

Modernization and Technology

Situation Overview:

- A. *Detail the farm's reasoning behind the decision to pursue a modernization plan.* As a family, we wanted additional cash flow from the farm. We also knew modernization would help keep the next generation, our children, interested in the farm.
- B. *List the key variables that impacted the decision to move ahead with the plan.*
- The feasibility study indicated that this project was financially viable and possible.
 - Transformation Team funds allowed professionals to gather around the table and plan the digester project with us.
- C. *The following modernization areas apply to our farm and describe the incorporation of technology:*
- Milking cow facilities – No upgrade to facilities during the project, but a source of manure for digester.
 - Alternate energy – Methane digester
 - Bedding – Separated solids

Challenges and Opportunities:

- D. *What were the different options the Transformation Team considered as they worked together to pursue this plan? Please describe.*

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- This project helped our uncle update his dairy farm (which was in dire need of modernization) because he will receive \$10,000 worth of solids per year to be used as bedding, which will save money.
- There is a better nutrient profile to the manure coming out of the digester since it is three species (cow, swine, chicken).
- We will be paying \$6/ton for the chicken manure shipped to the digester; this in turn opens up more acreage that manure from our farm can be spread on because the neighbor's acreage is included in the land base.
- Department of Environmental Protection (DEP) is currently viewing the project as a waste treatment facility rather than a Concentrated Animal Feeding Operation (CAFO).
- The completed digester includes room for future expansion.
- Building the digester sets us up for a possible transition into robotics or other expanded facility 5 to 10 years down the road.

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E. *Did any barriers, or bottlenecks, occur during the project, and if yes, how did the team overcome those issues?* Yes. It was difficult to secure solid numbers for a feasibility study since this was the first three specie digester in the country.

Actions:

F *How did the work done on a business plan or feasibility study impact the farm's final decisions?* The feasibility study gave us the information we needed to gain our lender's approval and to achieve the level of comfort to move forward with the project. Without it, we would have had no idea where we were going and what the new finished business model would look like for our family.

G. *How long did the project take, start to finish?* Three years.

Results:

H. *How did the modernization and new technology change the business as it relates to profitability?* The digester has helped with farm income. Electricity sales, in the first year, were higher than projected. We planned for .06 cents/kwh and in 2013 we were at .10 cents/kwh. Electricity rates always will fluctuate, as will tipping fees associated with food waste for the digester.

I. *Can the farm quantify labor savings, energy savings or environmental impact?*

- Labor Savings: Labor actually increased with our project. We now have a full-time employee on the farm.
- Energy Savings: Our electric bill on the farm went up after completing our project to about \$1,600 to \$1,800/month. With the digester, we generate our own electricity for the farm, realizing those savings each month. We do have a \$25 utility transfer charge for using Pennsylvania Power and Light (PP&L).
- Environmental Impact: We are using food waste and other animal waste in our digester, but it has been a learning process. It has helped keep the generator running at maximum capacity, and kept that waste out of landfills.

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J. *Did the modernization and new technology change management practices on the farm?* While our project didn't change management on the existing dairy, other than using bedded solids, we do have labor associated with the digester itself. Cliff manages the day-to-day digester work load, about 30 to 45 minutes/day, if there are no major issues. A full-time employee spends about 5 to 6 hours/week with digester maintenance, if there are no exceptional problems.

During the course of this project, we also began milking two herds of cows. Our full-time employee's barn has 50 cows, and our existing dairy has 100 cows in a tie-stall for a total of 150 cows.

K. *Have you learned anything that has influenced future decision making about technology or given you new enthusiasm for some aspect of modernization?* Be interested, research and use your resources to look hard at your options. There are good people in the dairy industry. You need to seek them out and ask lots of questions. A dairy farmer in Mt. Joy, who milks 900 cows, and has a digester, has become a good friend and resource to us, through this process. Our herd sizes are vastly different but we can help each other.

K. *Has the farm shared the new facilities or technology (milking facilities, manure management, etc.) with others in the dairy community? If yes, what was the response from the community?* We hosted an Open House in November 2012 and the response was very good. The people that came to the event were seriously interested in the technology. They were conscious of the Chesapeake Bay and associated environmental issues. They were exploring ways they could be better stewards on their farms.

