Reaching High Waste Diversion:
Research and Financial Analysis of New Technologies

A USDN Innovation Fund project sifts through emerging technologies to really understand what makes dollars and sense.

The ultimate goal of the New Water Technologies project was to understand what new technology exists to help cities divert and reduce waste - and at what cost. In Houston (and in many other USDN member communities), understanding the return-on-investment (ROI) of an environmental policy can be as important as the policy itself. New waste technologies can have many community benefits. With so many new technologies emerging, the difficulty lies in getting past product promotion to understand how use of that product could impact a community economically, socially, and environmentally. **Houston** led a project with **Austin**, **Dallas**, **Dearborn**, **El Paso**, **Iowa City**, **Loveland**, **Orlando**, **Philadelphia**, **Providence**, **San Jose**, and **Washington DC** to produce a New Waste Technologies Scan and Analysis Tool that can help communities better understand options and weigh potential investments.

The scan analyzed waste technologies based on the following implementation variables:

- **Technologies**: shredders, metering equipment, advanced screens, density separation, 2D-3D separators, metal recovery and optical sorters, as well as new process systems in the waste industry and new waste-to-energy technologies, including anaerobic digestion
- **Implementation Variables**: financial analysis, permitting analysis, community concern assessment, diversion rate potential, highest and best use of materials, and carbon emissions reductions

Impact on Cities

This project built on Houston's work on the One Bin for All concept. It gave the city much more information on the technologies being pursued to increase waste diversion. It also provided better data on the costs of the new technologies and their approximate greenhouse gas emissions. The tool is flexible, and as the user changes thinking about the right mix of technologies and processes to increase waste diversion, they can change their tool inputs to see how different technologies can work together.

Project co-lead Orlando is utilizing tool information to implement the Florida state-mandated 75% recycling goal via increased recycling, anaerobic digestion, and possibly other waste-to-energy processes. The timing of this grant was vitally important to Orlando, as their landfill contract expired in 2014. The findings of this project helped them move into the next phase of waste disposal.

Though not part of the grant team, Indianapolis followed along with the grant's progress because they were interested in the One Bin concept. Houston and Indianapolis both traveled to Montgomery AL to participate in the launch of their new One Bin facility.

Lessons Learned

- New technologies need to be thoroughly vetted and researched. Many new technologies hold much promise, but until they can be scaled, deemed affordable, and deliver on their claims of environmental and other benefits, it will be difficult for communities to embrace them. A strong third party analysis should be done of new technologies before cities can feel confident moving forward.
- Though waste innovation is not widespread in the United States, many countries in Europe and Asia are using innovative technologies. U.S. cities can learn from their work and implementation.