

# Converting Produce Waste into Energy

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In the movie "Back to the Future," Doc stuffs the center console of his DeLorean with coffee grounds, banana peels, and drips of beer. I remember thinking, "Food waste can be a fuel?"

Indeed, it can.

Representing the next generation of Doc's "Mr. Fusion" generator, an emerging trend to manage food waste these days is anaerobic digestion: a biological process that turns organic materials into clean energy and natural fertilizers. Food processors across North America are tapping into anaerobic digestion's ability to cut costs, reduce greenhouse gas emissions, provide green power and revitalize soil.

### **The Food Waste Problem**

Food waste has long been a problem: it is heavy; it is expensive to dispose of; it often needs to be delivered to distant landfills; once in a landfill, it produces

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greenhouse gas emissions and the nutrient values of the materials are trapped indefinitely.

As a society, we waste food along every step of the supply chain. At the retail and consumer levels, the USDA estimates that in the U.S., 31 percent, or 133 billion pounds, of the 430 billion pounds of the available food supply in 2010 went uneaten (Buzby, J.C, February 2014).

Further back along the supply chain at the food processing level, food waste occurs for a variety of reasons: trimmings, tops, peels and pits get sliced off; whole foods are discarded due to blemishes, being under-ripe, over-ripe or are just simply rejected. In his book, "American Wasteland," Jonathan Bloom explores the ins and outs of food waste, including how we have become very picky as consumers when choosing our fruits and vegetables at the market. Add to that equation expired foods, recalled items or materials damaged in transit and you have a recipe for tons of waste. Food processors bear the burden to responsibly dispose of these materials.

### **How Anaerobic Digestion Turns Food Waste into Clean Energy**

One solution for food waste disposal is anaerobic digestion, a natural process that has existed for millions of years. These days we mimic nature and create ideal conditions for anaerobic digestion to occur. When you place organic materials in warm, moist, gas-tight environments, naturally occurring bacteria convert, or anaerobically digest, the sugars, fats, and starches into biogas. This is the moment when we one-up nature: we then capture the biogas and either combust it to produce renewable electricity, clean it to pipeline grade natural gas standards or further process it into compressed natural gas (bioCNG) that can be used as vehicle fuel. Perhaps the best part about anaerobic digestion is that the nutrients remain intact and the remaining fibers are dried into natural fertilizers that can be returned to fields, farms and gardens to grow more food. In short, it's a closed loop cycle of energy and nutrients.

### **A Fresh Produce Recycling Program**

FreshPoint Central Florida, a fresh produce distributor that operates under the Sysco Company, has taken steps to maximize its organics recycling program while simultaneously contributing to clean energy. The company announced earlier this year its decision to send its vegetative overs, representing nearly 100 percent of their discards including fruit and vegetative peels, strawberry tops, corn husks and pineapple cores, to Harvest Power's anaerobic digester in Orlando, Fla. The food processor has access to the 24/7 availability of the digester. Harvest Power mixes the materials with other scraps, grease and discards to create the perfect concoction for trillions of anaerobic bacteria to do their work. The arrangement reduces pressure on landfills, reduces hauling fees, provides natural fertilizers and produces enough clean, renewable electricity to power over 2,000 local homes.

Food wastes of all flavors are being recognized as sources of fuel at our fingertips. The American Biogas Council counts 2,000 operational biogas systems in the U.S.

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and estimates the market potential for 12,000 new biogas systems to process readily available organic waste. Food waste has a powerful future.

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