

# MAINE STATE LEGISLATURE

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**Solid Waste Disposal Capacity Report**

- 2005

**Prepared by the Maine State Planning Office**

**for the**

**Joint Standing Committee on Natural Resources  
of the 123<sup>rd</sup> Legislature**

March 2007

## **Acknowledgements**

This report is prepared by the State Planning Office in accordance with 38 MRSA §2124-A.

Calculations are based on data provided by municipalities, commercial recycling brokers, and public and private disposal facilities. We would like to thank the hundreds of municipal officials and private sector waste management and recycling companies for their help with supplying data. Without them, the State Planning Office could not produce this report.

Data from calendar year 2005 are the most current, complete data available for this report.

Thanks to State Planning Office staff for the preparation of this report: Jody Harris, Sue Inches, George McDonald, and Sam Morris.

Executive Office  
State Planning Office  
Waste Management & Recycling Program  
38 State House Station  
184 State Street  
Augusta, Maine 04333-0038  
(207) 287- 8934  
[www.maine.gov/spo/recycle](http://www.maine.gov/spo/recycle)

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## Executive Summary

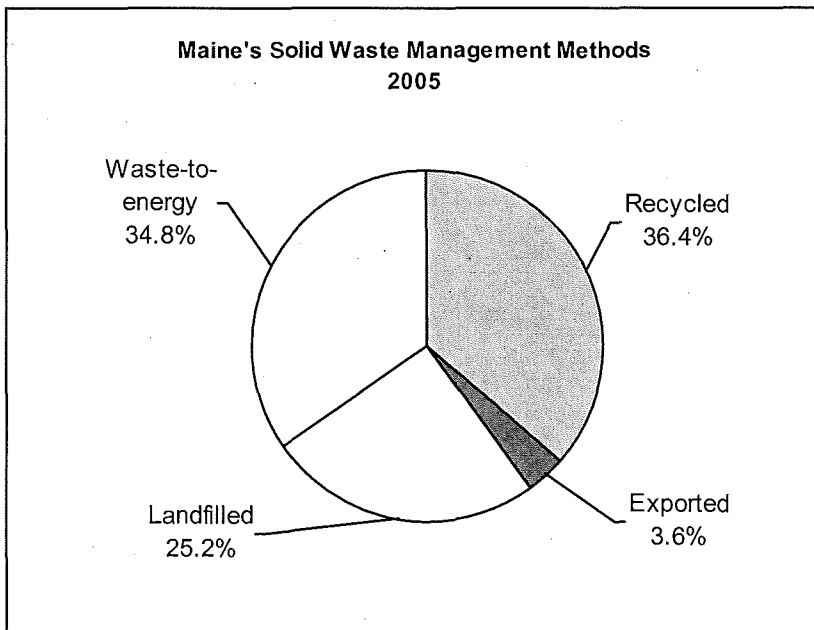
The state's current solid waste management system, a blend of public and private efforts, functions efficiently to meet Mainers' needs. The state has sufficient disposal capacity for at least the next 20 years and recycling efforts have significantly extended the lifespan of that capacity.

This report provides an overview of Maine's municipal solid waste recycling, combustion, and landfill activities for 2005<sup>1</sup> in order to: 1) determine the impact that these activities have on available solid waste disposal capacity, 2) identify planned and consumed capacity, and 3) project the lifespan of capacity. The report also assesses progress towards achieving the state's 50% recycling goal.

### KEY FINDING:

**Maine landfills only a fraction of its waste.**

Only one-quarter (25.2%) of the state's municipal solid waste is landfilled within Maine. Just over a third (34.8%) is delivered to four waste-to-energy plants and 36.4% is recycled, which reduce the volume of waste needing to be landfilled.



### KEY FINDING:

**Maine has sufficient disposal capacity for more than 20 years at projected fill rates.**

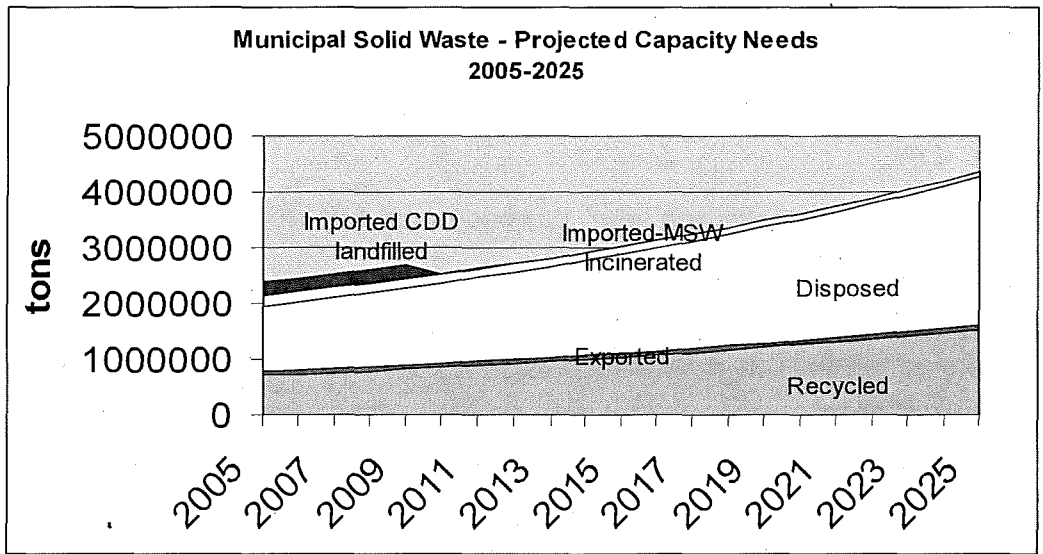
Disposal capacity is a factor of need versus availability.<sup>2</sup>

<sup>1</sup> Data from calendar year 2005 are the most current, complete data available for this report.

<sup>2</sup> See detailed analysis in Section V for the assumptions made in making these projections.

To calculate disposal capacity need, we set the following parameters: 1) recycling continues to reduce the waste needing to be landfilled by one-third every year, and 2) the four waste-to-energy facilities continue to handle their maximum licensed tonnage. Based on these projections, Maine will need 32 million cubic yards of landfill capacity over 20 years.

Over this same time, we project that the state's nine municipal, two commercial, and one state-owned landfills will provide 42 million cubic yards of landfill capacity. While Maine has sufficient capacity, we must not be complacent. Siting new disposal facilities is a costly and volatile undertaking. Maine should do all that it can to extend the life of this capacity.

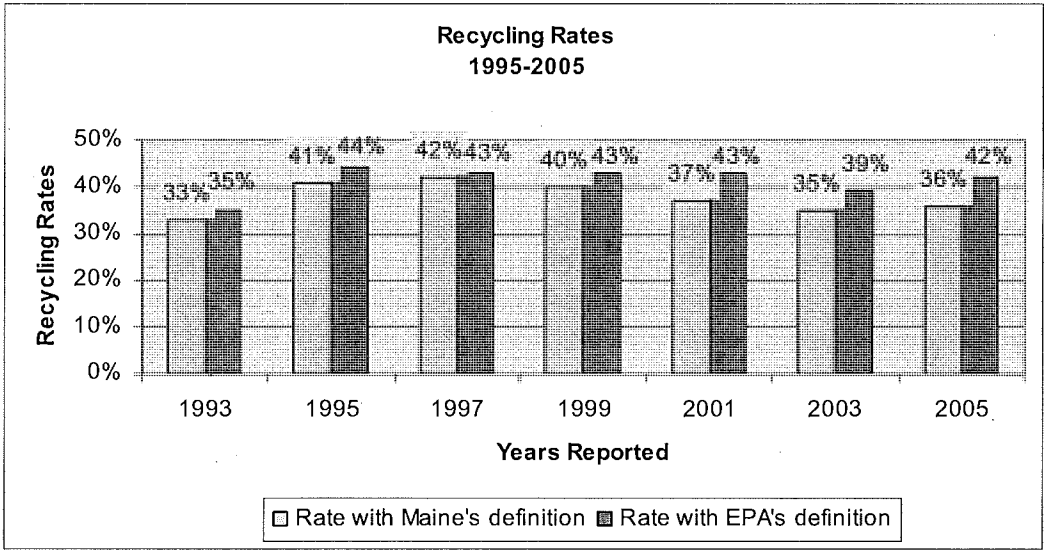


**KEY FINDING:**

**Maine's recycling rate is steady and strong.**

Maine's current statewide recycling rate is 36%. Recycling has held steady for a decade.

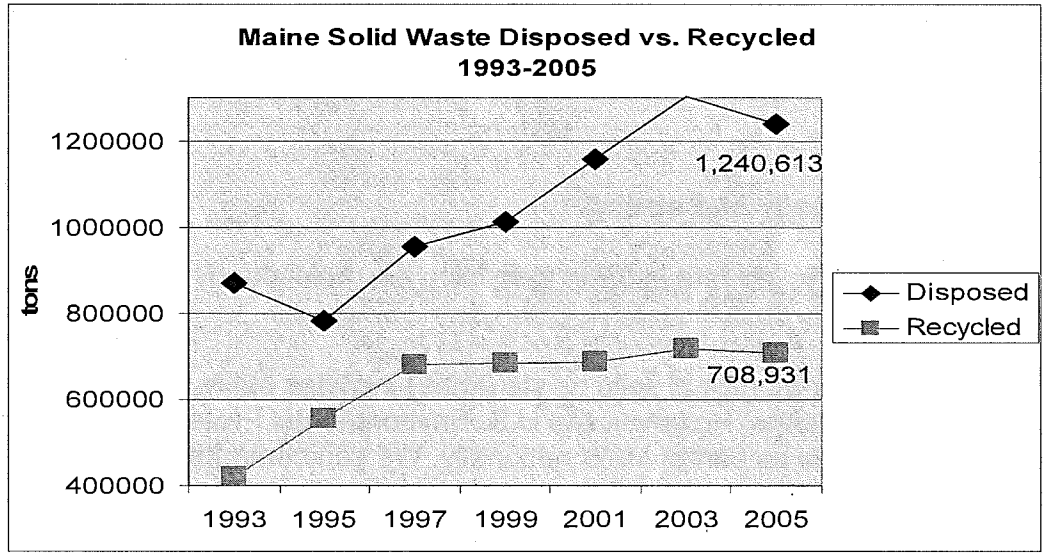
Maine's statutory definition for municipal solid waste (MSW) includes bulky waste and construction and demolition debris. However, the U.S. Environmental Protection Agency does not count these materials as part of MSW nationally. We can compute the state recycling rate exclusive of these materials. Either way, Maine's recycling rate is strong.



**KEY FINDING:**

**Mainers continue to recycle more each year, but recycling has not kept pace with the growth in the amount of waste we generate.**

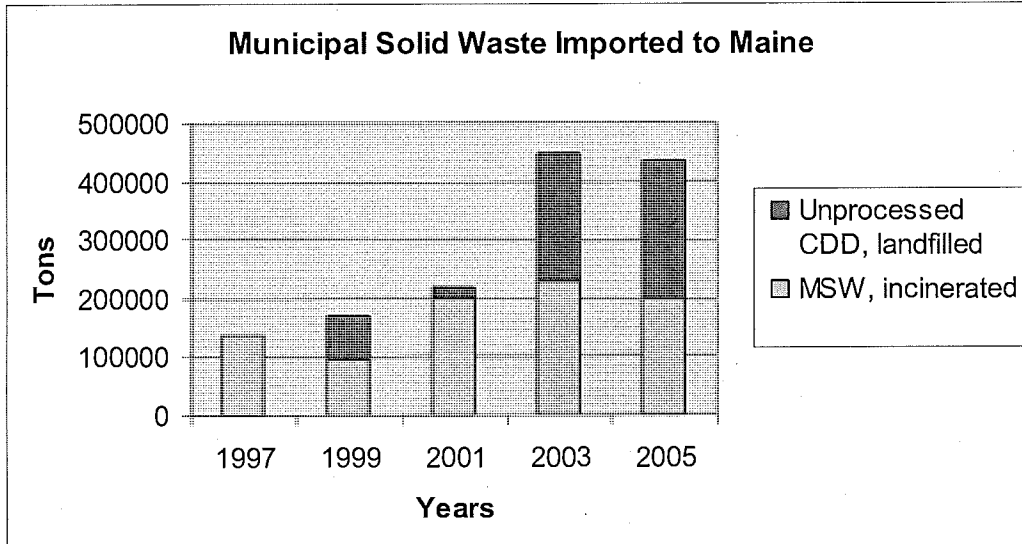
Maine has a 12-year trend of increased recycling (in tons). Over the same time, municipal solid waste generated has exceeded recycling growth; preventing the state recycling rate from increasing.



**KEY FINDING:**

**Imports of out-of-state waste support Maine's solid waste management system.**

While disposal facilities in Maine added 18% (436,412 tons)<sup>3</sup> to the waste stream from out-of-state in 2005, almost half<sup>4</sup> was brought in by three of the waste-to-energy facilities to keep their plants running at design capacity. The imported waste allows the plants to meet their obligation for electrical production that, in turn, keeps them operating economically and maintains tipping fees. One of the plants required 48% of its fuel needs to be met by importing waste.



**KEY FINDING:**

**Maine's solid waste disposal fees are stable.**

The opening of the state-owned Juniper Ridge Landfill will moderate disposal prices in Maine. When the state contracted for the operations of the landfill, it set an upper limit on fees for wastes delivered to the facility. Over time, it is expected that this tip fee ceiling will have a dampening effect on fees for similar wastes delivered to other solid waste facilities.

<sup>3</sup> This number does not include green wood or processed CDD chips imported by industrial boilers within the state for use as biomass fuel.

