

The Maine Community Exchange

<http://www.rurdev.usda.gov/me/>

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A Publication of USDA Rural Development in Maine



**Message from
USDA Rural
Development
State Director
Michael W. Aube:**

I am pleased to share with you the first issue of The Maine Community Exchange. This magazine is designed to be an informative and useful resource for Maine's rural communities.

Our first issue deals with a topic of growing importance: Renewable Energy. This is a subject that is a

priority for President Bush. At a renewable energy national conference held October 10-12 in St. Louis, Missouri, entitled "Advancing Renewable Energy: An American Renaissance," hosted by the United States Department of Agriculture and the Department of Energy, President Bush spoke to an audience of over 1,500. In speaking on the role of Renewable Energy, he remarked, "Technology will enable us to be able to say we can grow our economy and protect our environment at the same time." Since the beginning of the Bush Administration, \$10 billion has been spent on energy research.

USDA Rural Development is a major player in the energy revolution, investing over \$17.5 million in 36 states in Fiscal Year 2006 through the **Renewable Energy and Energy Efficiency Grant Program**. In Maine, three local businesses will benefit from a total of \$75,006 in grant funds, for an annual cost savings of over \$27,000. (See recipients on page 3). I hope that you will enjoy this first issue of our new magazine.

Guest columns included in this publication are exclusively the views of the author.



L. Herbert "Bussey" York, of Sandy River Farms, in Farmington, received a Rural Development Renewable Energy Grant for a new grain drying system



The grain drying bin (pictured above left) will help Sandy River Farms save on energy and costs

Outlook on Renewable Energy Bright for Rural America

by **Thomas C. Dorr**

The outlook for rural America has never been brighter. In fact, this nation is on the cusp of a rural renaissance. Renewable energy, especially biofuels, is leading the way.

All across America, producers are creating wealth and opportunity by convert-

ing corn into ethanol, as well as soybeans, vegetable oils and animal fats into biodiesel. Many others are in the process of planning and developing cellulosic ethanol and other biofuels.

In his State of the Union Address, President George W. Bush called for the (Continued on page 2)



Thomas C. Dorr,
Agriculture Under
Secretary, USDA
Rural Development

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Outlook on Renewable Energy Bright for Rural America (continued)

development of technology to produce ethanol from feedstocks such as switchgrass, which is known as cellulosic ethanol. When this technology is developed, grasses, stover, wood chips, and other readily available and geographically dispersed commodities will be converted into biofuels. Reducing the costs and improving the conversion efficiencies of cellulosic production is a high priority for this Administration.

A recent joint USDA and U.S. Department of Energy study found that U.S. farm and forest lands, on a sustainable basis, can supply enough feedstock to displace 30 percent of current U.S. petroleum consumption with biofuels by 2030, while still meeting the nation's food, feed, and export demands.

Last year, America produced 4 billion gallons of ethanol, and that figure is expected to rise to 10 billion gallons

by 2010. Biodiesel production has risen from an insignificant 500,000 gallons per year in 1999 to 245 million gallons this year.

Through the **Renewable Energy and Energy Efficiency program, USDA Rural Development** is helping producers and entrepreneurs nationwide with their energy projects. This program can provide loan guarantees for up to 50 percent of a renewable energy and/or energy efficiency project's cost with a maximum guarantee of \$10 million per project. Grants of up to 25 percent of a project's cost are also available. Our **Value-Added Producer Grant** program is another way for rural residents to explore opportunities, not only for energy projects but for new businesses or for marketing of products. It's being done all across the country.

In Oregon, the Rough & Ready Lumber Company, a third-generation lumber manufacturing operation, was awarded a \$500,000 grant and a \$2.35 million loan guarantee to help install equipment for their lumber-drying process and to produce 1.5MW

of renewable power from sawmill residuals and thinning operations on nearby public and private forests. The generated power will be sold to their area electric company. In Iowa, Tri-City Energy was also awarded a \$500,000 grant and a \$2 million loan guarantee to build and operate a bio-diesel production facility.

