The Oil Drum
DISCUSSIONS ABOUT ENERGY AND OUR FUTURE

Recycling Our Way to Sustainable Waste Management

Posted by Robert Rapier on September 25, 2010 - 8:32am
Topic: Environment/Sustainability
Tags: land fill, recycling [list all tags]

While my focus is primarily on energy, I am also interested in other sustainability issues. In this post I'd like to talk about some landfill waste recycling issues, and in particular those affecting the waste of Honolulu, Hawaii. I'd also like to explain how Switzerland is solving the problem, in a way that provides a source of electricity, and leaves no landfills.

A garbage barge sails past the Statue of Liberty on its way out of New York City.

Landfill Space Constraints

Regarding waste management, stories often appear in the media about places running out of landfill space. It doesn't seem like it's been that long, but twenty years ago there were numerous stories in the media about New York barging their garbage, but having trouble finding someone to take it:

The Garbage Barge

> The garbage barge wasn't just redolent with remarkable names. The misbegotten cruise quickly became a media sensation. The economy was hot, and news was slow. Garbage, which is just the effluence of our affluence, was the perfect target. Greenpeace, Phil Donahue and Johnny Carson all used the barge as fodder. Six months after it sailed, the garbage barge's trash was burned in a Brooklyn incinerator, and the ashes buried back in Long Island. The media didn't attend the funeral.

The story put landfill space in the spotlight, and there were a number of positive outcomes as a

result:

> After the circus was over, the barge had a profound impact on solid waste and recycling. Within three years, most states passed laws requiring some kind of municipal recycling. The United States went from about 600 cities with curbside recycling programs to almost 10,000. Our recycling rate is three times higher now than it was in 1987.

Without a doubt, that is a positive outcome. However, twenty years later numerous areas still struggle with the same issue. New York still ships garbage to states like South Carolina and Ohio. A story playing out in Hawaii over the past few years is that the island of Oahu, where Honolulu is located, has been working on a deal to barge their garbage all the way to Washington state. Not surprisingly, some in Washington aren't enthusiastic about accepting the garbage:

Hawaii Garbage Faces New Obstacle En Route to Washington State Landfill After Yakama Tribe Objects

> Over the weekend, Hawaii news outlets were reporting that the first shipment of Honolulu garbage was likely only weeks away from coming to a Washington state landfill near the Columbia River. Hawaiian Waste Systems, the Seattle-based company that has a contract to ship 150,000 tons of waste from Honolulu to the Roosevelt Regional Landfill, told reporters it believed that final approval from the US Department of Agriculture was imminent. But now there appears to be a new holdup in the approval process that has already dragged on for years and sparked controversy across the Pacific.

One of the core issues here is that despite the increase in recycling programs in the U.S., most areas still don't have them. Over the past 20 years I have lived in nine different cities in the U.S. Of those, only one – Houston – had a curbside recycling program. In other locations you could recycle, as long as you were willing to make the effort to segregate your garbage and then deliver it. Most people don't bother, and so our landfills fill up with green waste, paper, plastics, and metals — all items that can be composted, recycled, or burned for power.

One of many public recycling points dotted along the roads in Switzerland featuring huge containers for glass, cans and plastic packaging.

One of the steps I often take — when faced with a complex problem — is to see how others have responded to similar problems.

The Swiss Model

Over the summer I was in Switzerland, and I spotted a far away smokestack. I asked my host what it was, and he said *"That's a waste to power plant. We don't really have landfills here in Switzerland."* I was intrigued by this statement, and wondered if there were any lessons to be learned from Switzerland's waste management programs.

Most of the available information is in German, but Wikipedia does have an article specific to Switzerland's programs:

Waste management in Switzerland

> Switzerland is highly active on the recycling and anti-littering front and the country has one of the highest recycling rates in the world with a mean of 76% of all currently recyclable items being recycled. This has narrowly surpassed the Swiss government's 75% target, meaning that for the time being there will be no introduction of a recycling tax on glass bottles and jars, nor on clothes and textiles, plastic bottles, home-use batteries, light bulbs or paperware and card.

Of course the caveat is that those results are achieved with mandatory recycling laws that subject citizens to heavy fines for violating them:

> In many places in Switzerland, household rubbish disposal and collection is charged for. Household refuse (except dangerous and cumbersome items, batteries, sofas, electrical appliances etc.) in theory, is only to be collected if it is in bags which either have a payment sticker attached, or in official bags with the surcharge paid when the bags are purchased. However in practice, this is difficult to enforce, for hygiene reasons and the like. However it is a financial incentive to recycle as much as possible, for recycling is usually free of charge or cheaper, albeit not always operated through a door-to-door collection.

This is a very different situation than in most of the U.S., but we will ultimately need to have results like Switzerland's as our landfills continue to fill up. How we should obtain these results will be much debated; mandatory recycling laws probably won't be warmly embraced by most Americans. We have made progress in dealing with waste after it has been collected; the success of landfill gas and waste to power programs are examples. But if we begin to address the waste further upstream by separating it, we will have a much easier time devoting different waste streams to more appropriate end uses. Plastics, for instance, can be burned for power, but if they are a separate stream they likely have higher value being recycled back into plastics.

Comparing Pineapples to Cheese

The specifics of each local situation will always differ. As my Swiss host pointed out when comparing Hawaii's situation to that of Switzerland:

- Recycling in Switzerland is tied in with local or nearby facilities which reduces transportation cost
- Burning waste is relatively inefficient (35% or heat content retrieved on average in CHP mode, 11% for electricity only), which might create even bigger challenges for Hawaii than for Switzerland
- Running those waste burning facilities at halfway decent efficiencies needs a constant inflow of waste, which might be a problem for Hawaii (seasonality of tourism), even Switzerland imports waste from Germany to keep plants going
- The remains from burning have a high metal content (about 30% of their weight), which requires after-treatment

Probably the biggest challenge in the U.S. is that there are still lots of locations that we can cheaply bury our waste. That means that for the immediate future this will be a regional issue, in places like New York and Oahu in Hawaii that don't have local access to landfill space that can take their entire volume of garbage. In these locations mandatory recycling laws could go a long way toward solving their problems, and provide a road map for the rest of the U.S. Their road map, in turn, could be provided by Switzerland.