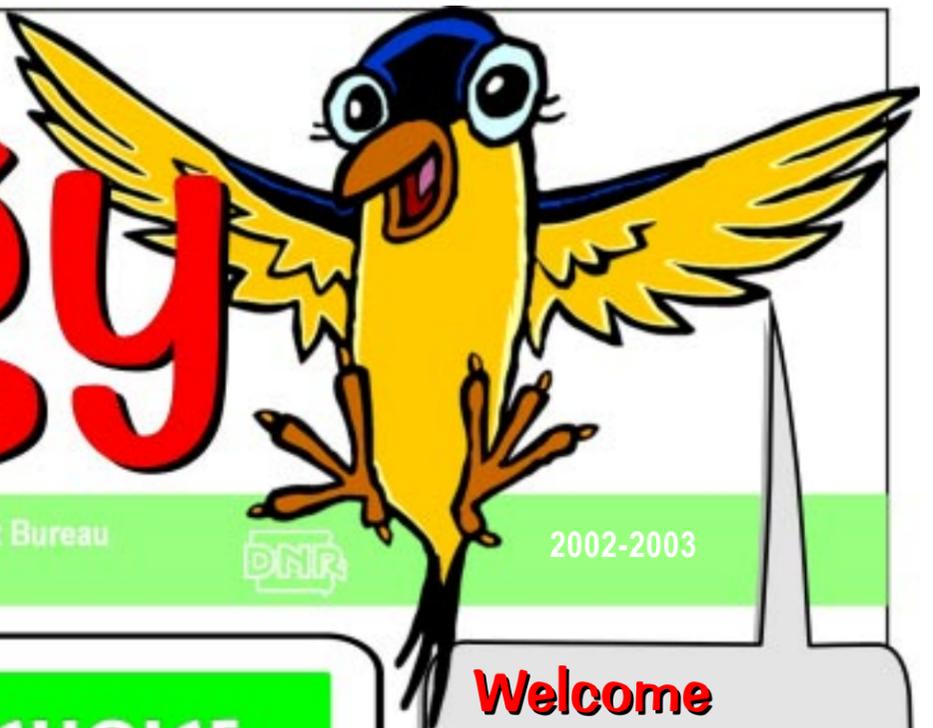


Aldo's Energy world



A special bulletin of the Energy and Waste Management Bureau
Iowa Department of Natural Resources



2002-2003

**YOUR TOWN, YOUR CHOICE...
YOUR FUTURE**

Welcome

My name is Aldo and I'll be your official environmental tour guide as we visit some important parts of your town. I'm named after a great Iowan, Aldo Leopold, who taught us to respect and preserve our land. Ready to take the tour? Follow me!

Hello there! Welcome to your town. It's not often you see a talking — or reading — goldfinch, but today is your lucky day.

My name is Aldo. Today, I am going to introduce you to several issues relating to how you and your community use and produce energy. We are going to explore the huge impact energy has on your town and your future. Most of all, I'm going to share with you the opportunities we all have to make smart energy choices.



Aldo the Goldfinch



Story County's new public building features energy-saving innovations.

Why Energy?

Energy is the ability to do work. It can be stored in the energy resources we use everyday — either nonrenewable (petroleum, coal, natural gas) or renewable (biomass, wind, hydropower, solar). All can provide the energy we need to run our homes, vehicles and businesses.

Energy use is critical to our everyday lives. But it does have consequences, both economically and environmentally. Iowa spends almost \$7 billion a year on energy, which is \$2,311 per person. About 60 percent (\$4.2 billion) of those funds leave Iowa to benefit the economies of other states and nations.

From an environmental standpoint, the burning of fossil fuels is the greatest contributor to air pollution in the world. Another pressing concern is global

climate change, caused by increasing levels of greenhouse gases in the atmosphere — about 85 percent of carbon dioxide, the most prevalent greenhouse gas, comes from energy use. Energy consumption also impacts water, habitats, wildlife and other natural resources.

Your Energy Choices

Fortunately, we have numerous opportunities to make better energy choices. Two critical choices are to use energy more efficiently, and to develop renewable energy sources.

Energy efficiency means using energy more productively in our buildings and vehicles, and it can be achieved through cost-effective technologies and techniques.

Renewable energy resources can be homegrown in Iowa and offer cleaner, affordable energy

alternatives. Many of these resources, such as wind and biomass, create no air pollution or harmful contaminants.

