

Municipal Waste Futures

Bureau of Waste Management
July 11, 2006

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Introduction

Reuse, reduce, reclaim and recycle have long been a driving force behind Pennsylvania's waste management programs. Since the mid-1980s, Pennsylvania has successfully reduced the amount of hazardous waste requiring commercial treatment or disposal by 62% from 817,630 to 313,677 tons per year. The Residual Waste Redux Project, initiated in 2004, is well on its way to redirecting large quantities of non-hazardous industrial / residual waste from land disposal to beneficial reuse.

This initiative focuses on the third major waste stream, which perhaps will be Pennsylvania's greatest challenge yet: municipal waste. Where the hazardous waste universe is comprised of approximately 1,000 generators and residual waste of 2,100, municipal waste is generated by 12 million Pennsylvania citizens, the government and upwards of thousands of commercial businesses across the Commonwealth. Further, nearly half of the waste disposed in Pennsylvania is from surrounding states. Reducing municipal waste generation and disposal in today's "throwaway" society (in which nothing truly goes "away") will take enormous effort.

But consider these numbers: between 1989 and 2004, the amount of solid wastes disposed in Pennsylvania's landfills has doubled from less than 13 million tons to 26 million tons.

Although this trend has begun to level off in terms of the total amount of wastes disposed, per capita generation rates continue to outstrip the amount of wastes recycled. This questionable environmental stewardship could leave future generations with a legacy of contamination, squandered resources and permanently lost open space.

Background

Twenty years ago, Pennsylvania faced a landfill crisis of immense proportions caused by failing, unlined landfills, rapidly diminishing disposal capacity, rising disposal costs, and an inadequate planning process. The late Governor Casey directed the agency to address the problem.

The resolution was an aggressive four-prong approach: mandatory recycling, county planning, municipal grants and incentives, and stringent municipal waste landfill standards. The program was successful in many ways. Municipalities initiated waste management plans and recycling programs, the recycling rate went from 1% to over 30%, recycling markets and businesses began to emerge, landfill capacity grew significantly, and regulations were strengthened to ensure landfills were designed and permitted to be more protective of the environment and more sensitive to impacts and effects on local municipalities.

But the success of those efforts yielded unintended consequences, mainly due to court decisions concerning interstate commerce. Fifteen years after implementation of Act 101 and the new municipal waste regulations, Pennsylvania is the nation's largest importer of municipal waste with more than a decade of capacity and some of the lowest disposal rates in the country. Excess

landfill capacity and low disposal costs work against broader waste reduction and environmental goals by making disposal financially preferable to waste minimization, energy recovery, reuse and recycling.

Millions of dollars in municipal grants still sustain most municipal recycling programs. Despite Pennsylvania's status as a national leader in recycling, these grant programs mask the true cost of recycling and, to a certain extent, inhibit greater private sector participation on the collection and processing side. Also, to the detriment of Pennsylvania citizens, the waste disposal capacity made available because of Pennsylvania citizens' recycling and reuse efforts is often replaced by waste from out-of-state generators that do not have the same recycling requirements.

Waste management facilities, particularly landfill siting and permitting, continue to garner opposition from the public. The public does not recognize the need for the number of permitted waste facilities in Pennsylvania, and many believe that municipal waste landfills, while designed to minimize their impact on the environment today, may eventually fail and cause problems for the future. At the same time, citizens generate an increasing amount of waste per capita per year with no end in sight.

Fundamentally, waste disposal is fast becoming an outdated and undesirable technology. Burying valuable and recoverable resources that can be reused, recycled or converted to alternative energy is not good public policy. As Pennsylvania (and the world) move into the 21st century, our natural resources will continue to become more limited, more expensive and difficult to obtain while the demand for products, services and energy continues to grow. It is time for Pennsylvania to design a regulatory framework with incentives to use waste as a resource with value and societal benefits rather than a liability to be buried and forgotten.

