

MAINE STATE LEGISLATURE

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**2001 Solid Waste Generation
and Disposal Capacity Report
to the
Joint Standing Committee on Natural Resources
of the 121st Legislature**

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I. Executive Summary

The Maine State Planning Office (SPO) is required by 38 M.R.S.A. 2124-A to report to the legislature on:

- statewide generation of solid waste;
- statewide recycling rates; and
- available disposal capacity.

The purpose of this is to review and analyze how communities and businesses in Maine are managing the solid waste being produced and disposed of, identify potential future management issues, and measure Maine's recycling progress.

The municipal solid waste volume generated by residents and businesses continues to increase, boosted by an unusual rise in the tonnage of construction/demolition debris. We believe this occurred in part because of extremely favorable financing costs, which allowed residents and businesses to make improvements to their properties. However, in terms of managing the municipal solid waste during 2001, the physical ability to incinerate Maine's solid waste has not significantly changed since 1999, and disposal capacity at landfills continues to decrease.

Recycling efforts, along with waste reduction activities and composting, continue to divert a significant portion of the state's solid waste stream from the existing processing and disposal facilities. These alternative waste management strategies are important; however, we will continue to depend on disposal facilities for the foreseeable future.

Some of the more significant findings from the report include:

- Maine residents, businesses and visitors generated 1,844,059 tons of Municipal Solid Waste (MSW) in 2001, up 8.7% from the 1,696,006 tons reported in 1999, which is higher than the 1,635,136 tons reported in 1997 and an increase from the 1,293,401 tons in 1993.
- The large increase in waste generation from 1999 to 2001 was primarily due to a 35% increase in the tonnage of construction and demolition debris, but improved collection of data may have also captured material that went previously unreported.
- Construction and demolition debris generation rose from 238,946 tons in 1999 to 323,221 tons in 2001. This increase of 84,275 tons accounts for 56% of the total increase in solid waste generated in Maine. With the wide variances in composition of the construction and demolition debris, and the limited recycling opportunities for this part of the overall waste stream, most of this debris is landfilled. The balance of the increase in solid waste, 65,060 tons, represents a growth of four percent in the non construction and demolition debris portion of the municipal solid waste stream.

- In 2001, a total of 218,942 tons of out-of-state generated MSW were shipped into Maine for disposal and 77,765 tons of Maine generated MSW was exported out of state for disposal. When compared to 1999, this represents an approximate 30% increase in imported municipal solid waste, and a 15% drop in exports.
- In 1999, the state-wide recycling rate was 40.4%. In 2001, although recycling efforts continued to increase, up slightly from 684,621 tons in 1999 to 687,815 tons in 2001, the impact of the growth in construction and demolition debris on the overall municipal solid waste tonnage generated resulted in a drop in the state-wide recycling rate, to 37.3%. Recycling of 'traditional materials' continued to advance but not at the same pace as the rise in MSW generation.
- The continued ban on new commercial landfills, and the closure of most of the other municipal landfills, has left the state with only 10 landfills that accept municipal solid waste (8 municipally operated and 2 commercially operated). The total amount of generated MSW (which includes garbage and construction/demolition debris) managed through landfilling was 432,822 tons. An additional 20,651 tons of MSW, delivered from out-of-state sources, were landfilled.
- There are 24 disposal facilities operated by public entities across the state that accept construction and demolition debris, inert fill, brush and trees. These facilities may often furnish the only 'local option' for the management of these wastes. A total of 52,577 tons of material were buried at these disposal sites during 2001, a significant increase from 1999 when 23,037 tons were received by these facilities.
- Municipal solid waste incinerators received 844,948 tons of MSW, of which 198,290 tons were from out-of-state. Of the total tons of MSW accepted at the incinerators, 64,918 tons were 'by-passed' to landfills and another 177,740 tons of front end process residue (FEPR) were removed prior to incineration and landfilled. The total ash resulting from the incineration of the MSW was 155,195 tons, which was landfilled.
- There are two commercial landfills serving the state – the Waste Management, Inc. (WMI) owned Crossroads Landfill in Norridgewock, and the Pine Tree Landfill in Hampden {formerly known as the Sawyer Environmental Recovery Facility}, owned by Casella Waste Services, Inc.. The Pine Tree Landfill, in their recently approved expansion, accepts a limited amount of MSW from the PERC incinerator, construction/demolition debris, and special wastes.
- Remaining disposal capacity at the various municipal and commercial landfills within Maine continue to decrease. Looking ahead, even with the approval that WMI received in 2002 for the expansion of its landfill in Norridgewock (an additional 4.1 million cubic yards of disposal capacity for MSW, construction/demolition debris, and special wastes), the total remaining disposal capacity at landfills is sufficient for approximately 10 years, given today's consumption rates.

II. Introduction

The Maine State Planning Office (SPO) is required by 38 M.R.S.A. 2124-A to report to the legislature on:

- statewide generation of solid waste;
- statewide recycling rates; and
- available disposal capacity.

The subject of this report is consistent with the goals and objectives of the State Planning Office's 'Performance Measure' for the Waste Management and Recycling Program. The program's stated goal is based upon the:

'Number of municipalities with effective recycling programs'.

The calculation of Maine's municipal solid waste generation and the recycling rate includes Municipal Solid Waste (MSW) only. MSW is the waste typically generated by households and businesses and may be managed by municipalities. It includes nonbulky waste (corrugated cardboard, newsprint, office paper, mixed paper, food waste, plastics, glass, metals and textiles) as well as bulky waste (tires, appliances, furniture, wood waste, yard waste, and construction/demolition debris).

Maine still ranks among the top 20% of states, based upon percent of municipal solid waste recycled. This continued high status is the result of teamwork on the part of many organizations in the public and private sectors and very clearly demonstrates that recycling is an important part of the established waste management infrastructure. It also underscores the importance and value of having strong and consistent markets for the recyclables managed by Maine municipalities and businesses. Without strong markets for recyclables, the resulting increased disposal needs of Maine communities could quickly disrupt the existing solid waste management system.