Next Stop - Your Town!

I invite you to learn more about energy in this publication. Inside you will discover the major energy issues relating to four important parts of your town: Main Street (commercial and industrial), Your Street (residential), Rural Route (agriculture) and Town Hall (public facilities like schools).

You will also find important solutions relating to energy efficiency and renewable energy that will save money, create economic opportunities and protect Iowa's environment. Finally, we will share with you resources that can provide assistance to help you take advantage of energy



Harvesting two energy crops — wind for electricity and corn for ethanol.



Switchgrass is being grown as an energy source in southern Iowa.



Proper insulation saves up to 30 percent on heating and cooling.

saving opportunities.

Remember — it's your town, your choice, your future. Thanks for visiting!



What's inside



Save energy in your home. Find out how!
Page 2



Discover how Iowa is harnessing wind power
Page 3

**YOUR TOWN
NEXT EXIT** →

MAIN STREET

Say hello to Main Street

Iowa's businesses and industries create products, services and jobs critical to the economic well-being of the state. They also use and produce significant amounts of energy, accounting for 55 percent of the energy consumed in Iowa.

Iowa companies can, and are, helping the environment by focusing on energy efficiency and relying on renewable resources. Many also create strong economic opportunities by developing technologies in these fields.

Industrial Efficiency

Industries that focus on energy efficiency boost productivity by lowering per-unit raw material and energy use, improving labor productivity, and reducing waste. The DNR is working with Iowa State University to help the metal casting industry find ways to improve industrial efficiency, and the agricultural industry develop bio-based ag products.

Sustainable Design

This innovative approach to construction and renovation minimizes environmental impacts, saves energy and money, and creates a comfortable, healthier space. Many Iowa companies have incorporated sustainable design techniques into the construction of new buildings. Techniques include: minimizing energy consumption; considering alternative energy sources such as biomass, wind or solar; reducing water use and protecting water quality; landscaping with prairie plants to reduce maintenance; using environmentally friendly, locally produced building materials; incorporating solid waste reduction programs;



Frigidaire is one of many Iowa manufacturers developing energy-efficient equipment.

and considering long-term costs of the building.

Economic Development

Renewable energy and energy efficiency technologies have become important industries in Iowa. New wind farms generate millions of dollars in economic development, taxes and new jobs in local areas. Ethanol creates \$1.7 billion in economic activity in Iowa, and 2,550 jobs directly related to the ethanol industry.

Iowa is home to companies developing emerging renewable technologies. Iowa Thinfilm Technologies, Boone, produces photovoltaic materials used on space missions; Prairie Lands Bio-Products, Centerville, is a farmer cooperative developing markets for switchgrass, which can be used to produce electricity.

Many worldwide manufacturers are located in Iowa, including Maytag, Pella Windows, Frigidaire Amana and others. These companies have developed energy-efficient equipment marketed across the globe.

These are just a few of the energy efficiency and renewable energy opportunities available for Iowa's Main Street.

What You and Your Town Can Do:

- Buy Iowa-produced energy products like ethanol, energy-efficient refrigerators, energy-saving windows, and more.
- If constructing a new building, look for home builders and architects who include sustainable design techniques in their plans.
- Encourage local business owners to improve their energy efficiency. Contact the Iowa DNR at (515) 281-8681 for ideas and resources.
- Look on the back of this publication for additional resources.

YOUR STREET

YOUR
YOUR
YOUR

What You and Your Town Can Do

- Use the energy-saving tips you see here in your own home!
- Contact your local utility to find out about possible free energy efficiency audits and equipment rebates they may offer.
- Promote energy efficiency at local home trade shows. Work with realtors, homebuilders and others to improve energy efficiency in Iowa homes.
- Host a "Ride Your Bike to Work Day" or give incentives to people you work with who carpool.
- Contact the Iowa Department of Natural Resources for more assistance — go to the Web site: www.state.ia.us/dnr/energy.



Look for the Energy Star logo whenever you're buying appliances, electronics, computers and more.

Around the corner and up the hill

It's a lovely neighborhood... look — it's your street and home. Did you know the average Iowa homeowner spends \$1,383 per year on energy bills, creating almost 27,000 pounds of carbon dioxide? Additionally, the residential sector accounts for 20 percent of the energy consumed in Iowa.

Homeowners have significant opportunities to reduce their energy consumption, and can easily cut their utility bills by 25 percent through easy, energy-saving measures.