We are now faced with a new type of disposal crisis: wasted resources, an overabundance of landfill capacity, status as the largest importer of out-of-state waste in the nation, and facility problems related to capacity and operation issues. These are the problems this project is designed to address.

Facts and Figures

By way of background, it may help to see the problem in numeric terms. Despite the goal set forth in Act 101 to reduce the per capita generation rate, Figure 1 illustrates a marked increase in waste generation in Pennsylvania over the past 15 years. Generation increased by 50% between 1989 and 2004 (8.8 million tons were generated in 1989 compared to 13.2 million tons in 2004), with dramatic increases occurring between 1997 and 2001. Some years saw a decrease in generation, but the overall trend has been on the rise.

- Figure 1 -

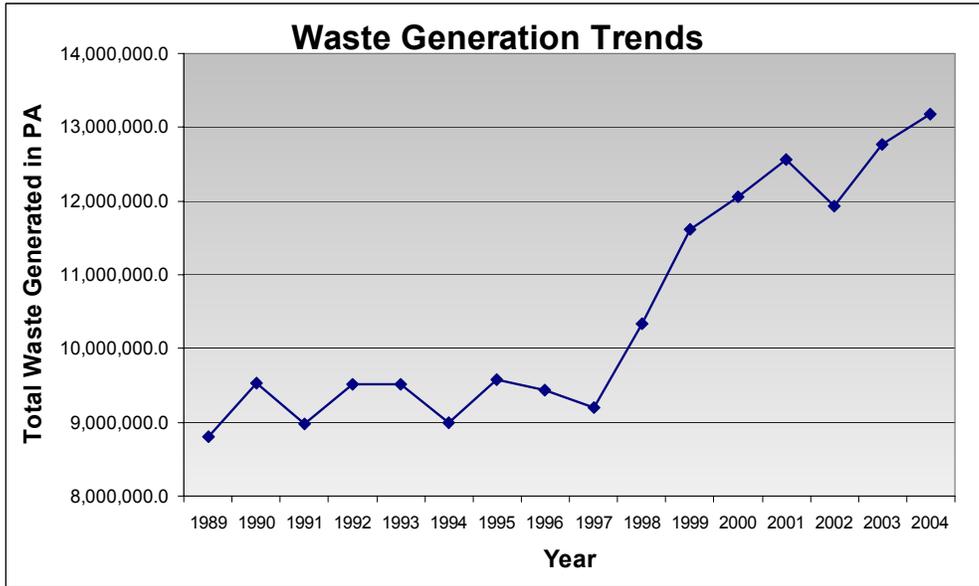


Figure 2 shows that landfill disposal increased by 107% between 1989 and 2001 from 12.9 to 26.7 million tons, with a small decrease between 2001 and 2004. This figure shows that a large fraction of the waste disposed is coming from outside Pennsylvania.