In evaluating generation rates, management strategies and disposal capacity, this report addresses MSW and only certain special wastes (primarily ash from MSW incinerators) disposal issues.

Current operating solid waste disposal facilities within Maine include 4 waste-to-energy incinerators, 8 municipally operated landfills permitted to accept MSW, (6 of which are permitted to accept special waste, as well as is the Regional Waste Systems landfill in Scarborough), and 2 commercial landfills permitted to accept municipal solid waste (including construction/demolition debris) and special waste.

III. Statewide Waste Generation and Recycling Rate

A. Methodology

Overview

Since 1989, Maine law has charged the State, (State Planning Office), with analyzing and preparing a plan for the management, reduction, and recycling of solid waste for the State. In response to this directive, the State has kept a census of the percentage of municipal solid wastes recycled in Maine. This census is part of the ongoing effort of the State to reach a recycling goal of 50% of the municipal solid waste stream and to track progress toward achieving this goal.

The State Planning Office uses three vehicles to calculate statewide waste generation and recycling rate: annual reports from municipalities; reports from disposal facilities; and, the survey of brokers and endusers. In 1992, the State's first formal assessment of the recycling effort in Maine consisted of a broker's survey and a composition study of municipal waste. In 1993, the State once again conducted a survey of private recyclers, supplementing that information with municipal recycling data. This assessment of private recyclers is repeated biennially. In order to provide confidentiality of the information furnished by the private sector, the State contracts with an outside consultant to conduct this broker survey. This survey gathers the tonnage of municipal solid waste generated in Maine that is being recycled and marketed by private companies. The private sector waste management and recycling companies have been helpful in completing the needed data requests initiated by the outside consultant.

This information is used in conjunction with data collected from Municipal Solid Waste Annual Reports; the municipally supplied data is used to calculate individual recycling rates for municipalities and regions. Maine municipalities are required to report MSW disposal and recycling data for their municipal solid waste management activities and have been very cooperative in providing data via the Municipal Solid Waste Annual Reports. The state now has six data years of solid waste data based on the methodology outlined in this report.

MSW Generation

The amount of waste generated within municipalities, and managed by them (including reuse, recycling and composting) is reported annually by municipalities to the State Planning Office. This information is then combined with the data derived from the Broker's Survey, and other sources, to form an estimate of the level of waste generation and recycling efforts in Maine; these other sources include the annual reports of disposal facilities (landfills and incinerators) and disposal data from neighboring state and provincial governments. The estimated statewide solid waste

generation combines the amount of waste disposed (incinerated, landfilled and exported) and the tonnage recycled, composted, and reused.

Recycling Rate

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

$$\text{Recycling Rate} = \frac{(\text{recycling} + \text{composting} + \text{reuse})}{(\text{disposal} + \text{recycling} + \text{composting} + \text{reuse})} * 100$$

This process is not a precise measurement. Some data are incomplete, particularly for composting and reuse efforts in the public sector, and certain recycling activities in the private sector. Additionally, adjustments are made to eliminate duplicate counting of recyclables, as when material moves from an in-state broker to an in-state end-user. Although there may be errors in the estimates for some individual materials SPO estimates that the overall result is accurate to within two (2) percentage points.

B. Statewide MSW Generation

Maine residents and visitors generated 1,844,059 tons of MSW in 2001; this is an increase over the 1,696,006 tons of MSW generated in 1999, the 1,635,000 tons in 1997, the 1,339,352 tons in 1995, and the 1,293,401 tons in 1993. MSW management methods and amounts for 2001 (disposal, recycling, and generation) are outlined in **Figure 1**. These numbers are adjusted to account for the movement of solid waste across the state line in order to include only the waste that is generated in Maine.

Municipal Solid Waste Generation & Management 1993-2001

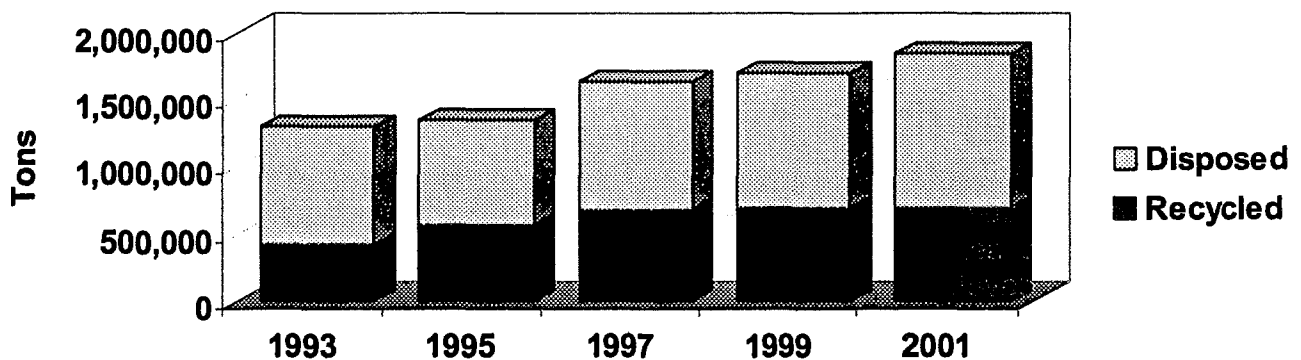


Figure 1

C. Statewide Recycling Rate

Based upon information and data received, the State Planning Office estimates that 37.3% of the municipal solid waste was recycled in 2001. This reflects a decrease of approximately 3 percentage points from the 1999 statewide recycling rate of 40.4%. The primary agent for this drop is the significant increase in the tonnage of construction/demolition debris produced in 2001; because recycling options are very limited for this part of the overall solid waste stream, much of the construction/demolition debris ends up being landfilled. There has been a shift in some of the categories of materials recycled but the overage tonnage reported as being recycled or reused has not significantly increased since 1999. The total of recycled material has risen only slightly, from 684,621 tons in 1999 to 687,815 tons in 2001, not quite keeping pace with the overall growth in MSW generation. The totals for recyclables in 1993, 1995, 1997, 1999 and 2001 are displayed in **Figure 2**:

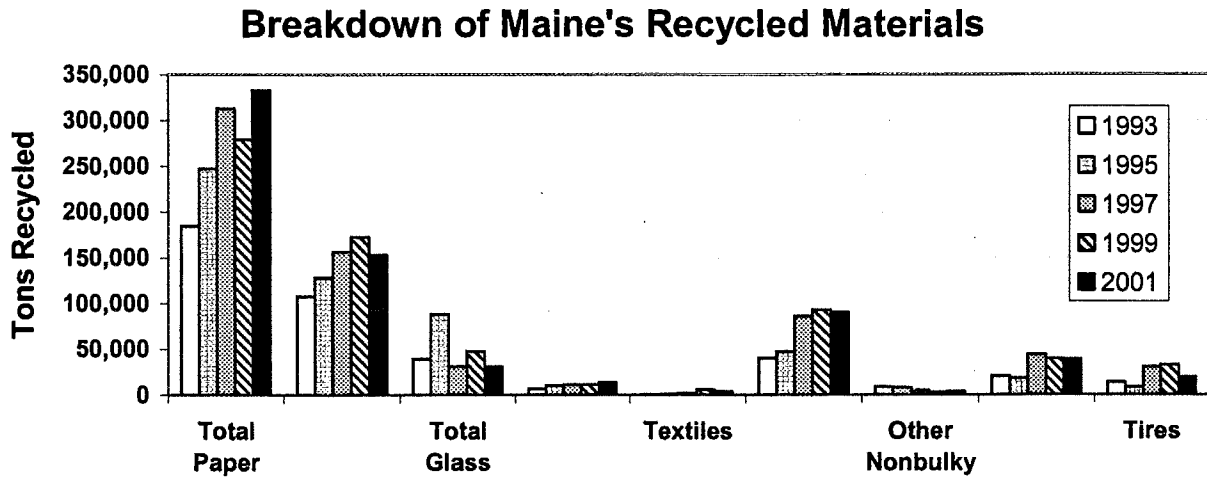


Figure 2

Considerations in Determining the Statewide Recycling Rate

The Statutory definition for municipal solid waste in Maine includes construction/demolition debris (CDD). However, under the EPA guidelines, CDD is treated as a separate category, and is not considered MSW. The U.S. EPA has considered developing standards for measuring MSW recycling on a national basis but has run into considerable opposition from many states because of the possible 'realignment' and loss of credit due to change in applicable categories.

When the 2001 state-wide recycling rate for Maine is calculated, using the EPA guidelines, the state-wide recycling rate rises to 42.6%. The two different methodologies were applied to calculate Maine's recycling rate in *Table A*:

MAINE STATE-WIDE RECYCLING RATE -- 2001			
Recycling rate = recycled tons/total solid waste generated (disposed + recycled + exported)			
MAINE STATE GUIDELINES		EPA GUIDELINES (CDD not included)	
	(in tons)		(in tons)
MSW w/CDD disposed	1,844,059	MSW w/o CDD disposed	1,522,121
MSW w/CDD recycled	687,815	MSW w/o CDD recycled	648,967
RECYCLING RATE:	37.3%	RECYCLING RATE:	42.6%

Table A

The impact of the increased construction/demolition debris tonnage on Maine's recycling rate is readily seen especially when considering the 1999 state-wide recycling rate, calculated using the EPA guidelines, was 43.1% compared to 40.4% using Maine guidelines.

Nevertheless, the data points to a trend in MSW composition of greater CDD material that presents management challenges to Maine's municipalities. The state, working cooperatively with construction companies, material handlers, brokers and the like, need to develop and implement solutions for better management of this material.

D. Progress Towards Achieving State Goals.

MSW Management and the Hierarchy

The State's policy is to plan for and implement an integrated solid waste management program based on an hierarchy. The hierarchy guides public decisions regarding investments in, and the permitting of, solid waste management facilities. MRSA Title 38, chapter 2101, establishes the management priorities for the hierarchy. In descending order, the priorities are:

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.*

Figure 3 displays MSW management methods for 2001. The majority of exported municipal solid waste is landfilled.

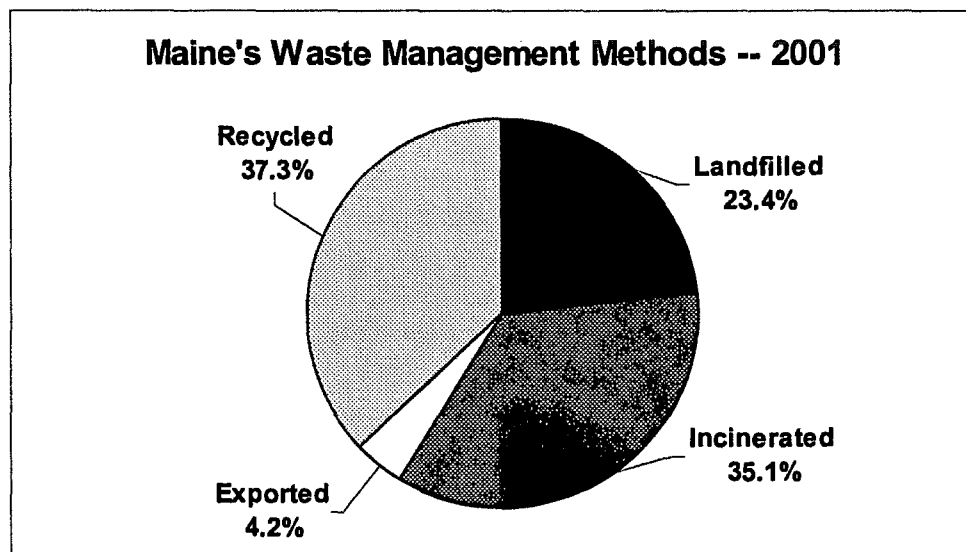


Figure 3

In evaluating the state's progress towards implementing the hierarchy; a comparison is made of MSW generated, recycled (materials reused, composted and recycled), and disposed (landfilled or incinerated) for 1993, 1995, 1997, 1999, and 2001 (Figure 4). This graph demonstrates that recycling, as a management option, continues to grow but not at a rate that matches the growth seen in the overall MSW stream.