Energy Star

The U.S. EPA's Energy Star® program labels energy-saving appliances, electronics, computers and more. Always look for the Energy Star! Go to www.energystar.gov.

Lighting

Replace your five most-used light bulbs with compact fluorescent lamps (CFLs). They are available at any hardware store and last 6-10 times longer.

Insulation

Proper insulation in roofs, basements, and walls can cut heating and cooling costs by 30 percent. Reducing air leaks around seams, doors and windows saves even more.

Hot Water

Water heating is the third largest energy bill in a home. Install low-flow showerheads, wrap your water heater and turn it down to 120 degrees.



This home, built by Able Builders in Sioux City, significantly reduces energy costs.

Landscaping

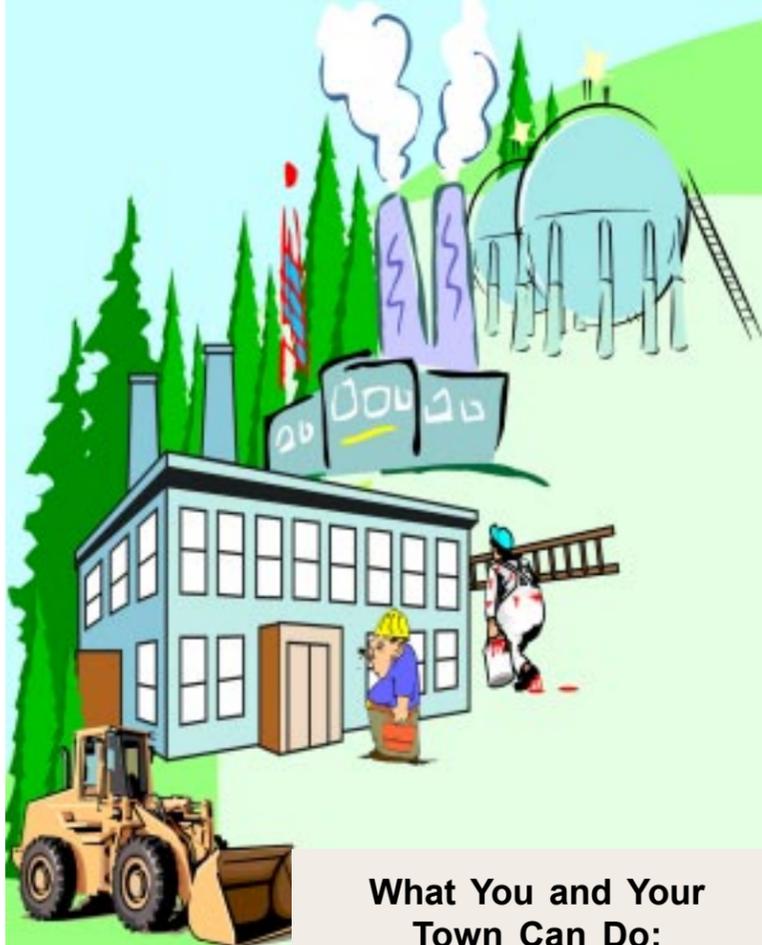
Well planned landscaping - evergreens to block wind and leafy trees to provide shade - can cut energy costs by 25 percent.

Build to the Energy Code

If you're building a new home, ask your contractor about Iowa's Building Energy Code, which recommends energy efficiency levels in construction materials and equipment. You could save 20 percent on annual energy bills.

Tune Up Vehicle Efficiency

Iowans also should consider energy use in their vehicles. The transportation sector makes up 25 percent of Iowa's energy consumption, as Iowans travel longer distances in less fuel-efficient vehicles. Keep your engine tuned up, inflate tires and drive the speed limit to reduce gas consumption. Just as importantly, consider buying cars with higher gas mileage, try to reduce commuting miles, and consider alternative forms of transportation like mass transit or car pooling.



RURAL ROUTE

Head out to the country

Welcome to the rolling fields and beautiful landscapes of Iowa's rural areas. Iowa's agricultural background makes the state a leader in renewable energy development.

Important renewable energy resources for Iowa include:

Wind

Iowa is the 10th windiest state and has more than 400 turbines producing 900,000 MWh of electricity annually - enough for 100,000 homes. The state is home to three major wind farms in Buena Vista, Cerro Gordo and Worth counties, with more farms coming on line in 2003.