<sup>4</sup> The other half of the 2005 imported waste comprised unprocessed construction and demolition debris, which was landfilled at the state's two commercial landfills.



## ***2005 Maine by the Numbers***

### **Municipal Solid Waste**

1,949,644 tons generated by Maine residents and businesses:

708,931 tons Recycled/Reused	36.4%	= <u>the State Recycling Rate</u>
678,535 tons to W-T-E facilities <sup>5</sup>	34.8%	
490,799 tons Landfilled	25.2%	
71,379 tons Exported	3.6%	

436,412 tons Imported Waste, divided into:

200,938 tons of MSW to W-T-E facilities
235,474 tons of unprocessed CDD to commercial landfills

### **Disposal Capacity**

#### W-T-E facilities, processing capacity

MMWAC, Auburn	70,000 tons/year
<i>ecomaine</i> <sup>6</sup> , Portland	170,000 tons/year
Maine Energy, Biddeford	310,000 tons/year
PERC, Orrington	<u>304,000 tons/year</u>
Total	<u>854,000 tons/year</u>

#### Landfills, licensed capacity and life expectancy at current fill rates

2 State landfills:

Juniper Ridge	9,500,000 cy, licensed, 10-12 years
Carpenter Ridge	2,000,000 cy, permitted, undeveloped

7 Municipal MSW landfills: 2,700,000 cy, 15 years (avg combined capacity)

2 Municipal ash landfills: 1,330,000 cy, 19 years (avg combined capacity)

2 Commercial landfills:

Crossroads, Norridgewock	4,700,000 cy, 10-12 years
Pine Tree, Hampden	2,000,000 cy, 3 years

Total: 22,230,000 cy

#### Landfill consumption:

490,799 cy<sup>7</sup>

<sup>5</sup> These tonnages include by-pass, ash, and other residuals resulting from combustion

<sup>6</sup> Formerly Regional Waste Systems (RWS)

<sup>7</sup> This reflects Maine-generated waste only and does not include W-T-E by-products, and assumes a 1:1 conversion ration of tons to cy.

## **I. Introduction**

Maine law requires the State Planning Office to report biennially to the Legislature on the state's recycling rate and the available and projected disposal capacity and how that capacity affects disposal prices. The full statutory language appears in Appendix A.

To accomplish this, the State Planning Office calculates the volume and tonnage of waste generated by Mainers, the amount of recycling, and how and where waste is disposed. It compares the disposal capacity needed with the available capacity, taking into account planned, new capacity and consumed, lost capacity. It also identifies the impact that recycling has on capacity and identifies potential recycling and disposal capacity issues for specific regions around the state. Additionally, the report provides insight on how disposal capacity impacts disposal fees.

### *How policymakers can use this report*

The capacity report provides policymakers with the information needed to plan for and make decisions about future capacity investment.

Maine law requires that the Legislature be notified with recommendations for developing new disposal capacity when there is four years<sup>8</sup> of capacity remaining. The state owns a permitted, greenfield site known as Carpenter Ridge in Township T2R8 for this purpose. This report provides the basis for the recommendations for developing new landfill capacity when needed.

The report also assists policymakers with understanding the progress toward our waste reduction and recycling goals and their impact on disposal capacity.

### *Shift to an annual report*

State law also directs the State Planning Office to convene a policy task force every five years to consider state waste management policy issues. The 2005 Solid Waste Policy Task Force concluded that the review of disposal capacity occurs too infrequently to adequately address fast-changing solid waste issues.

In order to improve its usefulness, the State Planning Office proposes updating the disposal capacity report annually and briefing the Governor, Joint Standing Committee on Natural Resources, and Department of Environmental Protection on new information contained in the update each year.<sup>9</sup>

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<sup>8</sup> A bill currently before the Legislature (LD 1313) proposes to increase the notice requirement from four to six years to give the Legislature more time to consider its options.

<sup>9</sup> LD 1313, currently before the committee, would accomplish this change.

### Changes in this report

The task force also recommended expanding the analysis of the state's disposal needs and capacity. The State Planning Office added the following new elements to the capacity report this year:

- project a 20-year time horizon
- identify and assess regional capacity issues,
- assess landfill volume as well as tonnage,
- assess stability and life expectancy of existing facilities,
- assess the amount and type of imported and exported waste, how it is being used, and where it is going, and
- analyze recycling processing capacity.

### Planning for solid waste management

This report provides an analysis of disposal capacity as required by state law. Later in 2007, the State Planning Office will issue a revised state *Waste Management & Recycling Plan*. The plan will take a broader view of waste management activities in Maine including analyzing how we manage waste and recommending ways to improve solid waste management in Maine.

### About this report

Data for the calculations in this report are provided by municipalities, commercial recycling brokers, and public and private disposal facilities. Data from calendar year 2005 are the most current, complete data available for this report.

This report focuses on municipal solid waste (MSW) as defined by Maine law. MSW comprises household, baggable waste and bulky wastes such as furniture, tires, and metal, and construction and demolition debris.

Besides a small amount of sludge and ash, this report does not include special wastes. Special wastes are generated by other than typical households or businesses and due to their quantity or chemical or physical properties require particular handling. They include primarily ashes, sludges, and industrial process wastes. These wastes are landfilled at facilities specifically designed and licensed for their disposal. This report looks at only those special wastes which are residues of managing municipal solid waste, primarily incinerator ash.

Industrial wastes are also not included in this report. Industrial wastes are not part of the waste managed by municipalities. These wastes are typically managed by the generator and disposed at generator-owned facilities or out-of-state.

Appendix B provides definitions for terms and acronyms used in this report.

## **II. Municipal Solid Waste Generation**

The amount of municipal solid waste (MSW) generated by Mainers is the starting point for the calculations and projections in this report. It provides the basis for determining the statewide recycling rate as well as all the projections that follow.

### ***A. Methodology***

#### *Municipal Solid Waste*

This report considers only municipal solid waste and its residues (primarily ash from waste-to-energy facilities). MSW is waste typically generated by households and businesses and managed by municipalities. It includes household garbage and other non-bulky waste (corrugated cardboard, newsprint, office and mixed papers, food waste, plastics, glass, metals, and textiles) as well as bulky waste (construction and demolition debris, appliances, furniture, tires, wood waste, and yard waste).

#### *Waste Generation Calculation*

The State Planning Office uses three pieces of data to determine the statewide generation of municipal solid waste:

1. Data provided by municipalities in their annual solid waste reports to the State Planning Office;
2. Data provided by public and private disposal facilities in their annual license reports to the Maine Department of Environmental Protection; and
3. Data provided by commercial recyclers and end-users in a voluntary survey.

The Office combines the amount of waste processed and disposed and the tonnage recycled, composted, or reused to create a reliable estimate of waste generation in Maine.

### ***B. Statewide Municipal Solid Waste Generation***

Maine residents and visitors generated 1,949,644 tons of municipal solid waste in 2005, down slightly from 2,019,998 tons in 2003. (Prior years' data is shown in Figure 1).

Between 1993 and 2005, municipal solid waste generation in Maine increased over 51%. Waste generation is a function of population growth and economic activity.<sup>10</sup> Between 1993 and 2005, Maine's population grew by only 6.7%, while economic activity increased over 61%. The increases in Maine's generation are due largely to growth in economic activity rather than population growth.

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<sup>10</sup> The large increase of 22% reported in 1997 is also due to improved data reporting by programs and verification efforts by the State Planning Office.

In 2005, municipal solid waste generation decreased by 3% from 2003. The decrease appears to be a compilation of several slight decreases in both recycling commodities and disposal streams, likely the result of a drop in economic activity, and cannot be attributed to any specific action or market force that would mark the start of a downward trend in generation. The slight drop mirrors a small decline in the national MSW generation total as well, lending credence to the idea that the decline is due to downturn in economic activity rather than Maine-specific waste reduction actions.

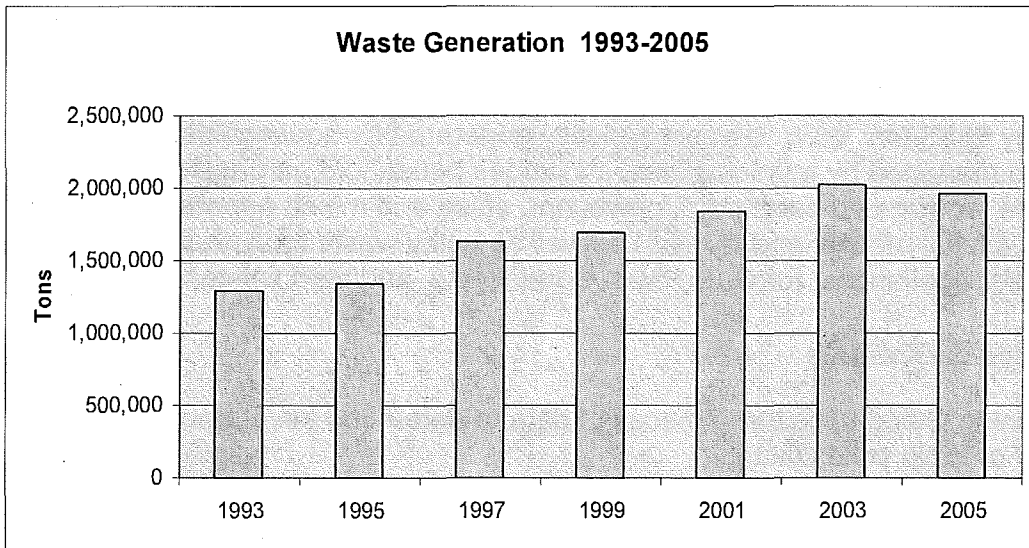


Figure 1: Maine Waste Generation, 1993-2005  
Source: State Planning Office

### C. Per Person Waste Generation

Municipal waste generation, when calculated on a 'per person' basis, shows that each Maine resident generates approximately 3,000 pounds of MSW a year, or about 8.1 pounds of waste per person per day.<sup>11</sup> Maine's per person generation is higher than the 2005 national average of 4.54 reported by the U.S. Environmental Protection Agency.

One obvious reason why Maine's per person number is higher than the national average is that Maine includes both bulky waste and construction and demolition debris (CDD) in its definition of MSW, which the U.S. EPA does not. If we exclude these wastes from our numbers, the Maine per-person rate drops to 6.8 pounds per day.

Another possible explanation for the higher weight per person is the impact of tourists. In 2005, an estimated 44 million visitor days were counted for Maine, which is the equivalent of about 120,000 year-round residents. We also attribute some of the difference to better tracking and accounting of the municipal solid waste generated within Maine.

<sup>11</sup> This number is derived from the total MSW generated in Maine for 2005 (1,949,644 tons) divided by the estimated 2005 population of 1,321,505.

### III. Recycling

The Maine Legislature set a 50% recycling goal for the state. The goal provides a benchmark by which to measure success of state and local recycling programs.

#### A. Statewide Recycling Rate

##### Recycling Rate Calculation

The recycling rate is derived by using recycling data in conjunction with disposal and generation data according to the following formula:

$$\text{Recycling Rate} = \frac{(\text{MSW recycled})}{(\text{MSW generated})} * 100$$

This calculation is not a precise measurement. Some data are incomplete, particularly for composting and reuse efforts. Adjustments are made to eliminate duplicate counting of recyclables, as when material moves from an in-state broker to an in-state end-user. However, the State Planning Office estimates that the overall result is accurate to within two (2) percentage points.

##### Recycling Trends

Maine recycled 36.4% of its municipal solid waste in 2005.<sup>12</sup> This reflects an increase from the 2003 recycling rate of 35.5%, the first increase in ten years.

Maine's recycling rate grew rapidly in the first ten years following the enactment of the Maine Solid Waste Management Act – from an estimated 17% in 1987 to 42% in 1997. It has since leveled off, but remained relatively steady each year. Figure 2 shows the state's recycling rate over time.

The rapid rise in recycling rates during the first half of the 1990s was due to a concentrated effort by private sector, local public programs, and the state acting in partnership, with recycling having not only a priority statutory identity, but state level presence and support. During this time, the state invested \$12.5 million in local grants for recycling collection and processing equipment, provided for statewide public education, and conducted hundreds of training workshops for local officials. Since that time, state funding has dried up and local programs compete with other municipal services for their share of property tax dollars.

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<sup>12</sup> Maine is often touted as having one of the highest recycling rates in the nation. While certain trade publications attempt rankings, there is no "official" national ranking. State recycling programs vary widely across the country and states calculate rates in different ways.

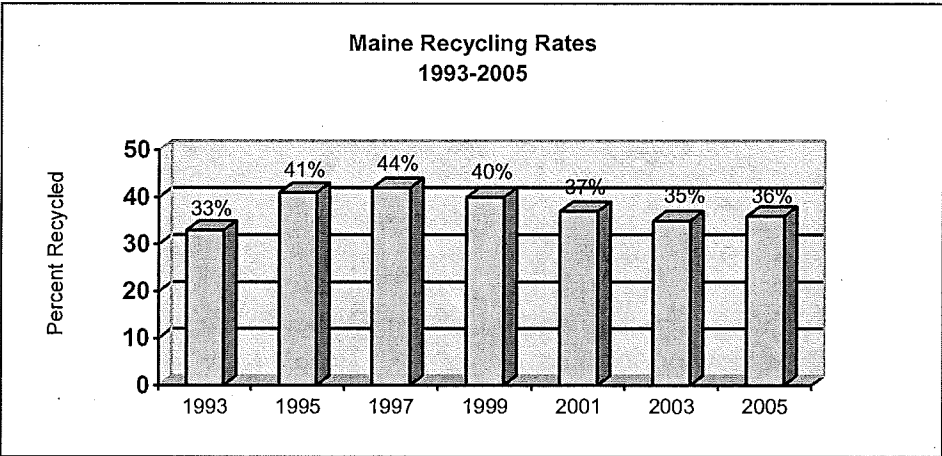


Figure 2: Maine Recycling Rates, 1993-2005  
 Source: State Planning Office

Tonnages being recycled grow slightly each year. Maine has a 12-year trend of increased recycling (in tons) as shown in Figure 3.

