

Widener University Commonwealth Law School

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2012

Next Generation Recycling and Waste Reduction: Building on the Success of Pennsylvania's 1988 Legislation

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NEXT GENERATION RECYCLING AND WASTE
REDUCTION: BUILDING ON THE SUCCESS OF
PENNSYLVANIA'S 1988 LEGISLATION

John Dernbach and the
Widener University School of Law Seminar on Climate Change*

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I. INTRODUCTION

Elementary school was the place to be in the 1980s and 1990s—not because of the big hair, leg warmers, or Schoolhouse Rock, but because elementary school students were at the forefront of the recycling movement. With the mantra "reduce, reuse, recycle," elementary school students fearlessly led the charge on recycling.¹ The effect that Pennsylvania's Municipal Waste Planning, Recycling, and Waste Reduction Act (Act 101)² had on school age children cannot be overstated. Well-funded education programs taught this generation that recycling and waste reduction is a way of life, rather than an obligation. And this generation has an expectation that this way of life will continue and grow.

It has been over twenty years—a full generation by many accounts—since September 26, 1990, when the mandatory recycling provisions of Act 101 went into effect for large municipalities.³ When this Act was adopted, the Commonwealth

¹ See Mark S. Singel, *State Recycling Program off to Good Start*, THE PATRIOT-NEWS, Nov. 9, 1989, at A17 (explaining the success at a Pennsylvania elementary school visited by the governor).

² Municipal Waste Planning, Recycling and Waste Reduction Act, No. 1988-101, 1988 Pa. Laws 556 (codified at 53 PA. STAT. ANN. §§ 4000.101-.1904 (West 2011)).

³ Governor Robert P. Casey signed the Act into law on July 28, 1988. *Id.* Much of the Act took effect in 60 days, on September 26, 1988. See tit. 53, § 4000.1904(2). The mandatory recycling provisions of the Act for larger municipalities—those with a population of 10,000 or more—took effect two years later, on September 26, 1990. See *id.* § 4000.1501(a). For smaller municipalities—those additional municipalities with a population of at least

became the largest state in the United States to require recycling.⁴ In the spring of 2010, students in a seminar at Widener University School of Law in Harrisburg—including several who learned about recycling and waste reduction in elementary school because of that Act—participated in a study of how well that Act has worked, and what can be done to improve its effectiveness. They did so as part of a seminar on climate change, an issue that in 1988 was only just beginning to get public attention. This article is the result of that seminar.

This article is for the next generation of Pennsylvanians who will learn about, and participate in, recycling and waste reduction because of Act 101. It is intended to strengthen the effectiveness of that Act and raise "next generation" reasons to care about recycling and waste reduction—such as sustainability and climate change—that were not in clear focus when the Act was adopted in 1988. The Act was adopted at a time when landfill space was scarce,⁵ when landfills and resource recovery facilities caused ground water contamination and air pollution,⁶ and when recycling and waste reduction were considered important in part because they conserved landfill space and polluted less.⁷ The legislature thus found:

5,000 and a population density of more than 300 per square mile—the Act took effect on September 26, 1991. *See id.* § 4000.1501(b).

⁴ *Pennsylvania's Recycling Page*, PA. DEP'T OF ENVTL. PROT., <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/RECYCLE/Recycle.htm> (last visited Jan. 26, 2012).

⁵ *See* tit. 53, § 4000.102(a)(2)-(4) (explaining the state's "inadequate and rapidly diminishing" disposal capacity and the need to "replace existing municipal waste processing and disposal facilities over the next decade").

⁶ *See id.* § 4000.102(a)(21) (legislative finding that landfills were harmful to public health and safety); *see also* ENVTL. PROT. AGENCY, AIR EMISSIONS FROM MUNICIPAL SOLID WASTE LANDFILLS—BACKGROUND INFORMATION FOR PROPOSED STANDARDS AND GUIDELINES 1-1 (1991); *Sources of Groundwater Contamination*, GROUNDWATER FOUNDATION, <http://www.groundwater.org/gi/sourcesofgwcontam.html> (last visited Jan. 18, 2012).

⁷ *See* Bureau of Waste Mgmt., *Municipal Waste Futures*, PA. DEP'T ENVTL. PROT., 2 (July 11, 2006), <http://www.dep.state.pa.us/dep/subject/advcoun/solidwst/2006/9-14-06%20meeting/Waste%20Futures%20Report.pdf> [hereinafter *Municipal Waste Futures*] (explaining that recycling initiatives were part of the Pennsylvania government's approach to increase landfill space and

Removing certain materials from the municipal waste[]stream will decrease the flow of solid waste to municipal waste landfills, aid in the conservation and recovery of valuable resources, conserve energy in the manufacturing process, increase the supply of reusable materials for the Commonwealth's industries, and . . . reduce substantially the required capacity of proposed resource recovery facilities and contribute to their overall combustion efficiency, thereby resulting in significant cost savings in the planning, construction and operation of these facilities.⁸

In some respects, the world is different now. Waste disposal capacity is not nearly as scarce, and the landfills and resource recovery facilities now in operation present far fewer environmental risks than those operating more than two decades ago.⁹ But it is still true that diversion of materials from the waste stream will "aid in the conservation and recovery of valuable resources, conserve energy in the manufacturing process, [and] increase the supply of reusable materials for the Commonwealth's industries."¹⁰ In fact, the combination of energy and material conservation with economic development and job creation continues to be among the Act's central achievements.¹¹ Policies that combine environmental protection, economic development, social well-being, and security—like those advanced by Act 101—are now described as policies that further sustainable development, or sustainability.¹²

landfill safety); *see also* Singel, *supra* note 1 (explaining that the Act aimed at reducing waste in order to target decreasing landfill space).

⁸ tit. 53, § 4000.102(a)(13).

⁹ *See Municipal Waste Futures*, *supra* note 7 (discussing the positive impact of Act 101 on landfill space and safety in Pennsylvania).

¹⁰ tit. 53, § 4000.102(a)(13).

¹¹ *See id.* § 4000.102(b)(1)-(14) (demonstrating these goals were among the original purpose of the Act).

¹² The Environmental Protection Agency (EPA) describes the principle behind sustainability in the following manner: "Everything that we need for our survival and well-being depends, either directly or indirectly, on our natural environment. Sustainability creates and maintains the conditions under which humans and nature can exist in productive harmony, that permit fulfilling the

Energy conservation—one of the key goals of Act 101—is also being treated with greater seriousness in recent years. Reasons include a desire to move the economy in a greener and more job-creating direction;¹³ global economic competition;¹⁴ high and fluctuating oil prices;¹⁵ growing global demand for energy resources;¹⁶ the environmental effects of fossil fuels, an old issue made new by the BP Gulf of Mexico oil disaster;¹⁷ and, of greatest significance, climate change.¹⁸ Increasing energy conservation through greater recycling and waste reduction can help address all of these issues and, in particular, can help reduce greenhouse gas emissions.¹⁹

While this article is for the next generation of Pennsylvanians and is based on reasons that are both similar to and somewhat

social, economic and other requirements of present and future generations." *What Is Sustainability?*, ENVTL. PROT. AGENCY, <http://www.epa.gov/sustainability/basicinfo.htm#sustainability> (last visited Jan. 15, 2012). The goals of sustainability involve encouraging social and economic development while protecting natural resources and the environment. John C. Dernbach, *Sustainable Development As a Framework for National Governance*, 49 CASE W. RES. L. REV. 1, 7 (1998).

¹³ See *The Pennsylvania Green Jobs Survey Report*, PA. DEP'T LABOR & INDUS., ii (2010), http://www.portal.state.pa.us/portal/server.pt/community/pa_center_for_green_careers/18911 (follow Pennsylvania Green Jobs Survey Report hyperlink).

¹⁴ See Jennifer Blanke et. al, *The Long-Term View: Developing a Framework for Assessing Sustainable Competitiveness*, in THE GLOBAL COMPETITIVENESS REP. 2011-2012 53, 55 (Klaus Schwab ed., 2011), available at http://www3.weforum.org/docs/WEF_GCR_Report_2011-12.pdf.

¹⁵ See James L. Williams, *Oil Price History and Analysis*, WTRG ECONS., <http://www.wtrg.com/prices.htm> (last visited Feb. 1, 2012).

¹⁶ U.S. ENERGY INFO. ADMIN., INTERNATIONAL ENERGY OUTLOOK 2011 1-7 (2011), available at [http://205.254.135.7/forecasts/ieo/pdf/0484\(2011\)_at.pdf](http://205.254.135.7/forecasts/ieo/pdf/0484(2011)_at.pdf) ("[W]orld marketed energy consumption [could] grow[] by 53 percent from 2008 to 2035.").

¹⁷ See Rebecca M. Bratspies, *A Regulatory Wake-up Call: Lessons from BP's Deepwater Horizon Disaster*, 5 GOLDEN GATE U. ENVTL. L. REV. 7, 7-9 (2011) (describing the impact of the BP oil spill disaster).

¹⁸ *Pennsylvania Final Climate Change Action Plan*, PA. DEP'T ENVTL. PROT., 2-3 (Dec. 18, 2009), <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-77736/ALL%20OF%20VOLUME%201%20AND%202.pdf> [hereinafter *Pennsylvania Final Climate Change Action Plan*].

¹⁹ *Id.* at 8-1, 8-8.

different from those that inspired Act 101 in the first place,²⁰ it also has another purpose—to rekindle the passion and energy that existed when this legislation was first implemented.²¹ In more than two decades, the initial energy behind the legislation has waned somewhat as other issues have demanded attention, and a certain fatigue has set in.²² Students in the seminar believe that children in elementary school now are not learning about recycling and waste reduction in the same way they did. To be sure, recycling efforts continue and are occasionally strengthened. Special legislation for recycling of computers and televisions was signed into law on November 24, 2010.²³ Still, we are overdue for a conversation about how to sustain and build the overall waste reduction and recycling program so that, in another twenty years, it will be even more effective than it is now.

This conversation is especially important for the following reasons:

1. *Act 101 is good for the environment.* Pennsylvania has recycling programs in over 1,900 municipalities, serving a population of nearly 13 million people.²⁴ Since 1988, the state recycling rate has grown from 2% to 36%.²⁵ More than two million tons of recyclable materials

²⁰ See *supra* notes 5-8 and accompanying text.

²¹ See Singel, *supra* note 1 (describing the legislative and public enthusiasm and drive behind the recycling movement in Pennsylvania in the late 1980s).

²² Jeff Frantz, *Widener University Report Aims to Reboot Recycling*, THE PATRIOT-NEWS (Apr. 18, 2011, 2:29 PM), http://www.pennlive.com/midstate/index.ssf/2011/04/widener_university_report_aims.html.

²³ Covered Device Recycling Act, No. 2010-108, 2010 Pa. Laws 1083.

²⁴ 1,930 Pennsylvania municipalities are involved in recycling programs. *County and Municipality Programs Act 101 Reporting*, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt/community/recycling/14060/county_and_municipal_programs_act_101_reporting/589556 (last visited Jan. 15, 2012). According to the United States Census Bureau, Pennsylvania's population is 12,702,379. U.S. Census Bureau, *Pennsylvania*, CENSUS.GOV, <http://quickfacts.census.gov/qfd/states/42000.html> (last visited Feb. 18, 2012).

²⁵ See *infra* notes 79-85 and accompanying text.

are diverted from disposal and recycled under Act 101 each year.²⁶

2. *Act 101 is good for the economy and job creation.* "Pennsylvania's recycling and reuse industry leads the nation in employment, payroll and sales," according to the Department of Environmental Protection (DEP).²⁷ In 2007, Pennsylvania's recycling industry had \$20.6 billion in receipts,²⁸ which represents 58.85 percent of recycling receipts in the five states of the Northeastern Recycling Council (including Pennsylvania, New York, Massachusetts, Delaware, and Maine).²⁹ An estimated 3,800 recycling establishments in the Commonwealth employ over 52,000 individuals, generating an estimated \$2.2 billion in annual payroll dollars,³⁰ "over \$18 billion in sales . . . and \$30.5 million in taxes."³¹ It has been estimated that Act 101 likely has saved Pennsylvanians more than \$1 billion in disposal costs since it was first adopted.³²

3. *Act 101 has led to the development of a recycling infrastructure in which hundreds of millions of dollars have been invested.* This infrastructure is both private and public, and it has been financed with public and private

²⁶ See *infra* text accompanying notes 89-95.

²⁷ 2005 *Recycling Data and Economic Value*, PA. DEP'T ENVTL. PROT. (2006), <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Data/2005recyfigs.pdf> [hereinafter *2005 Recycling Data Report*].

²⁸ DSM Env'tl. Servs., Inc. & Mid Atl. Solid Waste Consultants, *Recycling Economic Information Study Update: Delaware, Maine, Massachusetts, New York, and Pennsylvania*, NE. RECYCLING COUNCIL, INC., ES-3 (Feb. 2009), http://www.nerc.org/documents/recycling_economic_information_study_update_2009.pdf.

²⁹ See *id.*

³⁰ *Id.*; *Recycling in Pennsylvania*, PA. DEP'T ENVTL. PROT., <http://www.portal.state.pa.us/portal/server.pt/community/recycling/14060> (last visited Mar. 30, 2011) [hereinafter *Recycling in Pennsylvania*].

³¹ 2005 *Recycling Data Report*, *supra* note 27.

³² *The Future of Recycling in Pennsylvania: Act 175 Recycling Program Plan*, PA. DEP'T ENVTL. PROT., 10 (July 2004), http://www.portal.state.pa.us/portal/server.pt/community/recycling/14060/recycling_reports_and_studies/589560 (follow "Act 175 Recycling Program Plan" hyperlink).

money.³³ It includes physical assets such as buildings, processing facilities, and equipment.³⁴ It also includes economic infrastructure, including businesses that collect and separate recyclables and manufacturing facilities that convert recycled materials into new products.³⁵ It includes not only the people whose jobs depend partly or entirely on recycling, but also the millions of Pennsylvanians who habitually separate recyclables for collection.³⁶ None of this was developed quickly, and all of it requires care and maintenance if it is to continue to provide these and greater benefits in the future.

4. *Act 101 probably affects human environmental behavior more than any other statute in the state's history.* Those who actively recycle and reduce their waste demonstrate an understanding of the consequences of their behavior and, as a result, are more likely to engage in other environmentally conscious activities.³⁷ While many individuals have good intentions when it comes to the environment, intentions alone are unlikely to produce

³³ See Tim O'Donnell, *Pennsylvania Promise*, 42 WASTE AGE 28, 30 (2011) (describing the impact on the recycling industry by private recycling businesses); see also R.W. Beck, *Building Financially Sustainable Recycling Programs*, PA. DEP'T ENVTL. PROT. (Apr. 2005), http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/document/Sust_Rpt/Sust_Rpt.htm (discussing public funding and operation of recycling systems).

³⁴ "[M]aterial recycling facilities . . . separate recyclable materials for shipment to plants where they are processed into new materials for further fabrication or into final products. Transfer stations may be utilized to reduce the cost of transportation to distant disposal or recycling facilities." *2010 Report Card for Pennsylvania's Infrastructure*, AM. SOC'Y CIVIL ENG'RS, (May 24, 2010) <http://www.pareportcard.org/PDFs/Solid%20Waste%20FINAL%20NATL.pdf> [hereinafter *2010 Report Card*].

³⁵ See *Recycling*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/osw/conserve/rrr/recycle.htm> (last visited Jan. 15, 2012); see also *2010 Report Card*, *supra* note 34.