Ethanol

Iowa produces 540.5 million gallons of ethanol a year — 53 percent of Iowans purchase ethanol-blended gasoline at the pump. At least 11 new ethanol plants have been constructed or planned for Iowa, with seven to be producing ethanol by the end of 2003. Those seven plants will use more than 70 million bushels of corn annually and create 173 new jobs.

Biodiesel

This biodegradable diesel fuel is made from vegetable oils like soy oil. Iowa produces more than 15 million gallons of biodiesel a year, and the Dept. of Transportation uses biodiesel in its buses, trucks and equipment.

Switchgrass

Switchgrass is a native



Iowa, the nation's 10th windiest state, is home to three major wind farms.

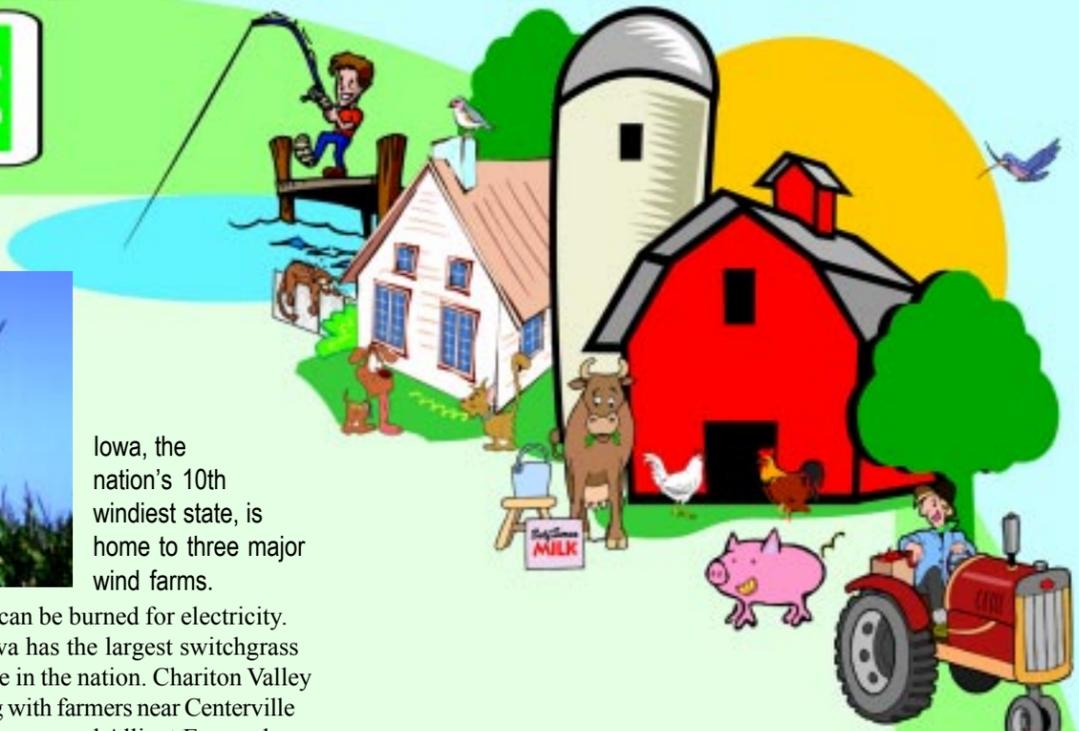
prairie grass that can be burned for electricity. South-central Iowa has the largest switchgrass demonstration site in the nation. Chariton Valley RC&D is working with farmers near Centerville to harvest switchgrass, and Alliant Energy has begun test-burning it at the Ottumwa Generating Station.

Methane

Methane gas is currently being captured from decomposing waste at livestock operations, landfills and wastewater treatment plants in Iowa, then used as an energy source. This process helps eliminate odors and control pollution. The amount of manure generated at Iowa's livestock confinement operations creates enough methane to meet 3 percent of Iowa's total energy consumption.

Solar

Energy from the sun can be captured to produce electricity, heat, or even power a vehicle. The DNR is creating a photovoltaic consumer guide to help Midwesterners find assistance to install solar power systems.