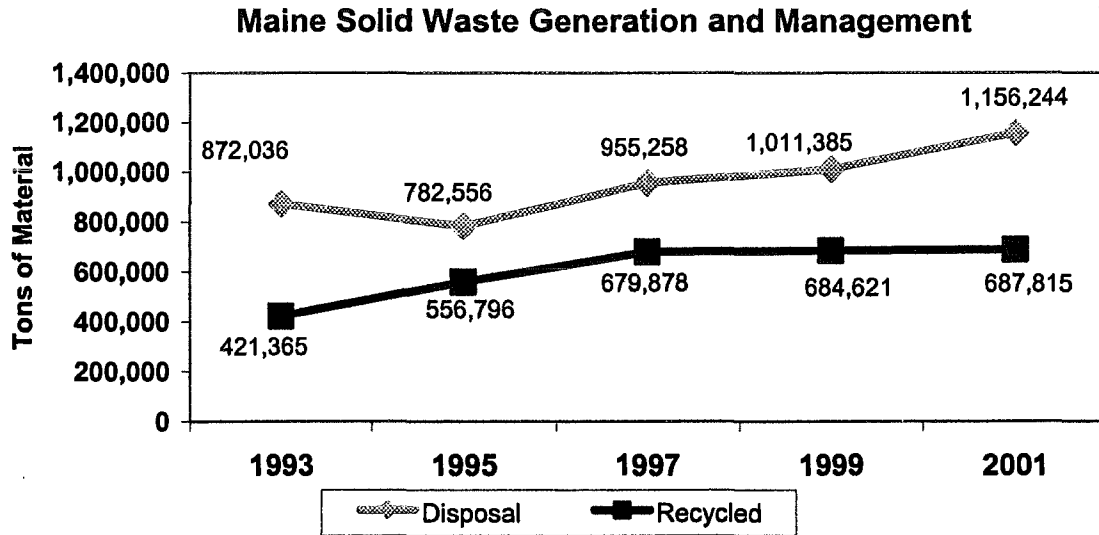


Figure 4

Opportunities still exist that will aid in reducing the volume of MSW delivered to incinerators or landfills, and the public and private sector should become more active in pursuing and implementing these strategies. Without continued efforts to better manage our municipal solid waste stream as a resource, the remaining disposal capacity will soon be filled, necessitating the need to create more landfill capacity.

State Recycling Goal

In 1989, the Maine State Legislature established the goal of recycling 50% of the state's annual municipal solid waste generated. This goal was set partially in response to Maine's anticipated solid waste disposal crisis, which included an increasing of MSW management and disposal costs to municipalities and businesses, and decreasing available landfill capacity. The target date to accomplish this was set for 1995 and has been amended to 2003. The 2001 state recycling rate is calculated to be 37.3%, short of the 50% goal. However, the State remains committed to reaching the 50% goal in light of the value of recycling and composting on reducing overall solid waste management costs, impact on the environment, and lessening the need for additional solid waste disposal facilities.

During the first session of the 120th Maine Legislature, a State waste reduction goal was discussed and passed. This goal challenges the State to reduce the annual generation of municipal solid waste tonnage by 5% by January 2003, and by an additional 5% every subsequent 2 years. The baseline tonnage to be used for calculating this reduction is the 1999 solid waste generation data gathered by the State Planning Office. The intent of this goal is to keep the importance of reducing solid waste in mind and encourage efforts to achieve the goal.

IV. Disposal Capacity

A. Landfill

1. Municipal Landfills

A survey of MSW landfills indicated that among the 8 municipally operated MSW landfills, there are approximately 3,763,440 cubic yards of remaining available capacity. This capacity is sufficient to carry those communities for an average of thirteen years, supposing a steady but continual growth in the volume of municipal solid waste requiring disposal. In 2001, 140,398 tons of waste was disposed at those landfills. The actual remaining life varies for each landfill, resulting in an 'unevenness' of remaining disposal capacity across the state. This variation, when a particular community or region may encounter a lack of disposal capacity, is irrespective of any possible state-wide disposal capacity concern. **Table B** provides information on each individual municipal landfill, including fill rates and available capacity:

	2001 Fill Rate	Remaining Capacity	
	(tons)	Years (est.)	Cubic Yards (est.)
Bath landfill	21,421	16	384,316
Brunswick	12,937	13	378,000
Greenville	770	18	127,000
Hatch Hill	27,450	19	862,200
Lewiston	22,986	23	148,056
Presque Isle	18,061	20	429,675
Tri-Community	36,260	8	1,401,244
West Forks	513	13	32,949
Total Tons Landfilled:	140,398		
Estimated Remaining Capacity (in cubic yards)			3,763,440

Table B

2. Publicly Owned Construction/Demolition Debris Landfills

There are two dozen publicly operated disposal facilities for locally generated construction and demolition debris (CDD), inert fill, brush and trees. These facilities often furnish the only 'local option' for the management of these wastes. These facilities have a combined current disposal capacity of approximately 961,316 cubic yards, providing adequate capacity for another eleven to twelve years. The capacity at individual facilities varies, however and a number of these facilities, when full, will create 'pockets' where CDD disposal options will need to be reconsidered. A total of 52,577 tons of material were buried at these disposal sites during 2001, a significant increase from 1999 when 23,037 tons were received by these facilities.