³⁶ *Pennsylvania Final Climate Change Action Plan*, *supra* note 18, at I-13.

³⁷ See Robert E. O'Connor et al., *Risk Perceptions, General Environmental Beliefs, and Willingness to Address Climate Change*, 19 RISK ANALYSIS 461 (1999).

behavioral changes.³⁸ However, when pro-environment intention is coupled with external pressure, the rate at which individuals engage in a range of "pro-environmental behavior" increases greatly.³⁹ Therefore, by requiring individuals to recycle, Act 101 acts as a catalyst to bridge the gap "between attitude and intention,"⁴⁰ increasing environmental consciousness and, in turn, making a greater long-term commitment to environmental change.⁴¹

5. *Act 101 reduces greenhouse gas emissions.* The material recycled in Pennsylvania in 2005 prevented emissions of "2.5 million metric tons of carbon equivalent."⁴² "That[is] the equivalent of eliminating the output from three large coal-fired power plants and taking 1.7 million cars and light trucks off the road."⁴³ A substantial additional number of tons of material appear to be recyclable.⁴⁴ Recycling that additional quantity of material would reduce Pennsylvania's greenhouse gas emissions by 5.4 million metric tons of carbon dioxide equivalent by 2020.⁴⁵ Indeed, Pennsylvania's recently adopted Climate Change Action Plan recommends specific changes to Act 101 as one of many ways to reduce greenhouse gas emissions.⁴⁶

³⁸ See Anja Kollmuss & Julian Agyemen, *Mind the Gap: Why Do People Act Environmentally and What Are the Barriers to Pro-Environmental Behavior?*, 8 ENVTL. EDUC. RES. 239, 241-44 (2002).

³⁹ *Id.*

⁴⁰ *Id.* at 248, 252-53.

⁴¹ *Id.* at 250-51.

⁴² *Save the Environment*, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt/community/benefits_of_recycling/14061/save_the_environment/589517 (last visited March 30, 2011).

⁴³ *Recycling in Pennsylvania*, *supra* note 30.

⁴⁴ *Pennsylvania Final Climate Change Action Plan*, *supra* note 18, at I-12.

⁴⁵ See *id.* at tbl.8.1. The plan was adopted pursuant to the Pennsylvania Climate Change Act. See 71 PA. STAT. ANN. §§ 1361.1, .5 (West Supp. 2011).

⁴⁶ *Pennsylvania Final Climate Change Action Plan*, *supra* note 18, at 8-5 to 8-6.

The Act thus teaches important lessons about climate change mitigation:

- Climate change will not be addressed by a single legal tool, but by the use of many legal tools.
- Many of the legal tools are already in use but could be strengthened.
- These legal tools provide important economic and job creation benefits, as well as other environmental benefits, in addition to their reduction of greenhouse gas emissions.

6. *The Act 101 program is rudderless and drifting.*

The success of the statute depends on public motivation and information, and the program began with specific goals to encourage public participation.⁴⁷ Those goals have either been met or ignored, and no new goals have been set. While several million tons of Act 101 materials are recycled each year, it is impossible to say with a reasonable level of confidence whether recycling of those materials has increased or decreased over the past decade, let alone by how much.⁴⁸ Per capita waste disposal is about the same now as it was when the Act was passed,⁴⁹ and it was much higher before the current economic downturn.⁵⁰

Part II of this article provides a brief overview of Act 101. Part III contains a lengthy set of recommendations. They include new

⁴⁷ 53 PA. STAT. ANN. § 4000.102(c)(3) (West 2011).

⁴⁸ See *Recycling in Pennsylvania Act 101 Annual Reports*, PA. DEP'T ENVTL. PROT. (Dec. 26, 2007) <http://www.elibrary.dep.state.pa.us/dsweb/View/Collection-8069> (providing data from only 2000-2002, thus illustrating that it is impossible to determine the impact of Act 101 within the past decade).

⁴⁹ See *Municipal Solid Waste Generation, Recycling, and Disposal in the United States*, U.S. ENVTL. PROT. AGENCY (Nov. 2011), http://www.epa.gov/osw/nonhaz/municipal/pubs/msw_2010_data_tables.pdf.

⁵⁰ See *Reporting and Fee Collection Annual Report Fiscal Year 08-09*, PA. DEP'T ENVTL. PROT., (Oct. 30, 2009) http://files.dep.state.pa.us/Waste/Bureau%20of%20Waste%20Management/lib/landrecwaste/municipal_waste/RFC_Annual_Report_FY_2009.pdf (showing a rather significant decrease occurring from 2008 to 2009).

and ambitious goals for waste reduction and recycling, specific steps to increase waste reduction and recycling, and improvements in market development. These recommendations provide the basis for a conversation about how to strengthen this program so that it may better serve the next generation. That conversation should include relevant stakeholders, such as counties and other municipalities, business and industry, nongovernmental organizations, and citizens. Whenever appropriate, changes in the state's waste reduction and recycling effort should be based on partnerships among these stakeholders. That is, after all, the context in which Act 101 originated.

II. SUMMARY OF ACT 101

Act 101 imposes recycling mandates on municipalities, government entities, and institutions, and it regulates the disposal of certain materials, including products such as lead acid batteries and leaf waste.⁵¹ To fund the mandates, the Commonwealth charges a flat, per-ton fee for municipal waste⁵² and then redistributes that money to municipalities through a comprehensive grant structure.⁵³ The benefit of the fee is two-fold: it discourages waste disposal, thereby providing an incentive for recycling and waste reduction,⁵⁴ and it provides a funding stream to offset costs associated with the recycling mandates.⁵⁵

Perhaps the most influential part of Act 101 is the mandatory municipal recycling program.⁵⁶ Under the Act, municipalities with a population of over 10,000 and municipalities with a population of 5,000 to 10,000 and a population density of over "300 people per square mile" are required to develop and implement a comprehensive recycling program.⁵⁷ Each program is required to

⁵¹ 53 PA. STAT. ANN. §§ 4000.501-.513, .1501-.1513 (West 2011) (requiring municipal waste management plans, imposing recycling programs, and outlining recyclable materials).

⁵² *Id.* § 4000.701(a).

⁵³ *Id.* §§ 4000.901-.905.

⁵⁴ *Id.* § 4000.102(b)(2).

⁵⁵ *See id.* § 4000.102(b)(6).

⁵⁶ *See id.* §§ 4000.1501-.1513.

⁵⁷ tit. 53, § 4000.1501(a)-(b).

include monthly curbside collection⁵⁸ for at least "three materials . . . chosen from the following: clear glass, colored glass, aluminum, steel and bimetallic cans, high-grade office paper, newsprint, corrugated paper and plastics."⁵⁹ Additionally, municipalities are required to include a provision for the separation, collection, and composting of leaf waste.⁶⁰ As a complementary requirement, municipalities must "establish a comprehensive and sustained public information and education program concerning recycling program features and requirements."⁶¹ Municipalities are given the option of undertaking these requirements on their own or by contracting with private companies.⁶² This part of the Act 101 program is administered by DEP.⁶³

Act 101 also requires public and private educational institutions, as well as government agencies, to develop recycling programs.⁶⁴ Additionally, Commonwealth agencies are tasked with "establish[ing] and implement[ing] a waste reduction program for materials used in the course of agency operations."⁶⁵ To bring the Act's agency program full circle, government agencies are required to procure "goods, supplies, equipment, materials and printing with recycled content"⁶⁶ and to use "composted materials . . . for the maintenance of public lands."⁶⁷ This latter part of Act 101 is administered by the Department of General Services (DGS).⁶⁸

Market development is an essential element of Act 101. The statute requires DEP to commission studies to assess market

⁵⁸ *Id.* § 4000.1501(c)(3) (providing that municipalities must develop "[a] system, including trucks and related equipment, that collects recyclable materials from the curbside or similar locations at least once per month from each residence or other person generating municipal waste in the county or municipality.").

⁵⁹ *Id.* § 4000.1501(c)(1)(i).

⁶⁰ *Id.* § 4000.1501(c)(1)(ii).

⁶¹ *Id.* § 4000.1501(d).

⁶² *Id.* § 4000.1501(e)(1).

⁶³ *See Recycling in Pennsylvania, supra* note 30.

⁶⁴ 53 PA. STAT. ANN. §§ 4000.1503, .1509 (West 2011).

⁶⁵ *Id.* § 4000.1503(b).

⁶⁶ *Id.* § 4000.1504(b).

⁶⁷ *Id.* § 4000.1503(c).

⁶⁸ *See id.* § 4000.1503(a)-(b).

development.⁶⁹ DEP also led the effort to create a Pennsylvania Recycling Markets Center, which facilitates business-to-business relationships in order to maximize the use of recycled feedstock by Pennsylvania businesses and manufacturers.⁷⁰

Funding is distributed through several types of grants.⁷¹ These grants are funded by a \$2 per-ton solid waste disposal fee, which is collected by DEP and then redistributed to fund recycling efforts.⁷² As required by the Act, 70 percent of the collected fee is "expended by [DEP] for grants to municipalities" and state agencies for various purposes.⁷³ The remaining 30 percent of the collected fee is split between the commission of feasibility studies (up to 10 percent), public information and education (up to 30 percent), and administrative costs ("[n]o more than 3 [percent]").⁷⁴

III. NEXT GENERATION RECOMMENDATIONS

A. The Commonwealth Should Incorporate Act 101's Goals into Its Administration of the Recycling and Waste Reduction Program

Act 101's initial goals include the following:

1. At least 25 percent of all municipal waste and source-separated recyclable materials generated in th[e] Commonwealth on and after January 1, 1997, should be recycled.
2. The weight or volume of municipal waste generated per capita in th[e] Commonwealth on January 1, 1997, should . . . be less than the weight or volume of municipal waste generated per capita on the effective date of [Act 101].

⁶⁹ *Id.* § 4000.508.

⁷⁰ *About RMC*, PA. RECYCLING MKTS. CTR., <http://www.parmc.org/about> (last visited Jan. 29, 2012).

⁷¹ 53 PA. STAT. ANN. §§ 4000.901-.905 (West 2011).

⁷² *Id.* §§ 4000.701(a), .706.

⁷³ *Id.* § 4000.706(c)(1). More specifically, these purposes include "grants to municipalities for the development and implementation of recycling programs[,] . . . recycling coordinators[,] . . . grants for municipal recycling programs[,] . . . and market development and waste reduction studies." *Id.*

⁷⁴ *Id.* § 4000.706(c)(2)-(4).

3. Each person living or working in th[e] Commonwealth shall be taught the economic, environmental and energy value of recycling and waste reduction and shall be encouraged through a variety of means to participate in such activities.⁷⁵

These goals are significant. They identify priorities, help focus implementation of the statute, and provide benchmarks for evaluating progress. Yet neither DEP nor DGS now use these goals—or any similar goals—in their implementation of the Act 101 program.⁷⁶

To remedy this, DEP and DGS should establish administrative targets and timetables that correspond to each of these goals. That is, DEP and DGS should set specific, measurable goals that are to be achieved by specific dates or according to specified timetables. When those targets are achieved, DEP and DGS should then work toward achieving even more ambitious targets to be achieved by later times. DEP has already done this once—with the recycling goal. There is no legal reason that prevents either agency from doing this again. Such targets and timetables would refocus and reenergize implementation of the statute and strengthen and increase the environmental, social, and economic benefits of Act 101.

All of these new targets and timetables, in turn, should be concrete steps toward an aspirational goal of producing zero waste. Quite plainly, goals of this sort would require other changes in the implementation of Act 101. But such goals would help focus the other new efforts that need to be made—efforts that are described in detail below.

⁷⁵ *Id.* § 4000.102(c)(1)-(3).

⁷⁶ See *Recycling in Pennsylvania*, *supra* note 30 (failing to provide any recycling goals); see also *Department of General Services Green Procurement Goals*, PA. DEP'T GEN. SERVS., http://www.portal.state.pa.us/portal/server.pt/community/green_procurement/5247/policy___goals/491345 (last visited Jan. 29, 2012) (providing goals that are different from those contained in Act 101).

(i) The State Should Set Increasingly Ambitious Waste Diversion Goals and an Ultimate Goal of Zero Waste

During the legislative process that led to enactment of Act 101, there was a debate over what the recycling goal should be for January 1, 1997—10 percent or 25 percent.⁷⁷ The latter was eventually chosen because it was more serious, seemed to better correspond to the magnitude of the waste problem, and was achievable even though more difficult than the 10 percent goal.⁷⁸

Early critics were skeptical that the state could meet the 25 percent recycling goal by 1997. After all, the statewide recycling rate was 2 percent in the years prior to the Act's adoption.⁷⁹ Yet, by 1996, just eight years after the General Assembly passed Act 101, Pennsylvanians were recycling an average of 25 percent of their waste.⁸⁰ Thus, the first quantifiable goal of the Act was met a full year before the January 1997 deadline.⁸¹

The Commonwealth then set a new goal—not through statutory amendment or regulation, but simply through a public announcement. The new goal, announced by Lieutenant Governor Mark Schweiker, was a recycling rate goal of 35 percent by 2003.⁸² The state said it met that goal in 2001, two years ahead of schedule.⁸³

In spite of this early and even dramatic success, no new goal was announced after that; for nearly a decade, the Commonwealth has administered the recycling program without any explicit goal

⁷⁷ See S. Journal 171-67, Reg. Sess., at 1257, 1263 (Pa. 1987).

⁷⁸ See *id.* at 1259, 1263-64.

⁷⁹ *Pennsylvania's Recycling Program: 2000-2001 Act 101 Annual Report to the General Assembly of Pennsylvania*, PA. DEP'T ENVTL. PROT. (Aug. 2002), <http://www.elibrary.dep.state.pa.us/dsweb/Get/Version-45909/2520-BK-DEP2586%202000-2001.pdf> (statement of Lieutenant Governor Mark Schweiker).

⁸⁰ See *Recycling in Pennsylvania: Act 101 Annual Report to the General Assembly of Pennsylvania for 2001 & 2002*, PA. DEP'T ENVTL. PROT., 2 tbl.1, <http://www.elibrary.dep.state.pa.us/dsweb/Get/Document-45916/2520-BK-DEP2586.pdf> (last visited Feb. 18, 2012).

⁸¹ See *id.*

⁸² H.R. 447, 1998 Gen. Assemb., Reg. Sess. (Pa. 1998).

⁸³ *Recycling in Pennsylvania: Act 101 Annual Report to the General Assembly of Pennsylvania for 2001 & 2002*, *supra* note 80, at 1.

at all.⁸⁴ In fact, the Commonwealth no longer even calculates or reports a recycling rate.⁸⁵ Instead, it calculates a total number of tons diverted for recycling.⁸⁶ The state evidently believes that an overall tonnage figure provides a more certain and precise measure of recycling than a percentage figure, which can vary based on changes in number of tons recycled, the number of tons disposed of, or both.⁸⁷ The state could have addressed this issue by setting a new goal based on total number of tons recycled, but it has not.

Equally problematic, it is not even clear whether the level of recycling has increased, decreased, or stayed more or less the same over the past decade. Without a new goal, apparently, there has been no reason to keep track of this information. To be sure, one can make a case that the amount of material recycled has increased over the past decade. The publicly available data can be used to indicate that, if one assembles it from different sources. But a closer examination suggests that it is impossible to draw any conclusions with a high level of confidence. Because the public has every right to expect that authoritative information on this would be readily available, some explanation of the data problem seems appropriate.

