AACC SEED & ATEEC Webinar:

Community Colleges Leading Rural-Based Green Economy Initiatives

December 2011
A coordinated national strategy to support community college students in leading the green economy.
Submitting Questions

- To submit a question or comment, type the question in the **text field** and click the **arrow button**.
- Please enter the name of the person to whom the question is directed.
- Your name, the text **“Submitted Question,”** and your question will appear in red on your screen, indicating successful submission.
- Questions are directly transmitted to presenters—no other participants will see your questions.
In the chat room, please type:

• your name,
• the name of your organization,
• your location, and
• the number of people attending with you today.
• Alternative energy, resource conservation and sustainable agriculture as economic drivers for rural areas

• Community colleges as the: lead/convener/partner/facilitator in preparing skilled workers AND creating jobs in the green sector

• And what does all of this look like in the classroom?
A coordinated national strategy to support community colleges in building the green and sustainable economy

Supported by the Kresge Foundation
Judith Canales, Administrator, Rural Business & Cooperative Programs, USDA's Rural Development Agency

Timothy Crowley, President, Northern Maine Community College

Robin Kohanowich, Sustainable Agriculture Coordinator, Central Carolina Community College
USDA Rural Business and Cooperative Service

Judith Canales has more than 20 years of experience working in federal and local government administrations and nonprofit management. She received her second presidential appointment in 2009 when President Barack Obama named her the first Hispanic woman to serve as the Administrator for the Rural Business and Cooperative Service (RBS) agency of the Department of Agriculture Rural Development.

Ms. Canales is responsible for overseeing the agency’s portfolio and is deeply involved in providing financing to small businesses and cooperatives throughout rural America. Ms. Canales also specializes in rural and urban development, community development, economic development, and housing.

Judith A. Canales
Administrator
Rural Business and Cooperative Service
U.S. Department of Agriculture
Rural Development
Sustainable Agriculture

- *Sustainable Agriculture* was addressed in the 1990 Farm Bill and under that law, “the term sustainable agriculture means an integrated system of plant and animal production practices having a site-specific application that will, over the long term:
  - satisfy human food and fiber needs
  - enhance environmental quality and the natural resource base upon which the agricultural economy depends
  - make the most efficient use of nonrenewable resources and on-farm resources and integrate, where appropriate, natural biological cycles and controls
  - sustain the economic viability of farm operations
  - enhance the quality of life for farmers and society as a whole
Sustainable Agriculture

While Rural Development programs do not support production related activities, several programs such as the Rural Energy for America Program (REAP), Rural Business Enterprise Grant (RBEG), Value-Added Producer Grant (VAPG), and Rural Business Opportunity Grant (RBOG) have assisted rural producers create or expand sustainable agriculture businesses.

Examples would include:

- Finance a mobile slaughter unit to assist small producers of naturally raised livestock market their products.
- Funding for a business plan or feasibility study for a producer of organic milk to develop value added dairy products.
- Funding for technical assistance and training to smaller-scale vegetable producers on good agricultural practices to ensure they are able to compete in retail markets.
- **Provide funding for an on-farm anaerobic digester to supply renewable energy.**
What projects are eligible for REAP?

Requirements for eligible renewable energy or energy efficiency projects:

- Must be located in a rural area unless agricultural producer
- Must be for commercially available and replicable technology
- Must be technically feasible
- Must have sufficient revenues to provide for operation and maintenance

The applicant must be the owner and control the operation and maintenance of the proposed project.
Guaranteed Loan limitations

Guaranteed Loan request must not exceed 75% of project costs (including grant funds, if applicable)

- Renewable Energy:
  - Minimum request: $5,000
  - Maximum request: $25,000,000

- Energy Efficiency
  - Minimum request: $5,000
  - Maximum request: $25,000,000
Grant limitations

Grants request must not exceed 25% of project costs

- Renewable Energy
  - Minimum grant request: $2,500
  - Maximum grant request: $500,000

- Energy Efficiency
  - Minimum grant request: $1,500
  - Maximum grant request: $250,000
Section 9007-  
Rural Energy for America Program (REAP)

