

Why is Food Waste Management an Issue?

Priscilla Hayes

Solid Waste Resource Renewal
Group

Food Waste Characteristics

- **May weigh up to 900 pounds per cubic yard**
- **Food waste averages 75% water, and may be up to 90% water**
- **Contributes to greenhouse gas production in landfill; burns inefficiently in incinerator**
- **10.1% of roughly 217 million tons of solid waste nationwide: USDA**
- **Only 2.6% of that 217 million tons is recycled: USDA figure**

Problem: I'm All Finished But Don't Look in the Garbage



Solution: Food Waste Recycling

- Recycling the carrots you did not eat will keep some archaeologist from digging them up ten or twenty years from now
- It will also avoid the decomposition which does happen in landfills, which is all anaerobic, and which is the major producer of methane, a gas with 72 times the warming capacity of carbon dioxide

Problem: Methane Emissions From Landfills

- Even the best landfills in our state cannot collect all the methane gas generated by degrading food and other organic waste in landfills.
- Landfills are the primary source of methane emissions in the U.S.
- The newest Intergovernmental Panel on Climate Change (IPCC) reports indicate that methane has a global warming potential **72** times that of carbon dioxide.

Food Waste Recycling Prevents Most NJ Methane Emissions

- Food waste and other organics recycling prevents methane production from landfills, the largest methane producers in our state
- The IPCC calculates that on a 20 year time horizon, shortly longer than its 12 year life span, methane has 72 times the global warming potential of an equivalent amount of carbon dioxide.
- In 12 years we could make major reductions.

Solution: Food Waste Recycling

- Methane has a short lifetime—only 12 years, compared to what could be a century or more for carbon dioxide.
- If we recycle food waste and other organics, we could reduce the amounts of methane in our atmosphere significantly in just 12 years—less than a 6th of our life expectancy.
- Carbon dioxide will most likely live on long after we are gone.



Problem: New Jersey's Lagging Recycling Rate

- After more than 20 years, we are still only recycling 35.9 % of our Municipal Solid Waste (MSW), which is the waste our homes and businesses and schools generate.
- Our goal was 50%.
- Even adding in the heavy stuff like construction waste, we only recycle 54.6 % of total solid waste--out of a goal of 60%.

Solution: Food Waste Recycling



- New Jersey DEP estimates food waste to be about 15 % of all MSW. Another large organic category, “Other Paper,” is about 18%. Recycling these would definitely put us **over** the 50% rate.
- On the residential side, the NYC Dept. of Sanitation study showed that even if you recycled every scrap of recyclable paper and every recyclable bottle or can, you could only achieve 36% recycling. Food waste was found to be 18% of the entire waste stream, and the largest single segment. Again, food waste could put the recycling rate over 50%.

Typical Statistics for Food Residual Generators (New Jersey)

Generator Type	<u>Lbs. / Meal</u>	<u>Tons / Month</u>
Supermarkets	n/a	5 to 45
Hotels	1.00 to 1.50	10 to 30
Catering Halls	1.00 to 1.50	8 to 30
Institutions	0.75 to 1.00	5 to 30
Restaurants	0.50 to 1.50	4 to 20
Hospitals	0.50 to 1.00	8 to 14
Nursing Homes	0.75 to 1.00	3 to 9
Corporate Offices	0.50 to 0.75	3 to 8

Source: EnviroFeed of New Jersey Field Research

Princeton Restaurant Kitchen Waste

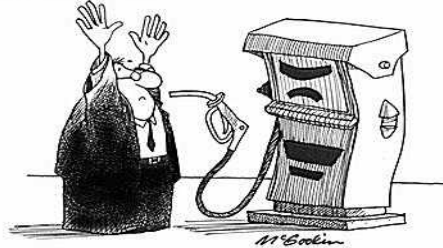
- About .63 pounds per person per meal ends up as food waste
- Of the kitchen waste, 22% was food waste, 23% was cardboard, and 46% was glass bottles/cans (from the bar).
- So if you recycled just three categories, food waste, cardboard and cans/bottles, you could attain a 91% recycling rate.
- Small amounts of paper (recyclable) and plastic (recyclable/film) made up the rest
- Large amounts of clean film can be recycled

