



Environmental Benefits of Recycling and Composting

Excerpts from "Recycling, Composting and Greenhouse Gas Reductions in Minnesota," by Eureka Recycling, 2008. Available at www.eurekarecycling.org

COMPOST

Make dirt, not waste.

Introduction

In 2006 in Minnesota, 3.6 million tons of municipal solid waste (the trash we generate every day) were buried in landfills or burned in incinerators, while 2.5 million tons of our discards were captured for recycling. That means Minnesota has achieved a 41% recycling rate, an impressive rate that is matched by only a handful of states and just 20 years ago was thought impossible. Our recycling efforts prevent nearly half of the products and packaging we use from being wasted. However, most of what is still being wasted every day in Minnesota can be recycled and composted with just a little improvement to our current systems.

What Are We Wasting?

- Over 50% of what we still throw in the garbage can be recycled through curbside and other types of collection.
- An additional 25% of our trash is comprised of food wastes and other materials that could be composted.
- The little bit of garbage that remains after we recycle and compost can be thoughtfully addressed through a zero-waste approach (which includes extended producer responsibility) to prevent waste altogether.

In other words, *there really is no waste.*



Waste and Greenhouse Gas Emission

Accounting for the connections between waste in many sectors, including mining, deforestation, industrial agriculture, manufacturing, transportation, and electricity, our wasting actually represents 36.7% of all U.S. greenhouse gas. In Minnesota, Recycling and composting all of our municipal solid waste would have the same impact as:

- Shutting down 20% of our state's coal power plants, or
- Reducing every car usage in the state by two-thirds, or
- Using 75% less electricity in Minnesota homes.

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Climate Change Impacts of Waste

Waste in incinerators and landfills create greenhouse gas emissions.

When trash is burned, incinerators emit carbon dioxide (CO_2) and nitrous oxide (N_2O), a greenhouse gas 310 times more powerful in atmospheric warming than carbon dioxide. On average in the U.S., incinerators emit more carbon dioxide per megawatt-hour than coal-fired, natural gas-fired, or oil-fired power plants.

Many people believe that throwing food scraps and paper products into a landfill is harmless because they biodegrade.

However, most people are surprised to learn that when these materials break down in a landfill, they become powerful contributors to greenhouse gas emissions.

Compostable materials such as food waste and paper decompose anaerobically (without oxygen) in a landfill, producing methane (CH_4) which has 23-71 times greater heat trapping capabilities than carbon dioxide. Landfills are the single largest direct human source of methane.



But what about creating energy from waste?

Methane from landfills and the BTUs generated from incinerators are sometimes captured and converted into energy.



- However, energy from waste is inefficient and does not eliminate the pollution created by landfills and incinerators, including the emissions of greenhouse gases.
- Even when a landfill is capturing some methane gas for energy production, many studies have shown that most of the methane gas is released before landfills even begin to capture it.
- Regardless of how much methane is captured from a landfill or how many BTUs are generated from an incinerator, waste does not generate nearly as much energy as recycling conserves. Overall, recycling produces a net reduction in energy 3.6 times larger than the amount of energy generated by incineration and 11 times larger than the energy generated by methane recovery at a landfill.

A Better Choice: Climate Change Benefits of Recycling & Composting

Composting is an effective way to reduce greenhouse gases.

By composting, the generation of greenhouse gases, particularly methane, is avoided. Backyard composting and well-run industrial compost operations will produce negligible greenhouse gas emissions (mostly from the operation of tractors and other equipment).

Composting also has “upstream” benefits, which further conserve our resources and reduce greenhouse gas emissions.

When this compost is used on fields, it displaces synthetic chemical fertilizers. Fertilizer production requires intensive fossil fuel energy and seriously impacts human and environmental health.

By using compost:

- The greenhouse gas emissions related to fertilizer production are avoided.
- There is significant reduction in the use of pesticides (avoiding emissions associated with their production).
- Improves health and workability of soils, resulting in less fuel consumption to till the soil.
- Helps soils hold or sequester carbon dioxide.



In addition to emission reductions, compost replenishes and revitalizes exhausted farm soils by replacing trace minerals and organic material, reduces soil erosion and helps prevent storm water runoff.

Recycling is an effective way to reduce greenhouse gases.

When we recycle, we avoid the greenhouse gas emissions from landfills and incinerators. We also reduce the need to extract new resources from the earth and replace logging, drilling, and mining of virgin materials with recycled materials that we no longer want. This greatly reduces the energy it takes to process and manufacture new goods.

Every product we use has embedded energy, which is the energy it took to extract, transport, and transform the materials needed to produce the product. Every single item we recycle results in significant energy savings because recycling takes advantage of this embedded energy. Virtually every recycled material uses less energy than its virgin component.



- Making a new aluminum can from old cans results in 90-97% energy savings compared to making a new can from bauxite and other raw materials.
- It takes 30% less energy to make a glass bottle from recycled glass than from silica, sand, soda ash, limestone, and feldspar.
- Recycling paper results in a 44% energy savings

Why measure waste reduction in terms of climate change?

Efforts are needed across all the sectors of our lives to reduce greenhouse gas emission.

- While many strategies require large purchases (i.e. new heaters, coolers, cars, etc.) **recycling and composting require little or no investment** and in most cases, some systems are already in place. What are needed are requirements and incentives for manufacturers to use recycled content and to design for recycling and composting.
- While actions such as shutting down 20% of our coal power plants, or reducing our car usage by two-thirds, or using 75% less electricity in our own homes may seem daunting, **recycling and composting are accessible and easy actions** we can do right now, every day, to make a difference.
- Translating recycling and composting into climate change impact reminds us that **recycling and composting are a powerful and significant part of the solution.** They are not trivial.
- It is also important to calculate the carbon impact of waste reduction as the global effort continues to enact a carbon "cap and trade" system. This system would create financial incentives to reduce green gas emissions, incentives that could benefit new recycling and composting efforts to expand our current infrastructure. We must weigh this against any further subsidies for landfilling and incineration as supposed "renewable" technologies.

Can we really recycle and compost this much?

For over 150 years, our worldwide manufacturing, distribution, and disposal systems have developed under the illusion that our natural resources are manageable and expendable and that any amount of pollution can be absorbed or diluted by the land and water. Today, we know this is not true. We have the technology, and we can have the foresight to cost-effectively adapt this old system of using and disposing to a new system of conserving, reusing, recycling, and composting our resources.

By adopting zero waste as our goal right now, we can change our economic measurements to support an abundant economy that rewards creativity, efficiency, community, healthy families and environmental protection. **Not only will our environment and our health improve, but so will our economy.**

Stop Trashing the Climate, a report released in June 2008, makes a case for a zero waste approach as one of the "fastest, cheapest, and most effective strategies for mitigating climate change in the short and long-term." **Several communities are putting these zero waste strategies in place.** Recognizing the need to provide all communities clear and concise examples for crafting zero-waste policies and strategic plans to achieve zero waste, Eureka Recycling compiled a Zero Waste Ordinance Resource Guide with nearly 70 examples from communities that are leading the way.

To learn more, contact Eureka Recycling. Visit www.eurekarecycling.org for the full report "Recycling, Composting and Greenhouse Gas Reductions in Minnesota."