Neighborhood Energy, LL C  
at Maxwell Farms  
Newport, Vermont

- Anaerobic Digester – Electricity
- $357,990 Grant + $326,770 Loan Guarantee
- 225 kW capacity, enough to power almost 200 homes
- 6.4 year payback window
- “Milk prices were low at the time. I mean really low…I knew that we needed to diversify our revenue and create some stability.”
Rural Energy for America Program (REAP)

AGreen Energy, LLC at Jordan Dairy Farm
Rutland, Massachusetts

- Anaerobic Digester – Electricity
- Five farm cluster project
- 300 head dairy plus additional recycled organics from partner farms and food processing
- $951,638 Loan Guarantee
- 300 kW production capacity
- Heat and electricity production for farms, greenhouses, and homes in the community
Rural Energy for America Program (REAP)

Show Me Energy Cooperative
Centerview, Missouri

- Biomass Pellet Production from spent seed and native grasses planted on marginal land
- 2003- Value Added Producer Grant (VAPG) for Feasibility Study
- 2003- $95,000 REAP grant for Pellet Production Facility
- 2010- Rural Business Entrepreneur Grant (RBEG) to study feasibility of collocating 22MW gasification to electricity production facility
Rural Energy for America Program (REAP)

Cliff Fitchpatrick
Wentworth, Missouri

- $20,000 REAP grant (25% of project cost) for 800 BTU Biomass Stove to heat four chicken houses

- “The biomass stoves also give us the flexibility to shift fuel sources...It helps to stabilize our energy costs...We can’t get caught in the do-nothing trap when oil prices are low. We need to be looking at promoting long-term sustainability.”
### FY 2011 Rural Energy for America Program

Renewable Energy/Energy Efficiency investments by technology

<table>
<thead>
<tr>
<th>Technology</th>
<th>Number of Projects</th>
<th>Grant and Loan Guarantee Investments</th>
<th>Leverage</th>
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<tr>
<td>Anaerobic Digesters</td>
<td>19</td>
<td>$ 20,901,079</td>
<td>$ 89,972,097</td>
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<td>Biofuels</td>
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<td>$ 872,633</td>
<td>$ 12,013,838</td>
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<td>Biomass</td>
<td>29</td>
<td>$ 6,986,914</td>
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<td>Energy Efficiency</td>
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<td>$ 23,188,213</td>
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<td>Flex Fuel Pump</td>
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<td>Geothermal</td>
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<td>Hydroelectric</td>
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<td>$ 12,473,709</td>
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<td>Hydropower</td>
<td>3</td>
<td>$ 301,517</td>
<td>$ 912,752</td>
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<tr>
<td>Solar</td>
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<td>$ 20,385,450</td>
<td>$ 57,861,071</td>
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<td><strong>1,873</strong></td>
<td><strong>$ 91,011,834</strong></td>
<td><strong>$ 374,011,813</strong></td>
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## FY 2003-2010 Rural Energy for America Program
### Renewable Energy/Energy Efficiency investments by technology

<table>
<thead>
<tr>
<th>Energy Type</th>
<th>Biomass Type</th>
<th>Number of Projects</th>
<th>Grant and Loan Guarantee Investments</th>
<th>Amount Leveraged</th>
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<td>$18,154,808</td>
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<td>137</td>
<td>$30,693,593</td>
<td>$71,647,897</td>
</tr>
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</table>

| BIOMASS                      |              | 376                | $200,096,959                         | $489,313,127      |
| ENERGY EFFICIENCY            |              | 4,258              | $154,720,413                         | $282,761,894      |
| GEOTHERMAL                   |              | 139                | $4,697,287                           | $18,222,896       |
| HYBRID                       |              | 27                 | $3,035,912                           | $186,683,216      |
| HYDROPOWER                   |              | 8                  | $1,754,281                           | $13,367,351       |
| SOLAR                        |              | 577                | $36,457,291                          | $77,560,158       |
| WIND                         |              | 507                | $105,723,541                         | $529,569,708      |

| Total                        |              | 5,892              | $506,485,683                         | $1,597,478,350    |
Business and Industry (B&I) Guaranteed Loan program provides loan guarantees to commercial lenders. The program also supports lenders by boosting their legal lending limits, expanding their lending portfolio, and allowing increased benefits through the sale of the guaranteed and non-guaranteed portions of the loan in the secondary market.

