Turning Trash Into Cash with Landfill Gas-to-Energy Projects Webinar – Questions and Answers

October 17th, 2013

Speakers
- Mark Dear, Environmental Compliance Coordinator/Facilities Engineer, City of Albuquerque Solid Waste Management Department
- Marcia Pincus, Mountain Region Manager, SCS Engineers
- Dean Olson, Director, Will County Land Use Department, Resource Recovery & Energy Division

1. **How did you estimate Operating and Maintenance (O&M) costs? Did estimated O&M costs include staff time/salaries as well?**

   - **Mark (Albuquerque):** It was our director that actually got the grant and she did the initial cost estimates, along with Marcia who might have more information on this.

   - **Marcia (SCS Engineers/Albuquerque):** I don’t know if Dean experienced this, but usually a grant given by the Feds asks for in-kind services, so the Director of Solid Waste for the City estimated in-kind services related to starting the project and maintaining it over a period of 5-10 years. SCS Engineers provided O&M costs based on our experiences with well fields, because we are the operators of the well field and the maintenance for the compression station that sends the gas over to the jail. The jail also has some in-kind costs because they have a maintenance crew that has to maintain the boiler, and then there were some costs added in for misc equipment.

   - **Dean (Will County):** As for our project, we really didn’t have to do much of this because Waste Management did it for us. However, my time was added in there. We did ask for the 10% administrative cost covered, so if I did spend some time, especially at the beginning of this project, we did put that in. Overall, Waste Management handled that and figured out performas and what their costs were going to be, since they own the equipment.

2. **Mark, is your landfill required by law to collect landfill gas?**

   - **Mark (Albuquerque):** Yes it is. It was estimated in 2003 that we hit the 50 mg baseline, so that gave us a one-2-year window for design and completion for our gas system. The initial gas system, which included 40 vertical wells, was installed in 2004.

3. **Our local landfill contracted with someone to use its LFG to generate electricity, but the contractor misestimated the amount of available gas (it’s much less than anticipated), so the gas is flared instead. What other options might the landfill consider for beneficial use of the collected gas? The landfill is isolated and surrounded land protected is from development.**

   - **Dean (Will County):** Is that a currently active landfill? Because we are recirculating the leachate, so that could help in the generation of gas and kick it up considerably. We are remotely located as well, and putting one of these engines in is not cheap. They were about
$750,000 and all the other equipment adds up. So you do have to have a decent about of gas to make those run to begin with. Maybe it could be used for CNG, instead of electricity. That can be done but you would need equipment nearby that could use it. So trucks that would come in and out on a regular basis.

- **Marcia (SCS Engineers/Albuquerque):** If they could use it for their own benefit, through a direct gas project for a maintenance shop, either using the gas directly through a boiler or a heater. Another possibility is using a microturbine to take that gas and turn it into electricity on a smaller scale for use in on-site facilities.

4. **NM rainfall is very small, so gas production is expected to be limited, how economic is this project?**

- **Mark (Albuquerque):** How economically feasible is it? At the level we are working at right now, it’s very feasible. We are making good use of the gas at this point. We are getting pretty good gas production with the six new vertical wells we brought online, and we’ve redone all of our existing wells. We are currently running about 500 CFM, which still just has us on one blower. Currently the boiler at the jail is using about 100 CFM, so we have more than enough gas. At the jail, they had some initial problems with things like the flow meter, and trying to match the in-house pressure so the water from the boiler can drop into the system. So that was a problem for a while, but we’re producing more than enough. Because of the oversized line we put in, there is good potential for future projects.

5. **Any issues with recirculated leachate being accepted at wastewater treatment plants after recirculating, due to contaminant concentrations?**

- **Dean (Will County):** No, we have not had any issues. To tell you the truth it has been a while since we have had to bring any of that material to a treatment plant. We have enough open area to place that leachate.

