Report Card
FOR MAINE'S
Infrastructure

Issued December 10, 2008

SOLID WASTE

Grade: C

Overview

Progress has been made, but Maine's solid waste policies are outdated. Planning must be based on realistic projections of generation rates and capacity. Maine's solid waste plan must address high waste generation rates (51% more than national average in 2005), an unmet recycling goal of 50 percent, advances in public policy and technology, and the time and multi-million dollar investment required to develop new capacity.

Introduction and Background

Legislation was enacted in 1987 and 1989 that resulted in far-reaching changes to the management of Maine's non-hazardous solid waste. In accordance with the legislation, Maine subsequently developed a comprehensive solid waste management plan. Together, the legislation and plan establishes a management hierarchy, recycling and waste reduction goals, and requirements for the periodic assessment of Maine's long-term disposal needs and available disposal capacity. Should additional disposal capacity be needed, state planners are responsible for siting and overseeing the operation of any new landfills. Planning for Maine's solid waste management needs was effectively shifted from the municipal level to the state level, though each community remains responsible for managing its own solid waste.

The plan was the result of conventional wisdom at the time, resulting in a shift away from traditional landfilling practices to volume reduction of the waste stream through incineration, with the subsequent landfilling of residues (process residuals, by-pass, and ash). Other aspects of the legislation expedited the closure and remediation of most municipal landfills; banned new commercial landfills in Maine; and imposed significant restrictions on the ability to expand existing licensed commercial landfills, including requiring the demonstration that an expansion of an existing commercial landfill would provide a substantial public benefit. In accordance with federal legislation, the Maine Department of Environmental Protection (DEP) developed regulations for the siting, design, construction, operation, and closure of new solid waste facilities. Maine's legislation established the Maine Waste Management Agency to develop, oversee, and implement the plan. In 1995 the Agency was dismantled and most of its responsibilities were transferred to the Maine State Planning Office (SPO).

According to an April 2006 review of Maine's solid waste management policies, developed from a task force convened by the SPO, significant changes have occurred since the late 1980s that indicate the policies should be re-examined. The report cited the following:

- Continuing increase in the amount of non-hazardous waste generated by residents and businesses;
- Increasing concern over toxics contained in household products;
- Growing public awareness of the environmental impacts of solid waste facilities, including air and water quality, truck traffic, and aesthetic issues (visual, noise, and odor);
- Increasing difficulty siting solid waste facilities;
- Rising costs and increasing expertise needed to operate disposal facilities;
- Increasing energy costs;
- Increasing amount of imported waste and bypass waste, and the legal ramifications;
- Many programs have maximized participation in recycling programs using current methods; and
- Maine's acquisition and operation of the Juniper Ridge Landfill in West Old Town.

Additionally, emerging technologies and current public policies have changed some of the fundamental concepts upon which Maine's solid waste legislation and the subsequent plan were based. Emerging technologies include advanced recycling methods, as well as energy production from "biomass" recovered from construction and demolition debris and from landfill gas. Current public policies include reduction of toxics in the waste stream,

green credits, and reduction of carbon footprint. According to SPO, Maine's solid waste plan is currently being updated.

Condition and Adequacy

The SPO's Waste Management and Recycling Program was assigned three major areas of responsibility: planning for the solid waste management needs of Maine; providing technical and financial assistance to municipalities with respect to solid waste management and overseeing municipal implementation of waste reduction and recycling practices; and developing additional solid waste disposal capacity for non-hazardous wastes. The solid waste legislation established the following solid waste management hierarchy for Maine, in order of preference: reduction, reuse, recycling, composting, volume reduction, and land disposal.

Solid waste, municipal solid waste, bulky waste, special waste, and hazardous waste are defined as follows:

- **Solid waste**: is defined as all non-hazardous waste streams; consisting of municipal solid waste plus special waste.
- **Municipal Solid Waste (MSW)**: consists of non-hazardous household and normal commercial and business waste, plus bulky waste,
- **Bulky waste**: can be thought of MSW that does not fit into a typical 30-gallon trash can, such as appliances, demolition debris, and construction debris.
- **Special waste**: is defined as non-hazardous industrial and agricultural wastes, including ash from waste-to-energy incinerators and sludge from wastewater treatment plants. Special waste and MSW are mutually exclusive. Special wastes are highly regulated, but are permitted to be landfilled at facilities in Maine.
- **Hazardous waste**: highly regulated, but, with few exceptions, must be treated to meet the criteria for special waste or must be shipped outside of Maine for disposal. Heavy industry is typically thought of as the sole producer of hazardous waste, but in reality there are many small generators of hazardous waste, including households. Household Hazardous Waste (HHW) should not be discarded like regular MSW; however, residences are exempt from Maine's rigorous hazardous waste management requirements.

Maine's solid waste policies have reduced toxics in the MSW waste stream and have established two permanent HHW facilities in Maine.