What You and Your Town Can Do

- Use renewable energy resources whenever possible, such as fueling your car with ethanol or buying solar landscape lighting.
- Check to see if your vehicle is an FFV - Flexible Fuel Vehicle, which means it can run on E85 (85 percent ethanol, 15 percent gasoline), E10, unleaded gasoline or any combination of the three. Some cars and trucks are FFVs and owners do not realize it. Go to: www.state.ia.us/dnr/energy/programs/ethanol
- Talk to your school about installing renewable energy facilities such as a wind turbine or PV system. Many Iowa schools are already doing it.
- Share information about renewable energy with your neighbors and community. Go to www.state.ia.us/dnr/energy/programs/renewable.



TOWN CHOICE FUTURE



TOWN HALL

C'mon downtown

We make our final tour to the Town Hall, where we will talk about public facilities, which include schools, hospitals, state agencies and more. Those institutions consume large amounts of energy to provide services to patients, students and the public.

For most public-sector facilities, tightening budgets, aging buildings and high energy costs are creating difficult challenges and choices. In fact, energy is often the second highest expense in Iowa schools, behind only salaries.

Fortunately, a variety of programs exist to help Iowa's public sector save taxpayer dollars while improving the comfort of their buildings.

Turn to the DNR

The Iowa DNR offers programs to help communities and public-sector facilities make energy efficiency improvements. Through these programs, more than \$150 million in improvements have been installed in Iowa, with \$134 million in total energy savings. Those improvements include new lighting, improved heating and cooling systems, better insulation, renewable energy facilities, and much more.

The Iowa Energy Bank

The Iowa Energy Bank helps schools, hospitals, local governments and nonprofit organizations become energy efficient. As an example of the benefits available through this program, with the \$10.4 million Iowa schools are saving each year, they could:

- Hire 2,181 teachers
- Purchase 1,400 school buses, or
- Buy 39,207 computers



Grinnell Medical Center is saving money and improving buildings through the Iowa Energy Bank.

State of Iowa

A program called the State of Iowa Facilities Improvement Corporation has helped state facilities save significant dollars on utility bills. Iowa state government owns hundreds of buildings with more than 43 million square feet of building space - the same as 10 of Chicago's Sears Towers. The state pays about \$83 million each year in heating costs, but has saved \$53 million since 1989 because of significant energy efficiency improvements.

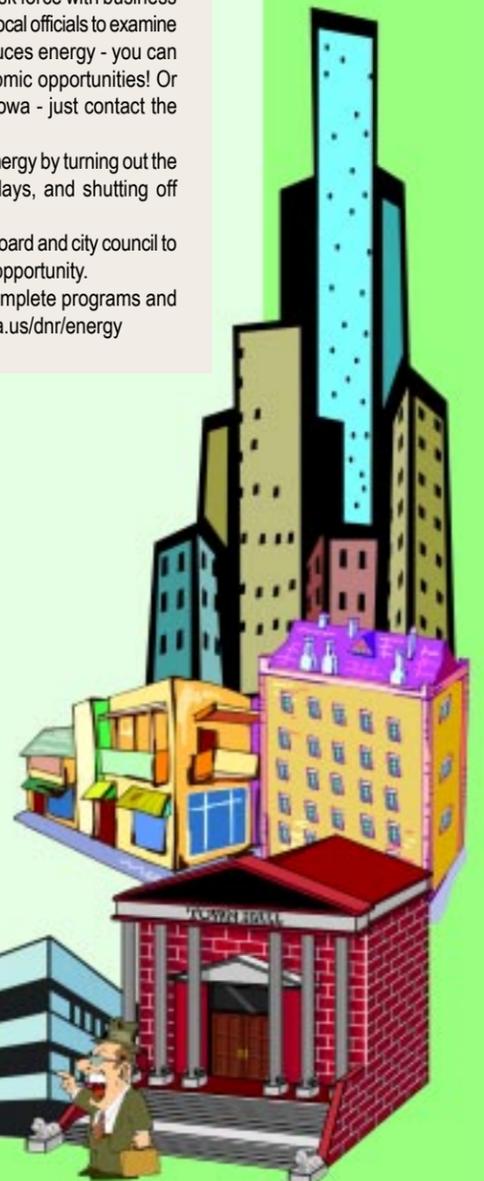
Rebuild Iowa

Entire communities can benefit through the DNR's Rebuild Iowa program. Business owners, local officials and town leaders come together to install energy efficiency improvements in their community. Several Iowa communities are saving thousands of dollars because they joined Rebuild Iowa, including Cedar Falls, Webster City, Centerville, Muscatine and Polk County.

All these programs can help your town conserve dollars and help the environment. What a combination.