- Figure 2 -

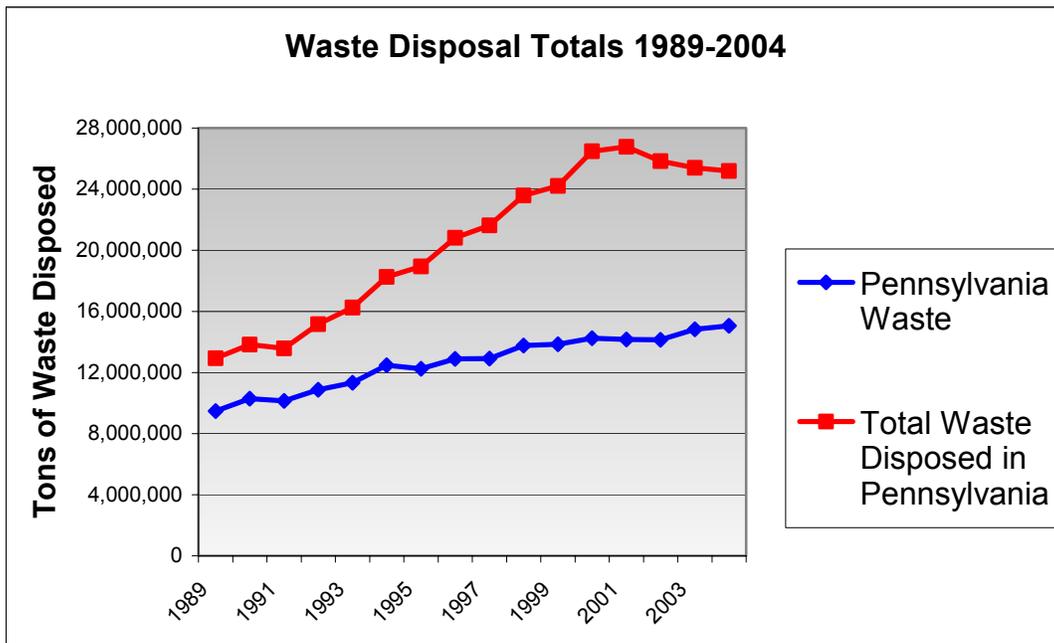
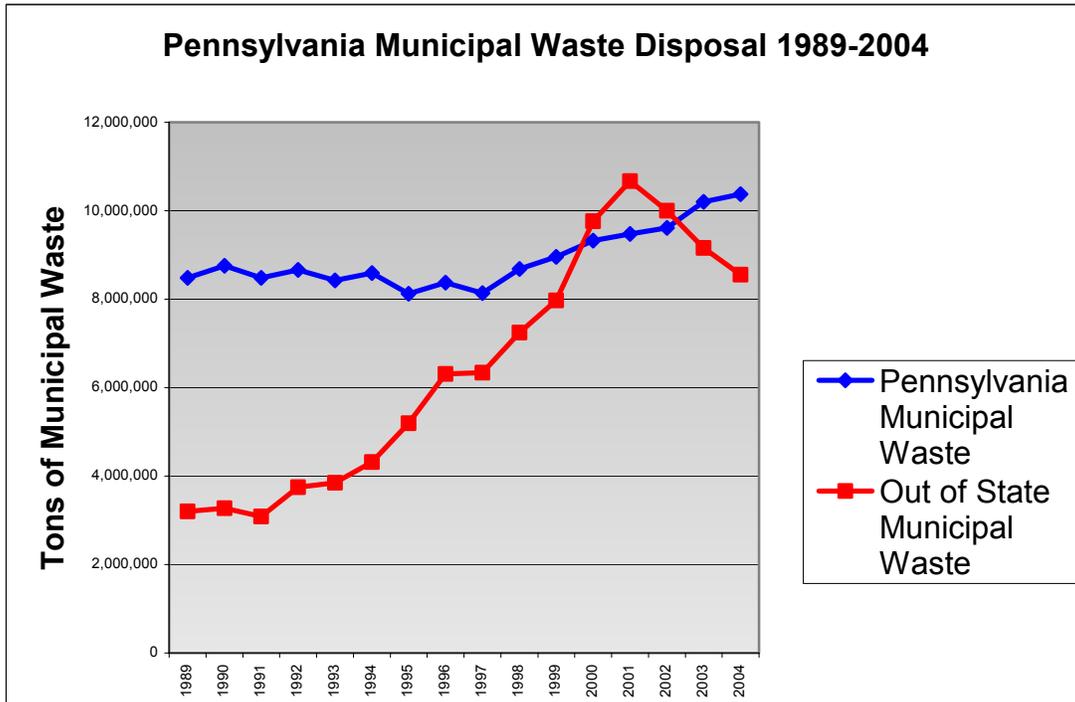


Figure 3 compares the dramatic increases in municipal waste disposal, both from an in-state and out-of-state waste perspective. The concurrent increase in Pennsylvania waste disposed and decreased out-of-state waste disposed may be due to reporting anomalies as a result of transfer station reporting errors.

