

Managing Municipal Waste in New Hampshire

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EXECUTIVE SUMMARY

Current in-state landfill capacity is adequate for the next 25 years, when New Hampshire will have to begin the potentially expensive endeavor of exporting waste, according to New Hampshire's Department of Environmental Services. To extend the lifetime of in-state solid waste disposal capacity, New Hampshire must more effectively reduce the volume of solid waste disposed of in landfills or incinerators. Reducing the amount of solid waste generated (source reduction), augmenting the state's disposal capacity through the construction of new landfills, or increasing the recycling rate on a district-by-district basis are three approaches that can address solid waste management problems in New Hampshire. This report focuses primarily on the third of the aforementioned options.

Several policy options are available to help New Hampshire municipalities recycle more effectively. The standardization of data collection and implementation of a measurable policy goal could improve the accuracy of data collected by the state and allow state agencies to more effectively identify and assist the areas in need. One way to begin this process would be to mandate that all private haulers report tonnage processed directly to the state. This could help create a more complete data set, which could better identify problem areas and target resources more effectively. A second policy option is to continue to encourage and assist municipalities in implementing "pay as you throw" (PAYT) programs, which are proven to increase the recycling rate by reducing waste disposal costs as individuals are forced to pay for the trash they generate. Towns that have implemented PAYT (e.g., Littleton) have recycling rates that are 10 percent higher than the state average. Instead of requiring communities to pay for solid waste generation, PAYT programs encourage individual responsibility for waste generation.

One way to raise the rapidity and effectiveness with which municipalities implement PAYT programs is to increase state funding for waste management programs and personnel. Additional statewide waste management initiatives cannot be undertaken without personnel increases, which can properly manage increased responsibilities that such actions would require. Finally, the state should explore the imposition of a statewide surcharge on tipping fees to provide funds for the necessary efforts and to discourage the wholesale disposal of recyclable items in landfills.

These four policy options, while challenging and potentially costly, could allow New Hampshire's waste management programs to make viable efforts to extend the state's solid waste disposal capacity and forestall the necessity of resorting to waste exportation. While it is not certain which particular policy option is best suited for New Hampshire at this time, we recommend a combination of the four options mentioned above. Alternatively, a strong focus on one option may extend the lifetime of in-state landfill capacity and New Hampshire's ability to determine independently how it deals with solid waste.

1. SOLID WASTE MANAGEMENT IN NEW HAMPSHIRE

New Hampshire generates solid waste at a significantly higher rate than the nation as a whole. New Hampshire generated 6 pounds of waste per person per day, as opposed to the national average of 4.5 pounds per person per day.¹ At the current rate, New Hampshire's disposal capacity is projected to be adequate for only the next 25 years.² After that time, the state will need to increase the amount of waste it exports to out-of-state facilities, which may significantly raise waste management costs.³ Increasing the recycling rate may help extend the viability of in-state waste disposal options.

New Hampshire instituted a hierarchy of solid waste management techniques in 1990. The hierarchy, in order of most preferred to least, is as follows:

- Source Reduction
- Recycling and Reuse
- Composting
- Waste-to-Energy Technologies (including incineration)
- Incineration Without Resource Recovery
- Landfilling

In 1996, the New Hampshire legislature adopted Chapter 149-M: Solid Waste Management, which dictated that the state should have reached a "40 percent minimum weight diversion of solid waste landfilled or incinerated on a per capita basis" through source reduction, recycling, reuse, and composting.⁴ Source reduction and reuse are both difficult to measure; as such, the state primarily uses composting and recycling figures to determine if this goal has been met. As of 2006, the state has failed to meet this goal.

Although nearly 99 percent of New Hampshire residents have access to recycling, the state average recycling rate in 2006 was 20.67 percent, well below the national average of 32.5 percent.⁵ Figures for the 2006 commercial recycling rate were unavailable, but in 2005, approximately 48 percent of commercial waste in New Hampshire was recycled.⁶ In 2006, the EPA set a national recycling-rate goal of 35 percent.

