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**Report to the Joint Standing Committee on
Environment and Natural Resources
126th Legislature, First Session**

Waste Generation and Disposal Capacity Report For Calendar Year 2011

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Executive Summary

This report is submitted to the Joint Standing Committee on Environment and Natural Resources pursuant to 38 MRS §2124-A. (see Appendix A). It provides an overview of Maine's solid waste generation, diversion, and disposal activities for 2011, and a projection of how those activities will impact available solid waste disposal capacity.

The report includes a projection of the solid waste disposal needs of Maine for the next 3, 5, 10, and 20 years. The report also projects how the fill rate at each solid waste landfill could affect the expected lifespan of that landfill. In addition, the report assesses supracompetitive pricing and its possible implications on solid waste management costs.

The information in this report can assist policymakers with planning for future solid waste disposal capacity investment. This report evaluates Maine's progress toward our waste reduction and recycling goals and the impact on disposal capacity.

Highlights

Solid waste generation is largely tied to a combination of the strength of the economy, our consumption of goods, and economic development activities.

- Maine residents and businesses continue to generate about the same amount of waste, even as the economy recovers. Total municipal waste generation remained relatively flat from 1,777,498 tons in 2009 to 1,773,083 tons in 2011.
- At current disposal rates, Maine will need approximately 22.8 million cubic yards of landfill capacity over the next 20 years. There are currently 15.3 million cubic yards of licensed capacity available within the State.
- Maine has capacity in the various public-owned landfills and the commercial landfill together to provide for the disposal of the total wastes generated through 2020. However, not all facilities will have capacity to accept wastes for disposal through that time period.
- Recycling tonnage as reported by municipalities declined slightly from 2010 to 2011. However, the Department has been able to augment the data historically supplied to the State Planning Office by the municipalities with data from other sources. Using this more comprehensive data, Maine's recycling rate for 2011 is calculated to be 39.6%.

I. Introduction

In 2012, 2011 Public Law ch. 655 transferred many of the State Planning Office's ("SPO's") solid waste management and recycling responsibilities to the Department of Environmental Protection ("Department"). These responsibilities include development of the State Waste Management and Recycling Plan, assisting municipalities and businesses with managing solid waste, maintaining an information clearinghouse on recycling markets and services, assisting municipal solid waste incinerators in soliciting waste to meet contractual energy content requirements, review and approval of applications to establish disposal districts, tracking annual waste generation and recycling information from municipalities, and annually reporting to the legislature on the generation of solid waste in Maine, statewide recycling rates and available disposal capacity for solid waste.

Historically, the Department has been responsible for licensing and compliance of solid waste management facilities to ensure appropriate handling of materials. This traditional regulatory approach is designed to protect the environment and public health from pollution. Consolidation responsibilities for waste management planning and recycling provided the Department with an opportunity to apply a more holistic approach to waste management that encourages waste diversion and narrows the stream of waste materials ultimately disposed at landfills. While maintaining a traditional regulatory approach to waste management in the Solid Waste Division, the Department created a new Sustainability Division to incorporate the Department's waste diversion and recycling, pollution prevention, product stewardship, toxics reduction, and climate adaptation efforts. The Sustainability Division will coordinate with other Department programs to support the state's waste management hierarchy and other efforts to provide long-term resources for Maine.

By integrating recycling tracking systems together with the Department's broader-reaching oversight of waste handling facilities, systems and diversion programs, the Department has been able to develop a more comprehensive assessment of recycling and diversion of waste from disposal for this year's report.

Waste Management Hierarchy

Maine statute establishes a hierarchy for management of solid waste, to be used as a guiding principle in decision-making. 38 MRS §2101 states:

It is the policy of the State to plan for and implement an integrated approach to solid waste management for solid waste generated in this State and solid waste imported into this State, which must be based on the following order of priority:

- A. Reduction of waste generated at the source, including both amount and toxicity of the waste;
- B. Reuse of waste;
- C. Recycling of waste;
- D. Composting of biodegradable waste;
- E. Waste processing that reduces the volume of waste needing land disposal, including incineration; and
- F. Land disposal of waste.

This report discusses the various efforts underway in Maine to divert wastes from land disposal, and provides an assessment of long-term landfill capacity based on current waste generation and recycling rates.

Methodology Utilized Within the Report

The most current, complete data available for this report is from the calendar year 2011, and comes from a variety of sources, including:

- recycling and waste management data submitted by municipalities to the Department in accordance with 38 MRS §2133;
- solid waste data from the public and private processing, composting, and disposal facilities' annual license reports to the Department in accordance with 38 MRS §1304-C, 2205, and 2232, and from other states which receive waste for disposal from Maine;
- data from annual reporting by manufacturers implementing product stewardship programs in Maine; and
- recycling data voluntarily provided by commercial entities.

