

## ECONOMIC ANALYSIS FOR DIGESTER DEVELOPMENT

R. Joblin  
AgPower Group  
Little Rock, AR

According to AgStar, there are about 150 digesters operating in the U.S. today, and most of them were financed the old fashioned way. The owner used an existing line of credit for the main business with the local banker. The banker was no as interested in the digester's viability as he was in the continuing viability of the farm. Digesters were considered just another farm implement.

Not any more.

In 2006, there was a paradigm shift in the way farmers and lenders started to look at a multi-million dollar investment for a digester. The digester needed to 'pay for itself,' that is, generate revenues to pay for the investment. Quantify its value. There were two reasons for the shift: digesters were becoming more technologically advanced and therefore more expensive, and concurrently, dairy margins were declining. The farmers needed all of their lines of credit and cash available for their core business.

That is also the year we were hired by Dean Foods to do what I believe was the first independent comparison of and economic analysis for digesters as a stand alone business. I think it was the first because I could not find any other studies to plagiarize, and that that made our task daunting. We definitely undercharged for the amount of work we had to do.

I won't bore you with all of the brilliant observations and conclusions we came up with – and of course, they were – but I do think it would be worth mentioning the hurdles we faced.

First, we could not find enough empirical data to provide any trends which would allow us to build actuarial tables from which we could construct economic models. We looked at a dozen different digester projects, and sure enough, they were operated a dozen different ways with a dozen different results. So, in plain English, we only had manure to go on.

To get financing – especially for what was considered experimental technology way back then – empirical data was mandatory. So, we had to literally create a business model for a commercially proven digester system, one that would lead a lender to the conclusion that we wanted: that a digester was a safe bet.

I am supposed to talk about the appropriate economic analysis methods (plural) "for evaluating handling/treatment/utilization systems and pros/cons of each." To be honest, I only know of one appropriate economic analysis model, because all of the others we

tried did not work. It starts with creating a business model that works and then minimizing the risks for all involved.

So, what data is important to build the model?

Obviously, you start with the dairy. Is it well run? This is important for two reasons:

1. Will the dairy provide a consistent supply of feed stock as was projected in the original analysis? Dry matter intake. Amount of water used in the dairy operation. Bedding. Holstein or Jersey. All of these are factors that affect a digester's operation and production. What goes in determines what comes out.
2. Will the dairy provide a constant supply of feedstock over the term of the financing? That is a nice way of asking if the dairy will stay in business that long. A lender must be comfortable with underwriting the dairy in addition to underwriting the digester project.

With all of that information, we established a base line of what should be a reasonable expectation of a consistent and constant supply of feedstock.

Second, we had to take our generic base line and apply it to each type of digester. What all did we want to know?

- Biogas production on a per cow per day basis. Obviously, the more the better.
- Parasitic load as a percentage of power production. Less is better.
- Operating costs and down times.
- Efficiency of gensets.
- Energy production from other substrates.
- Functional life of the system and major repair and replacement costs.
- Any environmental credits - carbon and RECs.
- Any co-products, especially relating to the quality of fiber and any cost of further processing. Way back then, we were concerned only with fiber as the marketable byproduct. Now we consider all other potential – present and future – co-products.
- Value of every possible revenue source.

Then, we fed this data into an economic model that we created, and voila, we had all of the answers. **Not**. But it did get us closer to having empirical data we could rely upon. Over time and with the help of a grad student much smarter than us, we built an economic model with all of the variables. An unbelievable amount of minutia went into it. I think there are about a dozen interrelated worksheets on the program. From that model, we created a simple summary spreadsheet, the one most of you have seen. We gave it to DMI for everyone's use in doing the initial modeling for a generic digester project. Hopefully, it will help folks to compare hose apples to horse apples.

Third, to prove that we were 'getting close' with our analysis, we needed a controlled test of our hypothesis. We needed a guinea pig.

Let me back up for a moment. Our hypothesis was very specific: that a digester project could be a successful stand-alone business that would attract third-party investment and independent lenders, not relying on the farmer's financial backing in any way. And, that is the way Dean Foods looked at the crazy proposal we made to the company in 2007. After Dean's own internal analysis, we were told: "The damned thing seems to work."

It should be noted, to Dean's credit, the initial idea was to develop a project to prove the hypothesis, not to start a new division of a Fortune 500 Company. It was Dean's commitment to the dairy industry and to its own sustainability effort that motivated the company.

So, we had our guinea pig. Then the hard part started.

We had to lock in all of our revenue sources:

- Energy;
- Fiber;
- Renewable energy certificates; and,
- Carbon credits.

I don't mean the wink-wink-trust-me-we-will-get-to-it type of commitments. We had to have contracts with credit-worthy companies that would be signed at closing. Dean approached the deal as any good lender would approach any financing.

We also had to have our costs nailed down:

- A construction contract with a guaranteed cost and completion;
- An operation and maintenance cost, also with guarantees built in; and,
- A long-term land lease and feedstock supply agreement with the dairy.

Finally, we had to have an Internal Rate of Return on Dean's money that was acceptable to company's management and board. It had to be a prudent investment for a publicly traded company. It barely was.

Dean had bought into the project before all of the economics fell together. So, I cannot represent that the same economic return would be acceptable today. That's why the parameters of a conventional lender would be a more prudent yardstick in this economic client.

Based upon all of the conversations we have had with all of the lenders we know, I can now report to you that it is still hard as hell to finance a digester project. About 90 – 95% of the lenders we have talked to are still unwilling to even discuss financing a digester projects.