The New Hampshire Department of Environmental Service (DES) is charged with implementing New Hampshire's municipal solid waste (MSW) and recycling policies. In 2000, there were 11 positions related to statewide recycling, including a state recycling coordinator, program administrators and a recycling markets developer. These positions were distributed across the Governor's Recycling Program, the NH Department of Resources and Economic Development and DES. The Governor's Recycling Program was discontinued in 2003, and two DES staffers are currently responsible for statewide recycling programs.⁷ The DES grant program for Do-It-Yourself oil recycling has also become inactive. Thus, responsibility for recycling currently falls primarily to municipalities and non-profit organizations.

2. BENEFITS OF RECYCLING

Recycling is an effective and important practice that has many tangible benefits. Recycling diverts useful materials from becoming waste in landfills, allowing towns to lower solid waste management costs through the avoidance of tipping fees as well as preserving in-state solid waste disposal capacity by extending the life of landfills. Recycling reduces the need for the construction of new landfills, creates jobs and stimulates economic development in industries that manufacture products using recycled materials. Furthermore, the sale of recycled materials provides a revenue stream for communities that can help offset some of the costs of municipal solid waste management programs.⁸

3. PAY AS YOU THROW MODELS

Pay As You Throw (PAYT) is a method of MSW management where citizens are charged by either weight or volume for the waste they produce. Generally, citizens pay by container of trash or purchase special trash bags. PAYT programs can be combined with a variety of collection and processing methods, including curbside pickup and drop-off centers or single or dual stream processing. Generally, residents are not charged for recyclables, providing a financial incentive to separate waste from recyclables. PAYT programs have been proven to save money, reduce waste and increase recycling rates by forcing citizens to pay for the waste they generate and raising awareness about the true costs of solid waste disposal.⁹ PAYT programs have decreased trash volume by up to 35 percent in many areas, increased recycling rates by up to 100 percent, and reduced solid waste management costs by up to 50 percent.

3.1 In-state PAYT Models and Littleton Case Study

Forty-seven of 228 New Hampshire towns currently have PAYT programs.¹⁰ DES estimates that New Hampshire towns that operate PAYT programs have recycling rates that are, on average, five to ten percent higher than statewide averages.¹¹

Littleton's PAYT program has been particularly effective, as its recycling rates are roughly 50 percent above the statewide municipal average.¹² Demographically, Littleton is similar to other New Hampshire communities on some dimensions but different on others. Its population has a median age of 38.7 years, is 95.3 percent white, and 82.3 percent of residents have at least a high school diploma. Littleton's population density of 515 people per square mile is higher than the state average of 147 people per square mile. Littleton's median income level is \$36,300 per year, while the state median income is \$56,768 per year.

Through the institution of a PAYT program in 1993, Littleton has increased its recycling rate from approximately 15 percent to over 70 percent.¹³ This recycling rate may be slightly inflated, though, by Littleton's acceptance of recyclables from neighboring towns.¹⁴ In Littleton's program, residents purchase special bags to dispose of garbage at the specified transfer stations. The cost of the bags covers both the bag itself and the cost

of the town's waste management services. Property taxes do not cover waste disposal costs. Recycling is free, giving residents a monetary incentive to recycle.¹⁵

Through cost avoidance totaling approximately \$130,000, Littleton's recycling program has proven economically beneficial for the community. The program received only \$112,000 in municipal funds in 2008, including all infrastructure and operating costs as well as salary for five full-time staff members. Furthermore, the program does not always spend all of its allotment, returning its surplus of approximately \$65,000 in 2007 to community members through lower bag prices.¹⁶ The primary revenue streams for the center are sales of garbage bags and recyclables.

Littleton Transfer Station's manager, Tony Ilaqua, emphasized the role of education in explaining the recycling program's success. Education efforts, which cost a maximum of \$300 per year, include holding awareness events for businesses, contacting schools and using the media to publicize the program.