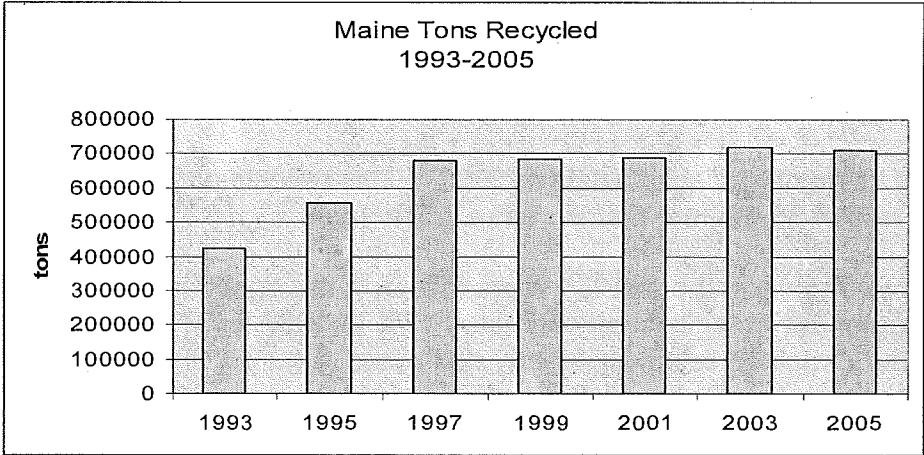


Figure 3: Maine Tons Recycled, 1993-2005  
 Source: State Planning Office

However, at the same time, there is an upward trend in municipal solid waste being generated. Figure 4 shows the tons of waste disposed compared to the tons recycled.<sup>13</sup> The growth in waste generation prevents the recycling rate from increasing despite greater tonnages being recycled.

<sup>13</sup> The small downturn in waste generation in 2005 caused Maine's recycling rate to increase slightly over 2003's rate.

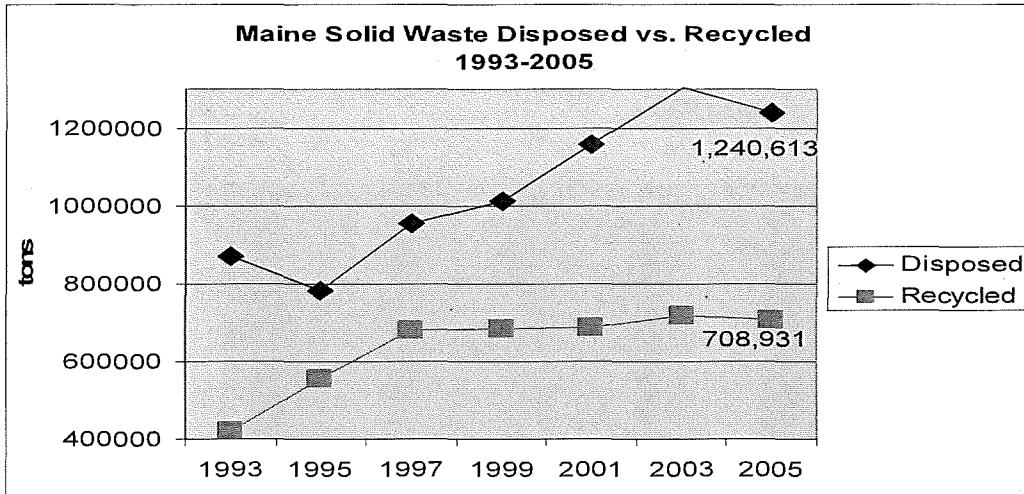


Figure 4: Maine Solid Waste Disposed vs. Recycling, 1993-2005  
Source: State Planning Office

There are three broad reasons why recycling rates are falling behind generation rates. First, recycling has not advanced aggressively into other components of the waste stream that are growing, such as the organic fraction and construction and demolition debris. Secondly, even though markets for traditional recycling commodities have grown throughout the first half of this decade with strong revenues and encouraging price signals, municipal programs have not sought to follow their lead and increase recycling efforts. This is primarily due to yearly budget constraints that prevent investment to take advantage of market opportunities. Thirdly, municipal programs typically view recycling as an “add-on” to their garbage collection program and lack sufficient confidence in recycling to position it as the keystone of their waste management system.

EPA Definition

We can also compute the state recycling rate using the federal definition for MSW. When the 2005 statewide recycling rate for Maine is calculated using the EPA guidelines, our statewide recycling rate becomes 41.6%. Table A shows the two methodologies for calculating the state’s recycling rate.

Maine Definition (CDD included)			EPA Definition (CDD not included)	
MSW with CDD generated	1,949,644		MSW w/o CDD generated	1,648,095
MSW with CDD recycled	708,931		MSW w/o CDD recycled	685,506
Recycling Rate	36.4%*		Recycling Rate	41.6%*



Figure 5 shows Maine's 12-year recycling rate trend using both calculations.

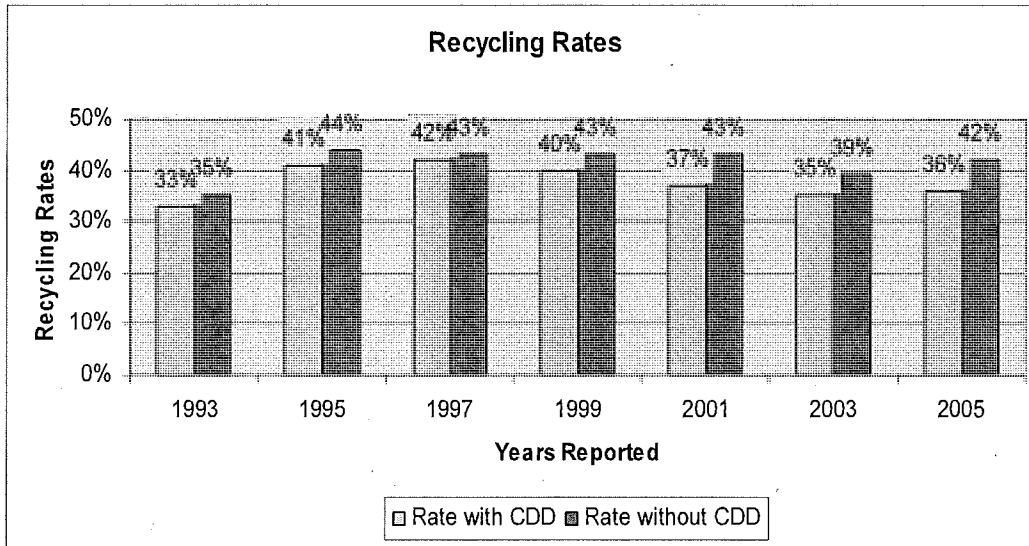


Figure 5: Maine's Statewide Recycling Rate, 1993-2005  
 Source: State Planning Office

**B. Type and Amount of Materials Recycled**

Maine recycles a wide variety of materials with the biggest recovery rates in glass, metal, and paper. See Appendix C for a table depicting recyclable categories and tonnages from 1995 to 2005.

Figure 6 shows the municipal solid waste stream broken down by category. Figure 7 shows how much of each material Maine recovers through recycling. These two figures reveal that large amounts of resources that potentially could be recovered are still being disposed.

For example, Maine recycles 42% of its available paper waste leaving a potential 300,000 additional tons available for recovery. Paper recycling alone could get us to our 50% recycling goal if we captured it all. Analyzing the organics fraction yields a comparable number.

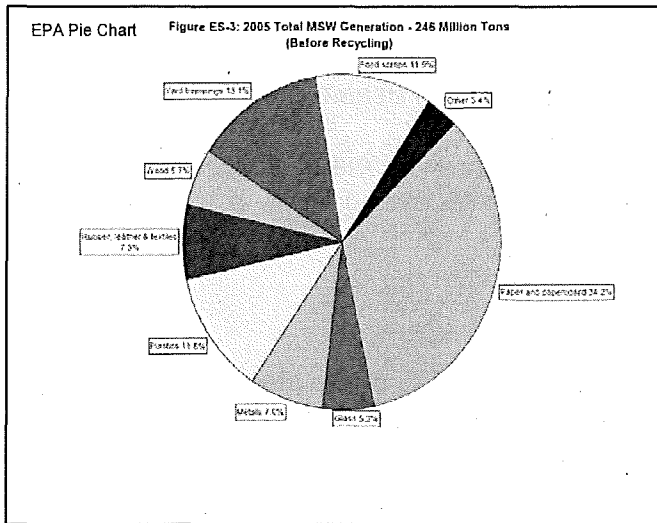


Figure 6: Total MSW Generation, 2005  
Source: U.S. EPA

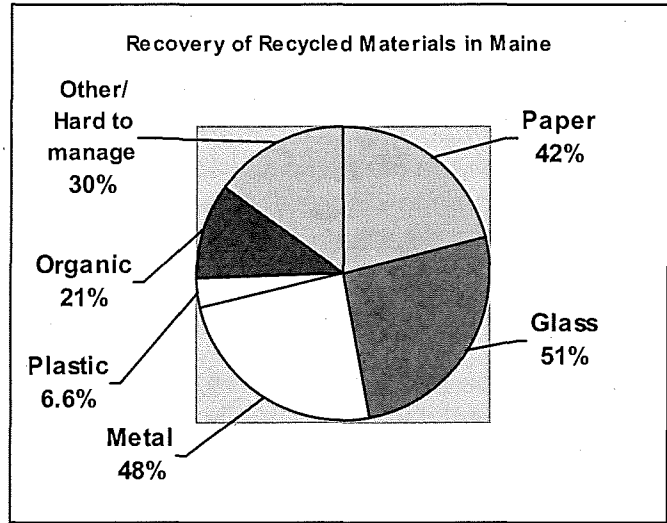


Figure 7 – Maine Recovery Rates for Recyclable Materials  
Source: State Planning Office

### C. Municipal Recycling Programs

Maine cities and towns by law are responsible for providing for municipal solid waste disposal. As a result, Maine municipalities have designed and implemented various solid waste management facilities over the years, including the construction and operation of approximately 240 transfer stations, over 300 public recycling programs, and over 70 composting facilities.

Individual municipalities and regions are not required to achieve a 50% recycling rate; but they are required to demonstrate progress towards the goal. Recycling progress varies from community to community, but overall, programs remove about 90,000 tons from the state's waste stream that would otherwise need disposal.

Appendix D provides a list of municipalities and recycling regions and their 2005 recycling rates.<sup>14</sup>

### D. Progress Toward Achieving State Goals

#### MSW Management and the Hierarchy

Maine's solid waste policy is to plan for and implement an integrated solid waste program based on a management hierarchy. The hierarchy guides public decisions regarding investments in, and the permitting of, solid waste management facilities. 38 MRSA §2101, establishes the management priorities within the hierarchy in priority order as follows:

<sup>14</sup> Municipal recycling rates are calculated using the same method of recycling tons divided by total MSW generated.

1. *Reduction, including both the amount and toxicity of waste;*
2. *Reuse (use of a product in same form as the original use);*
3. *Recycling (reprocessing of waste and creation of a new, usable material);*
4. *Composting of biodegradable waste;*
5. *Volume Reduction (waste processing that reduces the volume of waste requiring disposal, including incineration for-energy recovery); and*
6. *Land disposal.*

### Maine's Recycling and Waste Reduction Goals

In 1989, the Maine Legislature established a goal to recycle 50% of the state's municipal solid waste annually. The legislated date to achieve the goal is January 1, 2009. The 2005 state recycling rate is 36.4%, fourteen percentage points short of the goal. The state remains committed to reaching the 50% goal in light of its value on reducing overall solid waste management costs, the positive impact on the environment, and a lessening of the need for additional solid waste disposal facilities.

The state waste reduction goal challenges Mainers to reduce waste generation by 5% every two years. As waste generation continues to climb in Maine, we have not achieved this goal. Waste reduction results have been incidental and largely limited to slight reductions in the weight of consumer goods, for example when products get smaller, are made of more lightweight materials, or use lighter weight packaging.

### Achieving our Recycling Goal and Beyond

There are a number of efforts on the horizon to help Maine reach its 50% recycling goal, including organics recovery and composting, improved collection efforts, and a revitalized statewide public awareness campaign that is under development.

Perhaps the most significant is the move to single stream recycling, which is currently being implemented in the Greater Portland area as well as in approximately a dozen other communities. Single stream or single sort simply means collecting co-mingled recyclables and sorting them at a central processing facility. This method of collection serves to cut costs of collection by reducing labor and transportation and to increase the volumes of materials collected by making it easier for residents to recycle.

Nevertheless, these kinds of improvements require significant capital investment. For recycling to succeed, it will need to be viewed, not as a waste management tool, but as a business operation –making investments to produce revenue.

Recycling is increasingly critical as a foundation for sustainable production. In its 2005 policy review task force report, the State Planning Office called for Maine to move beyond a 50% recycling goal. We need to maximize use of waste and minimize its consumption of landfill capacity. It's time to view waste, not as a disposable, but as a resource.

Achieving the 50% recycling goal will require commitments from both the state and municipalities. Not only investments in collection and processing management and equipment, but recognizing recycling as the centerpiece for managing residents' discards. (Garbage is secondary and only constitutes what has not been recycled.) Recycling needs to be implemented as a resource management system, not a waste management system.