One could say that recycling in Pennsylvania increased from 3.9 million tons in 2001 to 5.7 million tons in 2009, which appears to be a significant improvement.⁸⁸ DEP has not described such a trend over the past decade in publicly available documents, but it is

⁸⁴ See *Recycling in Pennsylvania*, *supra* note 30 (demonstrating that neither the DEP website nor the site's reports and studies announce any future recycling goal).

⁸⁵ See *Pennsylvania's Recycling Page*, *supra* note 4 (failing to provide any county recycling data since 2009).

⁸⁶ See *The Future of Recycling in Pennsylvania: Act 175 Recycling Program Plan*, *supra* note 32, at 8. "The traditional way to measure that percentage has been to count tons of materials recycled and calculate recycling as a percentage of generation. In the past several years, [DEP] has been searching for a method whereby the progress of recycling may be measured in addition to counting tons." *Id.*

⁸⁷ *Id.* (explaining the differences between the traditional way to measure the percent of materials recycled and DEP's search for a new way to measure the progress of recycling by tonnage).

⁸⁸ Compare *The Future of Recycling in Pennsylvania: Act 175 Recycling Program Plan*, *supra* note 32, with *Recycling in Pennsylvania*, *supra* note 30.

possible to pull together numbers from various DEP sources to arrive at that conclusion. For the 2001-2002 annual report—the most recent annual report published for this program—DEP states that 3.9 million tons were recycled in 2001.⁸⁹ For 2005, in a two-page document entitled "2005 Recycling Data and Economic Value," DEP reported that 4.9 million tons had been recycled.⁹⁰ For 2006, 2007, and 2008, DEP has posted a ten-page spreadsheet for each year identified as county recycling data.⁹¹ On the bottom of page two of each spreadsheet is a figure for the total statewide number of tons recycled. The figures are 4.8 million tons (2006),⁹² 5.1 million tons (2007),⁹³ and 5.5 million tons (2008).⁹⁴ For 2009, the latest year for which any data is publicly available, DEP's "Recycling in Pennsylvania" web page reports that 5.7 million tons were recycled.⁹⁵

There is a catch, however. The county recycling data, which are the source of the recent data and appear to be the source of the 2009 figure, include recycled white goods, rubber tires, antifreeze, asphalt, construction and demolition waste, and other materials not covered by Act 101.⁹⁶ To be sure, the list of materials listed for recycling under Act 101 was never intended to limit or prevent

⁸⁹ *Pennsylvania's Recycling Program: 2000-2001 Act 101 Annual Report to the General Assembly of Pennsylvania*, *supra* note 79 (showing information at unnumbered page labeled "Facts").

⁹⁰ *2005 Recycling Data and Economic Value*, PA. DEP'T ENVTL. PROT., <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Data/2005recyfigs.pdf>, (last visited Jan. 12, 2012).

⁹¹ *See Recycling in Pennsylvania*, *supra* note 30.

⁹² *County List by Total Tons for Each Material, 2006*, PA. DEP'T ENVTL. PROT., http://files.dep.state.pa.us/Waste/Recycling/RecyclingPortalFiles/Documents/2006_Recycling_Report.pdf, (last visited Jan. 28, 2012).

⁹³ *County List by Total Tons for Each Material, 2007*, PA. DEP'T ENVTL. PROT., http://files.dep.state.pa.us/Waste/Recycling/RecyclingPortalFiles/Documents/2007_Recycling_Report.pdf, (last visited Jan. 28, 2012).

⁹⁴ *County List by Total Tons for Each Material, 2008*, PA. DEP'T ENVTL. PROT., http://files.dep.state.pa.us/Waste/Recycling/RecyclingPortalFiles/Documents/2008_Recycling_Report.pdf, (last visited Jan. 28, 2012).

⁹⁵ *Recycling in Pennsylvania*, *supra* note 30.

⁹⁶ *See supra* notes 92-94.

other recycling.⁹⁷ In fact, Act 101 likely encouraged the recycling of many of these other materials. Whatever the reason, an increase in the tonnage of all material recycled is plainly a good thing. Still, there has been a longstanding industrial scrap and waste recycling industry in Pennsylvania⁹⁸—one that long predates Act 101—and it is difficult to give credit to Act 101 for independent recycling efforts. It is also difficult to give Act 101 credit for recycling of materials, such as waste tires, that are covered by other state laws.⁹⁹ And it is not clear whether county reporting of non-Act 101 materials includes material that was previously recycled but not previously reported.

A closer look at the county data shows the difficulty of drawing any conclusions about trends. It is possible to separate the Act 101 materials from all waste materials in the annual county reports and to calculate the tonnage of Act 101 materials that were reported as recycled, but that only raises more questions. That calculation shows 2.4 million tons of Act 101 materials recycled in 2006, 2.4 million tons recycled in 2007, and 2.3 million tons recycled in 2008.¹⁰⁰ All of these figures are lower than the 3.9 million tons reported recycled in the most recent Act 101 report—published in 2003.¹⁰¹ One could thus say that there has been a decline in Act 101 recycling. On the other hand, it is possible that the 2003 report included materials other than the Act 101

⁹⁷ 53 PA. STAT. ANN. § 4000.502(e) (West 2011) (requiring the listed materials, "*at a minimum*," to be considered, meaning others, in addition, may be as well (emphasis added)).

⁹⁸ See, e.g., Allan Industries, *Welcome to ALLAN INDUSTRIES*, ALLANRECYCLERS.COM, <http://www.allanrecyclers.com/> (last visited Feb. 3, 2012) (showing an example of the many businesses engaged in industrial scrap metal and waste recycling in Pennsylvania).

⁹⁹ See *infra* note 207 and accompanying text.

¹⁰⁰ County Recycling Data—Totals (spreadsheet prepared by Jessica Schuller based on 2006-2008 County Reports, showing amounts of the following that were recycled: #1 to #6 plastic, mixed plastic, yard and leaf waste, clear glass, brown glass, green glass, mixed glass, cardboard, magazines, computer paper, office paper, newsprint, phone books, mixed paper, aluminum cans, steel and bimetallic cans, mixed cans, comingled materials, and single stream materials) (on file with author).

¹⁰¹ *Id.* *Recycling in Pennsylvania: Act 101 Annual Report to the General Assembly of Pennsylvania for 2001 & 2002*, *supra* note 80.

materials. One could also say that the figures for 2006 through 2008 are similar enough to indicate that the level of recycling may be relatively stable from year to year, but it is difficult to compare these data with data for previous years.¹⁰² Or one could say that recycling of Act 101 materials has increased based on the 5.7 million ton figure for 2009—the highest figure of them all.¹⁰³ But the 2009 figure is similar to the total figure for 2008 (5.5 million tons), most of which (3.2 million tons) is non-Act 101 materials.¹⁰⁴

Finally, it could be argued that the overall recycling number has increased regardless of what has happened with Act 101 recycling, and that Act 101's overall encouragement of recycling should make it reasonable for Act 101 to "get credit" for all recycling. But the county reports and other publicly available data do not make it clear whether recycling is improving or whether reporting is improving. Nor, as noted above, is it apparent why Act 101 should get credit for preexisting or completely separate recycling activities.

The stark reality is this: we lack the most basic information we need if we are to know how effectively the Act 101 program is actually working. In addition, we have no goal that would prompt the development and publication of that data. And this is all occurring in a program that relies on public participation and motivation for its effectiveness and continued improvement.

Other states that claim national leadership on recycling have achieved or established higher diversion rates, and they have been able to document their success. Under the California Integrated Waste Management Act of 1989,¹⁰⁵ that state adopted a two-step system under which each city, county, and approved regional entity would first divert 25 percent of solid waste through recycling, reduction, and composting by 1995 and then increase this amount to 50 percent by 2000.¹⁰⁶ The latter goal was not actually accomplished until 2005, when actual waste diversion

¹⁰² See *Recycling in Pennsylvania*, *supra* note 30.

¹⁰³ *Id.*

¹⁰⁴ See *County List by Total Tons for Each Material, 2008*, *supra* note 94.

¹⁰⁵ CAL. PUB. RES. CODE § 40050 (West 2007).

¹⁰⁶ *Id.* § 41780(a)(1)-(2).

rates hit 52 percent.¹⁰⁷ The diversion rate for 2008 is estimated to be just under 60 percent.¹⁰⁸

Florida's recently enacted Energy, Climate Change and Economic Security Act¹⁰⁹ sets a goal of reducing the amount of recyclable materials in waste facilities, landfills, and incinerators by 75 percent by 2020.¹¹⁰ While the state's current diversion rate is at most 28 percent,¹¹¹ the state apparently believes that such a goal is possible.

As an ultimate goal for such programs, "zero waste" is gaining greater prominence.¹¹² The idea is that waste represents salvageable resources that society needs, and that systems should be devised to close the loop by collecting those resources and turning them into marketable products.¹¹³ The deeper idea is that there is no physical limit to the fraction of materials that can be diverted from disposal and reused in some way;¹¹⁴ a 25 percent or even 60 percent diversion goal is good, but innovation and good policy can lead to even better results. In 2002, California became the first state to adopt a zero-waste goal as part of its strategic waste management plan.¹¹⁵ Zero waste has been embraced by companies such as Walmart, which is working toward a goal of

¹⁰⁷ *California's Estimated Statewide Diversion Rates Since 1989*, CALRECYCLE, <http://www.calrecycle.ca.gov/LGCentral/GoalMeasure/DisposalRate/Graphs/EstDiversion.htm>, (last visited Jan. 28, 2012).

¹⁰⁸ *Id.*

¹⁰⁹ See H.R. 7135, 2008 Leg., Reg. Sess. (Fla. 2008).

¹¹⁰ FLA. STAT. ANN. § 403.7032(2) (West 2009).

¹¹¹ Letter from Michael W. Sole, Sec'y, Fla. Dep't Env'tl. Prot., to Governor Charlie Crist (Jan 4, 2010), available at http://www.dep.state.fl.us/waste/quick_topics/publications/shw/recycling/75percent/75_recycling_report.pdf.

¹¹² *75% Recycling Goal Report to the Legislature*, FLA. DEP'T ENVTL. PROT., 18, available at http://www.dep.state.fl.us/waste/quick_topics/publications/shw/recycling/75percent/75_recycling_report.pdp, (last visited Jan. 28, 2012).

¹¹³ *Id.*

¹¹⁴ *The Case for Zero Waste*, ZERO WASTE ALLIANCE, <http://www.zerowaste.org/case.htm> (last visited Jan. 28, 2012).

¹¹⁵ Kim A. O'Connell, *California Adopts Zero Waste Goal in Strategic Plan*, WASTE AGE (Apr. 1, 2002), http://wasteage.com/mag/waste_california_adopts_zero/.

zero waste disposal from its U.S. operations by 2025.¹¹⁶ Waste Management, Inc., advertises that it can "design and implement zero-waste initiatives that maximize" a company's "materials value" and minimize its "overall environmental footprint."¹¹⁷ The zero-waste goal has also been applied at university campuses.¹¹⁸ Indeed, there are even methodologies for calculating the financial, climate change, and other benefits of zero waste to businesses.¹¹⁹ A network of nongovernmental organizations, including the Zero Waste Alliance, also supports this goal.¹²⁰

To implement this recommendation:

- The Commonwealth should adopt a long-term zero-waste goal.
- With an eye toward eventually reaching this goal, the Commonwealth should adopt fixed, successive goals and dates by which to achieve each successive goal.¹²¹ An initial medium-term goal

¹¹⁶ *Waste, WARMART STORES*, <http://walmartstores.com/Sustainability/9176.aspx> (last visited Jan. 28, 2012).

¹¹⁷ *Manufacturing & Industrial, WASTE MGMT.*, <http://www.wm.com/enterprise/manufacturing-and-industrial/index.jsp> (last visited Jan. 28, 2012).

¹¹⁸ See generally I. G. Mason et al., *Implementation of a Zero Waste Program at a University Campus*, 38 RES., CONSERVATION & RECYCLING 257, 258 (2003) (discussing the "growing acceptance of the sustainable development concept" by several universities and analyzing a zero waste program instituted at a particular university campus).

¹¹⁹ Amity Lumper, *Demonstrating the Climate, Financial, and Diversion Benefits of Zero Waste: A New Calculator for California Business*, CAL. RECYCLE, <http://www.calrecycle.ca.gov/climate/Recycling/Workshops/2010/Calculator.pdf> (last visited Jan. 28, 2012).

¹²⁰ *Who Are We?*, ZERO WASTE ALLIANCE, <http://www.zerowaste.org/> (last visited Jan. 28, 2012).

¹²¹ Any goal that is set should be aggressive, yet workable. See Edwin A. Locke, *Motivation by Goal Setting*, in HANDBOOK OF ORGANIZATIONAL BEHAV. 43, 44-45 (Robert T. Golembiewski ed., 2d ed. 2001). Developing a goal that strikes the appropriate balance between difficulty and attainability is extremely important, as it is directly related to the potential for achievement. *Id.* As behavioral scientist Edwin Locke explains:

[R]esearch shows that the more difficult the goal, the higher the performance achievement. This holds true even when goals are impossible to fully attain, although goal setting does not work if the

should be an ambitious stretch goal for diverting a certain percentage of the Commonwealth's waste for recycling by, say, 2016.¹²²

- The Commonwealth should consider and adopt ambitious stretch goals for particular waste streams, such as consumer electronics, construction and demolition waste, and organic waste (including yard waste and food waste). The State of Washington, for example, has adopted short- and long-term goals for organic waste recycling.¹²³ Such goals guide implementation of programs for specialized waste streams and ensure that the development of infrastructure, laws, and markets for such waste streams is synchronized.

(ii) The Commonwealth Should Set Increasingly Ambitious Per Capita Waste Disposal Goals

Although the Act sets a goal of decreasing per capita waste generation by 1997,¹²⁴ it appears that goal has never been addressed by administrators in a meaningful way. This goal was particularly challenging because per capita consumption rates continue to rise, which negatively affects per capita waste levels.¹²⁵ National per capita waste disposal averages between 1990 and 2000 reveal that 1992 was the only year in which the

goals are totally preposterous. For goal setting to work, there must be commitment to the goals Commitment becomes harder to attain, of course, as the goals become more difficult, especially if no credit is given for partial attainment.

Id. at 44 (emphasis omitted).

¹²² Pennsylvania's Climate Change Action Plan recommends that the Commonwealth set a "target diversion rate of 42.4 [percent] by 2020." *Pennsylvania Final Climate Change Action Plan*, *supra* note 18, at 8-5. Whatever the appropriate percentage diversion rate is, a goal to be achieved in five to six years is much more likely to be taken seriously by the public than a goal to be achieved in nine or 10 years.

¹²³ *Increasing Recycling for Organic Materials*, WA. DEP'T ECOLOGY, 5-6 (2004), <http://www.ecy.wa.gov/pubs/0407027.pdf>.

¹²⁴ 53 PA. STAT. ANN. § 4000.102(c)(1)-(2) (West 2011).

¹²⁵ John C. Dernbach, *Pollution Control and Sustainable Industry*, 12 NAT. RES. & ENV'T 101, 146-47 (1997).

national waste generation rates fell.¹²⁶ Every other year, overall waste disposal has increased and, with the exception of 2000, per capita waste disposal has remained relatively unchanged.¹²⁷

A basic challenge to the implementation of this goal is measuring how much waste is actually generated per capita at the household level.¹²⁸ No one weighs the waste generated in each household and counts the number of persons living there. Still, there is an effective proxy for measuring per capita waste generation—per capita waste disposal.¹²⁹ That number could be developed from population data and the measurements already required under Act 101 of the tonnage of waste disposed of at landfills and incinerated at resource recovery facilities.¹³⁰ That number would exclude waste materials that are recycled and would also reflect household or business waste reduction activities.¹³¹ Thus, it would reflect the progress (or lack of progress) in recycling and waste reduction.