Since 2001, **USDA Rural Development** has invested \$420.6 million in renewable energy and energy efficiency projects. In doing so, more than \$1.3 billion has been leveraged in private investment. Other USDA agencies are also working to increase America's renewable fuel output. In 2006 alone, USDA's outlay for bio-energy and biobased product development will total an estimated \$272 million. I would encourage you to contact any **USDA Rural Development** office concerning our energy programs or any of our other programs. At **USDA Rural Development**, we are "Committed to the future of rural communities."

-Thomas C. Dorr, Agriculture Under Secretary, USDA Rural Development

Cellulosic Fiber: A Promising Energy Source

By Ralph Turner, Guest Columnist

Some cellulosic materials that can be used for energy are well known. Anyone who has heated their home with wood has taken advantage of one of the oldest uses of cellulosic material as heating fuel.

The term "cellulose" describes a subset of "biomass." Where biomass is any material derived from plant and animal matter, cellulosic material is primarily derived from plant material and is the dry woody, or leafy parts of the plant. The lignin and oils in wood, or the oils in seed crops such as soy or canola, although very important, are not cellulosic.

One of the most promising new uses of cellulosic materials for energy is the production of ethanol. Making ethanol (ethyl alcohol) by fermenting sugar with yeast is well understood. Recent technological advances allow alcohol to be made from cellulosic materials by first breaking the cellulose down into fermentable sugars with enzymes (enzymatic hydrolysis) and using special microbes to ferment these sugars yielding ethanol and carbon dioxide. This process is not quite economically feasible on an industrial scale yet, but many experts expect that it will be within a few years.

Once cellulosic ethanol production is feasible, we will be able to make ethanol fuel from a wide variety of materials including agricultural plant wastes (corn stover, cereal straws, sugarcane bagasse), plant wastes from industrial

processes (sawdust, paper pulp), municipal solid waste such as demolition debris and waste paper, and energy crops grown specifically for fuel production, such as switchgrass. Years of paper mill sludge accumulated in landfills will likely become an economical source of cellulose for ethanol production.

A recent study completed for the Maine DEP showed that of the total 590,600,000 gallons of gasoline consumed in Maine for transportation in 2001, a maximum of about 260,000,000 gallons could be displaced by ethanol from cellulosic materials in Maine. That's about 44 percent. By comparison, ethanol from agricultural feedstocks such as corn, wheat, or triticale is expected to yield a maximum of about 17 percent of our 2001 consumption. This report shows that (Continued on page 7)

USDA Rural Development's Renewable Energy Program

Did you know that USDA Rural Development has a program specifically designed to help agricultural producers and rural small businesses reduce energy costs and consumption? Your business, farm, or organization may be eligible.

Eligibility:

Agricultural Producers- An individual or entity directly engaged in the production of agricultural products, including crops (including farming); livestock (including ranching); forestry products; hydroponics; nursery stock; or aquaculture, whereby 50 percent or greater of their gross income is derived from the operations.

Rural Small Businesses- An entity is considered a small business in accordance with the Small Business Association's size standards. (can be found at <http://www.sba.gov/size/index.html>)

Uses:

Eligible Uses include: Purchase and installation of equipment; Construction or improvements; Energy audits; Permit fees; Professional service fees; Feasibility studies; Business plans; and Retrofitting.

2006 Maine Grant Recipients

Maple Hill Farm, Inc., of Hallowell, has received a Renewable Energy Grant in the amount of \$41,500 for the acquisition of a solar thermal hot water system and solar electric photovoltaic panels that will save the Farm \$20,438 in financial savings, and energy savings of 138MM BTU.

L. Herbert (Bussey) York, Owner of Sandy River Farms, in Farmington, has received a Renewable Energy Grant in the amount of \$15,510 for a new grain drying system (pictured front cover), which is expected to yield an annual cost savings of \$4,326, and energy savings of 208MM BTU.