3.2 Out of State Models

3.2.1 Maine

Maine does not offer financial incentives to encourage towns to adopt PAYT programs and provides relatively few educational materials, yet 147 communities and organized townships had implemented PAYT programs as of 2002. In a 2000 study conducted by the Maine State Planning office, most communities with PAYT programs in place reported that trash volume had decreased and that recycling rates had increased following the program's implementation.¹⁷

PAYT programs were implemented with a variety of collection methods, including drop-off centers and curbside collection or a combination of both programs. While many expressed concern that such a program may increase illegal dumping, a 1995 study conducted by the Margaret Chase Smith Institute concluded that illegal dumping was only problematic during the first six months after the adoption of PAYT programs, and most Maine communities reported no problems of this nature.¹⁸

3.2.2 Massachusetts

Massachusetts does not require municipalities to adopt PAYT programs, but encourages them to do so voluntarily through grants. As of October 2004, 110 out of 351 cities and towns – ranging from towns with fewer than 300 residents to cities with 200,000 – had adopted PAYT Programs.¹⁹ The state first began offering grants to municipalities to create PAYT programs in 1996, and 29 communities per year created such programs at the grant program's peak. Municipalities in Massachusetts use three types of PAYT programs (which can be combined in practice):²⁰

- *Imprinted Trash bags:* Residents buy plastic bags that have an imprint of the name of the municipality. The cost of each bag includes both the cost of the bag itself and much of the cost of waste collection, transportation and disposal. Fifty-seven communities used this system as of 2004.
- *Stickers:* Residents must buy special labels or tags and place them on the trash bags or barrels they use, with different colored stickers or quantities of stickers denoting different volumes of waste. Thirty-six communities used this system as of 2004.
- *Barrel or Wheeled Cart:* Similar to the first option, rather than buying bags, residents use specially marked containers for their waste, with a fixed pick-up charge for each container.

Municipalities fund PAYT programs through a flat fee that compensates for the fixed costs of trash collection and a unit-based fee (i.e., per bag or container) to provide financial incentives to increase recycling and composting.²¹ Massachusetts PAYT programs have faced several challenges. The program has higher administrative costs, and the flat-fee may be perceived as a tax. Moreover, low-income families are disproportionately affected by the new fees, which may encourage illegal dumping. Nationwide studies have concluded, however, that illegal dumping has not increased significantly with the institution of PAYT programs.²² Massachusetts has relied on educational efforts to overcome these difficulties.²³

3.2.3 Iowa

Iowa is one of several states, including Minnesota, Washington and Wisconsin, that have mandated statewide adoption of PAYT programs.²⁴ In 1994, the Iowa General Assembly adopted Senate File 2300, which required solid waste planning areas that failed to achieve a 25 percent reduction in landfilled solid to develop draft ordinances to be used by local governments to establish PAYT programs.²⁵

Iowa communities adopted one of five major implementation options:

- Pre-Paid Bag
- Pre-Paid Tag or Sticker
- Subscription System: Households sign up for the collection and disposal of a specific number or size of garbage containers or bag per billing cycle
- Weight-Based System
- Hybrid System: Combination of a flat fee with a form of per unit fee; This was the most popular system in Iowa according to a survey of Iowa towns with PAYT Programs.²⁶

A survey revealed that 39 percent of Iowa towns that had adopted PAYT reported problems with illegal dumping. Towns also reported increased difficulties in planning for stable revenue streams with a per-unit charge system and administrative cost increases.