DEP does not currently calculate or provide such a number on its web page or in publicly available documents. But it is possible to calculate a number from DEP's data on waste disposal at municipal waste landfills and resource recovery facilities. DEP posts on its website an annual report showing the type of waste generated in each county and where that waste was disposed of or processed.¹³² By adding the municipal waste numbers for each county, one can derive a figure for total Pennsylvania waste

¹²⁶ *A Yearly Snapshot of U.S. (Municipal) Waste & Recycling*, ZERO WASTE AMERICA, <http://www.zerowasteamerica.org/Statistics.htm> (last visited Jan. 28, 2012).

¹²⁷ *Id.*

¹²⁸ *Id.* (showing a lack of data to project the per capita household rates of recycling and confusion about the exact amount of waste recycled).

¹²⁹ *See Model Staff Rep.*, DEP'T PUB. WORKS (Feb. 2009), www.calrecycle.ca.gov/lgcentral/goalmeasure/Tools/ModelReport.doc (showing the effectiveness of California's per capita waste generation measurement).

¹³⁰ *See* 53 PA. STAT. ANN. § 4000.704 (West 2011).

¹³¹ *See id.* §§ 4000.704, .1501(a)-(c) (understanding that the cited sections of the Act require reports, making it possible to generate the numbers mentioned).

¹³² *MW Disposal Info*, PA. DEP'T ENVT'L PROT., <http://www.portal.state.pa.us/portal/server.pt?open=514&objID=589667&mode=2> (last visited January 27, 2012).

generation by year. By such a calculation, municipal waste generation in Pennsylvania has increased from 8.26 million tons in 1989, the first full year in which Act 101 was in effect, to 8.83 million tons in 2010.¹³³ In that same period, Pennsylvania's population grew from 11.9 million to 12.7 million.¹³⁴ From this data, it appears that per capita municipal waste disposal in Pennsylvania is essentially the same now as it was when the Act was passed—it increased from 0.69 tons per person in 1989 to 0.70 tons per person in 2010. Put differently, per capita municipal waste disposal increased from 3.80 pounds per person per day in 1989 to 3.84 pounds per person per day in 2010.¹³⁵

Per capita waste disposal was much higher before the recent decline in the national economy. Municipal waste generation in Pennsylvania grew from 9.4 million tons in 2000 to 10.3 million tons in 2006, and it declined to 8.83 million tons in 2010.¹³⁶ Just before the recession, in other words, when Pennsylvania's population was 12.4 million, Pennsylvanians were each disposing of 0.83 tons per year, or 4.55 pounds per day.¹³⁷ This figure is about 20 percent higher than the 3.80 pound daily per capita

¹³³ See JOHN C. DERNBACH, TOTAL MUNICIPAL WASTE GENERATION BY PENNSYLVANIA COUNTY – IN TONS (2000 LBS) (on file with author) (comparing the waste generation totals in Pennsylvania by county in both 1989 and 2010, tallying the statewide total at the end).

¹³⁴ Compare U.S. Census Bureau, Population Division, *Population*, GOOGLE, http://www.google.com/publicdata/explore?ds=uspopulation#ctype=c&strail=false&bcs=d&nselm=s&met_y=population&scale_y=lin&ind_y=false&idim=state:42000&ifdim=state&pit=947826000000&hl=en&dl=en (last updated May 25, 2011) [hereinafter Population Division], with U.S. Census Bureau, *supra* note 24.

¹³⁵ This calculation excludes infectious and chemotherapeutic waste, residual waste, sewage sludge, construction and demolition waste, and asbestos waste. It also excludes municipal waste generated in Pennsylvania that was disposed of or incinerated in other states.

¹³⁶ See Email from David W. Buzzell, Drinker, Biddle & Reath, to author (April 8, 2011) (on file with author) (showing results of calculations).

¹³⁷ See *MW Disposal Info*, *supra* note 132; see also Population Division, *supra* note 134 (providing the total weight of recycled material for the state, which can then be divided by the population, to arrive at yearly weight per Pennsylvanian).

disposal figure for 1989.¹³⁸ As the economy improves, per capita waste disposal will likely grow again unless changes are made in implementation of the Act.

To repeat: DEP has done none of these calculations and makes no effort to provide the public with any of this information in a readily understandable form.

To implement this recommendation:

- The Commonwealth should adopt ambitious stretch goals of reducing per capita waste disposal using specific targets and dates that correspond to the dates chosen for the recycling target. These goals should be in addition to what would be achieved by DEP's recycling goals.
- The Commonwealth should adopt an ultimate goal of zero per capita waste generation.
- DEP—in concert with municipalities, counties, the waste industry and other stakeholders—should conduct a broad, long-term public education campaign about the economic, environmental, and job creation benefits of waste reduction. DEP should also provide households and businesses with easy-to-use information about how to reduce the amount of waste that they generate.

(iii) The Commonwealth Should Use Accurate, Understandable, and Transparent Metrics to Measure Progress in Meeting Program Goals, and It Should Use Those Metrics to Publicly Report on Program Effectiveness

Perhaps more than any other program that DEP administers, the Act 101 program relies on public participation and motivation for its effectiveness and continued improvement.¹³⁹ Yet we lack some of the most basic information we need if we are to know how effectively the Act 101 program is actually working—like the amount of Act 101 material that is recycled annually, for instance.

¹³⁸ *MW Disposal Info*, *supra* note 132 (under 1989, click on tab showing annual data by county).

¹³⁹ See 53 PA. STAT. ANN. § 4000.1501(d) (West 2011).

And where that data exists or can be calculated—per capita waste disposal—DEP often does not make it readily available. New goals will mean little unless there is good data to measure progress in meeting them.

To implement this recommendation:

- DEP should use clearly stated, reliable metrics for recycling that drive annual improvements in the program and that enable the Commonwealth to show, on an annual basis, what progress has been made. These metrics should also enable comparison of current efforts with efforts over the first two decades of the program. It is probably better for the metric to be based on tons recycled or diverted, rather than on percentages. Because percentages can vary based on factors other than the overall amount of recycling or waste reduction, they do not demonstrate how or whether the program is growing. In addition, while an overall recycling figure is useful, it is important for the public to know about recycling of Act 101 materials.
- DEP should provide the public with easily understood and readily available information about per capita waste disposal and per capita waste disposal trends. This data should also drive annual improvements in the program and enable the Commonwealth to show, on an annual basis, what progress has been made.
- More broadly, the Commonwealth should ensure that all of the data it uses to measure the impact of the Act 101 program is accurate and reliable.

(iv) The Commonwealth Should Again Give Priority to Public Education About Recycling and Waste Reduction.

It is impossible to have a successful recycling and waste reduction program without a strong educational component.¹⁴⁰ The availability of curbside recycling, by itself, means very little without public education about why, how, when, and where to recycle.¹⁴¹ Act 101 requires every municipality that falls within the Act's population requirement to adopt an educational component in its comprehensive recycling plan.¹⁴² Additionally, the Act authorizes DEP to designate a small amount of discretionary funds collected from the recycling fee to develop educational programs.¹⁴³

In the early years after the Act's initial implementation, DEP had a very strong education and public outreach program.¹⁴⁴ DEP officials spoke regularly at schools, had a strong physical presence at public gatherings and sporting events, and were generally visible throughout the Commonwealth. But, unfortunately, as administrations change, so do administrative priorities. The aggressive recycling campaigns of the late 1980s and early 1990s made way for budget cuts and readjustments.¹⁴⁵ As a result, the

¹⁴⁰ See *Recycling: Why People Participate; Why They Don't*, MASS. DEP'T ENV'T'L PROT., 2, <http://www.mass.gov/dep/recycle/reduce/crbdrop.pdf> (last visited Jan. 27, 2012).

¹⁴¹ See *id.*

¹⁴² tit. 53, § 4000.1501(d) ("Each municipality subject to this section shall establish a comprehensive and sustained public information and education program concerning recycling program features and requirements.").

¹⁴³ *Id.* § 4000.706(c)(3) ("Up to 30 [percent] may be expended by [DEP] for public information, public education and technical assistance programs . . .").

¹⁴⁴ See, e.g., *Pa. Recycling and Waste Reduction Curriculum Activities Grades K-6th*, PA. DEP'T EDUC. (1990), <http://infohouse.p2ric.org/ref/09/08479.pdf> (showing an example of a curriculum that was developed in 1990, shortly after initial implementation of Act 101, as a means of public outreach).

¹⁴⁵ The budget for fiscal year 2007-2008 allocated about \$6.3 million to fund public education and technical assistance programs. *Recycling Fund Advisory Committee*, PA. DEP'T ENV'T'L PROT., <http://www.dep.state.pa.us/dep/subject/advcoun/Recycle/Recycle2007.htm> (click on "Recycling Fund Public Education and Technical Assistance Expenditures") (last visited Apr. 1, 2011). Of the \$6.3 million, a majority was

effectiveness of public recycling education has suffered greatly. Today, DEP operates with a diminished recycling staff that simply lacks the human power to support a thriving educational program.

In addition, DEP, DGS, and the Department of Transportation (DOT) have stopped submitting annual reports to the General Assembly on implementation of the Act, even though they have significant public education value and the Act specifically requires them.¹⁴⁶ The purpose of these reports was to provide both the General Assembly and the public with basic information on the effectiveness of the Act, and in so doing, educate the public about the overall success of the recycling and waste reduction efforts in which citizens are participating.¹⁴⁷ The Act requires DEP to "submit an annual report to the General Assembly on receipts to and disbursements from the [r]ecycling [f]und in the previous fiscal year, projections for revenues and expenditures in the coming fiscal year, and the Commonwealth's progress in achieving the [Act's] goals."¹⁴⁸ These reports are posted on DEP's website, but the last report posted is for 2001 and 2002.¹⁴⁹ Similar annual reports are required for DGS¹⁵⁰ and DOT¹⁵¹ for public education purposes, but neither agency is providing those reports.¹⁵²

allocated to technical assistance and recycling market development programs. *Id.* This \$6.3 million also represents about 15 percent of the \$45 million annual budget for that fiscal year. *Id.* (click on "Comparative Financial Statement").

¹⁴⁶ See, e.g., 53 PA. STAT. ANN. §§ 4000.706(f), .1505(h), .1506(c) (West 2011) (requiring the listed entities to submit annual reports); *Recycling in Pennsylvania Act 101 Annual Reports*, *supra* note 48.

¹⁴⁷ See 53 PA. STAT. ANN. § 4000.1901 (West 2011).

¹⁴⁸ *Id.* § 4000.706(f).

¹⁴⁹ *Recycling in Pennsylvania Act 101 Annual Reports*, *supra* note 48.

¹⁵⁰ tit. 53, § 4000.1505(h).

¹⁵¹ *Id.* § 4000.1506(c).

¹⁵² An October 1, 2010 search of the DGS website for "recycling," "recycled," "waste reduction," and "Act 101" turned up no documents at all. DOT has not published annual reports, but has a memorandum of understanding with DEP to use some Act 101 funding for a "strategic recycling program" to "promote and support recycled materials in state highway construction and maintenance projects." *Strategic Recycling Program*, PA. DEP'T TRANSP., <http://www.dot.state.pa.us/Internet/Bureaus/pdDesign.nsf/DesignHomepage?OpenFrameSet&Frame=main&src=HomePagePPS?ReadForm> (last visited Apr. 8, 2011). The program includes research on the use of crushed glass, recycled Portland cement, and scrap tires. *Id.* The agency has also posted a summary of

Individual municipalities have generally done an adequate job in educating their citizenry; however, these efforts are similarly stunted by a lack of funding and workforce.¹⁵³ Generally, municipalities have boiled down their educational and outreach activities to website databases and the occasional pamphlet or flier.¹⁵⁴ Without DEP's support and encouragement, education has taken a backseat to other initiatives and Act priorities.

The effect of decreased educational effort could be devastating to the durability of recycling. While public education is difficult to measure in a quantitative way, there are numerous anecdotal reports of individuals and even teachers publicly expressing skepticism or indifference toward recycling.

The recommendations here are basic:

- DEP should make education about recycling and waste reduction a priority. The overall budget for technical assistance, training, education, and outreach should be increased, perhaps to the maximum allocation allowed under the Act. Once allocated, at least half of that funding should be dedicated exclusively to education programs and outreach initiatives. Additionally, DEP should appropriate a portion of those funds to hire an educational and outreach coordinator to mobilize DEP's educational efforts across the state. Enhanced public education would provide a renewed sense that recycling and waste reduction

its waste audit under Act 101. *PennDOT Waste Audit Summary Report: District Offices & Central Office*, PA. DEP'T TRANSP. (May 2007) <ftp://ftp.dot.state.pa.us/public/Bureaus/design/SEMP/Audits/Waste%20Audit%202007.pdf>.

¹⁵³ See R.W. Beck, *Building Financially Sustainable Recycling Programs*, PA. DEP'T ENV'T'L PROT., http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/document/Sust_Rpt/part_1 (last visited Jan. 27, 2012).

¹⁵⁴ See, e.g., *Lycoming County Resource Management Services*, LYCOMING CNTY. PA., <http://www.lyco.org/Portals/1/ResourceManagementServices/Documents/Reg%20Recy%20Facility%20flyer.pdf> (last visited Jan. 27, 2012) (notifying residents of the county of collection and drop-off services and the capabilities of its facility).

make a difference for the environment and the economy alike.

- DEP, DGS, and DOT should immediately publish annual reports on their implementation of Act 101 as required by the statute. Apart from their educational value, public reports are likely to lead to improved program implementation.¹⁵⁵
- The legislation does not impose responsibility for public education and waste reduction on DEP or state agencies alone. DEP should form partnerships in this public education effort with relevant stakeholders—including municipalities, the waste industry, and schools—and should encourage a variety of public and private actors to conduct their own public education efforts on behalf of recycling and waste reduction.

B. The Commonwealth Should Reduce the Amount of Waste That Is Disposed of and Increase the Diversion Rate for Recycling

It is one thing to set more ambitious goals. It is another to achieve them. The following steps would increase the amount of materials collected for recycling, and thus help achieve more ambitious waste diversion goals for recycling.

(i) The General Assembly Should Increase the Number of Municipalities Required to Engage in Curbside Recycling

Only municipalities with a minimum population, a certain population density, or both are required to implement a recycling program.¹⁵⁶ The legislation targeted larger and more densely populated municipalities because it was believed that curbside collection programs for recyclables could be more easily operated

¹⁵⁵ The value of such reports in environmental performance is generally recognized. There is also evidence of this in other fields. *See, e.g.,* Judith H. Hubbard et al., *Does Publicizing Hospital Performance Stimulate Quality Improvement Efforts?*, 22 HEALTH AFF. 84, 84 (2003) (concluding that "making performance information public stimulates quality improvement" at hospitals).

¹⁵⁶ *See* 53 PA. STAT. ANN. § 4000.1501(a)-(b) (West 2011).

in such municipalities.¹⁵⁷ People are more likely to recycle if they perceive it as convenient,¹⁵⁸ and obviously curbside pickup of recyclables is much more convenient for people than taking the recyclables to a drop-off center somewhere.

