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RECYCLING > BUSINESS

The Benefits of a Hub and Spoke Recycling System

At GWMS, Michelle Leonard, vice president of SCS Engineers, will discuss the "Rural Recycling Hub and Spoke Recycling Project" study that SCS Engineers completed for the Iowa Department of Natural Resources.

Mallory Szczepanski | Jan 19, 2018

Managing recycling in a rural area is no easy feat. There are challenges to worry about like transportation and having enough material to make recycling a financially viable option as well as the difficult task of finding a home for the material that's collected and processed.

One effective and efficient option for these rural areas is a hub and spoke recycling system, which consists of centralized processing centers (hubs) and surrounding communities (spokes) that feed the recyclables they collect to the main hubs. This system has proven successful in a number of rural areas and offers benefits like cutting down on the costs of equipment, personnel, processing, transportation and marketing.

At the upcoming Global Waste Management Symposium (GWMS), which is being held at the Hyatt Regency Indian Wells Resort & Space in Indian Wells, Calif., February 11-14, Michelle Leonard, vice president of SCS Engineers, will discuss the "Rural Recycling Hub and Spoke Recycling Project" study that SCS Engineers completed for the Iowa Department of Natural Resources and the many benefits of a hub and spoke recycling system.

Waste360: What is a hub and spoke recycling system and what are the benefits that this type of system provides?

Michelle Leonard: A hub and spoke system is where recycling hubs are established to shoulder the financial burden of operating a recycling center. The hubs, which are typically located in larger communities, process the material and benefit from capturing the value of the material that they market. The spokes, which are typically located in very rural areas, provide the hubs with recyclable materials.

The spokes don't benefit from the sale of the recyclables, and they are not liable for any of the expenses that come with operating the facility.

The reason why hub and spoke recycling works so well in rural areas is because those areas often don't have well-established markets like port cities do. Rather, they are challenged with marketing materials and getting enough materials to make it worthwhile to process and recycle. The hub and spoke method allows for the consolidation of materials, ultimately producing enough volume to make it economically feasible to process and market the material.

Waste360: Tell us about the "Rural Recycling Hub and Spoke Recycling Project" study that SCS Engineers completed for the Iowa Department of Natural Resources.

Michelle Leonard: The Iowa Department of Natural Resources had a grant, and we were contracted to research and consolidate existing information on the types and quantities of materials that are generated throughout the state.

We inventoried the existing recycling operations and looked at the various facilities, the infrastructure, the service providers, the haulers, the processors, etc. We also did a survey to identify who might be interested in a hub and spoke system because part of the original contract was to design a pilot hub and spoke system in a community in rural Iowa.

In addition, we researched and summarized some other rural recycling programs in other states and developed a cost benefit analysis model for the state to use to identify whether a certain area should be a hub or a spoke. The input for that model included things like whether they should charge for materials or pay for them, the types and quantities of materials, the distance from the spoke to the hub, whether it was private or public, etc. These are all factors that would impact the financial aspects of the program.

This study was a very valuable exercise for the state because it really had no idea who was doing what in terms of collection of recyclables, processing and where all of the materials were going. Above and beyond the hub and spoke aspect, the study gave the state a better idea of its current recycling infrastructure.

As part of the study, we also created a GIS-based map that included information on the state's various facilities, such as location, ownership, type of facility and materials collected. This map helps the state keep track of its existing recycling infrastructure, which is something it wasn't really able to do previously.

***Waste360:* Tell us more about how the study helps the State of Iowa understand its flow of recycling materials.**

Michelle Leonard: In the short term, the state has a better understanding of the movement of materials as well as the existing infrastructure. Through this study, the state realized that it has a robust recycling system, and that was a real eye-opener for the state and the public and private sectors.

In the long term, the state plans to use the information that we gathered to identify where help is needed and where grant funds should be utilized. Historically, grants have been given for equipment purchases like balers or conveyer belts, but now, the state will be able to identify areas that could benefit from new programs or program expansions.

In addition to this study, we conducted a statewide waste characterization study that provided the state with even more information in terms of target programs and areas to target for new programs.

***Waste360:* What are some of the challenges that come with managing recycling in a rural area?**

Michelle Leonard: The biggest challenge is having enough material to make recycling financially viable, and that ties back in with the whole scope of a hub and

spoke system that helps to consolidate materials. Plastics and glass also present challenges because there aren't a lot of markets for those materials right now.

Another big challenge is transportation and getting materials from remote, rural areas to a facility where they can be consolidated and combined with other materials before getting sent to market.

In Iowa specifically, we found that the state doesn't have a good system for gathering recycling data. For the study, we were able to do a survey to collect some data and got some good responses, so one of our recommendations was to implement some type of state reporting system where it could gather this data on a regular basis and then use that data to strategically allocate its grant funds to areas that may need some help in terms of equipment or other infrastructure. Right now, the state doesn't know what its recycling rate is and a state reporting system could really help it find out that evaluation.

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