## IV. Existing and Planned Processing and Disposal Capacity

In 2005, Maine's solid waste disposal facilities included: one state-owned landfill, two commercial landfills, nine municipally-operated landfills, 23 municipal construction and demolition debris (CDD) landfills, and four waste-to-energy facilities.

**Assumption:** Capacity figures provided for the state-owned and commercial landfills assume that operations of those facilities achieve a one-to-one ratio of tons-to-cubic yards using best management practices for landfill compaction.

### A. Landfills

#### State-owned Landfill<sup>15</sup>

In 2005, the former Georgia Pacific landfill in Old Town, acquired by the state, was renamed 'Juniper Ridge' and began to serve the disposal needs of municipalities and businesses for acceptable Maine-generated solid wastes. In its first full year of operation, the facility accepted 252,314 tons of waste, of which 46% was special waste (primarily ash) and 54% was bypass waste and construction and demolition debris.

#### *Assessment of Facility*

Available disposal capacity remaining at Juniper Ridge at the end of 2005 was 9.5 million cubic yards, which translates into space for approximately 9.5 million tons. At projected fill rates<sup>16</sup>, the present licensed capacity should provide 10-12 years of disposal capacity for the state.

In late 2006, the State Planning Office proposed an expansion at Juniper Ridge to add an additional 22.5 million cubic yards of disposal capacity. If approved, the expansion would provide an additional 15-20 years of capacity.

#### Commercial Landfills

Maine has two commercial landfills grandfathered under the 1989 Solid Waste Management Act that banned the development of new commercial disposal facilities. Having the commercial landfills has provided competition and disposal options for municipal solid waste, construction and demolition debris, and special wastes. The two commercial landfills are:

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<sup>15</sup> The State Planning Office owns 1500 acres of land in T2 R8 (near Lincoln), upon which a special waste landfill was permitted in the mid 1990s. Known as Carpenter Ridge, it has a landfill design for about two million cubic yards of waste. It was acquired by the former Maine Waste Management Agency and has been held by the state for disposal capacity when it is needed.

<sup>16</sup> The State Planning Office projects that wastes delivered to Juniper Ridge will average 500,000 tons per year in the short-term, but will increase with the planned closure of the Pine Tree Landfill, and increase further as waste generation grows and other public and private landfills close in the next 20 years.

- Crossroads Landfill, located in Norridgewock, owned by Waste Management, Inc.
- Pine Tree Landfill, located in Hampden, owned by Casella Waste Services, Inc.

The Crossroads Landfill provides recycling and disposal services on a contract basis for municipalities and businesses. It currently serves 30+ Maine communities in Western Maine. In 2005, the Crossroads Landfill received a total of 337,446 tons of solid waste. Of that tonnage, 181,642 tons were characterized as special. The balance, 155,804 tons, was MSW including CDD.

Pine Tree Landfill located in Hampden is permitted to take special waste, by-pass, and construction and demolition debris. In 2005, the Pine Tree Landfill received a total of 592,200 tons of solid waste. Of that tonnage, 234,539 tons were special waste. The balance (357,661 tons) was MSW and CDD.

Figure 8 depicts the waste accepted by the two commercial facilities in 2005 by type.

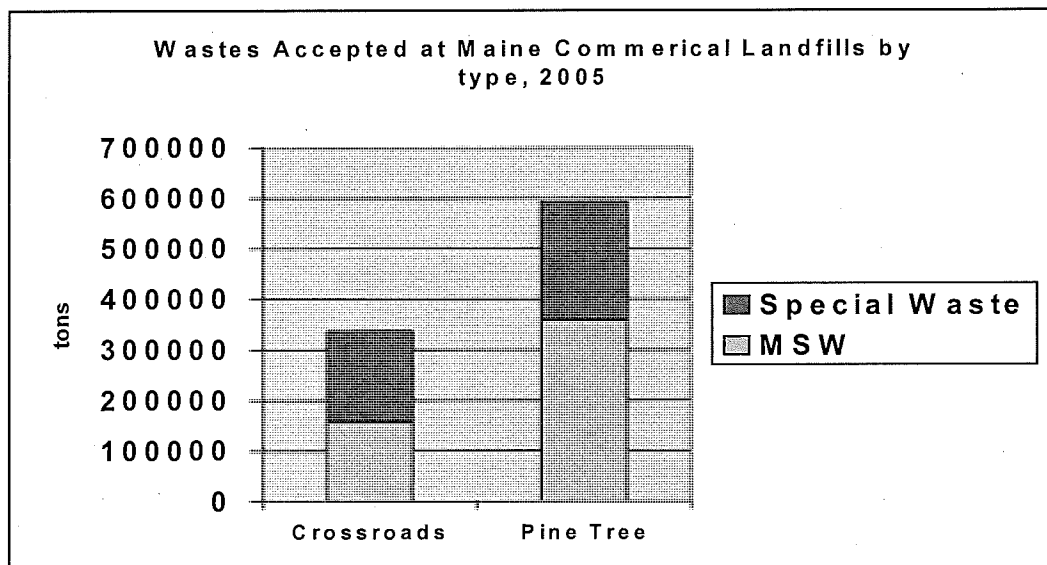


Figure 8: Wastes Accepted at Maine Commercial Landfills by type, 2005  
Source: Facility Reports submitted to Maine DEP

#### Assessment of Facilities

The total disposal capacity currently licensed at these two commercial landfills is approximately 6.7 million cubic yards. The majority of this capacity is at the Crossroads Landfill, with an estimated 4.7 million cubic yards of capacity remaining at the end of 2005.

Table B shows commercial capacity.

Table B: Capacity at Maine's Commercial Landfills – 2005				
	2005 Fill Rate (tons)	Remaining Capacity (Cubic Yards)	Remaining Capacity (tons)	Estimate in years of life remaining based on 2005 fill rates
Crossroads Landfill	337,446	4,700,000	4,700,000	12-14 years
Pine Tree Landfill	592,200	2,000,000 <sup>17</sup>	2,000,000	3 years
Total	929,646	6,700,000	6,700,000	

In 2006, Casella Waste Systems sought permission to increase its disposal capacity at the Pine Tree Landfill in Hampden by 2.5 million cubic yards. But, through a series of negotiations with the Maine Department of Environmental Protection and the Town of Hampden, only partial approval of the request was given, with the owner agreeing to cease accepting solid waste and close the landfill by December 2009.

Municipal MSW Landfills

In 2005, 98,172 tons of municipal solid waste and 42,846 tons of ash were disposed at nine municipally-operated landfills broken down as shown by Figure 9.

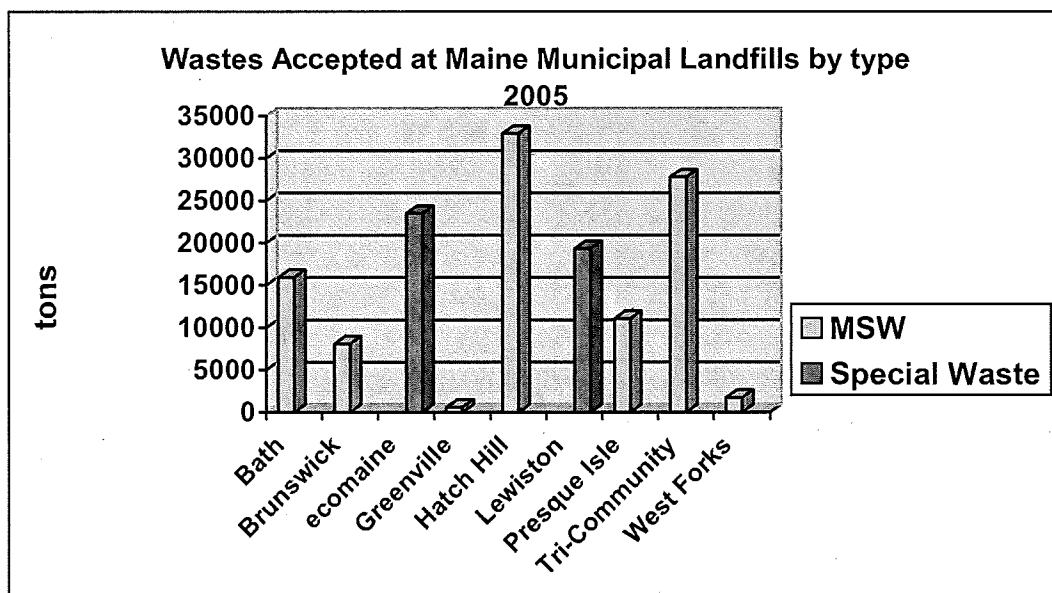


Figure 9: Wastes Accepted at Maine Municipal Landfills by type, 2005  
Source: State Planning Office

<sup>17</sup> At the end of January 2007, the Pine Tree Landfill had approximately 1.5 million cubic yards of space remaining.

Table C provides information on each individual municipally-operated landfill, including fill rates and estimated available remaining capacity.

<b>Table C: Municipal Landfill Tonnages – 2005</b>				
	<b>2005 Fill Rate (tons)</b>	<b>Remaining Capacity Cubic Yards (est.)</b>	<b>Remaining Capacity (tons)</b>	<b>Years of life remaining based on 2005 fill rates at .65 tons/yard<sup>18</sup></b>
<b>MSW Landfills:</b>				
Bath	15,946	467,000	303,550	19 years
Brunswick	8,082	153,000	99,450	12 years
Greenville	600	58,000	37,700	62 years
Hatch Hill (Augusta)	32,930	1,014,000	659,100	20 years
Presque Isle	11,077	196,000	127,400	11.5 years
Tri-Community (Fort Fairfield)	27,787	795,000	516,750	18.5 years
CFWF (West Forks)	1,750	13,000	8450	5 years
<b>Total Tons:</b>	<b>98,172</b>			
<b>Total Remaining Capacity (est.)</b>		<b>2,696,000</b>	<b>1,752,400</b>	<b>15 years (avg)</b>
	<b>2005 Fill Rate (tons)</b>	<b>Remaining Capacity Cubic Yards (est.)</b>	<b>Remaining Capacity (tons)</b>	<b>Years of life remaining based on 2005 fill rates at 1 ton/yard</b>
<b>Ash Landfills:</b>				
<i>ecomaine</i>	23,512	1,000,000	1,000,000	20-30 years
Lewiston	19,334	330,000	330,000	17 years
<b>Total Tons:</b>	<b>42,846</b>			
<b>Total Remaining Capacity (est.)</b>		<b>1,330,000</b>	<b>1,330,000</b>	

#### *Assessment of Facilities*

Among the seven municipally-operated MSW landfills, there is approximately 2.7 million cubic yards of remaining available capacity that can handle 1.76 million tons. This capacity is sufficient to carry those communities for 15 years (on average), supposing a steady but continual growth in the volume of municipal solid waste requiring disposal.

The actual remaining life varies for each landfill, resulting in 'unevenness' of municipal capacity across the state. This variation, as to when a particular community or region may exhaust their current disposal capacity, is independent and possibly irrespective of any possible statewide disposal capacity concern, but will be of significant concern to those regions (see Section V.B on Regional Disposal Issues).

<sup>18</sup> Different ton-cubic yard conversion rates are used for different facilities. Household, baggable waste at municipal landfills typically converts at 0.65 tons per cubic yard. Ash is heavier than municipal solid waste, so SPO uses a 1:1 conversion rate with one ton equalling one cubic yard. Commercial landfills, with heavier equipment for compaction, also typically achieve a 1:1 conversion rate.



Bath and Brunswick are two of the state's oldest landfills. Brunswick serves only its own residents and businesses. Bath provides disposal services for the smaller communities in its area. Both communities are putting programs in place to extend the life of their landfills, such as 'pay-as-you-throw' (PAYT) and single stream recycling collection. The Hatch Hill Landfill in Augusta serves eight communities and was recently expanded. None of these facilities is expected to expand beyond their current footprints.

Together, the Presque Isle and Tri-Community (Fort Fairfield) landfills serve nearly 50 communities in Aroostook County. Both are currently seeking expansions that will serve those communities for two more decades.

To extend the life of their landfill, the City of Lewiston brings its waste to the MMWAC incinerator in Auburn. MMWAC in exchange disposes its incinerator ash at the Lewiston landfill.

Municipal CDD Disposal Facilities

There are 23 municipal disposal facilities that accept locally-generated construction and demolition debris (CDD), inert fill, brush, and trees. Local facilities furnish a 'short-transport' option for the management of these wastes. A total of 34,839 tons of material were buried at these sites during 2005; a 45% decrease from 2003 when 64,666 tons were landfilled in these facilities as shown in Figure 10.