- Figure 3 -



These generation and disposal rates would not be possible without a place to put the waste. The following statistics provide a snapshot of the abundant disposal capacity in Pennsylvania as of May 2006:

- 47 Number of Active Landfills
- 5 Number of Active Resource Recovery/Waste-to-Energy Facilities
- 19 Number of Pending Landfill Applications
- 4 New Applications Expected in 2006
- 13.5 years Current Disposal Capacity for PA and Out-of-State Waste

Although unlikely, if all of the pending applications for new or expanded capacity were approved and built, the projected landfill capacity for both in- and out-of-state waste would more than double from 13.5 to 27.6 years. This amount does not include the potential impact of expected new applications for 2006.

Overall Administration Priorities

As with the Residual Waste Redux Project, this initiative will use the Administration's Priorities and Agenda for DEP: *Greater Environmental and Public Health Protection Will Serve As a Driver of Economic Growth* to align and focus the tasks in this project.

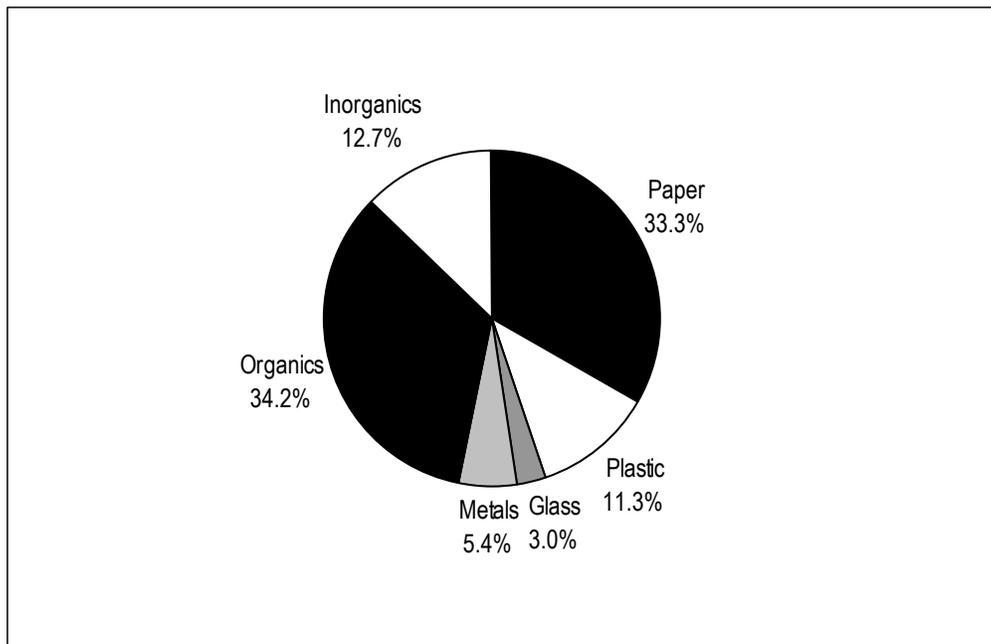
Environmental protection is too often seen as a tradeoff with economic growth rather than as an engine of efficiency, productivity, and enhanced competitiveness. To the extent this win/lose mentality persists, society will fail to take the necessary steps to protect the environment and will compromise quality of life and enhanced prosperity. To help change this dynamic, DEP will, in all of its programs:

- *Ensure continuing reductions in pollution and waste, with an ultimate objective of eliminating pollution, waste, and harmful conditions*
- *Identify and implement approaches to environmental challenges that enable new economic growth*
- *Develop beneficial reuse markets for waste materials*
- *Spur technology development and deployment, especially where technology manufacturing can be brought to Pennsylvania*
- *Increase protection of public health, public safety, mine safety, and the environment through more effective enforcement, better program and interagency coordination, and the development and implementation of more effective programs*
- *Provide greater protection of biodiversity and ecosystems*
- *Reduce overall costs through the use of emissions trading, pollution prevention, streamlined permitting and reporting procedures, and other innovations*
- *Support and encourage economic development that protects the environment and creates jobs*
- *Ensure greater engagement of citizens and other stakeholders in carrying out its priorities, including through effective environmental education initiatives.*

