

## Renewable Energy

### Situation Overview:

A. *Please describe what technology was selected and why.* We incorporated a manure solid separator to provide a greater supply of bedding which increased cow comfort, reduced bedding costs and decreased the amount of manure spread on surrounding fields. We also installed solar panels to heat hot water in our new barn. It heats water to 150°. T-8 low energy lights also were installed, upon the recommendation of our electrician.

B. *What were the expected results and actual results, in terms of the following?*

- Environmental benefits: Less manure spread on field could result in lower phosphorus levels in the soil; solar panels will decrease the amount of electricity purchased to heat hot water.
- Farm benefits: Increase cow comfort, no need to purchase bedding and reduce electric costs.
- Funding successes, failures and challenges: EQIP funds were secured for the separator and related construction costs. Federal grants were available for the solar panel project. Energy rebates were secured for low energy lights.
- Permitting/regulatory success, failures and challenges: When we were seeking information on the successes of manure separators, it was difficult to find data, since it was a relatively new technology.

### Challenges and Opportunities:

C. *What obstacles did the farm overcome while planning for the renewable energy project?* We like our manure separator, but it changed our management practices. Our somatic cell count was a little high, with mastitis incident issues, when we initially started using the separated solids as cow bedding.

### Actions

D. *Timetable for the project?* Start Date: July 2011; Complete Date: January 2012

E. *Final costs for the project?*

- Manure Separator – EQIP money was \$130,000 toward this project
  - o Separator – Cost \$45,000, and \$45,000 was funded through EQIP
  - o Pump system for separator and elevator away from separator was \$23,000
  - o Storage barn was \$61,700; \$45,000 of that cost was funded through EQIP
  - o Manure pit – Received an additional \$40,000 from EQIP funds to apply to the costs associated with the manure pit.
- Solar panels – Federal grant covered \$42,000; we had an additional \$1,400 in costs above the grant and a \$150 annual maintenance fee.

## Renewable Energy...continued

### Results

F. *What was the cost benefit/return on investment of the option you pursued?* We didn't pay a lot for the solar panels because of the grant opportunity, and we've seen good results. We feel it was a win-win situation. The EQIP money certainly helped the cost equation for the separator and we like the cow comfort associated with separated solids as bedding. It also helped our nutrient management plan. Our farm is short on acres. With the separator, we can remove excess nutrients before we spread manure on our fields, which is a bonus.

G. *Is the final project meeting initial expectations? Yes. If not, when do you expect it to be functioning at 100%?* We had some initial problems with the separator pump. We changed to another style of pump and the system now functions as expected. The manufacturer today only installs our secondary style of pump with new projects.

H. *Have you shared the technology and learning experiences with other dairy farmers? Yes. If so, what was their response?* We hosted an Open House with the Center for Dairy Excellence in July 2012 and five other farm related tours, such as Holstein Clubs. We also host many individual dairymen, or dairy related businesses that bring clients, and most of those people want to specifically see the separator. They like what they see, and in fact, one farmer followed our blueprint for their new system.

I. *Is there a renewable project you chose not to pursue? If so, why not?* Yes. We decided not to pursue a larger scale solar panel operation. The payback was not as rewarding as described, so installing a few solar panels was a better option for our farm. We continue to explore a methane digester, as it is a system that also would fit at our farm.