What You and Your Town Can Do

- Create a town energy task force with business leaders, interested citizens and local officials to examine how your town uses and produces energy - you can save money and create economic opportunities! Or have your town join Rebuild Iowa - just contact the DNR for details.
- Help your school save energy by turning out the lights, closing blinds on hot days, and shutting off computers when not in use.
- Encourage your school board and city council to look at utility bills as a savings opportunity.
- Contact the DNR for complete programs and assistance! Go to: www.state.ia.us/dnr/energy



Great tour, wasn't it?

Would you like to become energy efficient and use renewable energy resources? Great! Here are some important resources for more information on how to get started.

RESOURCES



Where to Turn

First, contact the Iowa Department of Natural Resources for information on any energy issue.

Iowa DNR
Wallace State Office Building
Des Moines, IA 50319
Phone: (515) 281-8681
E-mail: Julie.Tack@dnr.state.ia.us
Web Site: www.state.ia.us/dnr/energy
Or, locate assistance according to the part of town that most interests you!

Main Street

For business and industry information & assistance:

Iowa Energy Center
2521 Elwood Drive; Suite 124
Ames, IA 50010
(515) 294-8819
www.energy.iastate.edu

Industrial Assessment Center
2088 Black Engineering Building
Ames, IA 50011
(515) 294-3080
www.public.iastate.edu/~cber

Iowa Waste Reduction Center
University of Northern Iowa
Cedar Falls, IA 50613
(800) 422-3109
Web Site: www.iwrc.org

Your Street

For consumer information and resources:

Alliant Energy
www.alliantenergy.com
GeoExchange Office
www.geoexchange.org

Iowa Assoc. of Electric Cooperatives
8525 Douglas, Suite 48
Des Moines, Iowa 50322-2992
(515) 276-5350
www.iowarec.org

Iowa Assoc. of Municipal Utilities
1735 NE 70th Ave.
Ankeny, IA 50021-9353
(515) 289-1999
www.iamu.org

Iowa Renewable Energy Association
www.irenew.org

MidAmerican Energy
www.midamerican.com

U.S. Dept. of Energy — Consumer Web Site Page
www.energy.gov/house

Rural Route

For agricultural information and resources:
Chariton Valley RC&D
(641) 437-4376
www.cvr.cd.org

Iowa Department of Agriculture
Wallace State Office Building
Des Moines, IA 50319
(515) 281-6936
www.agriculture.state.ia.us

Iowa Corn Promotion Board
5505 NW 88th Street #100
Johnston, Iowa 50131-0781
(515) 225-9242
www.iowacorn.org/icpb.htm

Leopold Center for Sustainable Agriculture
Iowa State University
209 Curtiss Hall
Ames, IA 50011
(515) 294-3711
www.leopold.iastate.edu

Town Hall

For local government and public facility information and assistance:

Building Energy Management Programs
Monica Stone, Iowa DNR
Wallace State Office Building
Des Moines, IA 50319
(515) 281-6361
E-mail: Monica.Stone@dnr.state.ia.us
Web Site: www.state.ia.us/dnr/energy

Center for Energy and Environmental Education
University of Northern Iowa Cedar Falls,
IA 50614-0293
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www.uni.edu/ceee

Aldo's
Energy
world

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Programs and activities are available to all potential clientele without regard to race, color, national origin, sex, handicap or age. Anyone who feels that he or she has been discriminated against should send a complaint within 180 days to the Iowa Civil Rights Commission, 211 E. Maple, 2nd Floor, Des Moines, IA 50319.

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(515) 281-6794 (fax)



The DNR is Here to Help

The DNR has the resources, expert advice and friendly assistance to help you learn more about energy efficiency and renewable energy. Contact the DNR to find out how you can take advantage of many of the opportunities listed in this publication, or if you have additional questions or suggestions.

Web Site: www.state.ia.us/dnr/energy
E-mail: Sharon.Tahtinen@dnr.state.ia.us
Phone: (515) 281-8681



Energy and Waste Merge Together

Energy is closely tied to sound waste management practices. When companies reduce energy use, they often decrease their waste streams. Recycled products take significantly less energy to produce than those made from virgin ore materials. Waste materials such as methane from decomposing garbage

and wood waste can be used as energy sources. These are just a few examples of how energy and waste go hand in hand.

Learn more about waste management in Iowa by going to the Web site: www.state.ia.us/dnr/organiza/wmad.