CDD disposal capacity and management needs, along with those for oversized municipal solid waste {such as furniture and other durable goods}, continue to be a problematic issue in the management of municipal solid waste. These material streams are not accepted at incinerators and cannot be recycled or reused without expensive processing. Markets for processed CDD and bulky wastes do exist but are limited, due to low volumes and related transportation issues. This topic is considered further in the recommendations section of this report.

3. Commercial Landfills

Having two commercial landfills operating in the state has served the state well in terms of providing competitive disposal capacity options for municipal solid waste, construction & demolition debris, and special wastes. These two landfills are:

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

The total disposal capacity currently licensed at these two commercial landfills is approximately 3,340,603 cubic yards. The majority of this capacity is at the Pine Tree Landfill, which has an estimated 2,786,321 cubic yards of capacity remaining (at the end of 2001) from its recent expansion.

Note: even though this report covers the year 2001, it is worth including that with DEP approved an expansion for Waste Management Inc. (WMI) in 2002 for its Crossroads Landfill, located in Norridgewock, which provides an additional 4.1 million cubic yards of capacity.

The commercial landfills will continue to provide needed disposal capacity for municipal incinerator ash, front end process residue, municipal solid waste (including construction/demolition debris) for approximately the next ten years, given current fill rates.

4. Special Wastes

Special wastes are those wastes 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. Some examples of special wastes are: ash from municipal solid waste incinerators; wastewater treatment plant or other sludges; sand blast grit; coal ash; and, industrial and industrial process waste. These wastes are typically required to be landfilled, with some exemptions provided to wastewater treatment plant sludges and certain types of ash. The ash from municipal solid waste incinerators is special waste and is required to be landfilled.

B. Incineration

Maine's four waste-to-energy facilities receive and process approximately 35% of Maine's generated MSW. While they have provided a reliable outlet for MSW, the seasonal nature of waste generation has caused some tonnage overage problems during the summer months and the need to 'attract' additional tonnage during the winter months. The incinerators continue to provide service in reducing the volume of MSW requiring disposal and producing energy for residential and commercial customers.

Front End Process Residue and Incinerator Ash

The residual streams from the Maine Energy and Penobscot Energy Recovery Company facilities, which utilize 'Refuse Derived Fuel' technology, are called front end process residue (FEPR), fly and incinerator ash.

The Regional Waste System (in Portland) and Mid Maine Waste Action Corporation (in Auburn) utilize what is known as 'Mass Burn' technology and generate only fly and incinerator ash.

In 2001, the combined total of these waste streams from the four MSW incinerators, that had to be landfilled, was 262,508 tons (107,342 tons of FEPR; 155,166 tons of ash).

Front End Process Residue (FEPR) is solid waste that has been removed by processing solid waste prior to incineration or landfilling, and includes, but is not limited to, ferrous metals, glass, grit and fine organic matter. In the past, FEPR had been used in conjunction with landfill closure programs; however, since September of 1998, this has not been an available outlet due to the fact that the state-wide landfill closure program, that utilized FEPR, was completed. The FEPR waste stream has a strong negative impact on landfill capacity, since alternatives to landfilling this material stream do not readily exist. While some composting of FEPR has been done, the

resulting product typically contains levels of heavy metals that restrict its use to landfill cover applications only.

All municipal solid waste incinerator ash is disposed of at approved landfills within the state. In 2001, ash from Maine Energy was sent to Waste Management Inc. Crossroads Landfill in Norridgewock, and the ash from PERC was delivered to the Pine Tree Landfill in Hampden. Regional Waste Systems landfills its ash in their own landfill; though they are approaching capacity, they are in the process of licensing an additional one million cubic yards of disposal capacity for incinerator ash at their site. The ash from the Mid Maine Waste Action Corporation's incinerator in Auburn is disposed of at the City of Lewiston's secure landfill.

C. Imported/Exported MSW

In 2001, two of the incinerators in Maine (PERC and Maine Energy) accepted 198,291 tons of out-of-state generated MSW. An additional 697 tons of imported MSW was buried at the WMI Crossroads landfill, along with 641 tons of construction/demolition debris. The Pine Tree Landfill received 19,313 tons of demo debris from out-of-state. Total MSW exported was 77,765 tons. Of the total MSW exported, 38% (29,817 tons) was construction/demolition debris.

In 1997, Maine's MSW imports and exports were balanced, at 138,000 tons moving each way across the state line. During 1999, imported MSW tonnage totalled 168,709 tons (of which 140,039 tons were delivered to incinerators) while 91,274 tons were exported. In 2001, a total of 218,942 tons of MSW were imported and 77,765 tons of Maine generated MSW exported. Imported MSW tonnage, primarily to the two largest incinerators, continues to rise, whereas exports continue to decrease. This imbalance places additional burden on the limited disposal capacity remaining in Maine.

Maine Energy and Penobscot Energy Recovery Company facilities accept waste from out of state sources, which in 2001 amounted to 198,290 tons. Approximately 75% of this tonnage was delivered to Maine Energy in Biddeford and the remaining 25% delivered to the PERC incinerator in Orrington.

V. Conclusions and Recommendations:

The state has a fairly consistent solid waste management program, steadied upon two commercial landfills, eight municipal landfills, four incinerators, and strong public and private recycling efforts. Even though the solid waste infrastructure presently in place appears be able to provide for the management of state's solid waste, there are some aspects worth noting:

- Implementation of strategies in the management of municipal solid waste do not always support the solid waste management hierarchy, whether it is reuse, recycling, composting or incineration, over the landfilling of MSW. Where current policy accepts the responsibility for the management of wastes within state boundaries, efforts in the management of solid waste should reflect the hierarchy.
- An increase in the tonnage of construction/demolition debris being generated places additional burden on the already shortened life expectancy of smaller municipal disposal facilities, as well as the capacity at commercial landfills. The lack of recovery and recycling options of these materials frustrates overall efforts to reduce the volume of waste requiring disposal.
- The ongoing consumption of landfill disposal capacity, and the apparent reluctance to recognize the consequences of this, continue to pose a threat to a major component of the economic strength of the state.
- Reuse, recycling and composting, as management alternatives, require constant support and endorsement from all levels. Without the efforts of programs and their leaders, additional demands will be placed upon the already committed incinerator and landfill capacities.
- Waste reduction needs to become part of the lifestyle and behavior of not just residents and businesses within Maine, but within manufacturers as well. Action in this area has been largely driven by economics and competition, but more is needed, especially in the arena of designing products for recycling/recovery and the reduction of hazardous materials used in their production.
- Economics continue to play an increasing role in the selection and implementation of waste management practices and programs. Additional emphasis in tracking this information is needed and the data gathered summarized to provide guidance to communities when considering various options for their programs.