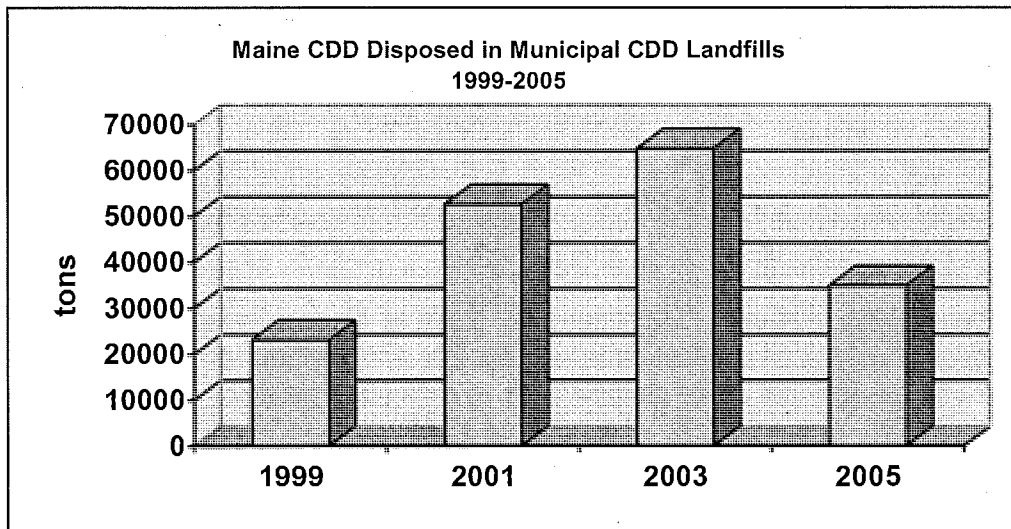


Figure 10: Maine CDD Disposed in Municipal CDD Landfills, 1999-2005  
Source: State Planning Office

*Assessment of Facilities*

The remaining capacity at individual CDD facilities varies, although statewide numbers indicate a remaining 850,000 cubic yards of landfill space exist for an overall capacity for another 10-12 years. A number of these facilities will be full before then, creating 'pockets' where CDD disposal options will need to be reconsidered. Four of the facilities have an estimated six years or less of capacity at current fill rates and licensed

footprints. One site, located in Marion Township in Washington County, is expected to be full in 2-3 years.

CDD disposal capacity and management continue to be problematic. These materials are unacceptable at waste-to-energy facilities and cannot be recycled or reused without investment in equipment, labor, and sufficient land area to aggregate and process them. Markets for processed CDD and bulky wastes do exist but, on the small scale that most Maine towns operate, are limited. Communities' low volume and dispersed facilities do not produce the economics needed for recycling markets.

Maine has two commercial CDD processors, KTI Biofuels in Lewiston and CPRC in Scarborough. KTI is a fixed operation. It accepts only clean wood products (from in-state and out-of-state) for processing for use as biomass fuel. CPRC has both a fixed and mobile operation. It moves its equipment on site to recover and recycle a range of CDD components (wood, asphalt, gypsum, etc.). The economics limit CPRC's range of mobility to southern Maine. There are also several commercial wood chippers that move from site to site to manage smaller brush piles. Additional commercial CDD processing capacity may be permitted in Maine in 2007-8, which would provide an outlet for Maine-generated CDD.

### **B. Waste-To-Energy Facilities**

In 2005, 34.8% of Maine's municipal solid waste was sent to a waste-to-energy facility (W-T-E). Maine's W-T-E facilities received 879,473 tons of MSW in 2005, an increase from 2003, but in keeping with the recent trend, as shown in Figure 11.

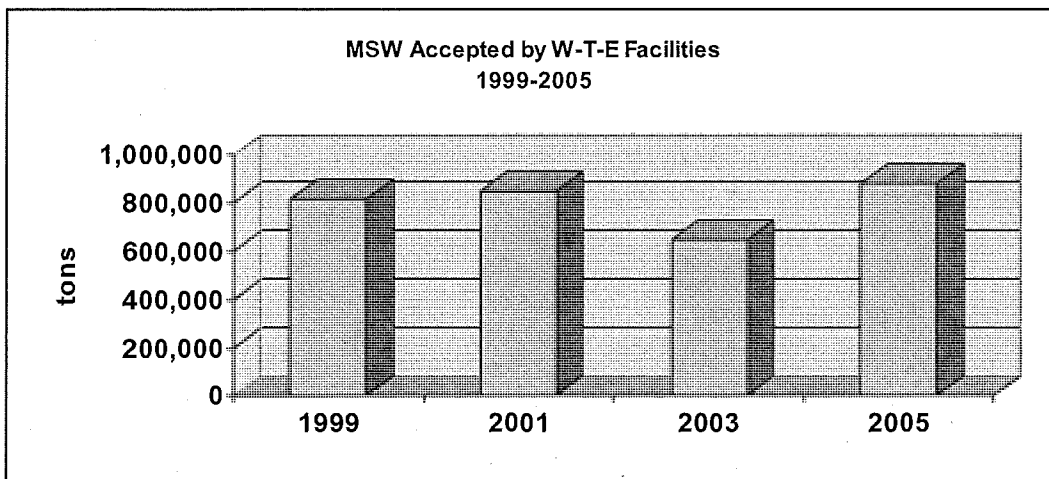


Figure 11: MSW Accepted by W-T-E Facilities, 1999-2005  
Source: Facility License Reports, Maine DEP

Table D shows the processing capacity of the four waste-to-energy facilities:

<b>Table D: Maine W-T-E Capacity</b>		
Waste-To-Energy Facility	Daily processing capacity (tons/day)	Annual processing capacity (tons/year)
Maine Energy (ME)	950	310,000
Mid Maine Waste Action Corporation (MMWAC)	200	70,000
Penobscot Energy Recovery Corporation (PERC)	1,050	304,000
<i>ecomaine</i>	550	170,000
<b>Total of W-T-E facilities</b>	<b>2,750</b>	<b>854,000<sup>19</sup></b>

The facilities provide both a product from combustion as well as a reduction of the MSW tonnage requiring disposal, thus reducing the need for landfill capacity. They produce a combined capacity of approximately 62 megawatts a day of electricity and reduce the volume of waste requiring landfilling by about two-thirds.

The four waste-to-energy facilities, while combusting MSW and producing electrical power, also produce several streams of materials and residues: by-pass waste, front-end process residue, and ash. These residues, which require disposal in landfills, comprise approximately one-third of the waste processed by waste-to-energy facilities (see Figure 12).

<b>2005 W-T-E Facts</b>
<ul style="list-style-type: none"> <li>• Accepted 879,473 tons of MSW (678,535 tons generated in-state and 200,938 tons imported)</li> <li>• Produced 118,555 tons of front-end process residue</li> <li>• By-passed 56,451 tons of municipal solid waste</li> <li>• Recovered 24,192 tons of metal</li> <li>• Created 161,289 tons of ash/residues</li> <li>• Generated over 62 mega watts of electricity (enough to power nearly 80,000 households a year, or about one household in seven in Maine. It would have taken about 30 million gallons of #6 fuel oil to produce a similar amount of electricity)</li> <li>• Combusted 518,986 tons of MSW (combustion is the net reduction from the volume accepted, minus the front-end process residue, ash, metals, and bypass)</li> </ul>

<sup>19</sup> The difference between what was received by these facilities (879,473) and processing capacity (854,000) is FEPR.

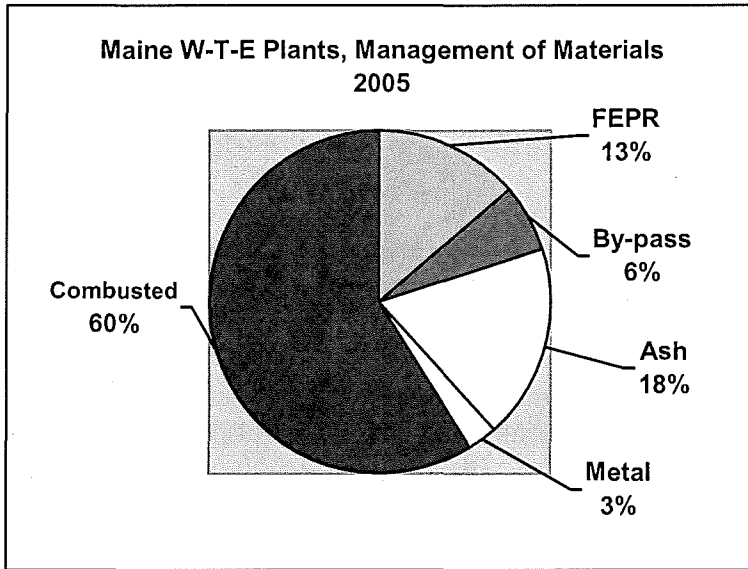


Figure 12: Maine W-T-E Plants, Management of Materials  
 Source: Facility License Reports, Maine DEP

*By-pass Waste*

By-pass waste is that portion of the municipal solid waste stream intended for delivery to and incineration at a waste-to-energy facility, but diverted because the facility could not accept it. Solid waste is 'by-passed' if there are operational interruptions or facility shut-downs or if the facility reaches its operational capacity and cannot accept waste that it is contractually-obligated to receive. The by-pass waste is typically delivered to a landfill for disposal.

*Front-end Process Residue*

Front-end process residue (FEPR) is removed prior to incineration, and may include ferrous metals, glass, grit, and fine organic matter. While metals are recycled, most FEPR is landfilled. In the past, FEPR was used in conjunction with landfill closure programs, but this is no longer a viable outlet. The FEPR waste stream has a strong, negative impact on landfill capacity, since alternatives to landfilling it do not readily exist. While some composting of FEPR has been done, the resulting product typically contains contaminants that restrict its use to limited landfill cover applications only.

Maine Energy (ME) and Penobscot Energy Recovery Company (PERC) use a 'refuse derived fuel' technology and generate front-end process residue as a by-product of their operations. These facilities dispose of the front-end process residue at the Pine Tree Landfill, though a portion was delivered to other disposal facilities. Mid-Maine Waste Action Corporation (MMWAC) and *ecomaine* use a 'mass burn' technology and do not produce FEPR.

### *Waste-To-Energy Facility Ash*

Ash is a by-product of incineration and is landfilled.<sup>20</sup> The ash from ME and PERC is buried at the commercial landfills and Juniper Ridge. The ash from MMWAC is buried at the City of Lewiston's landfill. In 2005, part of the ash from *ecomaine* was buried in their own landfill, with the balance delivered to the Pine Tree and Juniper Ridge landfills.

### *Assessment of Facilities*

Three of these facilities are at or close to their 20<sup>th</sup> year of operation. The plants' maintenance programs, along with upgrades, have kept these facilities functioning well, and should continue to do so for the foreseeable future.

Facility upgrades occur in response to environmental regulations, primarily aimed at air emissions reductions. All of the Maine W-T-E facilities perform at or better than their license requirements.

To produce the electrical generation contracted for, waste-to-energy facilities need to operate at maximum capacities. The seasonal nature of waste generation causes tonnage overage problems during the summer months and the need to 'attract' additional tonnage during the winter months. Facilities bypass waste when they reach their daily operating capacity and import waste to make up for shortfalls (see Section IV.C on Imported/Exported Municipal Solid Waste).

## **C. Imported/Exported Municipal Solid Waste**

Movement of solid waste across state lines is protected under interstate commerce laws. Municipal solid waste is considered a commodity and is subject to fluctuations accruing to supply and demand at the regional and national level.

During 2005, 436,412 tons of municipal solid waste were imported to Maine, while exports totaled 71,379 tons. The amount of MSW imported to Maine is increasing while the amount exported fluctuates as shown in Figures 13 and 14.

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<sup>20</sup> In addition, 267,381 tons of other special wastes, primarily sludges and contaminated soils, were landfilled in public and private facilities during 2005.

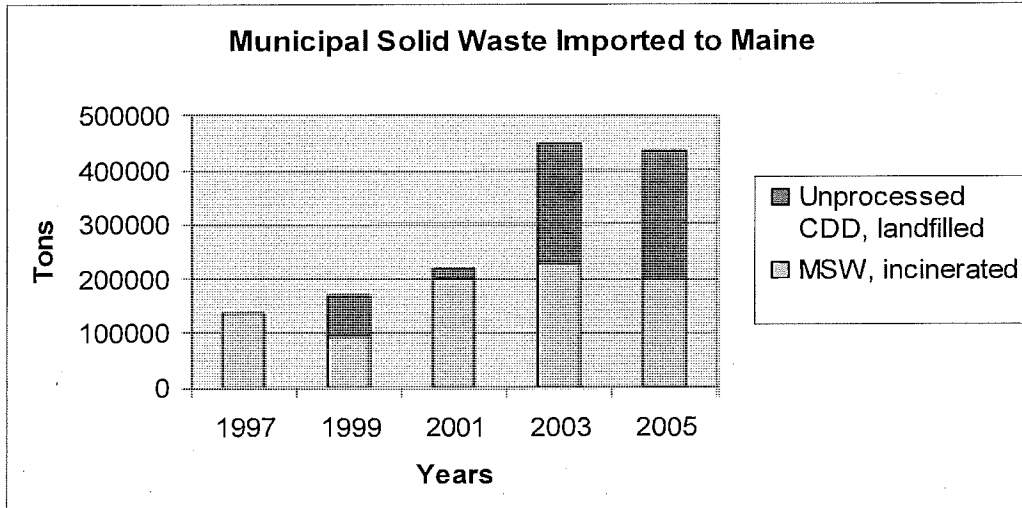


Figure 13: Municipal Solid Waste Imported to Maine, 1997-2005  
 Source: State Planning Office

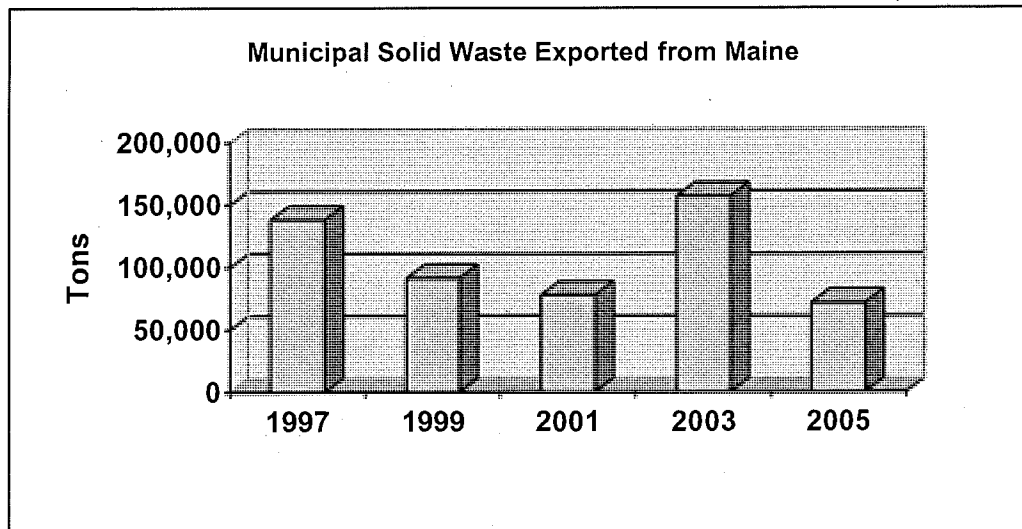


Figure 14: Municipal Solid Waste Exported from Maine  
 Source: State Planning Office

Exported waste was delivered to landfills in New Hampshire and New Brunswick for disposal.