Intermediary Relending Program (IRP) provides loans to local organizations that they will use to establish revolving loan funds. These loan funds will finance business and economic development activities that help create and save jobs in disadvantaged and remote communities.

Rural Business Enterprise Grant (RBEG) program supports the development of small emerging private business enterprises in rural areas. These grants can be made to public bodies and private nonprofit corporations that serve rural areas.

Rural Economic Development Loan and Grant (REDLG) program provides funding to rural projects through local utility organizations. Under the REDLoan program, the USDA provides zero interest loans to local utility organizations, which they make available to local businesses. Under the REDGrant program, USDA provides grant funds to local utility organizations which is used to establish revolving loan funds.

Value-Added Producer Grant (VAPG) program encourages independent producers of agricultural commodities to process their raw products into marketable goods that they can sell at local and regional markets, thereby increasing the farm’s income.
Thank you!

For More Information on Rural Development RBS Energy Programs, visit our website at http://www.rurdev.usda.gov/BCP_Reap.html or contact your Rural Development State Energy Coordinator:

Rural Based Green Economy Initiative
Northern Maine Community College

Timothy Crowley
President
Northern Maine Community College

www.nmcc.edu
Characteristics of Aroostook County

- Heavy dependence on natural resource based manufacturing, including its associated support structure
- An aging population
## Aroostook County Projected Population

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<th>Age</th>
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<th>15-19</th>
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<td>4601</td>
<td>3592</td>
<td>2381</td>
<td>2068</td>
<td>65,060</td>
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</table>
Mobilize Northern Maine
Renewable Energy Cluster Premise

• Aroostook County residents and businesses are burdened with high cost of electricity and dependence on the import of heating oil. This hampers the region’s competitiveness and exports wealth that reduces long-term economic potential.
• Governor’s Trade Mission
• College Participation Supported by Economic Development
• Discussion with Manufacturers and Energy Association Reps
• Open the Doors for Future Partnership

TRADE MISSION TO SPAIN AND GERMANY – FALL 2009
Wind Power Technology Program Established

Program Highlights:

- Safety Fundamentals
- Electrical Systems Fundamentals
- Mechanical Systems Fundamentals
- PLC/Communication Fundamentals
- Delivery System Fundamentals
- Maintenance Concepts
- Wind Turbine Siting and Park Layout
- Wind Farm Management Concepts
Aroostook County Renewable Energy Economic Strategy Elements

**INNOVATION**
UMPI, UMFK, UMaine & NMCC must lead in the development of R&D and workforce training programs attracting young thinkers and linking to regional industry.

**FINANCE**
The region must develop an integrated finance structure to supply specialty forms of financing for energy efficiency modifications and heating system conversions.

**NATURAL RESOURCES**
Forest and Farm biomass resources form the foundation of this industry in Aroostook County.

**ENTREPRENEURSHIP**
The region must embed a climate of entrepreneurship from grade school education to community leaders.

**INDUSTRY NETWORKS**
Informal and formal industry networks must be created locally, regionally, nationally and globally.

**VALUE ADDED PROCESSING**
Pellet and Chip manufacturers converting biomass for forest and farm into heating fuel material. Distribution systems deliver product to consumer.

**MARKETING & COMMUNICATIONS**
A strategic and consistent internal and external communication plan must be implemented to promote the use of Aroostook energy products and resources.

**CONNECTIVITY**
The region must be leading the US in the availability and 24x7 boundary-free uses and access to broadband services.
Residential Wind
Expansion of Wind Program
Thermal/Photovoltaic
Biomass

Green Energy
Building Methods
Energy Auditing
Weatherization
Northern Maine Center for Excellence in Alternative Energy Training and Education

Made possible by:
- Investment of Campus Resources
- Private Contributions
- Efficiency Maine Trust Grant
- MaineHousing
• Donations from 3 German Companies to WPT Program
• Plarad, PSA Sicherheitstechnik, August Friedberg
• $28,000 of tools and equipment
Revise and strengthen programs in building energy systems

New courses designed/major revisions to curriculum:
- Solar Domestic Hot Water
- Building Sciences I and II
- Energy Auditing
- Electrical Construction and Maintenance I & II
- Direct Digital Control