Currently, 440 municipalities that are subject to the Act have mandatory curbside collection programs.¹⁵⁹ According to DEP, an additional 617 municipalities voluntarily employ some form of curbside collection program.¹⁶⁰ Another 873 municipalities have drop-off recycling only.¹⁶¹ That means a total of 1,930 municipalities have some kind of recycling program.¹⁶² These municipalities together provide over 11.6 million Pennsylvanians with recycling service.¹⁶³ On the other hand, Pennsylvania has 2,563 municipalities,¹⁶⁴ which means that 636 municipalities have no recycling at all. Pennsylvania has 12.6 million people.¹⁶⁵ Thus, approximately one million people have no access at all to any kind of recycling program.

Moreover, only 79 percent of Pennsylvania citizens have access to curbside programs.¹⁶⁶ Significant evidence shows that curbside recycling programs are more likely to be used than drop-off locations because they are more convenient.¹⁶⁷ Thus, while 94 percent of Pennsylvania's citizens have at least some access to recycling,¹⁶⁸ it is likely that not nearly as many citizens actually recycle since drop-off recycling is less convenient. Unfortunately,

¹⁵⁷ Cf. *Lawrence-Mercer Counties Recycling and Solid Waste Department Big Blue Cart Program*, LAWRENCE CNTY. PA., <http://www.co.lawrence.pa.us/recycling/BigBlueCartProgram.html> (last visited Feb. 1, 2012) (explaining the inconveniences of curbside recycling for small municipalities).

¹⁵⁸ Ann E. Carlson, *Recycling Norms*, 89 CAL. L. REV. 1231, 1279, 1283 (2001).

¹⁵⁹ *County and Municipal Programs Act 101 Reporting*, *supra* note 24.

¹⁶⁰ *Id.*

¹⁶¹ *Id.*

¹⁶² *Id.*

¹⁶³ *Recycling in Pennsylvania*, *supra* note 30.

¹⁶⁴ *Information at Your Fingertips*, PAMUNICIPALITIESINFO.COM, <http://pamunicipalitiesinfo.com/Default.aspx> (last visited Apr. 3, 2011).

¹⁶⁵ Population Division, *supra* note 134.

¹⁶⁶ *Recycling in Pennsylvania*, *supra* note 30.

¹⁶⁷ Carlson, *supra* note 158, at 1278-79.

¹⁶⁸ *Recycling in Pennsylvania*, *supra* note 30.

the Commonwealth does not calculate the number of citizens who actually utilize each type of recycling program.

By contrast, each jurisdiction in California is required to implement a recycling program.¹⁶⁹ Under that state's law, a "jurisdiction" includes any city and county, regardless of population.¹⁷⁰ While California does not appear to require curbside recycling programs, it requires that each jurisdiction achieve minimum diversion goals for recycling, waste reduction, and composting.¹⁷¹

To carry out this recommendation, the General Assembly could amend Act 101 in one or more of the following ways:

- Counties in major metropolitan areas (especially Philadelphia and Pittsburgh) could be required to implement curbside recycling programs for all residents and businesses. Counties should be allowed to exclude parts of the county from this requirement where they can demonstrate that curbside recycling programs are not feasible.
- The threshold requirements for mandated curbside recycling programs could be reduced to municipalities with smaller populations and lower population densities.¹⁷² By lowering the population and density thresholds, many more municipalities would be required to implement a recycling program, thus increasing overall effectiveness through curbside pick-up.
- The General Assembly could require every municipality to implement a recycling program based on drop-off points in prominent locations or a curbside recycling program in parts of the

¹⁶⁹ CAL. PUB. RES. CODE § 41780 (West Supp. 2011).

¹⁷⁰ *Id.* § 40145 (defining "jurisdiction" without reference to a population requirement).

¹⁷¹ *See id.* § 41780(a)-(b) (requiring each jurisdiction to achieve minimum diversion goals, but lacking specific language requiring curbside recycling programs).

¹⁷² *See Pennsylvania Final Climate Change Action Plan, supra* note 18, at 8-5.

municipality where a curbside program is economically feasible.

(ii) The General Assembly Should Increase the Amount and Types of Materials Required to Be Collected

The Act currently requires mandated municipalities to recycle at least three materials from a list of eight materials contained in the Act.¹⁷³ When the Act was adopted, markets for many of the eight materials were not well-developed. It was anticipated that municipalities would select three materials for which markets were best-developed, most lucrative, or both. It was also believed that municipalities would "own" their recycling programs, and thus implement them more effectively, if they chose the materials that would be collected.¹⁷⁴ Under the Act, as long as at least three of the eight materials from the list are collected, it does not matter which three materials are chosen.¹⁷⁵

Circumstances have changed since 1988. The greater development of markets at present means that a municipality could be collecting three types of materials when there is actually an available market for a greater number of materials. In fact, there is a widespread market for all eight. Markets are now sufficiently developed to the point where most municipalities could collect and successfully sell all eight materials.

The growth of single stream recycling also makes it easier to expand the list of materials. In single stream recycling, citizens put all of their recyclables in a single container, and these materials are then separated at a processing center using sophisticated sorting technologies such as optical scanners.¹⁷⁶ These technologies are

¹⁷³ 53 PA. STAT. ANN. § 4000.1501(c)(1)(i) (West 2011).

¹⁷⁴ Joseph DiGiuseppe, Regional Note, *The 1988 Pennsylvania Municipal Waste Planning, Recycling, and Waste Reduction Act*, 9 TEMP. ENVTL. L. & TECH. J. 107, 111 (1990) ("Individual municipalities can control the time, place, and manner of waste disposal . . . as long as [they] comply with the provisions of the [A]ct.").

¹⁷⁵ See tit. 53, § 4000.1501(c)(1)(i) (implying that three materials must be chosen, but not specifying any specific three).

¹⁷⁶ An optical scanner is a "[c]omputer input device that uses a light beam to scan codes, text, or graphic images directly into a computer or computer

much more advanced than those available in the late 1980s.¹⁷⁷ Single stream recycling has grown rapidly, capturing six percent of recycled residential materials in Pennsylvania in 2005, but 43 percent in 2009.¹⁷⁸

In addition, expanded collection of certain materials could also bring significant greenhouse gas reduction benefits.¹⁷⁹ According to the state's climate change action plan, "[a]luminum, steel, cardboard, and paper should be initially targeted, as these materials will yield the greatest [greenhouse gas] reductions."¹⁸⁰ Thus it makes sense to require the collection of all eight materials for recycling whenever feasible, and to give particular emphasis to collection and recycling of materials that will do the most to reduce greenhouse gas emissions.

To carry out this recommendation, the General Assembly has the following options:

- Increase the number of materials from the list that are required to be collected for recycling. This might best be accomplished by first simply increasing the required number to eight, and then allowing municipalities to be excluded from that requirement only by demonstrating that there is not a sufficient market for a particular material on the list in their area.¹⁸¹ A standardized list of

system." *Online Dictionary*, MERRIAM-WEBSTER, <http://www.merriam-webster.com/concise/optical%20scanner> (last visited Jan. 13, 2012).

¹⁷⁷ See MICHELE NESTOR, SINGLE STREAM—IT'S NOT YOUR MOTHER'S RECYCLING 1 (undated).

¹⁷⁸ *Id.* at 2.

¹⁷⁹ See *Recycling*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/osw/conserve/rrr/recycle.htm> (last visited Jan. 13, 2012) (explaining how recycling brings significant greenhouse gas reduction); see, e.g., *Local Action Plan to Reduce Greenhouse Gas Emissions*, CITY OF FORT COLLINS, 81 (Nov. 1999), <http://www.fcgov.com/airquality/pdf/ch6-energy.pdf> (proposing expanded recycling drop-off sites in order to increase the range of materials that are collected).

¹⁸⁰ *Pennsylvania Final Climate Change Action Plan*, *supra* note 18, at 8-5.

¹⁸¹ Florida requires four materials to be collected by implementing municipalities instead of three, as mandated by Pennsylvania. FLA. STAT. ANN. § 403.706(2)(b) (West 2008 & Supp. 2010).

materials would make statewide public education about recycling easier and eliminate the confusion that often occurs when people move from one municipality to another.

- Require aluminum, steel, cardboard, recyclable paper, and plastics to be collected for recycling in every mandated municipality, without exception.
- Expand the list of eight materials that must be *considered* for recycling. Candidates for an expanded list include consumer electronics and food waste. These additional materials would be treated differently than the other eight (and are not included in the two prior recommendations).

(iii) DEP Should Ensure Recycling by Commercial, Institutional, and Municipal Establishments and Community Activities Within Mandated Municipalities

Act 101 specifically requires commercial, municipal, and institutional establishments to "separate high grade office paper, aluminum, corrugated paper and leaf waste and other materials deemed appropriate by the municipality . . . and to store the material until collection."¹⁸² These include businesses, office buildings, retail stores, restaurants, apartments, condominiums, schools, and government office buildings (including local office buildings).¹⁸³ Such establishments produce roughly half of all materials that enter the municipal waste stream.¹⁸⁴ It is not difficult to see why the Act includes this requirement. Because of their size, commercial, institutional, or municipal establishments can produce enormous amounts of paper, food, metal, glass, plastic, or cardboard waste, not to mention other waste materials. (The same requirement applies to community activities.)

¹⁸² 53 PA. STAT. ANN. § 4000.1501(c)(1)(iii) (West 2011).

¹⁸³ See *id.* (illustrating that the Act covers "commercial, municipal, or institutional establishments").

¹⁸⁴ *Why Should Your Organization Implement a Recycling Program?*, PA. DEP'T ENVTL. PROT., <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Tips/tipcover.htm> (last visited Apr. 3, 2011).

The fact that these establishments produce half of the materials that enter the municipal waste stream suggests that many mandated municipalities are unwilling or unable to have these entities recycle. The data does not distinguish between establishments located in and out of mandated municipalities. Still, the enormous amount of recyclable materials in the waste stream, and the fact that mandated municipalities include the majority of the state's population, suggests that a considerable amount of this material came from within mandated municipalities.

To implement this recommendation:

- DEP or mandated municipalities should provide incentives for participation to these establishments or disincentives for lack of participation. One option is to "red flag" entities that are not in compliance with the Act. A red flag would mean that the establishment is subject to public notice of the offense, such notice being posted on DEP's website and/or the municipality's website. The red flag would be lifted upon the establishment's implementation of a recycling program. The red flag would assist municipalities in achieving higher recycling rates, which in turn would likely increase the amount of performance grant money provided to the municipality.¹⁸⁵ A red flag would also deter noncompliance because of an establishment's unwillingness to be publicly red-flagged. It does not appear that DEP or mandated municipalities would need any additional legislative or regulatory authority to begin a red flag program.
- DEP should enforce the provisions of a 2006 amendment to Act 101 requiring a municipality to demonstrate that it is actually implementing its recycling program in certain ways in order to obtain a performance grant. Among other things,

¹⁸⁵ See 53 PA. STAT. ANN. § 4000.904 (West 2011) (describing the performance grant provision for municipal recycling programs).

the municipality must show that it "facilitates a commercial recycling program or participates in a similar county or multimunicipal program."¹⁸⁶

(iv) The General Assembly Should Require Recycling and Waste Reduction by Commercial, Institutional, and Municipal Establishments Located Outside of Mandated Municipalities

Commercial, institutional, and municipal establishments are not individually mandated to recycle unless they are located in a mandated municipality.¹⁸⁷ Of course, increased coverage of municipalities would increase coverage of commercial, institutional, and municipal establishments. Still, a great many of these establishments exist outside of mandated municipalities, and a great deal of recyclable material from them is disposed of or incinerated.¹⁸⁸

In some cases, the Act encourages such establishments to recycle. DEP is mandated under the Act to work with the Pennsylvania Department of Education to establish recycling guidelines for all schools in the Commonwealth, even private colleges and universities.¹⁸⁹ Yet these guidelines are only encouraged, not mandated, to be enacted by schools throughout the state.¹⁹⁰

Other countries directly regulate waste management at commercial and institutional establishments, apparently without regard to the size or density of the municipalities in which they are located.¹⁹¹ The Republic of Korea requires that restaurants, such as

¹⁸⁶ *Id.* § 4000.904(d)(4)(ii).

¹⁸⁷ *See id.* § 4000.1501(c)(1)(iii) (illustrating that the municipality has the ability to mandate recycling).

¹⁸⁸ *See, e.g.,* Susan Bush, *Promoting Commercial and Institutional Recycling in Susquehanna County*, R.W. BECK, 1-2 (2005), www.portal.state.pa.us%2Fportal%2Fserver.pt%3Fopen%3D18%26objID%3D505315%26mode%3D2&ei=wdAQT9GjLOfu0gGZs5zDAw&usg=AFQjCNERbWaoBQC3gBbdBBZZY4Czh5hbRA (explaining that there are many establishments outside the mandated municipalities and how they dispose of their trash).

¹⁸⁹ *See* 53 PA. STAT. ANN. § 4000.1509 (West 2011).

¹⁹⁰ *Id.*

¹⁹¹ *See, e.g., Recycling In Lugano*, FRANKLIN COLL. SWITZ., <http://www.fc.edu/content/sustainability/living-sustainably/lugano-recycling>

Burger King, recycle 90 percent of their paper waste every year.¹⁹² Similarly, Germany has strict recycling and source separation requirements for businesses as well as citizens.¹⁹³

To implement this recommendation:

- The General Assembly could amend Act 101 itself, or the Environmental Quality Board (EQB) could amend Act 101's implementing regulations. These amendments could require that commercial, institutional, or municipal establishments that exceed a certain size threshold (say, 50 or more employees, or those that generate more than a specified amount of municipal waste every week) develop and implement a recycling and waste reduction program. DEP should be required to provide technical assistance and produce guidance to enable such establishments to comply with these requirements. This amendment would substantially increase the amount of recyclable material collected from such facilities and would reduce the amount of waste generated.
- The program should include recyclable materials that are generated in the largest amounts at any particular facility. A starting point would be the materials required to be recycled by such establishments when they are located in municipalities where curbside recycling is mandated—"high grade office paper, aluminum, [and] corrugated paper." This mandate should also include the recyclable waste created by employees during the course of the workday; such waste

(last visited Jan. 13, 2012) (illustrating a country that requires all municipalities to recycle, regardless of size or density).

¹⁹² Sang Don Lee, *Waste Reduction and Recycling Law in Korea*, 5 INT'L ENVTL. L. COMM. NEWSL. 22, 22 (2003).

¹⁹³ See *All About Recycling*, HOW TO GERMANY, <http://www.howtogermaany.com/pages/recycling.html> (last visited Apr. 3, 2011).

would include plastic bottles, aluminum and steel cans, and the like.

- Alternatively, DEP could implement a statewide program to encourage such facilities to develop and implement such programs. As part of that effort, DEP could provide technical assistance, public education and training programs, and produce guidance. It could also publish on its website the names and locations of all such establishments that develop and implement a recycling and waste reduction program. This would have a much weaker effect on recycling and waste reduction, but would likely achieve better results than are now being achieved.

(v) The General Assembly Should Require Municipalities to Adopt and Implement Pay-As-You-Throw Programs

Many municipalities, households, and even some businesses pay the same fee for waste disposal regardless of the amount of waste they generate.¹⁹⁴ When that happens, a household that puts half a bag of trash on the curb pays the same fee as a household that puts eight bags of trash at the curb for disposal.