Project Goals

In 2003, DEP contracted with R.W. Beck to undertake a municipal waste composition study for the Commonwealth to help guide future decision-making. Using this data, Figure 4 shows the breakdown of disposed municipal solid waste (MSW) by major material group. Organics and paper make up the largest fractions of the waste stream, followed by inorganics, plastic, metals and glass. To make a significant impact on the total amount of MSW disposed, it pays to focus on organics (e.g., food and yard wastes), paper (including high-quality office paper and junk mail) and paperboard (e.g., corrugated cardboard) since these items make up 67.5% of waste disposed.

- Figure 4 -



Metrics

The Bureau believes that with an aggressive program targeted towards reducing organics, paper, and paperboard by 25% in 2008 and 50% by 2012, it is possible to reduce the amount of Pennsylvania MSW being disposed in landfills by 31% overall by 2012. If those same criteria are applied to out-of-state waste, the reductions are even more dramatic as shown in the following table.

Pennsylvania Material	2003	2008	2012	Total Reduction
Organics (tons disposed)	3,204,208	2,403,000	1,602,000	50%
Paper and Paperboard (tons disposed)	3,117,182	2,338,000	1,559,000	50%
Per Capita Pennsylvania MSW disposed (pounds/person/day)	4.62	3.90	3.19	31%
Total MSW Disposed in PA (million tons) *	19.4	16.1	12.9	34%

* Includes out-of-state waste

Project Strategy

The strategy to move this project forward is divided into two phases. Phase I includes tasks that can be initiated or accomplished within six months. Phase II consists of ideas that are longer-term, primarily because they require regulatory or legislative changes. Both phases include ideas that may benefit from stakeholder input. To that end, the Department will charge the Solid Waste Advisory Committee (SWAC), with its newly added recycling focus, to assist the Department on this initiative. Using SWAC as the core, subcommittees may be formed and ad hoc members added to provide additional perspectives and balance.

Phase I: Things We Can Do or Start Now

Partner with Government:

- ▶ Prioritize the upcoming round of 902 grant funding to promote incentive-based volume limitations and new and innovative recycling programs.
- ▶ Enforce the required curbside collection of yard waste in mandated communities and encourage it in others when no home composting options are available or desirable.
- ▶ Work with Pennsylvania State Association of Township Supervisors, Pennsylvania State Association of Boroughs, and the Pennsylvania League of Cities to train their members in financially sustainable programs, litter control ordinances and commercial recycling.
- ▶ Provide support to local government in the enforcement of local recycling ordinances for businesses and institutions.
- ▶ Promote and fund difficult-to-manage municipal waste collection programs, including household hazardous waste, electronic discards, mercury waste, and tires.
- ▶ Support amendments to House Bill 1902 to extend the recycling fee and require municipalities to use Section 904 reimbursement grants to support recycling and litter control programs.
- ▶ Work with EPA and the Region 3 states to enhance public commitment to recycling, increase public access to recycling opportunities, and engage those stakeholders who provide the greatest opportunities for success.

Partner with Business:

- ▶ Create a streamlined Research and Development general permit that encourages the development of emerging waste reduction technologies, particularly for organics and paper wastes.
- ▶ Partner with large retailers and grocery chains (Wal-Mart, Giant Foods, Kellogg's and Lowe's) to force packaging reduction and more environmentally acceptable alternatives such as charging for plastic bags, elimination of over-packaging, providing opportunities for difficult-to-recycle items (batteries, plastics, bags), organics composting, etc. Reward with positive press and awards.
- ▶ Work with engineering and architectural companies/societies, Builders Code groups, to incorporate recycling separation facilities in new and renovated housing, school and office designs.
- ▶ Develop promotional materials to encourage proper deconstruction and recycling of building materials.
- ▶ Draft policies, regulations and/or legislation for a phased, comprehensive landfill ban to target those materials that are either high volume (e.g., office paper and organics) or contain high levels of contaminants (e.g., tritium and mercury sources) for discussion with stakeholder groups.