Sixty percent of communities, however, stated that administrative costs had remained constant or decreased after the adoption of a PAYT program. Difficulties were also encountered in charging multi-family households.²⁷

4. MATERIALS RECOVERY FACILITIES

Materials Recovery Facilities (MRFs) sort, crush, bale and shred recyclables manually or mechanically. The facility then sells these processed materials for industrial use.²⁸ Materials recovery facilities can be dual or single stream. In a dual stream MRF, paper products are collected separately from, plastics, glass and other recyclables. Single stream facilities process all recyclables together.²⁹

Single stream processing dramatically decreases collection costs, the highest component of recycling costs, by allowing the co-collection of materials. Co-collection also requires fleets to have fewer vehicles, as each vehicle can make more stops per hour and can carry larger loads. The overall operating cost of the MRF is also lower, and more materials can be processed per hour. Drawbacks to single stream include the purchases of more advanced equipment, a higher upfront capital cost, and greater contamination of the finished materials (which lowers their market value).³⁰

Most single stream MRFs operate similarly. After trucks or individuals deposit the recyclables onto the designated tipping area, recyclables are placed onto a conveyer belt, where they are usually sorted by human sorters. Next, the recyclables travel onto a bouncing, tilted conveyer belt that causes flat items, such as paper, to stay on the belt while cylindrical items, such as cans, roll off. Paper products are then placed into a trammel, or large rotating cylinder, from which heavy items, such as stones, fall out. After that, the paper recyclables are sent to a baling machine to be compacted and baled.³¹

Of the remaining recyclables, non-paper materials pass along a large rotating magnet, which separates the steel cans and places them into a holding bay. Lighter materials, such as plastics and aluminum, are then sorted from glass products by an air separator, which blows the lighter materials onto a different sorting line. Glass products are hand-sorted by color, and the other recyclables undergo a similar process. Finally, a quality check is made and the materials are sold.³²

There are currently 11 MRFs listed on the New Hampshire Department of Environmental Services website, but only four perform the types of sorting activities normally associated with a MRF. Of the 11 listed, three are regional, three are municipal, and five are private.³³ The four official MRFs in the state are the City of Keene, Turnkey Rochester, Androscoggin Valley and Hooksett Recycling. The City of Keene and Hooksett Recycling MRFs are dual stream. The Turnkey Rochester MRF is both single and dual stream, and the Androscoggin Valley MRF is multi-stream. Two proposed MRFs, to be built in Concord and Manchester, will be single stream.³⁴ The remaining seven MRFs were either not located in New Hampshire (such as Conigliaro Industries), not significantly automated (such as the MRFs operated by the town of Plymouth and

Littleton), or only took specific types of recyclables (such as J. Schwartz Motor Trans. Inc, which only accepts paper).³⁵

5. REGIONAL PARTNERSHIPS AND COOPERATIVES

Rural areas with low population densities present distinct challenges for recycling programs. In particular, small communities often do not generate enough recyclable material or the correct material (those, such as aluminum, with high market resale value) to create an incentive for citizens or businesses to recycle. Furthermore, the high cost of the machinery necessary to process recyclables and prepare them for market poses another barrier to the establishment of successful recycling programs in rural areas.³⁶

Establishing regional partnerships or cooperatives between towns could help overcome these obstacles. Partnerships allow municipalities to reduce the capital costs of beginning a Materials Recovery Facility (MRF) and to introduce economies of scale through the creation of more reliable markets for recyclables.³⁷

5.1 Chittenden Solid Waste District

The Chittenden Solid Waste Materials Recovery Facility processes recyclables for the Chittenden Solid Waste District (CWSD), which includes all of Chittenden County, VT. The CWSD has a population of 50,000 people and includes 18 member towns.³⁸ The facility is publicly owned and operated by a private contractor (Casella Waste Management) that receives \$32 per ton for operating and maintaining the facility and machinery.