- This report focuses on the generation and disposal portion of the municipal solid waste management activities. Other parts of these programs include the transportation and consolidation of solid waste. The solid waste programs currently in place have evolved over the past twenty years and could be considered mature in many respects. As advances are made in solid waste management programs, whether in disposal, recycling or another management area, the economic investment in these existing operations should be recognized and their value factored in, as part of the planning effort, to minimize disruptions and reduce the possibility of “stranded costs” and the impact that could have on municipalities.

To assist in addressing these conclusions, the following recommendations are offered:

1. Continued support and promotion of the value of recycling: Even though the statewide recycling rate dropped from 1999 to 2001, the diversion of recyclables from disposal facilities continues to be an important effort. One of the most common needs of both municipal and commercial recycling programs is an effective, continuous education/information campaign extolling the benefits of recycling, and not just from an environmental standpoint.

Recycling provides needed resources for the secondary materials market, furnishes jobs and opportunities, decreases the tonnage of greenhouse gas emissions and decreases the need for disposal capability for those materials. Add to this the nearly equivalent costs of managing discards as either trash or recyclables and the value of recycling becomes more clear.

Recommendation: The state should continue working with municipalities, regions and other interested parties in promoting recycling and composting as management options for the municipal solid waste being generated, and step up its statewide educational campaign.

2. Waste Reduction Efforts: Reducing the volume and toxicity of solid waste being generated and managed by facilities in Maine is important from both a cost and facility use/development perspective as well as conserving natural resources.

Recommendation: The State should increase its education/information efforts in promoting waste reduction, both in volume and toxicity of the solid waste, to municipalities and businesses. The Office will continue its efforts in coordinating its outreach with the other states in the Northeast, to provide a larger ‘voice’ to industry and residents as to the value of waste reduction activities.

3. Municipal & Commercial Landfill Capacity: There has been no additional municipal landfill capacity developed within the past two years. The Pine Tree Landfill in Hampden received permission to, and has increased its capacity. Given current fill rates at the landfills, an estimated 10 years of disposal capacity remains. {This estimate includes the approval that WMI received in 2002 for an approximate 4.1 million cubic yard expansion at their Crossroads Landfill.} Any increase in the tonnages of materials accepted at any of these facilities could have a major impact on the number of remaining years of total available disposal capacity for the state.

It is important to recognize that although adequate landfill capacity may exist when considering the state as a whole, there may be disposal deficiencies at a regional level, necessitating the longer transport of their solid waste to a suitable disposal facility, resulting in a shift of that region's economic resources.

Recommendation: The state should continue monitoring the consumption of disposal capacity to ensure that adequate disposal capacity remains for the state as a whole, while tracking remaining capacity within regions of the state. This monitoring would also include a review of the economics of municipal solid waste management, disposal, and review of policy on the providing of additional disposal capacity and the development of a state owned solid waste disposal facility.

Recommendation: The state should encourage municipal solid waste management and disposal practices that follow the solid waste management hierarchy.

4. Management Options for CDD and Bulky Wastes: Where the capacity for disposal of these materials continues to decline and in some cases, these materials are landfilled and consume space in special waste licensed disposal facilities, this is an area where the municipalities, private sector and state could pursue processing and reuse options for these materials.

Recommendation: The state, in conjunction with existing CDD processors, should promote reuse opportunities and encourage municipal cooperation in diverting these materials to processors as well as work to provide markets for the processed products.

5. Management Options for Front End Process Residue: Where there is a significant volume of this waste being generated, as a by-product of the Refuse Derived Fuel technology employed by two municipal solid waste incinerators, and this waste is being buried at landfills, alternatives to the landfilling of this material should be investigated.

Recommendation: The state, in conjunction with the generators of FEPR, should increase efforts to determine other management options, including beneficial reuse, for this waste stream.

A Perspective on the Value of Recycling

It is important to keep in mind that each ton of solid waste diverted from disposal, whether it is reused, recycled or composted, is one less ton of solid waste that requires disposal. Given that the incinerators are nearly at processing capacity, and that landfill disposal capacity is being consumed (without being replaced), recycling as a solid waste management program becomes more important. By implementing other waste management strategies, as identified in the solid waste management hierarchy (which are actually resource management strategies), we will reduce the need for and our dependence upon incinerators and landfills for the disposal of municipal solid waste.

LOOKING TO THE FUTURE

It appears that at this point in time, the current solid waste management system is functioning well and may continue for the foreseeable future.

Upon closer examination, however, the foreseeable future for needed instate disposal capacity is approximately ten years. As the remaining, limited disposal capacity is consumed, Maine has an 'ethical responsible' to address this issue.

As was presented in 1999, and remains true today, Maine should be proud of its continued commitment to require and provide for environmentally concious solid waste disposal facilities; however, its ongoingreluctance to accept additional disposal facilities present a policy and management dilemma for state and local officials. Only by adopting today aggressive waste reduction, recycling and composting programs will the state be able to wisely utilize existing disposal capacity and truly reduce the need for and construction of additional landfills and related disposal capacity. Yet, commitment to these alternative management strategies wans with economic times and market fluctuations.