Significant upgrades to classrooms
Partnered with MaineHousing to become a Weatherization Training Center (WTC) for Northern Maine

($880,000, 4 sites in Maine)

- Pressure House
- Blower Door
- Thermal Imager
- Cellulose Insulation Blower
- Assorted Hand Tools
  and Measuring Devices

To provide training to support weatherization auditing and technicians for low and middle income residents of Northern Maine.
$500,000 grant from Maine Forest Service
~ $900,000 project to install new 1MW pellet boiler
Project is being designed to displace 50,000 gallons of #2 fuel oil with wood/grass pellets.
Estimated annual savings ~ $70,000
Sustainable Agriculture at "Green Central", CCCC

Pittsboro Campus, NC
“Green Central” is home to the Sustainable Technologies of green building, renewable energy, Natural Chef culinary and sustainable agriculture.
Sustainable Agriculture at CCCC

The Sustainable Farming Program at Central Carolina Community College grew out of a desire to address the needs of the farm community in Chatham County and the surrounding Piedmont region of NC.
The success of local Farmer’s Markets, organic food businesses and restaurants focusing on local and sustainable has encouraged and welcomed new and beginning farmers.
Grassroots beginnings

Initiated by local growers in 1996, the program quickly formed into a one-of-a-kind collaboration of farmers, community members, CCCC, NC Cooperative Extension, and several non-profit organizations.
Enduring Partnerships Across the Community
Sustainable Agriculture at CCCC

The on-campus Student Farm was developed in 1996 as a research and demonstration facility for sustainable agriculture practices, as well as an outdoor classroom for hands-on instruction.
Student Farm component:

- Practical application of coursework
- Used by curriculum and continuing education programs
- Work-study opportunities for students
- Community Supported Agriculture Project serving faculty and students, provides a marketing experience for students
Organic Crop Production class
AAS in Sustainable Agriculture

• In Fall of 2002, CCCC became the first community college to offer a degree in Sustainable Agriculture.

• Students came from all over the US, including this student from Iowa, one from Michigan, 2 from Georgia.

• In 2011: Florida, Illinois, Kentucky, New Jersey, South Carolina, Texas, and W. Virginia are represented (and NC!)
Students in 2011

- 2011 males: 36
- 2011 females: 72

- 4 yr degree: 45%
- High School: 10%
- some college: 15%
- veteran: 5%

Bar charts show distribution of students by gender and education level in 2011.
AAS in Sustainable Agriculture

www.cccc.edu/agriculture

In addition to a 2-year AAS degree, there are three, 18 credit hour certificate offerings:

Vegetable Production
Livestock Production
Sustainability
Sustainable Agriculture Student numbers, Fall semester data

Steady growth and a shift towards more students seeking an AAS degree.
AAS in Sustainable Agriculture

Courses in:

• Organic Crop Production
• Farm Business Management
• Animal, Plant and Soil Sciences
• Agricultural Marketing
• Agricultural Mechanics
• Biological Pest Management
• Farm Structures and Maintenance
Best Practices

Block Scheduling

- Allows for hands-on time
- Benefits working students, commuters
- Students may take 2-3 agriculture courses in one day and work the rest of the week.

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Tuesday</th>
<th>Wednesday</th>
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<td>AGR265 P01</td>
<td>AGR221 P01</td>
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Practical Application at the Student Farm
What are our students doing now?

They are farming!

www.tumblingshoalsfarm.com

www.twochicksfarm.com
Current Farm Manager
CCCC Graduate Hillary Heckler
2006-2008 Farm Manager – CCCC Graduate Cheryl McNeil; now teaches AGR265/266
CSA manager, grass fed-beef producer, goat herd and cut flower grower
The End
Questions?
• **Workforce Development Institute** *(Jan 25, 2012 in Miami, FL)*
   including full day SEED peer-to-peer workshop. SEED Members: email TODAY to get FREE Ticket *(enekrasova@aacc.nche.edu)*

• **2012 SEED Technology Workshop** *(June 10 – June 22, 2012)*
   Opportunity for high school and community college ENERGY TECHNOLOGY INSTRUCTORS

   College not a SEED member? Sign up at
   [http://theseedcenter.org/Membership/Join](http://theseedcenter.org/Membership/Join)