The CSWD MRF opened as a dual stream facility in 1993, but converted to single stream in 2003. The conversion costs totaled \$2,570,000; the majority of the funds were to purchase machinery and equipment. The MRF, which currently processes 30,000 tons of material per year, accepts waste from both licensed commercial haulers and large loads dropped off by residents and small businesses. Commercial haulers and residents are paid \$7 per ton for in-District recyclables and \$2 per ton for out-of-District recyclables, as of Jan. 1, 2008.³⁹ The facility processes and sells these materials to generate revenue and is usually revenue neutral (i.e., it takes in enough revenue to cover all operating costs, including the Casella Waste Management fee).⁴⁰

5.2 Wilton Solid Waste District

The towns of Greenfield, Greenville, Lyndeborough, Mason and Temple contract with the Wilton Recycling Center (WRC) to share use of the facility and the burden of its costs. Using a mix of curbside pickup and drop-off recycling, the district achieved a recycling rate of 53 percent in 2006. The facility accepts all household waste, excluding liquids, and widely distributes educational materials about proper recycling, two factors that contribute greatly to the District's success.⁴¹

6. EDUCATION

The Northeast Resource Recovery Association (NRRA) and the New Hampshire DES share responsibility for statewide recycling education efforts. The NRRA is a non-profit organization funded through donations and membership fees that runs a variety of recycling education and promotion programs. The NH DES provides educational materials and resources for recycling information primarily through its website. Currently there is no statewide recycling education program or advertising.

One of the problems typically faced by recycling programs is a lack of public knowledge regarding which materials are recyclable and how to recycle those materials properly. Recycling education and public information programs are one way that the aforementioned challenge can be overcome. Providing easy access to information about recycling using mass media can increase recycling rates and the effectiveness of recycling programs. Further, a diverse array of studies has found a correlation between public recycling education programs and higher recycling rates.⁴²

7. BEVERAGE CONTAINER BILLS

Commonly referred to as “bottle bills,” beverage container recycling programs impose a deposit on all containers. The deposit is returned to the consumer once the container is returned to a recycling or buyback facility.⁴³ Deposits vary from \$.02 to \$.20 per container. Currently, 11 states have bottle bill laws in place, and the recovery rate for beverage containers in those states is 72 percent, compared to a 28 percent recovery rate in those states that lack bottle bills.⁴⁴ Unredeemed funds from deposits are used differently in the various states with bottle bills; the aforementioned money may be retained by the state, spent on recycling programs, returned to bottlers and distributors, or some combination of each of the three options.⁴⁵ Opponents of bottle bills, however, contend that the programs are more expensive to administer than other recycling options and that they discourage other forms of recycling by removing the most valuable recyclable materials from the waste stream.

8. LANDFILL BANS

While most states allow all non-toxic materials to be thrown in landfills, some states have encouraged recycling by banning certain items from being thrown into landfills or being incinerated. These bans are often enacted at the state level, although some municipalities have also chosen to enact them even if the state has no such ban. The most common bans include those on e-waste, hazardous materials and yard waste. While federal law states that Cathode Ray Tubes cannot be disposed in landfills because they are hazardous, the law exempts households and businesses that generate fewer than 220 pounds per month of hazardous waste.⁴⁶ Other states ban all materials capable of being recycled, such as corrugated cardboard and glass.⁴⁷

Problems with implementing landfill bans include a lack of recycling infrastructure or markets for banned materials. Bans can also contribute to the illegal dumping of banned materials along roads.⁴⁸

8.1 New Hampshire

New Hampshire has banned the disposal of video display devices in all state landfills and incinerators since July 1, 2007 under House Bill 1455. Banned devices include televisions, computer displays (CRT), liquid crystal displays and plasma screens larger than 4 inches in diagonal. The ban aims to reduce sources of lead in the state's disposal facilities and to promote electronic waste recycling.⁴⁹

The ban has largely been successful in reducing the number of video display devices that have been placed into landfills and incinerators, according to Don Maurer of the DES solid waste technical assistance department. The ban has encouraged commercial recyclers to move into the state, and the number of these recyclers increased from 15 before the ban to 27 as of March 2008.⁵⁰