MSW Generation Rates: In 2005, the SPO estimated that Maine residents and businesses generated 1.95 million tons of MSW (includes bulky waste), or eight pounds per person per day. If bulky waste is not included in the MSW tonnage (making it comparable to United States Environmental Protection Agency (EPA) calculations), this quantity drops to approximately 6.8 pounds per person per day, compared to the national average of approximately 4.5 pounds per person per day.

The SPO reported that MSW generation in Maine increased over 51 percent between 1993 and 2005. During the same period, Maine's population grew only 6.7 percent, but economic activity increased over 61 percent, according to the report.

3Rs (Reduce, Reuse, Recycle): "Reduce" refers to keeping materials from becoming waste, such as eliminating junk mail or excessive packaging on products. Once in the waste stream, Maine's legislative goal is to achieve a 50-percent MSW recycling rate by January 1, 2009. Waste volume reduction through incineration is not considered either "reduce" or "recycle." In 2005, the SPO's figures indicate that Maine recycled approximately 36 percent of Maine's MSW (household and business waste, as well as bulky waste). Using the EPA definition of MSW (no bulky waste), Maine achieved a recycling rate of 42 percent in 2005.

Approximately 140 Maine municipalities have instituted "pay as you throw" (PAYT) trash collection programs, requiring residents to purchase bags to use for curbside trash collection. The fees collected from the sale of the bags are used to help offset the municipalities' costs for providing trash removal and disposal services, but do not cover the full cost of waste disposal.

PAYT programs have resulted in increased recycling rates, particularly in communities that also provide curbside recycling. Technology advances have also made recycling easier for the consumer and have resulted in increased, but now essentially stagnant, recycling rates.

Maine's solid waste policies have also emphasized beneficial reuse of components of the waste stream, which reduces the amount of waste requiring landfilling. An example of "reuse" is the diversion of clean wood construction and demolition debris from the waste steam for use as biomass fuel. However, the amount of waste generated continues to increase faster than the recycling rate.

Volume reduction (incineration): There are four Waste-To-Energy (WTE) facilities in Maine that, according to an SPO report, serve approximately 70 percent of Maine's population: ecomaine (formerly Regional Waste Systems), Portland; Maine Energy Recovery Corporation (MERC), Biddeford; Mid-Maine Waste Action Corporation (MMWAC), Auburn; and Penobscot Energy Recovery Company (PERC), Orrington. MERC and PERC utilize refuse derived fuel technologies (whereby the waste is processed prior to incineration), while ecomaine and MMWAC are mass burn technologies, which does not include waste processing prior to incineration. MMWAC and ecomaine are municipally owned operations; MERC is privately owned; and PERC is 75 percent privately owned and 25 percent municipally owned.

A 2008 SPO report specific to Maine's WTE facilities indicates that the four WTE facilities managed 853,817 tons of MSW from Maine municipalities and businesses, as well as from out-of-state sources. Importation of waste is necessary to allow the WTE facilities to operate at an efficient burn rate in the incineration units. WTE processing and incineration of the 853,817 tons generated 158,695 tons of front-end process residue and by-pass and 169,000 tons of ash that required landfilling. In addition, 22,044 tons of metal was recycled.

The four WTE facilities have managed approximately 800,000 to 900,000 tons of MSW per year since 1998. Though built in the late-1980s and early-1990s with a 20- to 30-year life expectancy, significant on-going environmental upgrades and other capital investments have extended the life expectancy until 2025 to 2030. Most of a WTE facility's income is derived from tipping fees paid by users on incoming waste, and to a lesser extent, from electricity generation. WTE representatives indicate that the facilities achieve approximately 80 to 90 percent volume reduction through processing and incineration.

Landfilling and Disposal Capacity: According to SPO and DEP records, 12 of the remaining 45 active landfills in Maine accept the majority of waste generated in Maine, including ash from the four WTE facilities. Of the 12 landfills, seven are municipally owned and are used primarily to dispose of MSW generated in the member communities; two are municipally owned and operated by regional entities to dispose of residue from two of the WTE facilities; two (Crossroads in Norridgewock and Pine Tree in Hampden) are privately owned and accept MSW and special wastes; and one (Juniper Ridge in West Old Town) is owned by Maine, with its operation subcontracted to a commercial solid waste company. The Pine Tree commercial landfill facility is closing.

With the 1989 ban on new commercial landfills, the legislature tasked the SPO with siting and developing new disposal capacity for Maine for MSW and special waste, depending on the needs identified through the SPO's periodic disposal capacity projections. In the 1990s, the State permitted a landfill on a site in the unorganized territory of T2 R8, outside of Lincoln, which is known as the Carpenter Ridge site. This permit is held in reserve in case Maine's estimated disposal capacity becomes less than six years. At that time, the SPO is required to notify the legislature and provide recommendations regarding construction and operation of the Carpenter Ridge facility.