Other Restaurant Figures

- Los Angeles found that 75 to 80% of a restaurant's waste was food waste and things like food soiled paper which could be recycled.
- Mohegan Sun's recycled food waste is about 14% of its total waste; Mohegan Sun's waste comes from the hotel and casino as well as the restaurant.
- For restaurants, food waste recycling offers the opportunity to send the heaviest and wettest and most odorous parts of the waste stream to options which will be cheaper than disposal

Problem: Increasing Costs of Oil and Other Fossil Fuels are Driving Prices Up

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- Oil and natural gas are used to make vehicle fuel and fertilizers, and the prices will keep going up.
- Nitrogen inputs from natural gas/oil are the largest contributors to the energy usage and greenhouse gas production from some agricultural products, especially meat.
- Food prices and those of other consumer goods are increasing because of increasing transportation costs and the use of corn and other products to make alternative fuels.
- There is serious concern that people will go hungry.

Solution: Food Waste Recycling



- New Jersey and the region can attract expecting facilities which will manufacture fuel for vehicles or power, or manufacture fertilizers and other soil products.
- The prices for these products will not be dependent on rising prices of fossil fuels.
- Maybe we can even use these products to boost production of food locally, and make some of this food available to our needy people.
- Farmers Against Hunger is one such organization.
- Farms are also one area where food waste and organic waste can be transformed into energy and soil enriching products.

Problem: Loss of Jobs and Local Manufacturing to Other Places

- Many things once manufactured in New Jersey and the region are being made abroad or in other areas of the country where labor and other costs are cheaper.
- Jobs are moving with the manufacturing capacity.



Solution: Food Waste Recycling

-  Recycling facilities will bring local capital, which can circulate in our local economy.
-  Recycling facilities will bring new “green” jobs, at all levels of skill and income.

Additional Benefits and Possibilities

- Lower cost for handling the heaviest and wettest wastes: organics.
- Control future costs by creating long-term contracts to buy back fuel/energy and/or soil amendments at controlled prices.
- Minimize risk of employee injury by adopting hauling system that minimizes lifting
- Work with government / business / institutional partners to:
 - Take advantage of the cost benefits of food waste recycling
 - Be in control of scheduling and budgeting to be ahead of any future regulatory requirements

Rutgers Study for NJBPU

1. Board of Public Utilities asked Rutgers to quantify biomass, both waste biomass and crops, which could be used for producing fuel/energy. This will allow biomass to be a factor in an energy master plan, as renewable energy.
2. New Jersey produces an estimated 8.2 million dry tons (MDT) of biomass annually.
3. Almost 75% of New Jersey's biomass resource is produced directly by the state's population, much of it in the form of municipal solid waste
4. Agriculture and forestry management are also important potential sources of biomass, and account for the majority of the remaining amount.
5. A screening process was developed to estimate the amount of practically recoverable biomass. The results of this process indicate that approximately 5.4MDT (~65%) of New Jersey's biomass could ultimately be available to produce energy, in the form of power or transportation fuels.
6. New Jersey's estimated practically recoverable biomass resource of 5.4 MDT could deliver up to 1,124 MW of power, (capable of producing ~9% of New Jersey's electricity consumption) or 311 million gallons of gasoline equivalent (~5% of transportation fuel consumed).

AVAILABLE OUTLETS FOR NON-RESIDENTIAL FOOD WASTE RECYCLING IN NEW JERSEY AND NEW YORK

- **Source Reduction: Reduced Portion Sizes, Less Waste At Source**
- **Human Use: Food Banks, Farmers Against Hunger, Etc.**
- **Animal Use: “Fresh” Feeding, Pelletizing, Extrusion**
- **Composting: Both Food Waste And Manure**
- **Fuel Component**
- **Other Developing Technologies**

How to Pick an Option

- Closer options will reduce your hauling charges
- Figure out what you want to get rid of—food waste, waxy cardboard, other organic wastes—and check with the recycler to see what they accept
- Look for help with figuring out how much waste you have and what your savings should be and for training

Five Steps for Generators

- Waste Audit, including many of the steps on the handout
- Wasteshed audit
- Purchasing audit
- Sustainability calculations and PR
- Planning for your option to arrive

Waste Audit

- Waste audit involves quantifying your waste and determining what missed recycling opportunities there are—when you look for food waste, you will find other things to recycle better
- But involves thinking about bins—how much space, what reconfiguration is needed, where can collection amount and frequency be reduced, where can costs be reduced
- Also involves thinking about systems and training
- More discussion will come in the separate segment at the end of this webinar.