Most towns and cities in New Hampshire have recycling programs for electronics, and residents have access to several commercial recycling centers. Texas, Oregon, Connecticut, Maine, Massachusetts, California and Maryland have similar legislation. The Electronic Industries Alliance has also generated a model for national legislation that would include an organization for recycling of televisions and a take-back program for computers and similar equipment.⁵¹

New Hampshire also bans the disposal of whole tires, leaf and yard waste, mercury containing devices, batteries and electronics.⁵²

8.2 Massachusetts

The Massachusetts legislation is more extensive than that of New Hampshire. Massachusetts 310 CMR 19.017: Waste Disposal Ban Regulation, first effective in 1990 and amended several times since then, prohibits residents from disposing, transferring for disposal or contracting for disposal of restricted materials. It also prohibits a transfer facility or combustion facility from accepting said material except to handle, recycle or compost it.⁵³

Banned materials include:

- Glass
- Metal and narrow-neck plastic containers
- Recyclable paper
- White goods and scrap metal
- Leaves and yard wastes
- Asphalt pavement, brick, concrete, wood

- Cathode Ray tubes
- Lead-acid batteries
- Whole tires

The Department of Environmental Protection may allow a facility or a person to dispose of restricted materials temporarily under the following circumstances:

- The material is contaminated or otherwise unacceptable for recycling and if the person who contaminated the material is notified and takes any necessary actions to prevent similar contamination in the future.
- The recycling or composting operation to which the material is normally sent refuses to accept it or is prohibited from accepting it because of an administrative or judicial order and an alternative recycling or composting operation cannot be located.

9. TIPPING FEES

Tipping fees are the charges, generally levied per ton, for the disposal of municipal solid waste in landfills. Unlike New Hampshire, many states impose a tax or surcharge on the disposal of solid waste to raise money to fund statewide recycling efforts or for their general funds. In addition to making recycling programs more effective through increased funding, surcharges on tipping fees may make recycling more economically competitive by raising the cost of solid waste disposal. That is, increasing the cost of solid waste disposal may reduce the volume of waste landfilled.

As of 2007, ten states levied taxes on the disposal of solid waste, including Vermont and Maine. These fees varied from 35 cents per ton to \$5 per ton. Data was unavailable to determine whether the imposition of a tax on solid waste disposal reduced the tonnage of waste landfilled. In a number of states, the funds garnered from the collection of surcharges on tipping fees are dedicated to recycling programs and staff, providing a stable source of funding for those agencies and programs. Currently, NH DES's recycling programs are apportioned from the general fund and subject to periodic increases and decreases.

10. POLICY RECCOMENDATIONS

10.1 Collect More Data

A primary policy recommendation is to specify a measurable policy goal and eliminate some of the barriers that impair accurate data retrieval. According to Chapter 149-M Solid Waste Management adopted in 1996, the state should reach a '40 percent minimum weight diversion of solid waste, landfilled or incinerated, on a per capita basis.' While diversion on a per capita basis is the mandated standard to gauge recycling rates, raw data is measured in tonnage per municipality, not on a per capita basis. This makes it difficult to determine whether a town is meeting the goal of Chapter 149-M.

Additionally, barriers such as imported waste, exported waste, and private contracts prevent municipalities from submitting accurate waste measurements to the DES. Current recycling rates in specific areas, such as Exeter, are artificially high or not accurate. This could be reduced if there were a standard method whereby both private and public haulers and facilities reported their waste managed to the DES. Data statistics would then more accurately reflect the state's recycling rate. Additionally, if private haulers were required to report disposed tonnage to the state, commercial waste statistics would better gauge the commercial waste produced by New Hampshire. This in turn would aid in standardizing data retrieval and could potentially improve the accuracy of statistics in place.