For imported waste in 2005, about half was municipal solid waste that was incinerated and half was construction and demolition debris that was landfilled.

Three of the waste-to-energy facilities in Maine (ME, PERC, and *ecomaine*) received 200,938 tons of out-of-state generated MSW. Approximately 75% of this tonnage (146,590 tons) was delivered to ME and the remaining 25% (53,810 tons) delivered to PERC. *ecomaine* accepted 538 tons of out-of-state waste at their facility.

Of the imported CDD disposed in Maine, 233,600 tons were landfilled at the Pine Tree Landfill and 1874 tons were buried at the Crossroads Landfill. Figure 15 shows the breakdown of imported wastes accepted by facility.

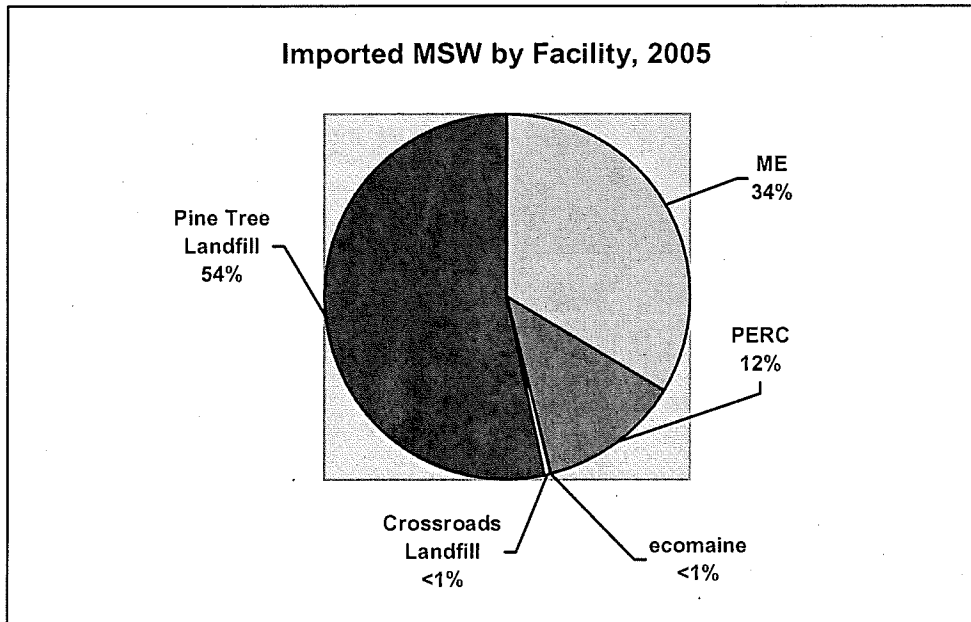


Figure 15: Imported MSW by Facility, 2005  
Source: Facility License Reports, Maine DEP

#### D. Recycling Capacity

Maine recycles over 700,000 tons per year; 15% of which (80,000 to 100,000 tons) is handled by municipal recycling programs. There are 300 local recycling programs and a dozen major municipal recycling processing centers.

Recycling consists of two operations: collection and processing. Collection can be done by the municipality or a private hauler by curbside pick-up or self-transported by residents to a collection center. Small collection centers provide short-term storage with some minimal processing (i.e. crushing glass) to reduce volumes. From there materials are moved to processing centers or sometimes, depending on the material, directly to end users.

Processing centers consist of building capacity to house storage and processing operations, equipment such as paper and plastic balers, glass crushers, and forklifts, and office space. They process material to meet market specifications and amass sufficient quantities to move directly to markets.

### *Assessment of Facilities*

Today, Maine recycling operations have the ability to process current tonnages, as well as modest increases.

There have been significant, recent (within the last five years) improvements in processing capacity in the following regional programs: Bangor, Pittsfield, Skowhegan, Rockland, Camden, Coastal Recycling, and Lincoln County. Currently, *ecomaine*, Maine's largest recycling region serving its 21- owner-municipalities in Cumberland County, is undergoing a \$3.8 million upgrade to its materials recovery facility in Portland. This investment will help *ecomaine* institute single sort collection in order to expand its recycling from 25,000 to 40,000 tons a year.

The State Planning Office conducted extensive interviews with over 20 regional recycling managers and operators around the state in the summer of 2005 and concluded that there is capacity to process an additional 20,000 (20%) tons of recycled materials with the existing infrastructure.

Almost all of Maine's municipal recycling physical plant was put in place in 1990-93 and is approaching 20 years of use.



## V. Projected Waste Processing and Disposal Needs and Capacity

The total remaining in-state disposal capacity, as of the end of 2005, was just under 20 million cubic yards. Accounting for projected changes in waste generation and capacity, Maine has sufficient capacity to meet its needs for the next 20 years and beyond.

### A. Statewide Disposal Capacity

#### Capacity Needed

Maine generated 1.9 million tons of waste in 2005. Assuming a 4% annual increase, we will generate over 4 million tons in 2025. 1.6 million tons per year is landfilled or sent to a W-T-E facility in Maine.<sup>21</sup> Of that just over 700,000 tons are landfilled within the state.

By 2025, our total tons needing disposal will increase to 2.8 million tons. Of that, 1.8 million tons or 2 million cubic yards will need to be landfilled per year. Figure 16 shows Maine's projected capacity needs over the next 20 years.

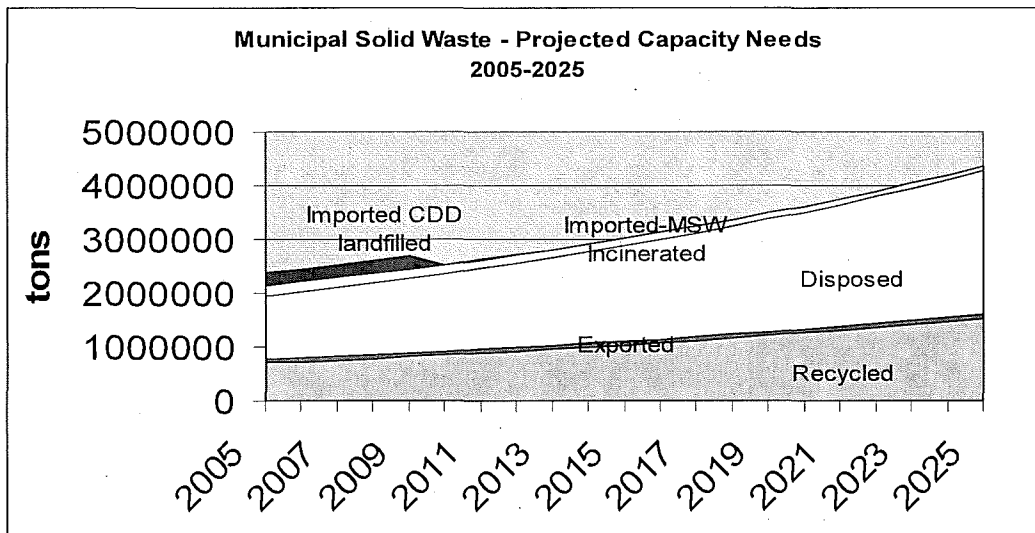


Figure 16: Maine Projected Capacity Needs in Tons, 2005 – 2025  
Source: State Planning Office

To handle this projected tonnage over the next 20 years, Maine will need 32 million cubic yards of landfill capacity based on the following assumptions:

<sup>21</sup> Including out-of-state waste

- continued growth in MSW generation at 4% per year (with no waste reduction assumptions built in)
- recycling tonnages increase as waste generation increases to maintain a 36% recycling rate<sup>22</sup>
- imports decrease as capacity at W-T-E facilities is replaced by Maine MSW as generation increases and landfills close
- exports remain at 2005 levels

### Projected Capacity Available

The projection of solid waste disposal capacity is based on these parameters:

- continued operation of and reliance upon the four W-T-E facilities
- no significant change in municipally-operated landfills
- closing Pine Tree Landfill
- a license amendment and expansion permit for Juniper Ridge is approved

Currently, we estimate that Maine has 19.75 million cubic yards of capacity for municipal solid waste disposal as follows:

- 2.7 million cubic yards in municipal landfills (1.8 million tons)
- 0.85 million cubic yards in municipal CDD landfills (550,000 tons)
- 6.7 million cubic yards in commercial disposal facilities (6.7 million tons)
- 9.5 million cubic yards in Juniper Ridge Landfill (9.5 million tons)

The amount of available disposal capacity will be affected by both increases and decreases in capacity as follows.

### *Projected Consumed Capacity*

The planned closure of Pine Tree Landfill in 2009 will result in a loss of two (2) million cubic yards of capacity. This projected loss of capacity is not expected to have a significant impact on Maine's current solid waste management system. The planned closure responds to state policy adopted in 1989 that sought to restrict additional private sector development of disposal capacity.

Its closure will, however, shift *in-state* special wastes and construction and demolition debris to Juniper Ridge.

### *Projected Planned Capacity*

The State Planning Office is seeking an additional 22.5 million cubic yards (22.5 million tons) of disposal capacity at the state-owned Juniper Ridge Landfill. The proposed capacity expansion is currently undergoing DEP review and, if approved and permitted

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<sup>22</sup> Note that even to maintain a 36% recycling rate will require that Maine double the tons recycled from 700,000 to 1.5 million tons over 20 years.

(which will take several years), will provide disposal capacity to the state for an additional 15 to 20 years.

#### *Impact of Recycling on Disposal*

Recycling will continue to divert significant tonnages from disposal. The State Planning Office estimates that over 20 years, recycling will divert 22 million tons (cumulatively) from disposal at today's 36% rate.

#### *Out-of-state Waste*

The types and amount of out-of-state waste will likely shift in response to changes in Maine's waste generation and management systems.

The waste-to-energy facilities that currently take out-of-state waste will continue to rely upon it to fulfill their boiler needs and power contracts. However, the State Planning Office anticipates that as Maine-generated solid waste tonnages needing disposal increase, waste-to-energy facilities' need for imported municipal solid waste will decrease. The state's commercial landfills will continue to accept unprocessed CDD from out-of-state for economic reasons. But as those facilities fill up and close, imported waste will drop.

For purposes of this report, we estimate a 4% annual reduction in MSW imported and decreases in unprocessed CDD to a nominal amount by 2015, or an estimated 4 million cubic yards (cumulatively) over 20 years.

#### **Biomass Fuel**

This report does not address processed green wood or construction and demolition debris imported into state for use as biomass fuel. This material is used in industrial boilers in Maine. Ash from its incineration has been managed by the industrial owner and has not impacted capacity at the state public or commercial landfills.

Nevertheless, with higher oil prices and tax incentives for green energy, interest in biomass fuel is growing. Anticipated development of construction and demolition debris processing facilities in Maine, in response to demand for biomass fuel recovery as well as recovery of other components of that waste stream, will rely upon out-of-state generated debris for at least part of their operation.

The residues from these processing facilities would be disposed of at landfills within the state. The ash from the combustion of the CDD fuel wood could be disposed of at any of the state's licensed special waste landfills, including the state-owned Juniper Ridge Landfill, with a corresponding affect on the lifespan of those facilities. This is an issue that warrants watching.<sup>23</sup>

<sup>23</sup> P.L. 2005, Chapt 617 directs Maine DEP to evaluate the effects of CDD used as wood fuel.

Projected Disposal Capacity, Available vs. Needed

Based on the above analysis, Maine will have an estimated 42 million cubic yards of landfill capacity over the next 20 years, more than meeting our need for nearly 32 million cubic yards as shown in Table E.

<b>Table E: Projected Disposal Capacity Available vs. Needed<sup>24</sup> 2005-2025</b>				
<b>Landfill Capacity Available (cubic yards)</b>			<b>Capacity Needed (tons)</b>	
Municipal Landfills	2,700,000		Total Maine waste disposed	62,000,000
Municipal CDD Landfills	850,000		Imported Waste	4,000,000
Commercial	6,700,000		Recycled	(22,000,000)
Juniper Ridge	9,500,000		Exported	(1,500,000)
Juniper Ridge expansion	22,500,000		Diverted to W-T-E	(11,000,000)
<b>Total Landfill Capacity Available:</b>	<b>42,250,000</b>		<b>Total Landfill Capacity Needed:</b>	<b>31,500,000</b>

Table E: Projected Disposal Capacity Available vs. Needed, 2005-2025

Source: State Planning Office

While Maine has sufficient landfill capacity to meet its needs, we must not become complacent. Siting new disposal capacity is a costly and highly volatile undertaking. Maine should do all that it can to make the existing capacity last beyond the next two decades. This will require state and local investment in waste reduction and recycling.

**B. Regional Capacity Issues**

Regionally, Maine is divided into “waste sheds” with waste feeding into regional disposal facilities as shown in Figure 17. Some waste sheds are geographically large like PERC (170+ communities) and the Crossroads landfill (30+ communities), some receive municipal solid waste from a single community or a small region, such as the two landfills on the mid-coast in Brunswick and Bath.