The alternative to this is tobegin reconsider existing policy, and the possible steps necessary, to provide the needed disposal capacity that will be required by Maine's residents and businesses in the future.

VI. Waste Reduction and Diversion Efforts

Waste reduction, often referred to as 'source reduction', sits at the top of the solid waste management hierarchy, yet is often the most difficult action to measure and/or implement. Waste reduction is defined as 'not generating waste'..... as opposed to the diversion of wastes to a facility or activity.... and can be as simple as not taking a shopping bag to carry your purchases home, or as complicated as redesigning a mechanical process that results in less waste being produced by a cutting operation. Waste reduction may address both the volume and toxicity issues related to solid waste.

Promotion of waste reduction activities is being done by the Office to residents and businesses in the state. Industry, in many ways, continues to lead the way on this waste strategy, but we, as consumers, may not always be aware of their actions. For example, during the last few years, the thickness of the typical aluminum beverage container has 'thinned', to where it now takes about 33 cans to equal a pound of aluminum, where before only 27 cans were needed for a pound. Plastics continue to increase their role in containers, and now are often used instead of glass, for product sale - - the plastic containers weigh less than the glass ones they replaced, also leading to a reduction in the weight of solid waste generated. Other not so obvious examples include changes in packaging, either in 'lightweighting' or removing the packaging entirely, and the 'downsizing' of long-lived products, that now use fewer resources in their manufacturing than before.

The State Planning Office continues to furnish municipalities and businesses with education/information on promoting and adopting various waste reduction actions. This outreach is often coordinated with the other states in the Northeast, to provide a larger 'voice' to industry and residents as to the value of waste reduction activities.

Waste Diversion, which is a 'disposal' activity that results in a waste stream being sent to a facility other than a landfill or incinerator, or an activity where the waste stream becomes a resource, either in manufacturing, construction, agriculture or some type of beneficial reuse application. Examples include: municipal wastewater treatment plant sludge applied to agricultural fields, for nutrient use; certain types of boiler ash utilized as fill; tires chipped and used as lightweight fill in highway or building construction applications; chipping of waste wood and the chips used as fuel as a boiler feedstock; and many others.

Even though waste diversion activities are not tracked specifically by the Office, they provide opportunities for the 'reuse' of selected solid waste streams, keeping that tonnage and volume of solid waste out of the landfills.

VII. Toxicity in the Municipal Solid Waste Stream and Recent Efforts to Reduce It

It is the policy of the State to pursue and implement an integrated approach to hazardous and solid waste management that reduces the toxicity of the waste at its source and throughout the management process. It is also one of the statutory responsibilities of the State Planning Office (SPO) to assist communities with the proper collection and disposal of household hazardous waste in coordination with overall waste and recycling management, within available resources.

In August of 2000, the Legislature enacted Public Law 779, which prohibits anyone from knowingly placing for disposal any mercury added product into Maine's municipal solid waste stream. This disposal ban, for commercial sources, is in effect now. The disposal ban will be extended to include household generated waste items as of January 1, 2005. The list of items required to be recycled includes all fluorescent lamps, regardless of mercury content, thermostats, thermometers, and any other mercury containing devices. The law directs the State Planning Office (SPO) to assist municipalities and other public entities with the management and recycling of waste mercury devices.

Also in 2000, the Legislature approved a one-time allotment from the Maine Solid Waste Management Fund of \$438,000 dollars to the State Planning Office, to fund a municipal based program to aid the start up of the collection and removal of mercury and mercury products from the solid waste stream. This 'Mercury Recycling Assistance Program' has taken three forms: a small shed built and delivered at no cost to the public entity; direct cash grants for larger facilities that also accept Universal Wastes; and financial support for 'one day' HHW collection events. Universal waste includes: PCB containing lighting ballasts; cathode ray tube (CRT) containing devices; fluorescent lamps, other lamps containing hazardous wastes, and mercury containing devices from commercial sources. Participation by the municipalities and other public entities is voluntary.

To date, 29 of the 8' X12' wooden sheds have been delivered to municipal and regional locations around the state. These programs serve an estimated 196,000 people. An additional 9 are currently on order for the spring of 2003. The Office has entered into 26 contracts with public entities to construct larger facilities that will handle all the waste items included under the state definition of universal waste. Of these, 12 are now operational. When all the current contracts are fulfilled, these facilities will serve an estimated 333,000. Combined, the two programs will provide collection infrastructure to approximately 41% of Maine's population.

In addition, to encourage and support infrastructure development, the Office entered into two statewide contracts for the transportation, recycling, and management of CRT devices, mercury devices and lighting ballasts containing PCBs. These contracts will be reviewed in January 2003 for their effectiveness and possible renewal.

In 2001, the Legislature's Natural Resources Committee directed the Remediation and Waste Management Division of the Department of Environmental Protection (DEP), in consultation with State Planning, to study and report on the costs associated with the collection of household hazardous waste (HHW). The Resource Economics and Policy Department at the University of Maine was selected for this research. The study looked at the costs and performance associated with four different collection scenarios: single site one day collection events; several small regional permanent facilities; a few large central permanent facilities coupled with possible mobile collections; and curbside or at the door collection service to residences.

The number of communities participating in HHW collections has grown from 70 to 110 in 2001. Where once the programs were concentrated in southern Maine, the geography of collection events has spread through the Augusta and Waterville areas in central Maine, to Bangor and fifteen surrounding towns, and DownEast to Waldo County and the Ellsworth area. Many single community events have expanded to include neighboring towns; new regional events have sprung up, and established regional programs have grown to include new participating municipalities.

Recommendations and Next Steps:

- The Office will continue to work with public entities to promote a regional approach to proper household hazardous and universal waste management, following the state's waste management hierarchy. The primary tools continue to be technical assistance, direct staff support where necessary, and data collection and presentation, to assist communities and other public entities as they examine their costs and operations in light of their goals and services.