10.2 Pay As You Throw

A second policy option is to encourage municipalities to adopt PAYT programs voluntarily through increased technical assistance, grants, or loans. New Hampshire already promotes PAYT through technical assistance, such as holding annual free conferences, but the state does not write model contracts. This technical assistance, therefore, could be increased. DES also does not currently give grants or loans to help cover the initial costs of starting a PAYT program, which includes buying the bags and hiring additional staff.⁵⁴

Giving towns grants or loans and increasing technical assistance to help them start PAYT programs has certain benefits. Many towns have been reluctant or unable to start PAYT programs because of the upfront costs associated with buying bags. Helping municipalities afford this cost might increase the number of towns that implement PAYT.⁵⁵ If loans were used, the municipality would likely be able to pay the state back from revenue generated by the sale of trash bags. PAYT programs have also been shown to both lower a municipality's MSW costs and increase its recycling rate, making it both economically and environmentally preferable.

Such actions, however, do have costs. Providing municipalities with grants or loans to start PAYT programs would require funds for both the grants/loans themselves and additional staff to administer the grant/loan program. Moreover, as the adoption of PAYT programs would still be voluntary, there is no guarantee that all municipalities will adopt such a program.

10.3 Increasing Funds and Staffing

At present, the New Hampshire Department of Environmental Service does not have sufficient staff devoted to recycling and municipal waste management to achieve the goals set by the state. Although adding staff positions at DES or other agencies would not guarantee that New Hampshire would meet established targets in recycling and municipal waste management, additional staffing may allow the state to take a more proactive role in finding solutions to these issues. In particular, expanding the number of personnel responsible for statewide recycling and municipal waste management policy

implementation could help the state expand the quantity of technical assistance it offers to towns and cities.

The current shortage of state personnel devoted to municipal waste management and recycling stems from a lack of resources and funding for such programs and positions. One means of correcting this lack of funds would be to impose a per ton surcharge on the disposal of solid waste in landfills. Further research is needed to determine the potential costs and benefits to municipalities of such a policy, however many other northeastern states impose such fees with success. The funds that would be raised by a landfilling fee could be appropriated to expand the number of statewide recycling personnel; provide grants, matching funds, or low-interest loans to help towns start PAYT programs; or used to implement other programs.

11. CONCLUSION

The principal problem facing the state of New Hampshire's municipal solid waste management programs is the limited lifetime of existing in-state landfill capacity. The preservation of in-state landfill capacity is an essential component of effective waste management planning in that it directly determines the state's ability to control the cost of waste management. Increasing the state's overall recycling rate, and thus diverting waste from landfills, is the most effective tool at New Hampshire's disposal in producing measurable results that extend in-state landfill capacity.

Of the policy options explored in this report, three stand out as the most practical for New Hampshire. The imposition of a "bottle bill" in the state of New Hampshire may remove an incentive to municipal-level recycling programs by removing aluminum (a material with a high re-sale value) from the waste stream, thereby decreasing the profitability of MRFs. Additionally, while landfill bans can be effective tools for increasing recycling rates for particular items, they require market supports that New Hampshire does not have the resources to maintain in the initial implementation phases. Likewise, expanded public education efforts require the use of mass media that New Hampshire likely cannot afford. Thus, policy options that are most likely to be useful for New Hampshire include: the encouragement of PAYT programs; the adoption of more rigorous, uniform and accurate data collection methods; and an increase in funds and staffing at DES, possibly paid for by the imposition of a tipping fee on waste. Implementation of one or more of these policies would likely contribute to the state's goal of achieving a more effective statewide waste management plan.

APPENDIX I

Recycling Methodology

Each state determines its recycling rate differently. The Department of Environmental Services determines New Hampshire’s recycling rate using the following equation:

$$\text{State Recycling Rate} = \frac{\text{Total Municipal Solid Waste Recycled} \text{ [Compost + Recycling]}}{\text{Total Municipal Solid Waste Generation} \text{ [Commercial Waste + Municipal Solid Waste + Compost + Recycling]}}$$