R. Christian Andrus, Owner of Pine Ridge Carpentry, Inc., in Camden, will receive \$17,996 for the installation of windows, doors, insulation, electrical, and lighting, saving an estimated \$2,497 annually, which will result in an energy savings of 4,658 KWh of electricity.

For more information, contact John Sheehan, Business and Cooperative Program Specialist, at 990-9127, or email John.Sheehan@me.usda.gov or visit <http://www.rurdev.usda.gov/rbs/farbill/> and click on Energy programs.

Renewable Energy Policies in Maine

By Beth Nagusky, Guest Columnist

This is an exciting time to be working in the energy arena. Energy independence and global warming have become household words. While high energy prices are proving challenging for Maine's homeowners and businesses, the silver lining is that now is the time to take serious action to reduce our fossil fuel dependence. Unfortunately we tend to forget about energy policy when crude oil sells for \$10 a barrel.

Governor Baldacci made energy a high priority by creating the Office of Energy Independence and Security, even though crude was just over \$20 per barrel when he took office. People questioned his thinking then, but no one does today. Not only have

energy prices risen dramatically, but it is now clear that burning fossil fuels is changing the climate in potentially catastrophic ways. And, our dependence on imported oil and gas increases political instability around the globe.

The three pillars of the Governor's sustainable energy policy are energy conservation, energy efficiency, and renewable energy. We cannot simply talk about renewable energy without talking about conservation and efficiency. It is highly unlikely we can achieve energy independence from wind, water, wood and wood wastes, the sun, and other renewable sources without tackling wasteful consumption patterns.

Governor Baldacci has taken huge strides toward energy independence in the past four years. He has issued Executive Orders that incorporate green building standards for state

buildings, required a more efficient state transportation fleet, and created a Hydrogen Energy Fuel Cell Partnership. The state has increased the number of hybrid vehicles in the fleet fivefold and reduced state travel and fuel consumption. The Governor Baxter School addition received a Silver LEED award. We use a biodiesel blend to heat certain state buildings and have increased our renewable power purchase. We have also made our lighting, vending machines, exit signs, and other equipment more energy efficient.

The Governor has introduced and signed legislation to increase energy conservation and efficiency efforts statewide, including a bill to create natural gas conservation programs and another to incorporate energy efficiency into our electricity portfolio. He has also introduced and signed (continued on page 5)

The Inside View: Two Renewable Energy Success Stories

By Emily J. Cannon

Windham Millwork, located in Windham, is a successful Maine company. Founded in 1957, the growing business has been involved in wood-working for over four decades. They focus on architectural millwork and cabinetry, moldings, and laminated panels.

The company began to face some hurdles, as its 25 year-old wood-fired boiler began breaking down constantly. The boiler was also a cause of discomfort to the 60 employees at the company, as heating was not efficient enough to properly warm the 64,000 square-foot facility. As a result, the company was forced to rely on a natural gas back-up boiler, causing energy costs to rise considerably.

In Fiscal Year 2005, Windham Millwork received a grant in the amount of \$65,000 through **Rural Development's Renewable Energy and Energy Efficiency Loan and Grant Program**. This assistance funded 25 percent of the cost to install a bio-mass boiler system that is fueled by the waste wood produced as a by-product of the business. The Maine Manufacturing Extension Partnership also worked with Windham Millwork in assisting and advising the company through the process.

The substantial energy cost savings have allowed for continued economic success of the company and helped to sustain 60 jobs in the community.

President and Chief Executive Officer of Windham Millwork Bruce Pulkkinen was pleased with the results, saying "Windham Millwork would not have been able to fund the cost of our new biomass wood boiler without the timely

help we received from **USDA Rural Development and its Renewable Energy Grant Program**Our ability to now use very limited natural gas while reducing our landfill waste stream is a win-win for us and the environment. We will face an 84 percent increase in our electricity per kilowatt-hour this year; without the new boiler the combined energy costs would have crippled our company in 2007."