The Program will focus on increasing access and availability to collection opportunities for all Maine citizens by; promoting interlocal agreements to allow residents from one area to attend other events; to work with the private sector to simplify the contracting process to allow for greater participation and encourage communities to offer their citizens access to programs; and to provide information to areas of the state underserved or served not at all so that they have a fair opportunity to consider the available options in HHW management.

- With the infrastructure development funds made possible by the recent (November 2002) bond issue passage, the state now has the opportunity and the additional resources to provide direct financial support to develop permanent public HHW and UW infrastructure. This effort will be a principle focus of the next few years. Permanent programs that are matched with existing waste management systems, will yield increased participation and decreased toxicity of the solid waste stream. It is intended that they will be ongoing points of focus for waste reduction and public awareness efforts. Such programs will heighten interest of all parties in seeking a reduction in the toxicity of the products purchased and in the extent of the manufacturers' responsibility for those products.

- Continue to pursue efforts on a statewide and region-wide level that promote the concept of Product Stewardship, in encouraging the recognition of this management activity on reducing the toxic materials that find their way into the municipal solid waste stream.

Product Stewardship

The 1999 Generation and Disposal Capacity Report first drew attention to the potential influence that product stewardship may have on the toxicity of Maine's waste stream. Product stewardship is also known as "Extended Product Responsibility" or "Manufacturer Take-Back Program". This waste management method commits manufacturers to a cradle-to-grave responsibility for the goods they produce. Until now, manufacturers had little or no responsibility for the end life of manufactured products; traditionally, it has been placed upon the consumer to manage a product at the end of its useful life. In the last two years significant advances toward product stewardship have been made in the following waste categories:

Rechargeable Batteries

Banned from disposal in Maine's municipal solid waste stream since the late 1980's, rechargeable batteries remain as one of the first 'producer responsible' products sold in the State. Retailers were initially charged with collecting and recycling the rechargeable batteries that would be returned, but in 1994, the Rechargeable Battery Recycling Corporation (RBRC), a non-profit company formed by battery manufacturers, offers free rechargeable battery recycling to all municipalities, counties, and transfer stations in Maine, as well as retailers. Dozens of Maine communities are taking advantage of this opportunity and the RBRC has partnered with the following retailers in Maine: Wal-Mart, Sears, Radio Shack, Verizon, Best Buy, Home Depot, and Circuit City.

Used Electronics

Several electronics take-back initiatives have been initiated across the country:

- In 2000, Sony Electronics teamed with the Minnesota Office of Environmental Assistance and Waste Management, Inc., to establish a take-back and recycling program for Sony electronic products. With this program, consumers throughout Minnesota can return all Sony electronic products free of charge, and the products processed and materials recovered for reuse by Sony.
- The National Electronics Product Stewardship Initiative (NEPSI) was formed in June 2001. This stakeholder group has taken on the task of attempting to create a national electronic take-back program.

- Certain retailers, primarily ones who sell various electronics, have offered various 'take back' programs for their customers, for limited times.

Note: A recent (late 2002) action has been taken by Sony and Hewlett-Packard/Compaq, in response to the California Legislature's attempt to pass electronics waste legislation, which was vetoed by Governor Davis. Governor Davis had urged industry to lead the way and devise innovative solutions that incorporate partnerships between the consumer and manufacturers. These two electronics manufacturers have announced their support for a statewide computer take-back program. With strong industry support, many expect California will adopt a statewide computer/television take-back program.

Mercury Containing Products

The Northeast Waste Management Officials' Association, a coalition of state waste program directors from New England states and New York, drafted model legislation intended to reduce mercury found in municipal solid waste. The model legislation offers a variety of approaches states may use to manage mercury-containing products (such as thermometers and certain electronic products) and wastes, with a goal of instituting consistent controls throughout the region. These approaches focus on: notification; product phase-outs and exemptions; product labeling; disposal bans; collection and recycling programs; and a mechanism for interstate cooperation. Bills containing certain provisions of the model legislation have been passed in many of the states.

Carpet

Although not hazardous, carpet does make up a sizable portion of the construction/demolition debris waste stream. Many manufacturers have already begun to implement some of the steps necessary to collect used carpet, reprocess it and turn it into new carpet. Manufacturers and distributors are also selling carpet containing recycled content, by primarily used plastic resins recovered from beverage containers and similar plastic sources. After a year of meetings and negotiations, on January 8, 2002, members of the carpet industry, representatives of government agencies at the federal, state and local levels, and non-governmental organizations, signed a Memorandum of Understanding for Carpet Stewardship. This important agreement establishes an ambitious ten-year schedule to increase the amount of recycling and reuse of post-consumer carpet and reduce the amount of waste carpet going to landfills. The agreement promotes product stewardship for carpet by asking manufacturers to assume responsibility for funding the overall effort and meeting the goals for recycling and reuse of waste carpet. This approach is expected to reduce the environmental impacts of carpet throughout its life cycle.

Automobiles

In April of 2002, the Maine legislature passed the nation's first law to mandate manufacturer responsibility for the removal of mercury switches from motor vehicles. The law requires automakers to create a statewide system for collecting and recycling mercury-added switches from motor vehicles. Auto-makers must pay a minimum of one-dollar bounty for each switch turned in, and pay for transport and recycling of the switches collected in this program. Collection and management of the mercury switches must be according to state adopted universal waste rules. The service of removing mercury-added switches must be offered to consumers at no charge. The law also includes the following provisions, effective January 1, 2003:

- New motor vehicles cannot be sold in Maine if they contain mercury switches.
- Replacement switches cannot be sold in Maine if they contain mercury.
- Used motor vehicles cannot be sold in Maine if all mercury switches have not first been removed.
- All mercury switches must be removed from a vehicle before it can be crushed or shredded.

The law also upholds an earlier Maine statute that requires labeling of all mercury-added products sold in Maine. As of July 15, 2002, all vehicle manufacturers must affix a doorpost label listing mercury-added products that may be contained in the vehicle.