Why? I know all of their excuses, but I am not sure I know their reasons. So, let's remove those lenders from prospect list and concentrate on the forward-thinking, the friendly, the few lenders available to us.

A lender wants and will probably demand:

- An experienced developer;
- A proven, commercially available technology;
- Qualified operator with performance guarantees;
- Long-term off-take agreements with credit-worthy companies;
- A debt service coverage ratio of (probably) 1.5 times or higher;
- A disproportionately high percentage of equity investment; and,
- An interest rate high enough to give me a nose bleed.

To be fair, lenders do not have carve-outs for digester projects. This is not charity, nor are there government mandates to force them to lend to us. Our projects must compete with other borrowers for the same limited pool of funds, be they wind, solar or shopping center projects. Potential lenders – all black-hearted capitalists – are looking for the highest return balanced by the lowest risks they can find for their money. That is the playing field, and they have all the balls. Well, if they don't have when you apply for a loan, they surely will before you get their money.

It is worth remembering that all federally regulated lenders are between a rock and a hard place since the collapse of the financial institutions in 2008. The rock is the Federal Reserve which is throwing almost free money at the lenders and begging them to make loans. The hard place is the Federal Deposit Insurance Corporation which is warning lenders to not take risks. Well, making a loan is taking a risk. And, making a loan on a digester is risky. What's a lender to do? Try to minimize its risk. That usually starts with demanding more and more equity.

The most expensive money with the highest risk for losing it that goes a project is not the debt – not the lender's money – but the equity. The money that pays for all of the work that goes into putting together a project to take to a lender. Design engineering. Permitting, Legal. Environmental. Land acquisition. Utility bills. Food. Home mortgages. Somebody has to pay for all of that before even knowing if a lender will finance the project. That can easily be several hundreds of thousands of dollars. Then, the lender will require that a portion of the project is paid for with more equity. 25% of more. We have talked to lenders that required 50% equity. Some lenders want the equity to be first in and last out. I do not know of an equity investor who will agree to that.

Let's try to quantify the worth of equity, at least to some degree. Using round numbers, what if it takes three hundred thousand dollars to put together a project, to get it ready to take to a lender? What is that risk worth? Is the money from your own pocket, saved for college tuition? What is it worth to you? What would you have to give up to get that money from an investor? What about when the lender wants another two million dollars of **cash** equity invested in the project before any of the lender's funds are

released? What would you give up to get that money? What if you can't get this money back out of the project until it shows a profit, a 1.5 debt service coverage? What is a fair return **ON** that money? 10%, 20%, 25%? What is an acceptable return **OF** that money? 2, 3, 4, 5 years? What is the premium demanded for high risk money?

The correct answer to all of these questions is: ***It depends.*** It will be different for every potential investor, from the dairy making the investment to the venture capitalist sitting in an office high above the bustling crowds in a city far, far away. However, the value of that risk capital must be factored into your economics, because it will have to be paid back someday.

Then, there are the risk factors that you cannot put on a spreadsheet:

- Will the dairy be in business in ten or fifteen years?
- What changes in regulations will there be in five or ten years?
- What will be the changes in technologies?
- What additional revenue potential might there be?

How good is your crystal ball? Probably no better than the lender's. And, therein lies the problem. After analyzing all of the data, doing all of the due diligence and crunching all of the numbers, it is still a judgment call.

First, it is your judgment call. Can you step back and objectively look at your own project from the lender's perspective? Have you put together all of the pieces, covered all the bases, minimized all the risks? If not, stop. Either go back and fill in the blanks and correct the mistakes or walk away. The last thing we need in this industry is another failure.

Second, it is the lender's judgment call. Even if the developer has put together all of the pieces, covered all the bases and minimized the risks, is the digester project the best place to make a loan?

The quick answer from some folks would be: It is with a loan guarantee. No necessarily. To apply for a loan guarantee, there must first be a ready, willing and able lender offering terms and conditions acceptable to the borrower. We have walked away from a guaranteed loan because the lender's terms did not agree with our conditions.

Let's get specific. I am talking about USDA loan guarantees, the only viable long-term loan guarantee I know of for a digester project on a national basis. There is no question the loan guarantee can make a marginal project financable. But should it?

Here's where things get sticky.

- A lender wants the term of the loan as short as possible. The USDA loan guarantee is designed to extend the term, allowing for an easier payback. The shorter payback that the bank wants will extend the repayment **OF** equity and lessen an investor's interest in the project.

- A loan guarantee should make the interest rate on the loan lower, but when the annual loan guarantee fees to the cost of the loan, the effective cost of money could actually be higher than a commercial loan.
- The government's loan guarantee usually requires that each owner with 20% or more sign personally for 100% of the loan. If my share of the project is worth one million dollars, why should I guarantee five million dollars?
- If my part of a five million dollar project is worth one million dollars and if I have a net worth of two million dollars, what assets I am going to guarantee the next project with? After one project, I could be out of business.

It does not seem that the loan guarantee structure was developed with any input from potential borrowers or lenders, just regulators. These regs do not reflect current economic realities, and the USDA knows it.

This administration is working hard to adapt the loan guarantee program to current economic realities, and is working with developers and lenders to review and hopefully streamline the loan guarantee program. It just takes time.

How do we take all of these pieces and make a financing plan for digesters out of it? I'm not sure, but I do know each project must have solid foundation:

- Empirical data,
- Proven, commercially available technology,
- Professional operator,
- Long-term off-take agreements with creditworthy companies,
- An experienced developer,
- Manageable risks, and
- A reasonable return on the investment for the debt as well as the equity.

Then, if all the pieces of the puzzle fit, there has to be – somewhere out there – a reasonable, receptive lender. There just has to be.