The project will save in excess of \$80,000 in energy and landfill costs for 2006 and will have a total payback of less than three years.

-Emily Cannon is the Public Affairs Specialist for USDA Rural Development in Maine



By Lyn Millhiser

The Blue Spruce Farm, Inc., in rural Bridport, Vermont, is family-owned and operated by three brothers (Eugene, Earl, and Ernie Audet) who purchased the farm from their parents when the parents retired. It is a dairy housing and milking operation with 1,200 dairy cows. Due to a woefully inadequate imposed milk pricing structure that fails to adequately compensate farmers who produce milk for a living, this farm operation, like many others, showed net income losses annually for the previous three years.

In an effort to sustain their farm business and maximize their revenue potential, the Audets explored diversification opportunities on the farm. Recognizing the energy potential in the farm's abundant manure assets, the farm developed a partnership with their local utility company, CVPS, which fostered the development of "Cow Power" electricity generation on the farm.

Determined to construct an anaerobic digester system that would convert dairy manure into electricity, the Audets

worked with engineering consultants to design a reliable system and identify the equipment specifications necessary for the project. Collaborative relationships with staff from CVPS, Vermont Agency of Agriculture, Biomass Energy Resource Center, VEDA/VT Agricultural Credit, Yankee Farm Credit, USDA NRCS, and **USDA Rural Development** were critical in developing a plan to design, construct, and finance this large-scale project.

The total system costs were estimated to be nearly \$1 million and included construction of a reception pit, digester with heating and gas mixing systems, and a solids separating and drying building. Several different sources of funds contributed to the total system costs. **Rural Development** contributed to the electrical generator portion of the system with estimated costs of \$389,275. These costs included the electrical generator, with plumbing and service hookups, and a utility building for the generator. Lyn Millhiser, Business and Cooperative Programs Specialist, facilitated a grant

application and award for 25 percent of the electrical generator portion of the project, for a total of \$97,318.

The system has been constructed on schedule, and the farm began sales of electricity to CVPS in December 2004 at a price agreed to be wholesale value plus a consumer premium. Electrical generation projections are estimated at nearly 2,000,000 kWhr annually, for a projected *annual net revenue* to the farm of \$155,604. There is additional profit potential of nearly \$53,000 annually from Carbon Credits and Tax Credit savings.

-Lyn Millhiser is the Business and Cooperative Programs Specialist for USDA Rural Development in Vermont and New Hampshire



Roving Reporter Rural Rover



USDA Rural Development Mascot Rural Rover

Message from USDA Rural Development Mascot Rural Rover:

Welcome to my column, where you can find out answers to your questions on topics of interest to rural Maine—you might even say I have a “nose for news!” If you’ve never met me, I am Rural Development’s Mascot, **Rural Rover**, and

I travel around Maine sharing information about the Programs of **USDA Rural Development**. I also have a keen interest in learning about programs and organizations that help improve the quality of life for rural Americans. I hope that you will enjoy learning with me as I “sniff out” valuable information that I hope will be useful to you.

Don’t be left in the doghouse— read my column!

This Issue Rural Rover Asks:

How Can We Make Renewable Energy Work in Maine?

This issue, I met with Sue Jones, President of Community Energy Partners, whose mission is to bring locally owned renewable energy and energy efficiency projects to communities throughout the Northeast. I had some questions on renewable energy, and my senses told me she would have some doggone good answers.



Q: How does a farmer or small business find out if a renewable energy system is right for them, and what are the first steps?

A: Before a farmer or small business embarks on installing a renewable energy system, he or she should fully evaluate his or her energy needs – both electricity and fuels – and ask a few questions, as follows:

First: What exactly are my energy needs – how much electricity and fuels do I need each month for my business? To answer this, you will examine your electricity and fuel bills for the last year or longer to get an idea of monthly and annual needs, as well as seasonal variations.