Maine's solid waste hierarchy emphasizes incinerating MSW over landfilling MSW as a means of achieving volume reduction and preserving landfill capacity. Though volume reduction is achieved, incineration of MSW results in a special waste that requires more stringent landfilling practices than MSW. Though lowest on the 1989 solid waste management hierarchy, today's MSW or co-disposal landfills are a source of "green" energy. Already, landfill-gas-to-energy plants are in use, under construction, or in the design phase at three Maine facilities.

In 2005, the SPO projected that Maine will need to landfill 32 million cubic yards of solid waste between 2005 and 2025, including incinerator ash. These projections suggest Maine will have sufficient landfill capacity. However, the waste generation projections, as well as the disposal capacity projections were based on assumptions that are dynamic and optimistic. For example:

- Waste generation rates are increasing;
- Recycling rates are stagnant. However, a statewide recycling campaign is underway to encourage renewed recycling efforts, including single-stream recycling;
- Waste volume reduction rates will decrease significantly if one WTE facility closes, which could also result in the immediate need for additional MSW disposal capacity, ideally in close proximity to the closed WTE facility; and
- The projections assume that significant additional disposal capacity at the state's Juniper Ridge Landfill will be approved.

Conclusions and Recommendations

Solid waste legislation enacted in the late 1980s, together with external influences since that time, have resulted in many positive outcomes, including:

- Closure of obsolete facilities;
- Increased public awareness of solid waste issues and infrastructure;
- Development of new technologies;
- Enhanced protection of public health and the environment, through the closure of obsolete facilities, reduction of toxics in the MSW waste stream, and strict regulations governing solid waste facilities;
- Achievement of reasonable recycling rates; and
- Provision of adequate disposal capacity.

Today, Maine's solid waste infrastructure is adequate; however, Maine's solid waste plan is outdated and must address:

- Increasing solid waste generation rates;
- Stagnated recycling rates and unmet recycling goals;
- A solid waste management system that relies heavily on commercial and private investment;
- The basis for Maine's solid waste management policies (i.e., hierarchy) was appropriate in 1990, but has not been updated despite significant advancements in technology and public policy;
- Though policy decisions are made at the State level, solid waste management is still the responsibility of and funded almost entirely at the local level. Thus, state policy makers must consider the costs to local tax payers for solid waste management, yet strive to maintain environmental protection; and
- The challenges posed by Maine's wide variation in population density, waste generation rates, and type of waste generated.

Maine ASCE gives solid waste a grade of **C**.

Maine ASCE makes the following recommendations:

- Continue support to municipalities to enhance local solid waste management programs, with emphasis on cost-effective reuse and recycling, and support of household hazardous waste collection;
- Continue financing of public education programs to encourage recycling;
- Review mechanisms to promote waste reduction, recycling, and beneficial reuse of waste products. This should include incentives for solid waste service providers for research and development and capital investments to encourage development of new technologies, enhanced and new beneficial reuse of waste, new markets for recyclables, and enhanced environmental safeguards;
- Review and update Maine's solid waste policies to reflect technological advances made in the solid waste industry, current or present-day public opinion, and current management policy, as well as Maine's variations in population density, waste generation rates, and type of waste generated;
- Timely response to annual reviews of the solid waste plan and capacity projections, to begin permitting and constructing facilities for additional disposal capacity or other means to manage additional waste; and
- Report actual cost information for solid waste management on municipal property tax bills.

Sources

- Code of Federal Regulations (CFR) Title 40: Protection of the Environment; Part 258 – Criteria for Municipal Solid Waste Landfills;
- Maine Revised Statutes Annotated (MRSA) Title 38; Chapters 13 (Waste Management) and 24 (Solid Waste Management and Recycling);
- Report entitled "Solid Waste Disposal Capacity Report," prepared by the Maine State Planning Office for the Joint Standing Committee on Natural Resources of the 123rd Legislature, and dated March 2007;
- Report entitled "Review of Solid Waste Management Policies, Recommendations for Moving Maine Beyond 50% Recycling," prepared by the Maine State Planning Office for the Joint Standing Committee on Natural Resources of the 122nd Legislature, 2nd Regular Session, and dated April 2006;
- Report entitled "Waste-to-Energy Facility 'Talk' – 2006, An Overview," prepared by the Maine State Planning Office and dated March 2008;
- Web site of the Waste Management and Recycling Program of the Maine State Planning Office;
- Fact check and comments received from the Maine State Planning Office on the October 2, 2008 draft of this report card
- Web site of the Bureau of Remediation and Waste Management, Maine Department of Environmental Protection;
- Comments received from the Maine Municipal Association on the August 2008 draft of this report card;
- *Environmental Business Journal* – "Solid Waste and Recycling 2008," Volume XXI, Number 6, 2008; a ZweigWhite Publication.