An attractive option for some states and many municipalities—including a growing number of Pennsylvania municipalities (213 in 2004)—is a variable rate or pay-as-you-throw system.¹⁹⁵ These programs create a financial incentive to reduce waste that requires disposal because they charge more to households and businesses that produce more solid waste—typically based on a charge for each can or bag of waste that is placed for disposal.¹⁹⁶ While the number is growing, only 18

¹⁹⁴ *Pay-As-You-Throw*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/osw/conservation/tools/payt/> (last visited Jan. 13, 2012).

¹⁹⁵ *See Pay-As-You Throw in Pennsylvania*, PA. DEP'T ENVTL. PROT., <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/payt/payt.htm> (last visited Jan. 13, 2012).

¹⁹⁶ *Id.*

percent of Pennsylvania municipalities use pay-as-you-throw programs.¹⁹⁷

Pay-as-you-throw programs make sense in environmental, economic, and job-creation terms. They reduce residential generation of municipal solid waste by about 17 percent by increasing the amount of waste that is recycled, diverting waste to yard waste collection programs, and reducing waste generation through other means.¹⁹⁸ According to a 2006 report prepared for EPA, pay-as-you-throw "is the most effective single action that can increase recycling and diversion, and can also be one of the most cost-effective."¹⁹⁹ Diversion of waste from landfills to recycling centers also creates more jobs.²⁰⁰

Perhaps the most commonly mentioned concern is the possibility that pay-as-you-throw will increase illegal dumping.²⁰¹ That occurs in only one in five communities, ordinarily lasts no more than three months, and most frequently involves "white goods" (large appliances).²⁰² Communities can address these problems by adopting and enforcing illegal dumping ordinances, ensuring that citizens have easily available recycling and yard waste programs, and adopting special programs for the collection of white goods.²⁰³

To implement this recommendation:

- The General Assembly could amend Act 101 (or adopt separate legislation) requiring that mandated municipalities collect their waste under a pay-as-you-throw program.

¹⁹⁷ Lisa A. Skumatz & David J. Freeman, *Pay As You Throw (PAYT) in the US: 2006 Update and Analyses*, U.S. ENVTL. PROT. AGENCY, 4 (2006), <http://www.epa.gov/osw/conservation/tools/payt/pdf/sera06.pdf>.

¹⁹⁸ *Id.* at 1, 7.

¹⁹⁹ *Id.* at 1.

²⁰⁰ *Id.* at 9 n.20.

²⁰¹ *Id.* at 14.

²⁰² *Id.*

²⁰³ Skumatz & Freeman, *supra* note 197; *Illegal Diversion*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/epawaste/conservation/tools/payt/top8.htm> (last visited Apr. 3, 2011).

- Alternatively, the General Assembly could amend Act 101 (or adopt separate legislation) requiring pay-as-you-throw in all municipalities, but provide certain exceptions. Minnesota has such a statute, requiring collection charges for mixed municipal waste to "increase with the volume or weight of the waste collected."²⁰⁴ Exemptions are permitted if the municipality is implementing other mechanisms that are more effective, if the municipality's "residential recycling program . . . collects more categories of recyclable materials than required," if the municipality's residential participation rate is 70 percent or greater, or if the municipality's residential participation rate is greater than the rate for the county in which it is located.²⁰⁵
- Whether or not legislation is adopted, DEP could restructure its performance grant program to provide greater financial support to municipalities that have adopted pay-as-you-throw programs. DEP could also provide enhanced technical assistance and training to municipalities to help support the development of such programs.

(vi) The Commonwealth Should Adopt Diversion Requirements
for Specialized Types of Waste

In recent decades, the recovery rate for lead acid batteries (which are used in cars and other motor vehicles) has been very high because Act 101 bans their disposal, requires dealers to accept an old battery for every one they sell, and requires old batteries to be delivered to lead smelters permitted by EPA- or DEP-authorized collection or recycling facilities.²⁰⁶ Separate legislation establishes similar requirements for waste tires.²⁰⁷ These programs

²⁰⁴ MINN. STAT. ANN. § 115A.93(3)(a) (West 2005).

²⁰⁵ *Id.* § 115A.93(3)(d)-(e).

²⁰⁶ 53 PA. STAT. ANN. § 4000.1510 (West 2011).

²⁰⁷ Waste Tire Recycling Act, 35 PA. STAT. ANN. §§ 6029.101-.115 (West 2003).

are effective because they combine a specialized diversion process at the source with a disposal ban. Similar programs should be considered or modified for other specialized types of waste; such types of waste include construction and demolition waste, consumer electronics, leaf waste (more commonly known as yard waste), and food waste.

a. Construction and Demolition Waste

Other states have adopted diversion and prohibition-of-disposal requirements for construction and demolition waste. California provides an example of requiring diversion at the source that may be the most robust state requirement of its kind for construction and demolition waste.²⁰⁸ In 2008, the California Building Standards Commission adopted new, statewide building standards for all new buildings.²⁰⁹ These are not just another set of building regulations; the state describes them as "the first-in-the-nation mandatory Green Building Standards Code."²¹⁰ Among other things, the new regulations require that all new building permit applications include a plan for diverting from landfills at least 50 percent of the construction waste.²¹¹ While this would be difficult to implement statewide in Pennsylvania because building permits are issued at the local level, the California approach suggests a path for increasing the diversion of such waste.

It does not appear that California has a similar requirement for demolition waste. The most commonly used approach for recycling at the demolition site is deconstruction, which involves salvaging as much as possible—plumbing fixtures, windows and window frames, doors and door frames, hardwood floors, appliances, and anything else of value—before a building is

²⁰⁸ See Leslie Guevarra, *California Adopts Green Building Code for All New Construction*, GREENBIZ.COM, (July 17, 2008), <http://www.greenbiz.com/news/2008/07/17/california-adopts-green-building-code-all-new-construction> (stating that California's green building code was the "first of its kind in the nation.").

²⁰⁹ *Id.*

²¹⁰ *Ca. Gov. Schwarzenegger Announces First-in-the-Nation Statewide Green Building Standards Code*, CAL. NEWswire, (12 Jan. 2010 – 21:51:40) http://californianewswire.com/2010/01/12/CNW6480_215140.php.

²¹¹ CAL. CODE REGS. tit. 24, § 708.3 (2008).

completely demolished.²¹² Although structural deconstruction is labor-intensive, it can be repaid by the ability to sell salvaged materials.²¹³

On the disposal end, Massachusetts has banned "asphalt pavement, brick, concrete, metal, and wood" from disposal.²¹⁴ It has imposed this prohibition to meet an ambitious statewide goal—"reducing non-municipal solid waste by 88 [percent] in 2010."²¹⁵ The state's own studies indicate that recycling is cost competitive at the disposal facility, and even more cost competitive when separation and diversion for recycling occur at the construction or demolition site.²¹⁶

To implement this recommendation:

- DEP should develop guidelines and provide technical assistance for collecting and separating recyclables at construction sites and for deconstruction, collection, and separation of recyclables at demolition waste sites. These guidelines should particularly address construction and demolition of buildings and other facilities where collection, separation, and deconstruction are not already occurring.
- The EQB should adopt regulations prohibiting the disposal of specific types of construction and demolition waste that can be recycled or reused. These types of waste should probably include the same as those identified by Massachusetts—

²¹² See *id.*; NAHB Research Center, Inc., *Report on the Feasibility of Deconstruction: An Investigation of Deconstruction Activity in Four Cities*, U.S. DEP'T HOUS. & URBAN DEV. (2001), <http://www.huduser.org/Publications/PDF/deconstruct.pdf> (information located on unmarked page titled "Foreword").

²¹³ NAHB Research Center, Inc., *supra* note 212, at vi.

²¹⁴ *Frequently Asked Questions About the Massachusetts Construction and Demolition Materials Waste Bans*, MASS. DEP'T ENVTL. PROT., 1, www.mass.gov/dep/recycle/solid/cdbanfaq.pdf (last visited Apr. 3, 2011).

²¹⁵ *Id.*

²¹⁶ *Id.* at 2.

"asphalt pavement, brick, concrete, metal, and wood."²¹⁷

b. Consumer Electronics

When Act 101 was adopted in 1988, consumer electronics were not prominent in the waste stream. Personal computers were only just coming into use, and much of the technology we take for granted today did not exist. Since then, electronics have changed the way most of us live—from desktop computers to handheld computers, and from global positioning systems in our cars to iPods and MP3 players in our ears. Although discarded electronics account for only two percent of the municipal solid waste in the United States,²¹⁸ they are the fastest growing segment of waste.²¹⁹ Unlike other materials, electronics are presumably discarded primarily because they are obsolete, not because they are worn out or no longer work.

Consumer electronics pose a particular challenge in Pennsylvania because of the public expectation that recycling opportunities will be available. That challenge is particularly visible because many people are replacing at least one of their electronic devices (cell phone/Blackberry/iPhone, laptop/iPad, CD player, or television) every year.²²⁰ Yet, consumer electronics are not on the list of materials that must be considered for recycling in mandated municipalities.²²¹ To help fill the gap, DEP has provided financial support for weekend drop-off programs for consumer

²¹⁷ *Id.* at 1.

²¹⁸ *Fact Sheet: Management of Electronic Waste in the United States*, U.S. ENVTL. PROT. AGENCY, 1, <http://www.epa.gov/osw/conserves/materials/ecycling/docs/fact7-08.pdf> (last updated July 2008).

²¹⁹ *Statistics on the Management of Used and End-of-Life Electronics*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/osw/conserves/materials/ecycling/manage.htm> (last updated Nov. 2, 2011).

²²⁰ See, e.g., Suzanne Choney, *Planned Obsolescence: Cell Phone Models*, MSNBC, http://www.msnbc.msn.com/id/29258026/ns/technology_and_science-tech_and_gadgets/t/planned-obsolescence-cell-phone-models (last updated Feb. 24, 2009) ("[M]ost phones have a market life cycle of nine to 12 months.").

²²¹ See 53 PA. STAT. ANN. § 4000.1502(b)(1) (West 2011).

electronics,²²² some computer companies have established programs that allow consumers to return used laptops for recycling,²²³ and the Pennsylvania Recycling Markets Center has funded collection and recycling efforts.²²⁴ Still, a great many Pennsylvanians have old computers, monitors, CD players, cell phones, and other electronic devices sitting in their garage, basement, or attic because they are unwilling to throw them away.

In November 2010, the governor signed legislation that will require collection and recycling of some consumer electronics and ban their disposal.²²⁵ The law applies to "covered devices," a term that includes desktop computers and monitors, laptop computers, and televisions, but does not include telephones, personal digital assistants, or global positioning systems.²²⁶ It requires manufacturers of such devices, particularly those marketed in Pennsylvania, to establish and implement a program for collecting and recycling them; DEP approval for that plan is required.²²⁷ Under this legislation, manufacturers are required to collect and recycle such devices each year in an amount (in pounds) equal to or greater than the weight of their market share of such devices for that year.²²⁸ Additionally, covered devices cannot be sold in Pennsylvania unless the manufacturer of those devices has registered to participate in this program.²²⁹ To backstop and ensure compliance with these provisions, the Act also bans the disposal of covered devices.²³⁰

²²² See *Electronics Collection Programs*, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt/community/household/14079/electronics_collection_programp/589591 (last visited Feb. 20, 2012).

²²³ See, e.g., *Easy Recycling for Home & Business*, DELL, <http://content.dell.com/us/en/corp/d/corp-comm/us-goodwill-reconnect.aspx> (last visited Feb. 20, 2012) (showing how the computer company Dell has instituted a recycling program for used computer equipment).

²²⁴ See *Electronic Scrap*, PA. RECYCLING MKTS. CTR., <http://www.parmc.org/market-development/electronic-scrap> (last visited Feb. 20, 2012).

²²⁵ See 35 PA. STAT. ANN. §§ 6031.505-.506 (West Supp. 2011).

²²⁶ *Id.* § 6031.102.

²²⁷ *Id.* § 6031.305.

²²⁸ *Id.* § 6031.305(a).

²²⁹ *Id.* § 6031.302(a).

²³⁰ *Id.* § 6031.506(a).

An important feature of this legislation is that it makes manufacturers primarily responsible for the collection and recycling of the devices they produce. It is thus unlike Act 101, which imposes on municipalities the responsibility for collection and recycling of bottles, cans, and similar consumer products.

To implement this recommendation:

- DEP should promptly and vigorously implement the new legislation.
- The General Assembly should consider legislation that would apply the same or similar principles and requirements to other consumer electronics, including cell phones and other devices that are specifically excluded from this legislation.

c. Yard Waste

Act 101 categorically requires mandated municipalities to have leaf waste collection programs for residences as well as municipal, commercial, and institutional establishments.²³¹ The Act also prohibits municipal waste landfills from accepting for disposal "truckloads composed primarily of leaf waste" and prohibits resource recovery facilities from accepting such truckloads for any purpose other than composting.²³² The term "leaf waste" includes not only leaves, but also "garden residues, shrubbery and tree trimmings, and similar material, but [does not include] grass clippings."²³³ Nearly all Pennsylvania counties have composting facilities for leaf and other waste.²³⁴

To implement this recommendation:

- The General Assembly should amend the Act to change the term "leaf waste" to "yard waste." The

²³¹ 53 PA. STAT. ANN. § 4000.1501(c)(1)(ii)-(iii) (West 2011).

²³² *Id.* § 4000.1502(a).

²³³ *Id.* § 4000.103.

²³⁴ See *PROP's Compost Directory*, PROF'L RECYCLERS PA., <http://www.proprecycles.org/Compost%20Directory.html> (last visited Jan. 28, 2012) (showing a map of Pennsylvania with colored-in counties representing those with composting).

term "leaf waste" in the Act has been confusing because the legal definition is broader than just leaves. The more widely used term for such materials is "yard waste." Changing the term will thus eliminate confusion about what materials are required to be collected.

- The General Assembly or the EQB should simply prohibit landfills or resource recovery facilities (other than composting facilities) from accepting yard waste.²³⁵ The prohibition against accepting "truckloads comprised primarily of" such waste has been difficult to enforce. DEP should provide guidance to haulers and municipalities to ensure that haulers do not pick up such materials for disposal. DEP should also consider providing guidance to haulers and municipalities on places where yard waste, once picked up, can be taken.

d. Food Waste

Food waste includes fruit and vegetable scraps from food preparation as well as uneaten food that is not kept as leftovers in homes and apartments.²³⁶ Food waste also comes from larger sources, such as restaurants and stores.²³⁷ A 2001 study of Pennsylvania's municipal waste led DEP to focus more attention on food waste, though it is still not treated in the same way as yard waste. The 2001 study found that organic waste, which includes not only food waste and yard waste, but also wood waste, diapers, and textiles, comprised about one third of residential and commercial waste found in landfills, or an estimated 3.2 million

²³⁵ See 310 MASS. CODE REGS. 19.017(3) (2010) (banning leaves and other yard waste from disposal, transfer, and incineration facilities).

²³⁶ See *Food Waste*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/wastes/conservation/materials/organics/food> (last updated Nov. 28, 2011).

²³⁷ See Tina Mather et al., *Food Waste Remains Persistent Problem at Farms, Grocery Stores and Restaurants*, CALIFORNIA WATCH (March 31, 2010), <http://californiawatch.org/health-and-welfare/food-waste-remains-persistent-problem-farms-grocery-stores-and-restaurants>. Agricultural waste, another form of food waste, is ordinarily managed at farms. See *id.*

tons per year.²³⁸ Organic waste, it said, is the number one recyclable material that ends up in a landfill.²³⁹ Food waste disposal alone was estimated at 1.1 million tons.²⁴⁰ As a result of the 2001 study, DEP established a grant program to develop public and private composting capacity or infrastructure for organic waste, including food waste.²⁴¹ Still, there is no obligation to compost food waste, and large amounts of food waste are disposed of annually.

