologies that add value to agricultural resources. Exhibits will focus on new products and developing technologies.

For More Information: www.oznet.ksu.edu/pr_apuf or 785-532-4064

GeoExchange Teleconference

When & Where: November 14, 11:30 am - 1:30 pm, IEC's Energy Resource Station, Des Moines Area Community College, Ankeny, Iowa

Hosted By: Iowa Energy Center

Focus: This teleconference is designed to educate local government officials on how the energy efficiency, reliability and low maintenance and operating costs of geothermal technology can save

money and meet increasing budgetary demands. The event is free and a box lunch is offered, but space is limited and pre-registration required.

For More Information: To reserve a space contact Denise Junod at djunod@energy.iastate.edu or 515-965-7055.

Renewable Energy - Market Outlook & Strategies Current & Future

When & Where: November 29-30, Denver, Colorado

Hosted By: Strategic Research Institute and U.S. Department of Energy

Focus: This event gathers experts from around the world to present the latest finding and developments in renewable energy. Topic titles include the United Nations World Energy Assessment; Federal Green Power Initiative; Impacts of Electrical Restructuring on Renewable Energy; Thermal Store Technology; Developments of a Solar Thermal Power Generator; Fuel Cells; Urban Biodiesel Production; Geothermal Heat Pumps; Renewable Clean Diesel Alternative; and Solar Energy in Schools.

For More Information: 212-967-0095, ext. 238, nharris@srinstitute.com or www.srinstitute.com/cr179

Energy Resource Station Offers New Workshops

Building Commissioning

The Iowa Energy Center is always working to add new courses to its repertoire, as well as host educational energy course offered by other organizations. This winter, two new courses on building commissioning will be offered at the Center's Energy Resource Station, located on the Des Moines Area Community College campus in Ankeny, Iowa. Also, the fundamentals of direct digital controls, both one-day and week-long, courses will be offered in the early part of 2001.

The first course, a one-day event on building commissioning benefits, processes and performance, debuted on November 10. A dry run for a week-long course on building commissioning will be held December 4-8. Both of these courses will be offered again in spring 2001.

Companies across the United States are recognizing commissioning as an essential business strategy. These courses show how the commissioning process allows your building to achieve top performance. Building owners, facility managers, architects, design engineers, construction engineers and energy service professionals are ideal candidates for this course.

The one-day course is an overview of the commissioning process; typical commissioning findings; discuss what is involved in commissioning a building; the costs and benefits of commissioning; the importance of operation, maintenance and continuous commissioning; and how to get started developing an action plan. The week-long course covers these same issues in much more depth. Par-

ticipants in the week-long course will gain hands-on experience applying commissioning strategies at workstations developed for this course. The commissioning courses will be taught by Jay Santos, P.E., president of Facility Dynamics Engineering.

If you are interested in receiving notices of the 2001 commissioning course schedule, contact Denise Junod at 515-965-7055 or djunod@energy.iastate.edu.

GeoExchange Teleconference

The Center's Energy Resource Station will also be a host site for an international teleconference on GeoExchange technology, November 15 from 11:30 am to 1:30 pm. The conference focuses on GeoExchange technology (aka, geothermal systems) to state, county and municipal buildings.

The teleconference has been designed to educate local government officials on how the energy efficiency, reliability and low maintenance and operating costs of GeoExchange technology can save them money and meet increasing budgetary demands.

The national sponsors of the teleconference are the Geothermal Heat Pump Consortium, the International Ground Source Heat Pump Association and the U.S. Environmental Protection Agency.

The event is free and a box lunch is offered, but space is limited and pre-registration required. To register contact Denise Junod at the Energy Resource Station at 515-965-7055 or djunod@energy.iastate.edu.



NFRC Certified Products Directory On-line

Consumers and homebuilders can now easily access, via the Internet, the ninth edition of the *National Fenestration Rating Council (NFRC) Certified Products Directory: Energy Performance Ratings for Windows, Doors and Skylights*. For the

first time the directory is web ready, as well as available in print and CD-ROM format. The NFRC web site address is www.nfrc.com.

This most recent directory includes U-factor,

solar heat gain coefficient and visible transmittance ratings for more than 80,000 windows, doors and skylights from over 240 manufacturers. The eighth edition directory included ratings for approximately 61,000 products from 180 manufacturers.

The current on-line version is searchable by manufacturer and product type. The price for a printed directory is \$50 and \$10 for a CD-ROM version. To order a copy of the directory, call 301-589-6372.

The NFRC is a non-profit organization that administers a rating and labeling system that provides accurate and reliable energy performance information about windows, doors and skylights.



If you have an energy-related event you would like to have included in *Perspectives*, please send the information at least two months in advance to: *Perspectives*, Iowa Energy Center, 2521 Elwood Drive, Suite 124, Ames, Iowa 50010-8263, fax the information to 515-294-9912 or e-mail iec@energy.iastate.edu.

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