What in the World Are "Feedstock Logistics"?

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FDC Enterprise's Feedstock Logistics award has developed a single pass harvester, which is shown gathering corn stover and feeding it into the baler. Thanks to strategic modifications to the harvester, tightly packed, large square bales emerge from the rear of the baler and are gently lowered to the ground in pairs while the baler continues its job. | Department of Energy Photo.

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WHAT DOES THIS PROJECT DO?

- **Reduces the cost of processing advanced biofuels.**
- **A more efficient and cost effective process will ultimately save you money at the pump.**

Biomass feedstocks - the raw organic material that can be converted into biofuel, biopower, or bioproducts - come in many forms, from woody crops like hybrid poplar and shrub willow to herbaceous species such as switchgrass and agricultural residues such as corn stover. Getting that variety of material from the field to the biorefinery (i.e., the biomass processing facility) in a usable form and quality while minimizing storage losses is a critical part of "Feedstock Logistics."

After the farms or other grower plants and maintains the crop, each energy feedstock, depending on its type, must be harvested, baled or chipped, and dried. It can then be densified, milled, transported, stored, and finally delivered into the mouth of the biorefinery. Each step in this supply chain involves large, heavy-duty equipment that is designed to perform a specific function. Since delivered feedstock cost can represent up to one-third of the final end product cost, keeping costs down at every step of the feedstock supply chain is an obvious target for R&D directed at reducing the delivered cost of feedstock materials while maintaining a revenue stream for the producer.

To address the challenge presented by feedstock logistics, one important key lies in the commercial availability of purpose-designed or modified existing equipment for the bioenergy industry. Toward that end, the Energy Department's Biomass Program has invested $21.3 million in five competitively awarded Feedstock Logistics Demonstration projects. Each of these projects, with an additional private cost share of at least 50% of total project costs, has targeted one or more bioenergy crop or agricultural residue. They are developing, building and demonstrating full-scale equipment systems specifically designed to significantly reduce the cost of harvesting, processing, delivering and storing biomass en route to the biorefinery.

For example, one project has developed equipment able to cut and densely bale a standing crop, such as switchgrass or miscanthus, in a single operation. A slightly different configuration of this machinery can densely bale corn stover left lying on the ground after the grain is harvested. The same project has also designed and built two pieces of equipment of r rapid gathering and stacking of bales at the side of the field, as well as another pice of equipment that can load or unload a full flatbed trailer load of bales in about five minutes. A different project has developed three purpose-designed pieces of equipment for optimizing felling, chipping and hauling of 12-15 year old loblolly pines for bioenergy purposes.

The novel prototype equipment developed in these projects is now being used in real world harvesting, transporting and storing operations. With time, the idea is to quantify costs relative to a base case (using traditional equipment) in order to demonstrate a clear reduction of costs associated with logistics. We are already seeing improvements that will help reduce delivered feedstock costs, bringing the biomass industry closer to cost-competitiveness with conventional fuels and helping to reduce our dependence on imported oil.

http://energy.gov/articles/what-world-are-feedstock-logistics