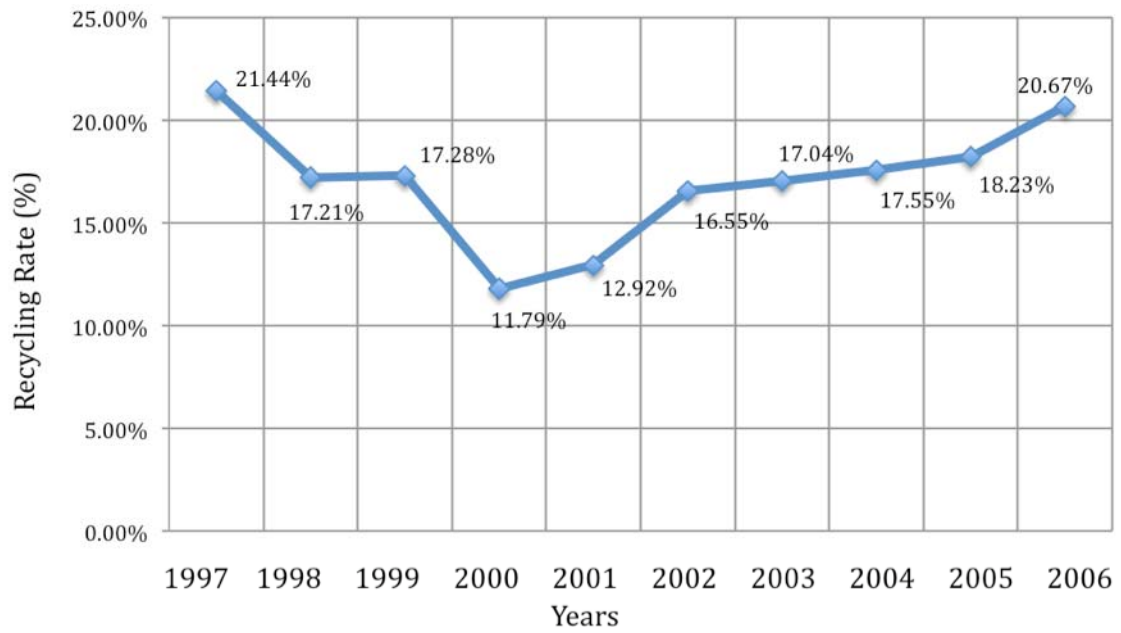
The recycling rate is the amount of waste composted and recycled divided by total municipal solid waste generated. One of the challenges with using this specific formula is that private recycling organizations and other states do not necessarily use the same formula to determine a municipality or state recycling rate. Biosolids, papermill sludge, and/or contaminated soils may be included in the total amount of waste generated, and other materials (e.g. automobile hulks and chicken droppings) are included as recyclable municipal solid waste. This makes it difficult to compare and contrast recycling rates in general. Thus, use of a standardized recycling rate among all organizations dedicated to recycling efforts, both public and private, could create comparable statistics and consistent rates across a variety of institutions and organizations.

Summary Statistics: Compiled Recycling Rates

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|----------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| MSW | 476,326 | 477,788 | 526,920 | 599,432 | 511,880 | 517,501 | 598,068 | 584,679 | 562,819 |
| Commercial | 144,106 | 104,442 | 120,006 | 138,633 | 147,565 | 145,234 | 74,766 | 81,355 | 64,106 |
| Compost | 33,778 | 20,269 | 15,428 | 33,343 | 22,753 | 25,844 | 28,666 | 22,892 | 27,207 |
| Recycling | 95,222 | 101,388 | 71,079 | 76,206 | 108,021 | 110,305 | 114,568 | 125,555 | 136,125 |
| Total | 749,432 | 703,888 | 733,433 | 847,614 | 790,219 | 798,883 | 816,068 | 814,481 | 790,256 |
| Recycling Rate | 17.21% | 17.28% | 11.79% | 12.92% | 16.55% | 17.04% | 17.55% | 18.23% | 20.67% |

Data Retrieved from DES Compiled Data, Courtesy of Don Maurer. [Data measured in tonnage]

Historical Recycling Rates in New Hampshire



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