



*ACEEE Forum on Energy Efficiency in Agriculture
Des Moines, IA
November 16, 2005*

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Renewable Energy/Energy Efficiency

- *FY 2002 Farm Bill – Title IX*
- *Other USDA Programs*



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*Farm Bill - Energy Title
Section 9001 – Definitions*

Renewable Energy:

Biomass

Geothermal

Hydrogen

Solar

Wind



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*Farm Bill - Energy Title
Section 9001 – Definitions Con't*

Biomass:

Agricultural Crops

Tree Grown for Energy Production

Plants (including aquatic plants and grasses)

Residues

Fibers

Animal Waste and other Waste Materials

Fats, Oils and Greases





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Farm Bill - Energy Title

Section 9006 – Renewable Energy Systems and Energy Efficiency Improvements Program

- *Establishes a grant, loan, and loan guarantee program to assist eligible farmers, ranchers, and rural small businesses in purchasing renewable energy systems and for making energy efficiency improvements.*



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General Provisions

- *Grant amount not to exceed 25% of activity funded.*
- *Combined loan/grant not to exceed 50% of cost of activity funded.*





Energy Efficiency Improvement: Gold Top Farms

Applicant

- Gold Top Farms, a family-owned dairy, located in Knox, Maine
- Awarded \$4,133 in Section 9006 grant funds for an Energy Efficiency Improvement project



Gold Top Farm, con't

Project goals

Improve barn ventilation – in summer, cows bunching up in ventilated areas creating more heat and stress, which directly affected health – in winter, heat from cows coupled with lack of ventilation created damaging condensation on barn ceiling

Technology employed

Three 24-foot Big Ass Fans® -- these are very large, high volume, low speed fans that provide greater air circulation and require less electricity than the previous method – these fans can move up to 246,000 cfm of air over an area as large as 20,000 square feet for about a nickel an hour



Gold Top, con't

Savings

Gold Top expects annual savings of:

Energy – 90,000 kWh/yr
Financial -- \$8,000/yr

Financing

Gold Top received a Section 9006 grant in the amount of \$4,133, or 25% of total project cost – the dairy also leveraged an additional \$8,000 of total project costs with state incentives



Renewable Energy System: Castelanelli Bros. Anaerobic Digester

Applicant

- Castelanelli Bros. Dairy, a family-owned, 1600 cow dairy, located in Lodi, California
- Awarded \$166,580 in Section 9006 grant funds for a Renewable Energy System project





Castelanelli Bros. Digester, cont'd

Project goals

Waste management, odor reduction, replacement of electricity produced from fossil fuels

Technology employed

Anaerobic digester, 160 kW engine/generator – bacteria present in digester convert the manure into biogas to produce electricity



Castelanelli Bros. Digester, cont'd

Savings

Castelanelli expects to produce most of the dairy's electrical needs with the digester – expecting to make \$80,000 to \$100,000 annually

Financing

Castelanelli Bros. received a Section 9006 grant in the amount of \$166,580, or %25 of total project cost – the dairy also leveraged additional funds with state incentives



Renewable Energy System: Pope, MN Wind Turbine

- Went online in October 2003 in Pope County, central Minnesota.
- A remanufactured E-15 35 kW machine, from Energy Maintenance Services in Gary, SD.
- One of 4 similar projects to funded in Minnesota.



Visitors inspecting the new turbine at the dedication.



Pope, MN Wind Turbine, cont'd

- Partners: Farmer Earl Hauge and his former farmhand Minneapolis resident Carl Nelson see wind power as a great opportunity to revitalize rural Minnesota.
- Earl owns the land and enjoys the new income from selling the extra electricity he doesn't need for his farm,
- While Carl earns some extra income and the piece of mind of making pollution free energy.
- A USDA grant covered 25% of the cost (\$17,175).



Neighbors and other interested farmers at the turbine dedication.



Section 9006 Funding Activity FY03 thru 05



Renewable Energy

| | <i>No.</i> | <i>Amounts</i> | <i>Leveraged Funds</i> |
|-------------------|------------|---------------------|------------------------|
| <i>Biomass</i> | 119 | \$29,757,021 | \$197,116,700 |
| <i>Wind</i> | 121 | 27,809,516 | 446,418,325 |
| <i>Solar</i> | 17 | 1,442,243 | 3,559,375 |
| <i>Geothermal</i> | 4 | 380,283 | 1,140,872 |
| <i>Hybrid</i> | 9 | 2,439,832 | 185,455,600 |
| <i>Totals</i> | <u>270</u> | <u>\$61,828,895</u> | <u>\$833,690,872</u> |

Energy Efficiency Improvements: 165 - \$4,927,655

Guaranteed Loans (Biomass): 2 - \$10,100,000 Leveraged Funds \$13,134,000



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Promoting Energy Programs

- *Working Together*
- *Leveraging of Financial Resources*
- *Outreach and Marketing*
- *Technical Assistance*





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QUESTIONS



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THE END