Two Ways of Creating a Wasteshed

- Create a compact dense route, limiting hauling time and costs passed on to you
- Create recycling sheds on the model of Northampton and Princeton

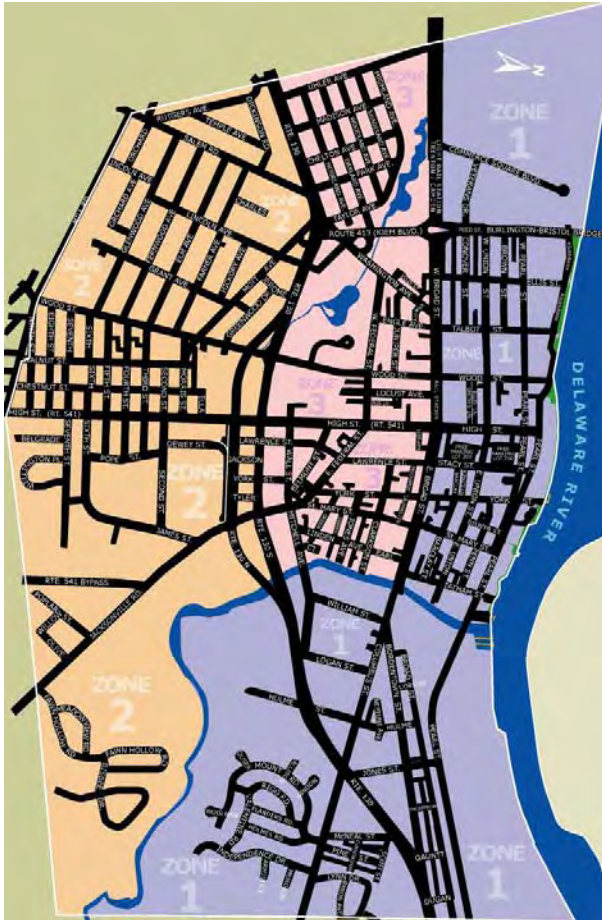
Smallest Wastesheds



Working Together With Neighbors

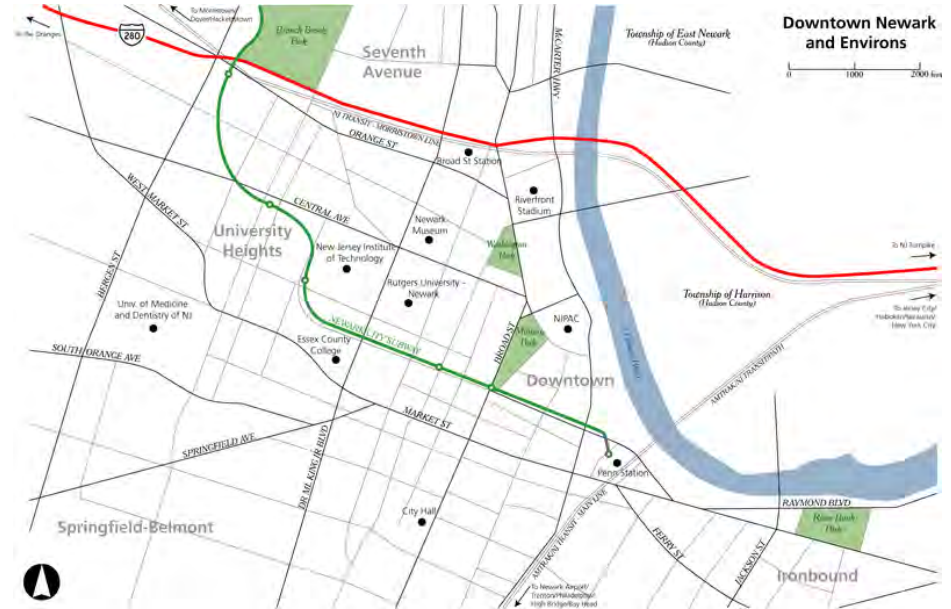
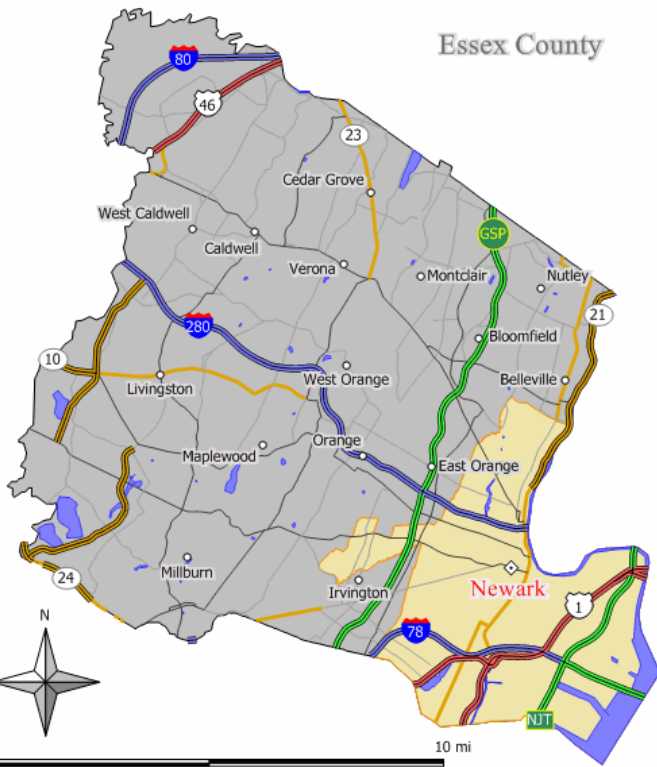


A Municipal District as a Wasteshed



- Waste zones are very familiar to us in a residential context—it is cheaper and more efficient to drive house to house
- Food waste is heavy and putrescible—you don't want to transport it far. Also, it needs to be picked up at least 2x per week.
- Our wasteshed concept is an opportunity for municipalities to recreate these efficiencies for food waste recycling
- We are working with several municipalities in to assist in creating wastesheds

Possible Wasteshed Sizes: County, Municipal, Neighborhood



Purchasing Audit

- Food waste recycling programs across the country are more successful when compostable/biodegradable products are incorporated
- Compostable liners/bags save labor costs of washing, also costs of rejected loads
- Compostable tableware makes sorting easier
- Cooperative purchasing makes all these cost less

Sustainability Calculations and PR

- Food waste and other organics recycling prevents methane production
- Saves greenhouse gases in state; much other recycling saves greenhouse gases elsewhere