Like yard waste, the optimal approach for food waste is to compost it and use the composted material as a soil amendment.²⁴² Composted material reduces the need for more expensive artificial fertilizers, improves soil by adding organic material, and stores carbon in topsoil that might otherwise be released as a greenhouse gas.²⁴³ The separation and use of food waste also creates jobs at composting facilities, in landscaping businesses, and elsewhere.²⁴⁴ The use of compost can also improve crop production in agriculture.²⁴⁵ Like the diversion of yard waste, the diversion of food waste from landfills reduces methane generation from the anaerobic decomposition of that waste;²⁴⁶ methane is 21 times more powerful than carbon dioxide as a greenhouse gas.²⁴⁷

²³⁸ *Statewide Waste Composition Study*, PA. DEP'T ENVTL. PROT., ES-12 (April 2003), <http://www.portal.state.pa.us/portal/server.pt?open=18&objID=505137&mode=2>.

²³⁹ *See id.*

²⁴⁰ *Id.* at 4-8.

²⁴¹ *Technical Assistance: About the Composting Technical Assistance Program*, PA. DEP'T ENVTL. PROT., <http://www.portal.state.pa.us/portal/server.pt?open=514&objID=589528&mode=2> (last visited Jan. 28, 2012).

²⁴² Jacob Leibenluft, *Are Garbage Disposals Bad for the Environment?*, SLATE.COM, http://www.slate.com/articles/health_and_science/the_green_lantern/2008/09/should_we_dispose_of_disposals.html (last updated Dec. 26, 2008).

²⁴³ *Increasing Recycling for Organic Materials*, *supra* note 123, at 2.

²⁴⁴ *Id.*

²⁴⁵ *See, e.g.,* Louise E. Jackson et al., *Scientists, Growers Assess Trade-Offs in Use of Tillage, Cover Crops and Compost*, 57 CA. AGRIC. 48, 48 (2003).

²⁴⁶ *Methane*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/methane/scientific.html> (last updated June 22, 2010).

²⁴⁷ *Id.*

To be sure, this issue raises a question about the best way to implement environmental goals. Most Pennsylvania municipal waste landfills recover methane for energy production, and thus limit their methane emissions into the atmosphere.²⁴⁸ These methane recovery systems are expensive to install and operate, and the energy recovered from these systems is being used for productive purposes.²⁴⁹ On the other hand, many landfills do not now have methane recovery systems, and it cannot be said that food waste at these landfills is contributing to energy production.

To implement this recommendation:

- The EQB should consider a disposal ban for food waste from commercial, municipal, and institutional entities that exceed a certain size threshold. The ban should then be extended to residential sources, at least in mandated municipalities. Persons who engage in on-site composting of food waste, of course, would be exempt from this ban.
- DEP should also direct grants toward any additional needed composting facilities and other infrastructure to manage the increase in food waste diversion. In conjunction with the Recycling Markets Center, DEP should ensure that markets exist for the additional composted material.
- To reduce greenhouse gas emissions, the EQB should consider a rule categorically requiring methane recovery systems at landfills.
- DEP should also conduct a comparative sustainability assessment to determine if methane recovery is preferable to food waste composting for such waste.

²⁴⁸ See *Pennsylvania Landfill Methane Projects*, PA. DEP'T ENVTL. PROT., <http://www.portal.state.pa.us/portal/server.pt?open=514&objID=589657&mode=2> (last updated July 28, 2011) (providing a map of Pennsylvania landfills that carry out methane recovery projects).

²⁴⁹ See *id.* (explaining how the methane is productively used at each landfill with a methane recovery project).

(vii) DEP Should Adopt a Competitive Grant Program for Recycling and Waste Reduction Innovations

The Act 101 grant programs help municipalities establish and implement recycling programs,²⁵⁰ but they are not as good at encouraging innovations in recycling and waste reduction. Yet achievement of more ambitious goals would require such innovations.

Florida law provides an idea about how to address this issue. The state authorizes an innovative grants program.²⁵¹ Innovative grants are to be awarded to applicants who demonstrate new and innovative ways to process recycling materials or reduce waste overall.²⁵² While the Florida legislature did not provide funds for this program in the fiscal year of 2009-2010,²⁵³ Pennsylvania could adapt the idea for this program for its own use.

To implement this recommendation:

- DEP could establish a small (say, \$250,000 annually) competitive grant program from money received by the recycling fund. The program would be awarded to applicants who demonstrate new and innovative methods to further the Act's goals. These methods would need to produce significant results and be replicable. Grants would not be limited to municipalities, but would be available to private companies, individuals, and educational institutions.
- If the General Assembly increases the recycling fee as recommended in section C below, it could set aside some or all of the additional receipts to create and expand private sector incentives for waste reduction and recycling. Some of that

²⁵⁰ See 53 PA. STAT. ANN. § 4000.902 (West 2011).

²⁵¹ See Charles F. Goddard, *FY 2010-11 Innovative Recycling and Waste Reduction Grants Update*, FLA. DEP'T ENVTL. PROT., 2 (June 18, 2009), http://www.dep.state.fl.us/waste/quick_topics/publications/shw/recycling/InnovativeGrants/IGYear12/Update_memo_FY10-11_FINAL.pdf.

²⁵² FLA. STAT. ANN. § 403.7095(1)(a)-(c) (West 2008).

²⁵³ Goddard, *supra* note 251, at 1.

additional funding could be used to support this competitive grant program at a much higher level.

(viii) The General Assembly Should Adopt a Revolving Fund to Support Specialized Recycling Programs

It is increasingly clear that grant programs alone will not provide the necessary funding to develop new recycling capacity. While recycling program startup costs are high, investment returns for recycling have the potential of producing even higher returns.²⁵⁴ The profitability of recycling is evidenced by DEP's assertion that 70 percent of municipal collection is conducted by private industry.²⁵⁵ Thus, it makes sense to consider an alternative to grant programs—to use revolving, low- or no-interest loans to jumpstart specialized processing programs in the private sector, to lower startup costs, and to entice the development of new collection and processing plants.²⁵⁶ New private facilities would emerge with the capability of handling specialized recyclables, such as food and electronic waste, and in turn, more waste would be diverted from the current waste stream.

Logistically, the program would work in the following manner: The General Assembly would initially appropriate a moderate, one-time disbursement to establish a revolving credit fund. Private industries interested in collecting and processing specialized materials, such as organic waste or electronics, could

²⁵⁴ See, e.g., *Economic Benefits*, PA. DEP'T ENVTL. PROT., http://www.portal.state.pa.us/portal/server.pt/community/benefits_of_recycling/14061/economic_benefits/589514 (last visited Jan. 28, 2012) (showing high return on recycling business). Properly sorted material has the potential for bringing in large returns; for instance, properly separated clear glass can retrieve a much higher per-ton return than mixed green, brown, and clear glass. See *Markets for Recovered Glass*, U.S. ENVT'L PROT. AGENCY (Dec. 1992), <http://epa.gov/osw/nonhaz/municipal/pubs/cok.pdf>.

²⁵⁵ *County and Municipal Programs Act 101 Reporting*, *supra* note 24.

²⁵⁶ See, e.g., Cal. Integrated Waste Mgmt. Bd., *Recycling Market Development Revolving Loan Program*, CNTY. OF VENTURA PORTAL, 1 (Jan. 1, 2000) http://portal.countyofventura.org/portal/page/portal/PUBLIC_WORKS/wasteManagement/commercial/busibusi_assistance/rmdz/3_1_4_2loansumm.pdf (showing how California uses such loans). California is beginning to use revolving credit for demand-side market development. *Id.*

apply for a loan to defray startup costs. Because these specialized recyclables yield a high market return, the private industries would then repay the Commonwealth's revolving credit fund once the processing facility is operational. The return on these loans could then be reinvested into other programs across the state. This program would require very little of the General Assembly aside from a one-time appropriation. Additional changes to the Act would not be necessary because DEP is already authorized under the Act to oversee a program of this nature.²⁵⁷ Thus, with minimal effort, the Commonwealth could increase waste diversion and boost its overall recycling rate by increasing collection capacity across the state; this will make it more likely that the Commonwealth will be able to reach any extended goals set for the recycling rate in the coming years.²⁵⁸

Composting of organic waste is a good example to illustrate the potential success of a revolving loan program. Compost enriches soil, helps control erosion, and reduces the need for water and chemical fertilizers.²⁵⁹ Composted materials also have a mandated recycling market because the Act requires government agencies to use recycled material "for the maintenance of public lands."²⁶⁰ But while the potential for higher return on the product from composting facilities is high, initial startup is typically cost-prohibitive.²⁶¹ Therefore, by offsetting startup costs with low- or

²⁵⁷ See 53 PA. STAT. ANN. § 4000.301 (West 2011).

²⁵⁸ Of course as an added benefit, this sort of revolving loan program would boost the economy, providing additional employment opportunities and tax revenue for the Commonwealth.

²⁵⁹ *Wastes-Resource Conservation-Reduce, Reuse, Recycle-Composting*, U.S. ENVTL. PROT. AGENCY, <http://www.epa.gov/epawaste/conserves/rrr/composting/benefits.htm> (last updated Nov. 3, 2011).

²⁶⁰ 53 PA. STAT. ANN. § 4000.1503(c) (West 2011). Act 101 creates an *instant market* for composted mulch and other landscaping end products, as the Act requires government agencies to use recycled material. *Id.* ("All Commonwealth agencies responsible for the maintenance of public lands in this Commonwealth shall, to the maximum extent practicable and feasible, give due consideration and preference to the use of compost materials in all land maintenance activities which are to be paid with public funds.").

²⁶¹ See *Composting Yard Trimmings and Municipal Solid Waste*, U.S. ENVTL. PROT. AGENCY, 115 (May 1994), <http://www.epa.gov/ttnatw01/burn/burnalt1.pdf> (explaining the costs associated with starting composting facilities).

no-interest loans, DEP could enable more processing facilities to emerge across the Commonwealth.

Revolving loans would not replace the Act's current municipal grant programs. Rather, the loans would be available only to private companies interested in developing facilities to recycle specialized, high-return recyclables. Further, a revolving credit line might relieve some of the Act's financial burden on municipalities by lowering municipal contracting costs. As already noted, DEP states that about 70 percent of municipalities contract with private companies to collect recyclables.²⁶² If these private companies saved on overhead and startup costs as a result of the proposed low- or no-interest loans, municipalities would have leverage to renegotiate their contracts with private collection companies, thereby passing industry savings on to municipalities. Adopting this form of renewable funding would, therefore, go a long way toward increasing waste diversion rates and ultimately increasing the overall recycling rate. An increase in the recycling fund,²⁶³ as recommended in section C, could be used to increase the amount of money available to the private sector for revolving loans.

(ix) DGS Should Fully Implement Its Act 101 Responsibilities

Act 101 requires every Commonwealth agency to adopt "a source-separation and collection program for recyclable materials[,] . . . including, at a minimum, aluminum, high grade office paper and corrugated paper."²⁶⁴ Additionally, the Act requires every government agency to develop "a waste reduction program for materials used in the course of agency operations."²⁶⁵ The Act was designed to enhance market development by requiring government agencies to purchase materials, supplies, and equipment with a minimum percentage of recycled content, as specified for federal agencies in guidelines issued under the

²⁶² See *County and Municipal Programs Act 101 Reporting*, *supra* note 24.

²⁶³ See 53 PA. STAT. ANN. § 4000.706(c) (West 2011) (setting forth the authorized uses of the recycling fund).

²⁶⁴ *Id.* § 4000.1503(a).

²⁶⁵ *Id.* § 4000.1503(b).

Resource Conservation and Recovery Act of 1976 (RCRA).²⁶⁶ These requirements were intended to ensure that state government led by example, that it walked the recycling talk. Act 101 also put DGS in charge of Commonwealth agency recycling and waste reduction.²⁶⁷ DGS was a logical choice in 1988 because of its overall responsibility for management of state government operations, including acquisition of supplies.²⁶⁸

DGS has not, however, carried out these responsibilities with the effort that is needed.²⁶⁹ In 2007, the governor's office issued a management directive "to reinvigorate Commonwealth agency recycling programs[,] to ensure that Commonwealth agencies are meeting or exceeding the requirements of Act 101 . . . and to direct Commonwealth procurement toward increasing the demand for environmentally preferable products."²⁷⁰ This directive makes the Commonwealth Agency Recycling Office (CARO), which operates within DGS, responsible for overseeing agency recycling, waste reduction, and procurement efforts.²⁷¹ Among other things, the management directive requires each agency to appoint a recycling and waste reduction coordinator, to set a waste diversion (or recycling and waste reduction) goal to be achieved within one year, to establish a goal for "increasing the use of environmentally

²⁶⁶ See *id.* § 4000.1505 (citing 42 U.S.C. § 6901-92k (2006)); see also 40 C.F.R. §§ 247.1-17 (2011) (federal procurement guidelines). For a full list of current minimum recycled content, see Bureau of Purchasing, *Recycled Content Minimum Requirement*, PA. DEP'T GEN. SERVS., http://www.portal.state.pa.us/portal/server.pt/community/procurement/1271/recycled_content_requirements/256745 (last visited Apr. 3, 2011).

²⁶⁷ See tit. 53, § 4000.1503.

²⁶⁸ See *generally About DGS*, PA. DEP'T. GEN. SERVS., http://www.dgs.state.pa.us/portal/server.pt/community/department_of_general_services/1230/about_dgs/251142# (last visited Jan. 28, 2012) (discussing the duties of DGS).

²⁶⁹ *Pennsylvania's Recycling Program: 2000-2001 Act 101 Annual Report to the General Assembly of Pennsylvania*, *supra* note 79, at 6 (demonstrating that little attention was given to the agency recycling mandate).

²⁷⁰ *Management Directive 205.22 Revised, Recycling, Waste Reduction and Procurement of Environmentally Preferable Products*, § 3 (Aug. 29, 2007), http://www.state.pa.us/portal/server.pt/gateway/PTARGS_0_2_5325_711_2085_71_43/http%3B/pubcontent.state.pa.us/publishedcontent/publish/global/files/management_directives/management_administrative_support/205_22.pdf.

²⁷¹ *Id.* § 7(c).

preferable products," and to set five- and ten-year goals.²⁷² CARO is required to submit to DEP an annual report on "the recycling, waste reduction and environmentally preferable purchasing activities of Commonwealth agencies."²⁷³ Each agency is to shoulder its own implementation costs.²⁷⁴

Still, there are reasons to believe that DGS's efforts continue to lag. DGS has not submitted its annual report to DEP. Recycling containers are not even in evidence in many Commonwealth buildings, including large buildings within several blocks of the Capitol Building in Harrisburg. CARO's recycling policy, published pursuant to the directive,²⁷⁵ claims that CARO oversees the collection of office paper, newspapers, corrugated cardboard, glass, aluminum, plastic, metal, toner cartridges, electronics, organic waste, carpet, batteries, and compact discs in the Harrisburg metropolitan area.²⁷⁶ But this list does not match the list of acceptable versus unacceptable materials published on CARO's website.²⁷⁷ According to CARO's site, newspapers, magazines, and corrugated cardboard are only collected from "larger [buildings]," and food waste (organic waste) is listed on CARO's "unacceptable materials" list along with common paper

²⁷² *Id.* § 7(a)(1), (a)(5)(b).