Second: Are my buildings’ electricity and fuel needs as efficient as I can make them? Are my processes and operations as efficient as I can make them? To help answer this question, you may want to call Shirley Bartlett of the Maine Energy Office and schedule a free energy audit of your buildings and operations. Once completed, you will qualify for state assistance, and may qualify for grants and low interest loans to help you finance efficiency and renewable energy projects.

Third: Are there renewable technologies that I might be comfortable with using and does my location (Continued on page 6)

Renewable Energy Policies in Maine (continued)

legislation to encourage renewable power development, including bills that: create rebates for residential and small business solar systems; will increase the amount of renewable power in the state’s electricity mix; and, provide tax incentives for biofuels produced and sold in Maine. The University of Maine is researching production of cellulosic ethanol and other valuable products from our wood wastes. The state is working with a number of developers looking to both produce and import biofuels and with farmers interested in growing crops that can be converted to fuel and heat. Maine’s (and New England’s) first large scale wind farm is under construction at Mars Hill, and many more are under consideration.

With its vast renewable power resources, Maine is poised to become the most energy independent state in the nation. We cannot afford to take our foot off the pedal.

Beth Nagusky is the Director of Energy Independence and Security for the State of Maine

Biomass Research and Development Grant

Did you know the Section 9008 Biomass Research and Development Grants are awarded to private corporations and universities for applied research and development projects? Projects must involve any aspect of the conversion and utilization of biomass feedstocks for energy and chemical production. Look for funding availability at: <http://www.biomass.govtools.us/>

Ask About: Renewable Energy (Continued)

provide a good resource? Most parts of Maine provide a reasonable amount of solar potential, so solar is an option for many. In contrast, wind technology at this point has only evolved to where windy coastal areas are economically feasible areas to use wind. (However, that will hopefully change as the technology improves even more over time.) Currently, anaerobic digesters are most feasible only at large dairy farms in Maine, although that will change as technology improves. There are other examples as well, but the point remains that your site will determine most of your choices in renewable energy.

Q: What programs and resources are available for assistance in funding my renewable energy system, and who are the energy experts I can rely on for guidance?

A: There are many programs; however, not one individually will likely serve your entire funding needs. For smaller projects, the State Energy Office and **USDA Rural Development** are the starting point at the state and federal levels. For larger projects, those are also the same starting points, but you may want to call for additional advice in pulling together a project. For more information about the State Energy Office, call Shirley Bartlett at 287-3318, or visit: www.maine.gov/msep. For more information about **USDA Rural Development**, call John Sheehan at 990-9168 or visit: www.rurdev.usda.gov/me/.

Q: How might implementing a renewable energy system save money and increase efficiency for my business or farm?

A: Depending on the resources available at your location, you may be able to produce enough electricity to offset your needs (thereby allowing you to offset retail electricity costs), and in some cases, you may be able to put the excess generated back onto the grid and receive credit for it.

Q: Can implementing the renewable energy system increase revenues or create an opportunity to encourage new business?

A: In some cases, renewable energy systems can provide you with added income from selling the excess power back onto the grid. This is known as “net metering” and can help you fund and finance the project. With on-site systems, you may be able to have more power than you currently need. If so, this could enable you to increase your operations, expand your capacity, or otherwise encourage new business at your location.

Q: What is the payback period for establishing a renewable energy system? (How long will it take for the system to generate enough savings to pay for itself, and what is the return on investment?)

A: Payback periods are entirely dependent on a number of variables, such as the price of electricity that you currently pay (differs with each utility area in Maine), the technology that you decide to use, the amount of renewable resource that you have on-site, the funding and financing package you use, the distance to 3-phase power to connect to the existing grid (if needed), and numerous other factors, including the type of renewable resource that you have.

Q: Are there specific tax incentives to encourage renewable energy systems?

A: Yes, there are numerous federal tax incentives for wind, solar, biomass, fuel cells, and other sources of renewable energy. At the state level, there are tax incentives for wind, and other types of incentives (rebates, grants, etc.) for the other types of systems.