While this report typically looks at statewide disposal capacity, the State Planning Office has identified some regional or local areas where disposal capacity is uneven or in flux.

<sup>24</sup> Assumes a 1:1 conversion ration between tons and cubic yards

# Municipal Solid Waste Disposal - 2004

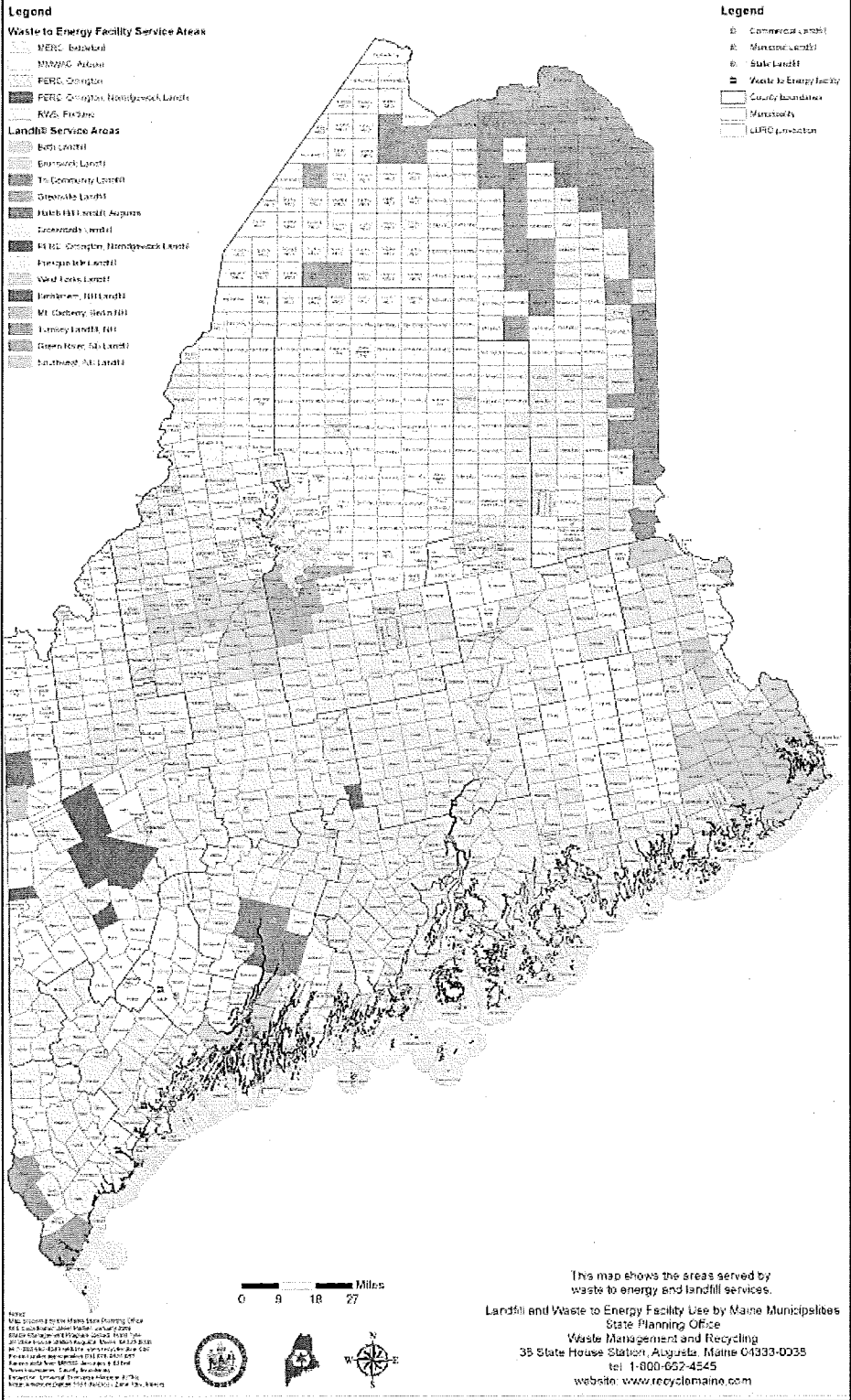


Figure 17: Disposal Regions in Maine  
Source: Maine State Planning Office

### Aroostook County

While the Presque Isle Landfill has another decade of life at its existing facility, the city is already beginning to plan for the future. It is currently seeking approval for an expansion. The expansion, if approved, will extend their capacity for another 20 years. The Tri-Community Landfill in Fort Fairfield also is seeking a landfill expansion at this time which will serve those communities for another 15-20 years. These efforts will require significant local resources but should not disrupt the solid waste capacity in the region.

### Washington County

The Marion Regional CDD Landfill in Marion Township is reaching capacity and will close in 2008-9. A new construction and demolition debris landfill for that region is in the planning stages, although the extent of the potential sources and volumes of the waste have yet to be finalized.

### York County

In 2006, local officials undertook an effort to purchase and close the Maine Energy W-T-E facility. This facility, which serves about 36 communities in York County, is located in downtown Biddeford. Proposals were put to the voters in Biddeford and Saco to raise the money to buy the facility, but were turned down.

The loss of disposal capacity in Southern Maine would disrupt Maine's waste management system, but it would not precipitate a crisis. The loss could be absorbed through a combination of aggressive waste reduction and recycling efforts by communities in the service area, transporting waste to other in-state and out-of-state disposal facilities<sup>25</sup>, and, with a possible license amendment to Juniper Ridge to accept "bagged" or household MWS, transporting waste there.<sup>26</sup> The state, municipalities, and the private sector would need to work in partnership to find the best solution for the long term.<sup>27</sup>

### **C. Recycling Capacity**

To achieve a 50% recycling goal would require municipal and private sector recycling programs to handle 300,000 tons more of material based on what we generate today. This number will grow each year to match projected increases in waste generation.<sup>28</sup>

Over the next 20 years, simply to maintain the state's current 36% recycling rate will require public and private programs to double their recycling handling abilities. As waste

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<sup>25</sup> The cost-benefit of transporting wastes long distances would have to be considered.

<sup>26</sup> Any change in the type of waste accepted at Juniper Ridge would require approval from the Maine Department of Environmental Protection.

<sup>27</sup> Another consideration for this region is the contract renewal for electrical generation payments. A lower price could increase tip fees and impact volumes at the ME facility.

<sup>28</sup> Based on an assumed 4% annual growth in municipal solid waste generation

generation increases, the volume of recyclable materials at a 36% rate will increase from 700,000 tons in 2005 to 1.5 million tons in 2025.

To achieve a 50% recycling goal by 2009 and hold it, we would mean processing 30 million tons from the waste stream over the 20-year period as shown in Figure 18 (increasing from 700,000 tons in 2005, to 1 million tons in 2009 and 2.1 million tons by 2025).

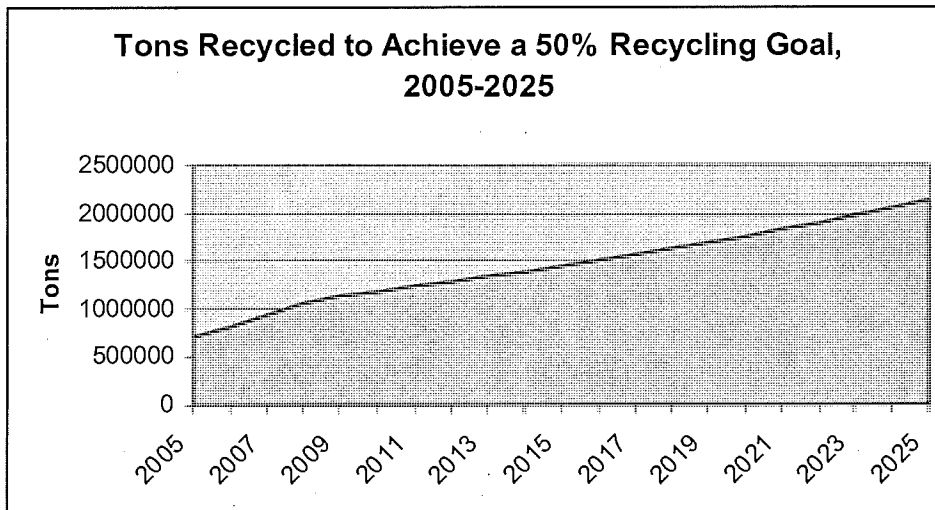


Figure 18: Tons Recycled to Achieve a 50% Recycling Goal  
Source: State Planning Office

Currently municipalities do not have the capacity to handle these kinds of new volumes; neither the physical (buildings and equipment) nor human (staffing) capacity. Municipal recycling programs currently handle, on average, 90,000 tons of recycled materials per year. As discussed earlier, they have additional capacity for another roughly 20,000 tons annually.<sup>29</sup>

The private sector can likely handle additional tonnages or be in a position to respond with capital investment needs to grow their tonnages if the economics warrant it.

There are also concerns over where this volume would come from. Higher yields and participation rates can be stimulated with public awareness programs, incentives such as pay as you throw, and technological advances including single sort. Many communities are responding with these kinds of efforts, but greater effort is needed to generate the tonnage to achieve a 50% recycling goal.

It will take significant infrastructure capital investment by both the public and private waste management sectors to achieve our 50% recycling goal. Maine should begin to prepare now to build the infrastructure needed to manage an increase in recycling.

<sup>29</sup> This does not include the ecomaine recycling collection and processing expansion that is predicted to add 15,000 tons a year of recyclable material.

## **VI. Disposal Prices**

### **A. Disposal Fees**

The cost of managing solid waste is one of the biggest portions of municipal budgets. Disposal expenses comprise collecting, transporting, and 'tipping' waste. Disposal fees or 'tipping' fees are a key driver of municipal disposal costs. Current disposal fees range from \$40.00 to \$158.00<sup>30</sup> per ton at Maine's landfills and incinerators and have stabilized allowing predictability for municipal budgeting and long-term planning.

Tip fees at the four waste-to-energy facilities are stable and reflect the commitment of the municipalities who either own the facility or have long-term contracts for disposal services. A number of regional landfill facilities (Bath, Augusta, *ecomaine*) recently implemented price increases that should hold for the foreseeable future.

The State, in its operating agreement with Casella Waste Systems, established a 'ceiling' for tip fees that sets an upper limit on how much can be charged for wastes delivered to the Juniper Ridge Landfill. It is anticipated that this will act as a check on pricing for the disposal of similar materials at other solid waste facilities.

### **Energy Revenues**

Tipping fees at waste-to-energy facilities are largely determined by revenues from the sale of the electricity they generate. The revenues reduce the facility's operating expenses, yielding a reduction in the tip fee charged for solid waste. Should electrical sales revenue drop, tip fees may increase. Conversely, should the electrical sales increase, the possibility exists lower or maintain tip fees being charged.

Maine Energy's electrical contract is up for renewal in 2008. A lower price for electrical generation could impact not only tip fees but also reduce volumes at that facility.

### **B. Supracompetitive Prices**

Supracompetitive, as applied to '*prices*,' means prices that are higher than they would be in a normally functioning, competitive market; usually as a result of overconcentration, collusion, or some form of monopolistic, oppressive practice. State law requires the State Planning Office to determine whether changes in available landfill capacity have generated, or have the potential to generate, supracompetitive prices and make recommendations for legislative or regulatory changes as necessary.

Disposal capacity at Maine landfills is sufficient to meet current needs. At the time of this report, the disposal capacity situation does not appear to have generated, nor does it appear to have the potential to generate supracompetitive disposal fees.

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<sup>30</sup> This does not reflect spot market prices.



## **Appendices**

### **A. Legislative Reference**

Title 38: WATERS AND NAVIGATION  
Chapter 24: SOLID WASTE MANAGEMENT AND RECYCLING  
Subchapter 2: SOLID WASTE PLANNING

#### **§2124-A. Solid waste generation and disposal capacity report**

By January 1, 1997 and every 2 years thereafter, the office shall submit a report to the joint standing committee of the Legislature having jurisdiction over natural resource matters setting forth information on statewide generation of solid waste, statewide recycling rates and available disposal capacity for solid waste.

The report must include an analysis of how changes in available disposal capacity have affected or are likely to affect disposal prices. When the office determines that a decline in available landfill capacity has generated or has the potential to generate supracompetitive prices, it shall include this finding in its report and shall include recommendations for legislative or regulatory changes as necessary.