Phase II: Need Stakeholder Input or Regulatory/Legislative Authority to Implement

What follows is a “brainstormed” list of ideas that would benefit from additional evaluation and input. In some cases, they need additional regulatory or legislative authority to pursue.

- ▶ Investigate opportunities to recover recyclable materials through the separation and processing of recyclables by haulers, landfills and other waste facilities.
- ▶ Reduce permitting requirements, simplify the permitting process or give priority for recycle, reuse or energy resource development projects.
- ▶ Require more stringent design standards to address current operating problems at municipal waste landfills.
- ▶ Require landfills, through redesign of bonding worksheets, to establish Catastrophic Funds for use in the event of failure.
- ▶ Deduct volumes recycled from average daily volume (ADV) to provide an incentive to landfills and other waste facilities.
- ▶ Make the issuance/award of DEP permits and grants dependent upon successful compliance with recycling ordinances.
- ▶ Highlight environmentally preferable products and companies whose products minimize packaging through the Governor's Waste Minimization awards program.
- ▶ Infuse additional funds into the Act 198 grant program to support new and innovative projects that result in recycling or energy recovery from waste streams.
- ▶ Utilize the Recycling Markets Center (RMC) to develop markets for hard-to-recycle materials.
- ▶ Require and enforce mandatory recycling for all business/commercial/recreational facilities.

- ▶ Develop legislation to require all residents and businesses to pay for collection or disposal services.
- ▶ Ensure all Commonwealth residents are within 5 miles of a recycling option (curbside or drop-off).
- ▶ Create tax credits for manufacturers substituting recycled content for virgin materials.
- ▶ Increase the types of materials eligible for 904 performance grant funding.
- ▶ Revisit the concept of public-private partnership and determine whether legislative changes are necessary to reinstate.
- ▶ Empower local governments to more forcefully address litter and illegal dumping.
- ▶ Educate local District Justices on the true costs of open dumping and littering to promote higher fines and penalties for violators.
- ▶ Beautify or redevelop remediated properties to ensure they don't become "second-time" dumps.
- ▶ Consider the landfilling of wastes that are recoverable as a "harm" in the H/B analysis.
- ▶ Develop policies or municipal waste regulatory amendments that create opportunities to:
 - Require on-site yard waste and other waste stream processing at receiving facilities.
 - Require dedicated facilities for the processing and disposal of construction and demolition (C&D) waste.
 - Incorporate sustainable landfill technologies.
 - Increase isolation distances.
 - Require the separation or processing of wastes into reusable material streams at transfer stations – including out-of-state waste.
 - Rescind the money-back guarantee for landfills and allow it for permitting of recycling and recovery type facilities.
 - Enforce permit term limitations for waste facilities to ten years.

Next Steps

To facilitate an open and constructive dialogue on the ideas and concepts presented here, as well as to generate more ideas and options for creative and innovative municipal waste management, DEP will be placing Municipal Waste Futures on the agenda of each Solid Waste Advisory Committee (SWAC) meeting for consideration and discussion over the next year. In addition to the existing members of SWAC, DEP will also be appointing ad hoc members from the public and private sectors to assist in these deliberations. Innovation and creativity are the central themes of this effort, which will require a broad range of participation from both the private and public sectors.

The management of waste as a resource that can be used to support and strengthen our economy and diminish our reliance on external energy and raw materials is not a new concept. Recycling, reuse and waste-to-energy projects are becoming more of a reality every day and an important part of our economy. Many of the ideas presented in Municipal Waste Futures may indeed be complex; however, alternatives to the existing approach to waste management deserve careful and thoughtful consideration. Clearly, Municipal Waste Futures is an ambitious endeavor but an important first step as the Commonwealth sets the stage for the management of this resource for the coming decades.