-Sue Jones is the President of Community Energy Partners. For more information, visit their website: www.communityenergypartners.com or call Sue Jones at (207) 221-5639.

Cellulosic Fiber: A Promising Energy Source (Continued)

together agricultural commodity and cellulosic feedstocks could, given the right economic conditions, yield enough ethanol to displace over 60 percent of the gasoline used in Maine.

One interesting lower technology alternative being prototyped in Maine is the use of agricultural residue in the production of pellets to feed stoves designed for wood pellets. Others are using dried corn kernels in the same way taking advantage of the oil content of the seeds with great success.

The agricultural potential for agricultural cellulosic energy crops is so great on a national basis that the U.S.

Department of Energy has shifted the primary responsibility for research on fast growing energy crops to the U.S. Department of Agriculture. Cellulosic energy crops can be grown successfully, and very efficiently, on land that is normally considered marginal for traditional carbohydrate crops.

If there is an upside to the recent high petroleum energy prices, it is that many new opportunities are likely to emerge for agriculture related to cellulosic energy crops and the processing of these crops into energy products.

-Ralph Turner, P.E., is the Technical Director of Biofuels for The Benham Group, of Oklahoma City, Oklahoma, and owner of Laughing Stock Farm located in Freeport, Maine

Want to Share Your Thoughts on Renewable Energy in Maine With Us?

We welcome you to submit your opinion. Opinions are run at the discretion of the editor, and should be 150 words or less to allow for multiple contributions.

Please submit opinions for the April publication by February 1, 2007. Submissions may be emailed to:
Emily.Cannon@me.usda.gov
or mailed to:

USDA Rural Development
Attn: Emily Cannon
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Renewable Energy Websites

- www.rurdev.usda.gov/me/ (USDA Rural Development Maine website)
- www.maine.gov/agriculture/mpd/business/index.html (Maine Department of Agriculture)
- www.state.me.us/msep/ (Website for Maine State Energy Program)
- www.me.nrcs.usda.gov/programs/rc&d.html (Maine Natural Resources Conservation Service)
- www.maine.gov/mpuc/renewable (Maine Renewable Resources Stakeholder Group)
- www.maine.gov/msep/ (Maine State Energy Program)
- www.aceee.org (American Council for Energy Efficient Economy)
- www.dsireusa.org (Federal incentives for Renewable Energy)
- www.energymaine.com (Efficiency Maine website to promote the efficient use of electricity and help businesses reduce energy costs)
- www.maineenergyinfo.com (Provides access to Maine Energy information)
- www.maineenergyinfo.com (The Maine Green Power Connection)
- www.ellsworthme.org/MESEA (Maine Solar Energy Association)
- www.biomass.govtools.us/ (Biomass Research and Development Initiative)
- www.ghdinc.net (Engineering firm for Anaerobic Digesters)
- www.usaenergyindependence.com (Nonpartisan energy independence news website)
- www.ethanolRFA.org (Renewable Fuels Association)
- www.agenda2020.org (Agenda 2020 Technology Alliance- Project of American Forest and Paper Association)
- www.ncga.com (National Corn Growers Association)
- www.regfuel.com (Renewable Energy Group— biodiesel industry leader)
- www.LiveFuels.com (Consortium of labs breeding algae to produce biocrude oil)

In Our Next Issue: Broadband

As the need to connect for information-sharing activities grows among small businesses, healthcare organizations, and communities, so too does the need for technology that can keep up with the demand. With many areas of rural Maine by-passed by the broadband revolution seemingly sweeping the rest of the country, some wonder how they will catch up. Join **USDA Rural Development** in the April issue of The Maine Community Exchange as we explore the needs of Maine communities, and discover the programs and solutions that are available to connect Maine with the latest in broadband technology. Included, will be information presented by Federal, State, and local participants at A Broadband Symposium: Connecting Maine's Future, held November 8.



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