²⁷³ *Id.* § 7(c)(1)(h).

²⁷⁴ *Id.* § 8.

²⁷⁵ *Id.* § 7(c)(1)(a).

²⁷⁶ Commonwealth Agency Recycling Office, *Commonwealth Agency Recycling/Waste Reduction Policy for Harrisburg Area Locations*, PA. DEP'T GEN. SERVS., http://www.google.com/url?sa=t&rct=j&q=&esrc=s&frm=1&source=web&cd=1&ved=0CCQQFjAA&url=http%3A%2F%2Fwww.revenue.state.pa.us%2Fportal%2Fserver.pt%2Fgateway%2FPTARGS_6_2_138749_20263_962073_43%2Fhttp%253B%2Fpubcontent.state.pa.us%2Fpublishedcontent%2Fpublish%2Fcop_general_government_operations%2Fdgs%2Fcommunity_content%2Frecycling_policy.doc&ei=1uQtT7ejD6L30gH449jiCg&usg=AFQjCNFcG2SwdXTq8kpS_ymuofwugBqEXQ&sig2=_F4urVMby6nEc6b2ve5Fnw (last visited Feb. 4, 2012).

²⁷⁷ Compare *id.*, with Commonwealth Agency Recycling Office, *How the Commonwealth Recycles*, PA. DEP'T GEN. SERVS., http://www.dgs.state.pa.us/portal/server.pt/community/commonwealth_agency_recycling/20263 (follow "How the Commonwealth of Pennsylvania Recycles" hyperlink) (last visited Feb. 4, 2012).

materials, such as napkins, paper towels, paper cups, paper plates, and yellow or brown envelopes.²⁷⁸

To implement this recommendation:

- DGS should, as a starting point, publish a report describing its efforts to implement the Act as well as the management directive. Both the 2007 management directive and Act 101 require such a report.
- Governor Tom Corbett's DGS secretary and other cabinet officers should be directed to fully implement their responsibilities for recycling, waste reduction, and environmentally responsible purchasing under Act 101 and the management directive.
- Failing that, the Act authorizes citizen suits against "any person who is alleged to be in violation of this [A]ct" and the award of reasonable attorney fees and costs.²⁷⁹ The term "person" specifically includes DGS.²⁸⁰ While few if any citizen suits have been filed under the Act, this appears to be an appropriate subject for a citizen suit.

(x) The Commonwealth Should Encourage Markets by
Establishing an Honor Roll of Companies That Use Substantial
Amounts of Recycled Content in Their Products

Almost all products, from the clothes on our backs to the carpet under our feet, are made from some amount of recycled material.²⁸¹ Manufacturers, believing consumers would balk if products were advertised as recycled, do not always advertise the

²⁷⁸ Commonwealth Agency Recycling Office, *supra* note 277.

²⁷⁹ 53 PA. STAT. ANN. § 4000.1711(a) (West 2011).

²⁸⁰ *Id.* § 4000.103.

²⁸¹ See *Don't Overlook Textiles!*, COUNCIL FOR TEXTILE RECYCLING, <http://www.smartasn.org/textilerecycle/index.htm> (last visited Jan. 13, 2012).

recycled content.²⁸² While manufacturers and retailers may be correct about the older generation, the emerging generation, steeped in the mantra "reduce, reuse, recycle," actively seeks products made from recycled materials²⁸³ and, as a result, a growing "green movement" has taken the market by storm.²⁸⁴

In 2000, "DEP heightened its emphasis on recycling market development with the creation of the Recycling Markets Section within the Bureau of Land Recycling and Waste Management."²⁸⁵ These initial efforts included outreach activities, the creation of a "recycled products directory," the commission of several market development and waste composition studies, the establishment of a market development center, and the development of several training programs and seminars.²⁸⁶ Most of these efforts were above and beyond the Act's requirements.²⁸⁷

To improve the market for recycled materials, DEP later created the Recycling Markets Center, which is run as a separate,

²⁸² See Ellen Telander, *Recycled Products Guide*, RECYCLING ASS'N OF MINN., <http://www.recycleminnesota.org/htm/ReProd.htm> (last visited Jan. 30, 2012) (stating that products sometimes do not sell when they are advertised as recycled); see also *Eco-Friendly Products*, ALL-RECYCLING-FACTS.COM, <http://www.all-recycling-facts.com/eco-friendly-products.html> (last visited Jan. 30, 2012) (explaining that locating recycled products can be difficult due to the fact that manufacturers do not always advertise products as recycled).

²⁸³ See Pat Williams, *Reduce, Reuse, Recycle!*, REAL ESTATE TOURIST BLOG (Nov. 15, 2011), <http://www.real-estate-tourist.com/2011/11/reduce-reuse-recycle/>. A new "green movement" has emerged in recent years as the new generation takes over the product market. See *id.* One only needs to walk down the aisle in the local Target store to see that more and more products are advertised as recycled and are geared toward the emerging generation. See, e.g., *Products*, TARGET, <http://www.target.com/s?searchTerm=green+recycle+reuse&category=0|All|matchallany|all+categories> (last visited Jan. 13, 2012).

²⁸⁴ See generally Alice Kaswan, *Greening the Grid and Climate Justice*, 39 ENVTL. L. 1143, 1153-55 (2009) (discussing the "green movement" in the context of climate change); Chris Arnold, *Green Movement Sweeps U.S. Construction Industry*, NAT'L PUB. RADIO (July 2, 2006), <http://www.npr.org/templates/story/story.php?storyId=5528063> (showing how the green movement has impacted the construction industry).

²⁸⁵ *Pennsylvania's Recycling Program: 2000-2001 Act 101 Annual Report to the General Assembly of Pennsylvania*, *supra* note 79, at 8.

²⁸⁶ *Id.* at 8-9.

²⁸⁷ See 53 PA. STAT. ANN. §§ 4000.301, .508 (West 2011).

nonprofit entity.²⁸⁸ The center provides business services (such as market analysis, startup assistance, and business strategies), environmental services (such as commodity evaluations, "feasibility analysis," cost avoidance, and manufacturing techniques), and economic services (such as tax incentive assistance, supply and quality evaluation, networking, and policy advocacy).²⁸⁹ Further, DEP provides a host of resources on its Recycling Market Development website.²⁹⁰ Entities seeking assistance can access sample contracts, ordinances and policies, as well as marketplace profiles.²⁹¹

To implement this recommendation:

- The honor roll would be based on specified criteria for the weight of recycled content, the length of time that recycled content had been used in the manufacturing operation, and other factors. The honor roll could even have tiers, analogous to the silver, gold, and platinum certifications provided by the U.S. Green Building Council's Leadership in Energy and Environmental and Energy Design program. The list could be posted on DEP's website, and honorees would be allowed to use their honor roll status for advertising and other purposes. An independent advisory body to DEP should be entrusted with the responsibility of reviewing applications and making recommendations to DEP concerning inclusion on the honor roll.
- In addition, the Commonwealth should specifically involve the Recycling Markets Center and its stakeholders in efforts to ensure the continuing availability and attractiveness of

²⁸⁸ *About RMC, supra* note 70.

²⁸⁹ *RMC Services*, PA. RECYCLING MKTS. CTR., <http://www.parmc.org/node/3> (last visited Feb. 4, 2011).

²⁹⁰ *See Recycling Market Development*, PA. DEP'T ENVTL. PROT., <http://www.dep.state.pa.us/dep/DEPUTATE/AIRWASTE/WM/recycle/Market/market.htm> (last visited Apr. 3, 2011).

²⁹¹ *Id.*

markets for the materials that the newly energized Act 101 program would yield.

- Finally, DEP and appropriate stakeholders should consider what other private sector incentives for recycling and waste reduction would contribute the most to achieving the Commonwealth's recycling and waste reduction goals. They should then consider mechanisms for creating and implementing those incentives. An increase in the recycling fee, as recommended in section C, would provide a means of funding these additional incentives.

C. The General Assembly Should Increase the Recycling Fee and Make It Permanent

Act 101 currently imposes a \$2 per-ton recycling fee on landfill-bound and resource recovery facility-bound waste.²⁹² This fee is used to fund most Act 101 programs, now generating about \$35 million annually.²⁹³

On May 12, 2010, Governor Rendell signed into law an amendment to Act 101 that extends the life of the recycling fee, which was due to expire on January 1, 2012, to January 1, 2020.²⁹⁴ Funds generated by the fee have declined over the past decade; the decline is primarily attributable to declining disposal of out-of-state waste in Pennsylvania facilities.²⁹⁵

The recycling fee also faces other challenges. Because the fee has not been increased or adjusted for inflation since the Act's

²⁹² 53 PA. STAT. ANN. § 4000.701(a) (West 2011).

²⁹³ See *Comparative Financial Statement*, PA. DEP'T ENVTL. PROT. (Aug. 26, 2010), http://www.dep.state.pa.us/dep/subject/advoun/solidwst/2010/9-10-10/FY11-12_Recycling_Fund%20_Spending_Plan.pdf.

²⁹⁴ Act of May 12, 2010, No. 2010-24, sec. 1, § 701(d), 2010 Pa. Laws 189, 190.

²⁹⁵ See *Waste, Recycling, Growing Greener Fees Collected by DEP Continue Decline in 2008-09*, PA. ENV'T DIG. (Nov. 09, 2009), <http://www.paenvironmentdigest.com/newsletter/default.asp?NewsletterArticleID=13970&subjectID=>.

inception in 1988, it is equivalent to only \$1.05 in 2011 dollars.²⁹⁶ Thus, its purchasing power has been cut in half over more than two decades. Money from the recycling fund has also, over the years, been diverted on a fairly regular basis to other initiatives.²⁹⁷ Indeed, the legislation extending the recycling fee for eight additional years also diverts \$5 million over four years to clean up old waste tire piles.²⁹⁸

Finally, the 2010 legislation represents the fourth time since 1988 that the sunset date for the fee has been extended. It was originally set to expire on October 25, 1998.²⁹⁹ In 1997, the Governor signed a law extending the fee to October 25, 2003.³⁰⁰ In December 2002, less than a year before it was set to expire, the fee was extended to January 1, 2009.³⁰¹ In 2006, the fee was extended again—to January 1, 2012.³⁰² Finally, in 2010, the Governor signed this legislation extending the fee to January 1, 2020.³⁰³ Plainly stated, the constant legislative dance is a waste of resources—both on the part of the legislature and DEP—and an impediment to effective implementation of the program.

²⁹⁶ Compare Municipal Waste Planning, Recycling and Waste Reduction Act, No. 1988-101, § 701(a), 1988 Pa. Laws 556, 584, with Act of May 12, 2010, No. 2010-24, sec. 1, § 701(a), 2010 Pa. Laws 189, 189 (showing a lack of adjustment for inflation since Act 101's enactment in 1988 to the present); see *CPI Inflation Calculator*, <http://146.142.4.24/cgi-bin/cpicalc.pl> (last visited Mar. 23, 2012) (calculation of inflation effect on fee).

²⁹⁷ See generally *Pennsylvania's Recycling Page*, *supra* note 4 (showing a lack of data and movement with Pennsylvania's recycling fee initiative since 2008).

²⁹⁸ Commonwealth Enterprise Portal, *DEP Announces Completion of Beaver County Tire Pile Remediation Project*, PA. DEP'T ENVTL. PROT., <http://www.portal.state.pa.us/portal/server.pt/community/newsroom/14287id=186&typeid=1> (last visited Jan. 13, 2012).

²⁹⁹ See Municipal Waste Planning, Recycling and Waste Reduction Act, No. 1988-101, § 701(d), 1988 Pa. Laws 556, 584.

³⁰⁰ See Act of Nov. 26, 1997, No. 1997-57, sec. 13, § 1936-A(b), 1997 Pa. Laws 530, 544.

³⁰¹ See Act of Dec. 9, 2002, No. 2002-175, sec. 2, § 701(d), 2002 Pa. Laws 1404, 1404.

³⁰² See Act of Nov. 9, 2006, No. 2006-140, sec. 1, § 701(d), 2006 Pa. Laws 1347, 1347.

³⁰³ See Act of May 12, 2010, No. 2010-24, sec. 1, § 701(d), 2010 Pa. Laws 189, 190.

Because the fee supports municipality recycling programs that would otherwise be unfunded mandates,³⁰⁴ the ongoing threat of termination of the fee means that the core of the program is more or less continually at risk. This is especially challenging to the various grant programs under the Act, which require applications from municipalities, operate on an annual basis, and thus have significant lead times.³⁰⁵ In November 2009, prior to the most recent extension, DEP began shutting down various programs to avoid spending money that may not be available. The impact of such actions on municipal recycling programs and the private sector companies that support them is considerable.

To implement this recommendation:

- The General Assembly should consider increasing the fee to \$3 per ton to adjust for the effect of inflation since 1988. Such an increase would cost each Pennsylvanian about one additional dollar per year.³⁰⁶ Because the money would not go into the general fund, and because money in the recycling fund is dedicated to specific purposes, it is not a conventional tax. The General Assembly should also consider setting aside some or all of this additional money for programs to encourage and reward private sector recycling and waste reduction efforts—an area that did not get significant attention in Act 101. This would enable the General Assembly to provide greater private sector incentives without compromising current and projected expenditures for municipalities and others in the existing grant programs.

³⁰⁴ See Act 101: Pennsylvania's "Municipal Waste Planning, Recycling and Waste Reduction Act," PA. DEP'T ENVTL. PROT., <http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/facts/act101.htm> (last visited Jan. 13, 2012).

³⁰⁵ See 53 PA. STAT. ANN. §§ 4000.901-.905 (West 2011).

³⁰⁶ The national per capita disposal rate in 2005 was 2.46 pounds per day, or about 900 pounds per year. *Municipal Solid Waste in the United States: 2005 Facts and Figures*, U.S. ENVTL. PROT. AGENCY, 14 (Oct. 2006), <http://www.epa.gov/osw/nonhaz/municipal/pubs/mswchar05.pdf>.

- The General Assembly should eliminate the fee's sunset date. This should be done considerably earlier than 2019 to avoid disrupting the program again.
- The General Assembly should provide for an annual adjustment of the fee to account for inflation. This would ensure that the purchasing power of the fee stays constant over time and is not eroded by inflation.

IV. CONCLUSION

The first generation that learned to "reduce, reuse, [and] recycle" because of Act 101 has now come of age. Young men and women are taking their place in society, becoming voters and parents—and many are becoming lawyers. And they tend to expect that the recycling and waste reduction programs they learned about in elementary school will be passed onto their children.

Act 101 is currently at a critical juncture. The Act sustains a multi-billion dollar industry, employs over 52,000 individuals across the Commonwealth, and is responsible for considerable savings of materials and energy as well as greenhouse gas reductions. Yet, it has become a maintenance program in recent years, and it has lost much of the energy and momentum that characterized its first decade. The recycling rate may or may not have changed in nearly a decade, and Pennsylvania's claim to national leadership is fading as other states continue to improve and strengthen their programs.

The recommendations in this article were developed by law students who are part of that first generation. These recommendations would lead to a more dynamic and effective program—a program more capable of turning waste into economic opportunity and job creation. These recommendations provide a platform for a serious conversation about the future direction of this program. To ensure that the opportunities of this program are fully available to the next generation of Pennsylvanians, including children who are now in elementary school, that conversation needs to begin now.