- WARM model will help you start preparing for when all greenhouse gas production will be more scrutinized
- WasteWise gives you free PR materials; can help you publicize your sustainability

Planning for Your Option to Arrive

- Some on site options can be considered right now; may be labor intensive or not use full resource value of the material
- Off site options—Premier, depending on proximity or creation of a compact route
- Converted Organics in mid 2008
- Pick an option to encourage
- Make some sort of commitment

Why should we care?

- Climate change ... demonstrates our global interdependence and our surprising fragility. Nature teaches us that life is structured by relationships and consists of never-ending change. Beneath our awareness, perhaps, these lessons seep into popular consciousness, telling us that our acts do matter. All of them.
 - Frances Moore Lappe, *Utne Reader*, March-April 2006, No. 134, p. 69.

Priscilla E. Hayes, Esq., Program Coordinator

Solid Waste Resource Renewal Group

Turning Waste Into New Products Through Innovation and Policy Change

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c/o Department of Agricultural, Food and Resource Economics

Rutgers New Jersey Agricultural Experiment Station

Rutgers, the State University of New Jersey

55 Dudley Road

New Brunswick, NJ 08901-8520

732-932-9155, ext. 233

Fax: 732-932-8887

hayes@aesop.rutgers.edu

Please visit our websites:

<http://swrrg.rutgers.edu>

<http://enviropurchasing.rutgers.edu>