6. **Did either NM or IL landfills consider LFG (Landfill Gas) to LNG (liquefied natural gas) for transportation fuel? What were/are the economics of renewable liquid fuels versus renewable electricity?**

- **Dean (Will County):** Well right now, our growth in our county is at least ten miles away. Therefore, it would take trucks 20-25 miles to tank up, so it doesn’t really make economic sense to use for fuel for the vehicles. There is not enough activity for us to market that either, so electricity is definitely the best way for us. When I do this presentation to the biogas industry, they are a little jealous in many ways because we did pick the electric option. Gas is very cheap right now and they do not get many of the same benefits that we do with electricity. In Illinois, we do quite well with the benefits, but it might be different in other states. Electricity is still looking like the best option for us. If other landfills are located farther away from populations, I would recommend it as well.

- **Mark (Albuquerque):** I don’t know if we looked at liquefied natural gas (LNG), but we did consider compressed natural gas (CNG). We considered possibly using it in the city garbage trucks, but the problem with that is similar to the problem that Dean mentioned. The yard where the trucks are kept is about 30 miles away, so it is difficult. Ideally if we were going to do CNG the trucks would fuel up here, so the idea to move all the trucks and shops was a
nightmare. There are some issues with CNG as well - the size of the tanks required, and the limited ability for the complete conversion of the engines. In addition, all of our mechanics are trained on diesel trucks at this point and to convert to CNG would be fairly involved, and beyond the scope of this project. Marcia, was there any consideration of LNG?

- **Marcia (SCS Engineers/Albuquerque):** There was no consideration of LNG.

7. **How has the price of natural gas impacted the project?**

- **Mark (Albuquerque):** It hasn’t really, since we are supplying directly to the jail. I mean the offset maybe is not as good. If the price of natural gas goes up, it is more of a benefit to them. If the price goes down, it is a little less of a benefit. But since we are going from one government entity to another, and we aren’t really selling the fuel, the cost of natural gas hasn’t really affected our project.

- **Dean (Will County):** I believe it will affect us when we negotiate the contract. I was just talking to an energy expert, asking what the forecast is, and whether you like it or not fracking does cost the price to go down because there is more natural gas out there. That has caused the energy markets to be lower than it would have been. So I think we will take a hit eventually, but right now we are doing fine. Over the next few years, if it stays low then we will not get as much revenue.

8. **Why did the City of Albuquerque decide to apply for the EPA grant?**

- **Marcia (SCS Engineers/Albuquerque):** The Director of the Solid Waste Department for the City of Albuquerque is a recycling person, so we just didn’t see flaring the gas as an option. We recognized that gas is energy and we wanted to make some use of it. We also wanted to have a partnership with the City and County and so it was a good thing to do. I personally had worked for the City of Albuquerque and had looked at that project for about 10 years. It is a small project now, but the jail has plans to expand and so we put in that large line. They do plan to add more pods, and there is a possibility we could feed their HVAC system and eventually go into electricity. The County has over 1 million dollars in electricity bills, so that would be a large help. There were many benefits for applying for the grant. It may look like a small project now, but like Dean, we are stepping it out over long term to make a bigger, better benefit as funding allows.

9. **Are your landfills collecting on all cells or only closed/capped cells?**

- **Dean (Will County):** We have five cells right now; the fifth cell is fairly new so there’s really only passive flaring there. But the other four have many wells, especially cells two and three. The first cell was at the beginning of the project when we didn’t do leachate recirculating. Two and three have been open for a while and have received more leachate recirculation. Therefore, there is a lot more gas wells in those areas and there will be from now on. We do have restrictions on it. We did have a gas issue at the very beginning, there was a gas well causing an odor, and Waste Management fixed it right away and replaced it. If you have a big cell it is hard to open area to put a gas well in, because equipment may hit it and then you have issues there.
- **Mark (Albuquerque):** We have eight cells, and two are active. We aren’t completely filled on the sixth; we still have some room on top. We have a sizable landfill; it is 81 million cubic yards with 24 million cubic yards of waste. The new wells can be raised so if we add the remaining amount of air space we have on the top of those six cells, we can raise the existing wells without having to redo them. We are doing horizontal gas collection in cell seven. We are putting waste in cell eight now, and we have a line under it that will be connected to the high side. There is a five-year requirement that when waste hits five years, you are supposed to start gas collection, even if your landfill is active and that is difficult. It’s difficult to run gas lines and maintain them in an active landfill, there’s too many hazardous. You’re having to maintain slope, it is easy to damage lines and wellheads, and that has happened to us a lot. However, you are required to do that after the waste hits five years.