## **B. Definitions and Acronyms**

The following definitions are provided to assist the reader in reviewing this document:

Broker's Survey – *a biennial survey conducted of private sector recycling brokers and end-users to determine level and effort related to management of commercial recyclables.*

Bulky Wastes – *these are solid wastes that do not typically fit into a 30 gallon trash container, and may include such items as wood, large metal appliances and construction materials.*

Construction/Demolition Debris (CDD) – *these are the wastes generated by building, remodeling and/or destruction activities and may include such wastes as wood and wood products, concrete and brick, gypsum board, shingles and other common components of buildings.*

Front-end Process Residue (FEPR) – *residual of municipal solid waste resulting from the processing of solid waste processing prior to incineration or landfilling, and includes, but is not limited to, ferrous metals, glass, grit and fine organic matter.*

Household Hazardous Wastes (HHW) – *items generated by households that are corrosive, toxic, ignitable, or reactive, and as such are hazardous to humans and/or the environment if disposed of improperly.*

Incinerator Ash – *this is the residue from the combustion of municipal solid waste at waste-to-energy facilities. It may also contain fly ash from the facility's operation and is designated as a 'special waste'.*

Municipal Solid Waste Annual Reports – *these are the reports submitted to the State Planning Office by municipalities, as required through 38 MRSA § 2133. These reports convey their efforts related to municipal solid waste management and provide detail on the tonnage of solid wastes they have overseen and a description of the various solid waste management practices utilized.*

Municipal Solid Waste (MSW) – *solid waste emanating from household and normal commercial activities.*

Special waste – *wastes that generated by other than domestic and typical commercial establishments that exist in such an unusual quantity or in such a chemical or physical state that require special handling, transportation and disposal procedures.*

*Supracompetitive when applied to prices – means prices that are higher than they would be in a normally functioning, competitive market -- usually as a result of overconcentration, collusion or some form of monopolistic, oppressive practice.*

*Universal Wastes – a category of wastes that including: PCB containing lighting ballasts; Cathode Ray Tube (CRT) containing devices; fluorescent lamps; other lamps containing hazardous wastes; and, mercury-added devices from commercial sources.*

*Waste-to-energy facilities (W-T-E) – incinerators which receive municipal solid waste, and through combustion, recover energy and convert it into electricity, while reducing the volume of waste requiring disposal.*

The following acronyms are provided to assist the reader in reviewing this document:

**CDD** – *means Construction/Demolition Debris, wastes generated by building, remodeling and/or destruction activities and may include such wastes as wood and wood products, concrete and brick, gypsum board, shingles and other common components of buildings.*

**CRT** – *means ‘Cathode Ray Tube’, the projection device located in certain computer monitors and television sets*

**DEP** – *means the Maine Department of Environmental Protection*

**EPA** – *means the United States Environmental Protection Agency*

**FEPR** – *means Front-End Process Residue, residual of municipal solid waste resulting from the processing of solid waste processing prior to incineration or landfilling, and includes, but is not limited to, ferrous metals, glass, grit and fine organic matter.*

**MSW** – *means Municipal Solid Waste, solid waste emanating from household and normal commercial activities.*

**PCB** – *refers to Polychlorinated Biphenyls, a class of chlorinated aromatic hydrocarbons*

**SPO** – *means the Maine State Planning Office*

**W -T- E** – *means waste-to-energy facilities, incinerators which receive municipal solid waste, and through combustion, recover energy and convert it into electricity, while reducing the volume of waste requiring disposal.*

### C. Maine Recycled Materials, 1995-2005

Materials:	2005	2003	2001	1999	1997	1995
high grade paper corrugated cardboard	72,965	3,951	43,125	11,570	31,470	35,673
newspaper	117,144	88,166	202,129	198,442	214,536	138,759
magazines	32,300	33,442	32,069	42,612	44,710	29,238
mixed paper	8,723	1,881	13,259	6,104	3,702	13,805
other paper	5,226	13,919	14,766	12,860	12,207	24,521
other grade not specified	8,900	3,166	27,376	12,671	6,465	5,112
<b>Total paper</b>	<b>36,805</b>	<b>132,475</b>				
	<b>282,063</b>	<b>277,000</b>	<b>332,724</b>	<b>284,259</b>	<b>313,090</b>	<b>247,109</b>
clear glass	11,058	6,334	11,706	8,324	10,590	31,396
brown glass	24,377	11,270	12,200	12,545	7,060	20,263
green glass	12,622	3,142	6,700	26,167	11,767	35,363
all other glass	3,598	21,672	620	440	1,734	1,168
<b>Total glass</b>	<b>51,655</b>	<b>42,418</b>	<b>31,226</b>	<b>47,476</b>	<b>31,151</b>	<b>88,190</b>
white goods	78,401	68,125	115,219	142,640	122,895	68,238
aluminum	2,163	2,109	6,100	1,862	1,332	3,880
tin cans	1,089	3,154	9,754	18,833	10,693	13,823
non ferrous other (various materials)	23,213	18,847	22,491	18,652	21,572	42,521
<b>Total Metal</b>	<b>68,432</b>	<b>68,984</b>				
	<b>173,298</b>	<b>161,219</b>	<b>153,564</b>	<b>181,987</b>	<b>156,492</b>	<b>128,462</b>
HDPE	9,377	3,420	2,274	4,410	4,160	3,486
PET	4,766	8,725	9,042	6,521	6,021	4,836
LDPE film	526	711	4			
polystyrene	8	0	554	6	6	32
Other	631	531	1,917	1,211	1,042	1,916
<b>Total Plastic</b>	<b>15,308</b>	<b>13,387</b>	<b>13,791</b>	<b>12,148</b>	<b>11,229</b>	<b>10,270</b>
wood waste	93,582	92,154	40,443	41,103	38,402	16,658
leaves	29,938	33,376	26,340	27,421	24,528	13,361
food waste	142	2,623	23,744	24,582	23,240	17,035
<b>Total Organic</b>	<b>123,662</b>	<b>128,153</b>	<b>90,527</b>	<b>93,106</b>	<b>86,170</b>	<b>47,053</b>
tires	30,374	35,467	19,621	32,530	30,559	8,511
CDD, other wastes	23,425	49,714	38,848	39,469	44,209	18,311
Mercury-added/UW	487	327	242			
<b>Total Hard to Manage</b>	<b>54,286</b>	<b>85,508</b>	<b>58,711</b>	<b>71,999</b>	<b>74,768</b>	<b>26,822</b>
Textiles and other nonbulky MSW	1,724	2,260	3,827	6,023	1,726	873
	6,935	7,638	3,445	2,740	5,252	8,017
<b>TOTAL TONS RECYCLED:</b>	<b>708,931</b>	<b>717,583</b>	<b>687,815</b>	<b>699,738</b>	<b>679,878</b>	<b>556,796</b>

## D. Municipal Recycling Rates, 2005

Town/Region	Rate	Town/Region	Rate
Abbot	18 %	Carmel	8 %
Acton	8 %	Carrabassett Valley	6 %
Albion	17 %	Carthage	13 %
Alfred	39 %	Casco	63 %
Alton	18 %	Castine	22 %
Andover	20 %	CENTRAL PENOBSCOT	20 %
Anson	32 %	CHERRYFIELD REGION	29 %
AROOSTOOK VALLEY	53 %	Chester	30 %
Arrowsic	28 %	Chesterville	30 %
Arundel	47 %	China	25 %
Athens	5 %	Clifton	20 %
Auburn	24 %	CLINTON REGION	32 %
BAILEYVILLE REGION	25 %	Cornish	9 %
Bancroft	8 %	Cornville	5 %
Bangor	24 %	Cranberry Isles	23 %
Bar Harbor	46 %	Cumberland	48 %
Bath	30 %	Danforth	23 %
Belfast	84 %	Dayton	14 %
Belgrade	44 %	Dedham	24 %
Belmont	13 %	Deer Isle	22 %
Berwick	20 %	Denmark	35 %
Bethel	29 %	Detroit	37 %
Biddeford	48 %	Dixmont	36 %
Bingham	44 %	DOVER-FOXCROFT REGION	44 %
BLUE HILL REGION	17 %	Dresden	30 %
BOOTHBAY REGION	72 %	Drew Pt.	8 %
Bowdoin	14 %	Durham	41 %
Bowdoinham	64 %	E. Millinocket	57 %
Bradley	23 %	Eastport	12 %
Brewer	36 %	Eddington	8 %
Bridgton	39 %	Edinburg	8 %
BRISTOL REGION	36 %	Eliot	53 %
Brooks	17 %	ELLSWORTH AREA	33 %
Brownfield	25 %	Embden	8 %
BROWNVILLE AREA	15 %	Enfield	30 %
Brunswick	44 %	Etna	23 %
BUCKFIELD REGION	41 %	EUSTIS REGION	37 %
BUCKSPORT REGION	51 %	Fairfield	10 %
BURLINGTON-LOWELL	25 %	Falmouth	68 %
Burnham	17 %	Farmington	42 %
Buxton	42 %	Fayette	17 %
Calais	43 %	Frankfort	8 %
Canaan	24 %	Franklin	31 %
Canton	23 %	Freedom	17 %
Cape Elizabeth	63 %	Freeport	51 %
CARATUNK REGION	9 %	Frenchboro	48 %
		Frye Island	26 %
		Fryeburg	33 %

Garland	22 %	Lincoln	42 %
Georgetown	37 %	Lincoln Pt.	54 %
Gilead	27 %	Lisbon	58 %
Glenburn	12 %	Litchfield	38 %
Gorham	43 %	Littleton	19 %
Gouldsboro	27 %	Livermore	46 %
Gray	46 %	Livermore Falls	37 %
Greenbush	27 %	Long Island	47 %
Greene	34 %	Lovell	56 %
GREENVILLE REGION	37 %	Lubec	8 %
GREENWOOD WOODSTOCK	34 %	Lyman	6 %
Hampden	39 %	MACHIAS REGION	42 %
Hancock	37 %	Macwahoc Pt.	8 %
Hanover	26 %	Madison	25 %
HARMONY REGION	5 %	Magalloway Pt.	40 %
Harpswell	65 %	Mariaville	40 %
Harrington	13 %	MARION TS	13 %
Harrison	24 %	MARS HILL AREA	33 %
Hartford	39 %	Mattawamkeag	18 %
Hartland	42 %	Mechanic Falls	33 %
HATCH HILL REGION	43 %	Medford	8 %
Haynesville	8 %	MEDWAY REGION	8 %
Hebron	28 %	Mercer	15 %
Hermon	14 %	MID-COAST	40 %
Holden	39 %	MID-MAINE	41 %
Hollis	11 %	Milbridge	21 %
Howland	53 %	Milford	13 %
Hudson	39 %	Millinocket	60 %
Indian Township	11 %	Milo	15 %
Industry	31 %	Minot	12 %
Islesboro	21 %	MONMOUTH REGION	57 %
JACKMAN REGION	36 %	Monroe	14 %
Jackson	22 %	MONSON REGION	28 %
Jay	48 %	Montville	44 %
Kenduskeag	10 %	Morrill	8 %
Kennebunk	51 %	Moscow	26 %
Kennebunkport	18 %	Mount Desert	43 %
KINGFIELD REGION	33 %	Mount Vernon	22 %
Kittery	36 %	Naples	62 %
Knox	23 %	New Gloucester	23 %
Lagrange	8 %	New Sharon	28 %
Lakeville	44 %	New Vineyard	40 %
Lamoine	35 %	Newburgh	13 %
Lebanon	24 %	Newfield	14 %
Lee	33 %	Newport	41 %
Leeds	24 %	Newry	24 %
Levant	28 %	No. Yarmouth	25 %
Lewiston	49 %	NOBLEBORO REGION	31 %
Limerick	41 %	Norridgewock	22 %
Limington	20 %	North Berwick	49 %

North Haven	32 %	Sidney	28 %
NORTH OXFORD REGION	41 %	Skowhegan	47 %
NORTHERN AROOSTOOK REGION	48 %	Smithfield	19 %
NORTHERN KATAHDIN VALLEY	36 %	Solon	41 %
Northport	15 %	Sorrento	28 %
NORWAY PARIS	40 %	SOUTH AROOSTOOK REGION	25 %
Oakland	49 %	South Berwick	58 %
Ogunquit	45 %	South Portland	53 %
Old Orchard Beach	16 %	Southwest Harbor	29 %
Old Town	46 %	Springfield	36 %
Orient	5 %	St. George	64 %
Orono	43 %	Standish	33 %
Orrington	13 %	Starks	36 %
Otis	8 %	Stetson	26 %
Otisfield	52 %	Steuben	17 %
Oxford	19 %	Stockton Springs	18 %
Palmyra	35 %	Stonington	23 %
Parkman	25 %	Strong	15 %
Parsonsfield	20 %	Sullivan	41 %
Passadumkeag	39 %	Swans Island	13 %
Penobscot	8 %	Swanville	26 %
PENOBSCOT COUNTY	11 %	Temple	20 %
PHILLIPS REGION	13 %	THOMASTON REGION	19 %
Phippsburg	38 %	Thorndike	8 %
PISCATAQUIS COUNTY	17 %	Topsham	81 %
Pittsfield	67 %	Tremont	37 %
PLEASANT RIVER	31 %	Trenton	20 %
Plymouth	13 %	TRI-COMMUNITY	40 %
Poland	37 %	TRI-COUNTY	48 %
Portland	42 %	TRI-TOWN	21 %
Pownal	26 %	Troy	33 %
PRESQUE ISLE REGION	48 %	Turner	32 %
Princeton	14 %	UNION RIVER	8 %
Prospect	8 %	Unity	20 %
RANGELEY REGION	34 %	UPPER ST. JOHN VALLEY	5 %
Raymond	43 %	Upton	43 %
READFIELD REGION	49 %	Van Buren	32 %
Reed Plt.	8 %	Vassalboro	48 %
Richmond	37 %	Veazie	27 %
Rockland	23 %	Verona	8 %
Rome	19 %	Vienna	29 %
Sabattus	40 %	Vinalhaven	23 %
Saco	43 %	Waldo	8 %
Sanford	25 %	WALDOBORO REGION	37 %
Scarborough	37 %	Warren	22 %
Searsmont	35 %	Waterboro	58 %
Searsport	29 %	WATERFORD STONEHAM	16 %
Sebago	18 %	Waterville	19 %
Shapleigh	42 %	Weld	31 %
SHERMAN REGION	68 %	Wells	30 %

West Bath	20 %	Winter Harbor	29 %
West Gardiner	50 %	Winterport	41 %
West Paris	21 %	Winthrop	35 %
Westbrook	23 %	WISCASSET REGION	37 %
Weston	10 %	Woolwich	26 %
Willimantic	19 %	Yarmouth	72 %
WILTON AREA	38 %	York	48 %
Windham	58 %		
Windsor	17 %		
Winn	26 %		
Winslow	31 %		