The Department combines the tonnages of waste processed and disposed, as well as recycled, composted, and reused, to estimate the total quantity of solid waste generated in Maine.

The Department receives landfill capacity estimates from each of the public and private facilities, and annual reports of the amount of waste being disposed at each facility. The Department projects the amount of waste expected to be disposed over time at current disposal rates to estimate the projected life span of each facility. Those calculations are then totaled to provide an estimate of remaining capacity at a statewide level. Further decreases in solid waste disposal rates will, therefore, extend the life span of Maine's disposal facilities.

Lastly, state economic indicators are examined as an alternative to historical data to project future waste amounts. In the past, state economists found a strong correlation between Maine retail sales and waste generation.

Additional assumptions used in making these projections:

- Reuse, recycling and composting tonnages increase as waste generation increases, working towards the State's 50% goal;
- Exported waste tonnages remain at their decade median;
- Continued operation of and reliance on the three remaining waste-to-energy facilities, at their existing mix of tonnages (out-of-state waste, processed residues, etc.); and
- No significant change in municipally-operated landfills.

Factors that would significantly change the projections and assumptions include:

- significant closures or start-ups of waste processing or disposal facilities,
- major swings in market conditions for recyclables, and
- policy changes to increase public and private waste diversion.

One significant facility change occurred in 2012: the Maine Energy Recovery Company (MERC) waste-to-energy facility in Biddeford was sold to the City of Biddeford and subsequently ceased operations in December 2012. The in-state generated municipal solid waste that was being delivered to the facility is now being transferred to other disposal facilities, and the out-of-state waste which went to MERC is no longer brought into Maine. The impact of this closing on demand for disposal capacity in Maine cannot be fully accounted for until the review of proposed changes to other solid waste disposal facility licenses has been completed.

This report focuses on municipal solid waste (MSW) as defined by Maine law. MSW is comprised of household baggable waste and construction demolition debris, including such items as furniture, tires, and metal. The report does include some sludge and ash tonnages considered ‘special wastes’, since the disposal of those wastes at landfills impacts the disposal capacity remaining at the disposal facility, one of the metrics tracked. Special wastes are wastes that are generated by other than households or typical businesses and, due to their quantity or chemical or physical properties, require particular handling. They include primarily ashes, sludges, and some processing wastes. Industrial wastes are not included in this report. Industrial wastes are not part of the waste managed by municipalities.

This was the first year that all municipal solid waste management reports were submitted to the Department for a consolidated review and analysis. The Department has found that some avenues of waste diversion are not reported and, therefore, are difficult to quantify. To estimate recycling, the Department combines municipal, commercial and private recycling tonnages and adjusts the figures to eliminate duplicate counting of recyclables. The calculation is not a precise measurement. Some data are incomplete: as the reporting required by Maine law does not capture recycling by businesses directly through private brokers and waste management companies, and reporting by municipalities on their solid waste management and recycling is often incomplete. The Department will be establishing a strategy for more comprehensive analysis of Maine’s waste stream in the 2014 revision to the state’s Waste Management and Recycling Plan.

State Waste Management and Recycling Plan

In accordance with 38 MRS 2122, the Department is required to revise the state’s waste management and recycling plan every five years. The state plan contains data on capacity needs and management options. The capacity report annually furnishes updates on those numbers. A key to achieving Maine’s statutory waste management goals is having the data available for short-term course corrections (consistent with the state plan) when and where they are indicated by the findings in the capacity report.

The Department will be updating the State’s Waste Management and Recycling Plan during 2013. The Department will conduct a broad evaluation of all activities in Maine that divert wastes from disposal and opportunities to support additional waste diversion through regulatory, voluntary, and market-based programs.

II. Municipal Solid Waste

Municipal Solid Waste Definition

Municipal solid waste (MSW) is waste typically generated by households and businesses. It includes household garbage and other waste including recoverable materials such as cardboard, newsprint, office and mixed papers, food waste, plastics, glass, metals, textiles, appliances, furniture, tires, wood waste, and yard waste, as well as construction and demolition debris.

Construction or Demolition Debris (CDD) are the wastes generated by building, remodeling and destruction activities and may include such wastes as wood and wood products, concrete and brick, gypsum board, shingles, and other common components of buildings. Maine includes CDD in its definition of MSW.

Municipal Solid Waste Generation and Management

Every day, approximately 4,800 tons of municipal solid waste are generated within Maine by residential and commercial activity. Maine residents, visitors and businesses generated an estimated 1,773,083 tons of municipal solid waste in 2011, as compared with 1,722,160 tons in 2010. Waste generation is a function of population growth, lifestyles, economic activity, and manufacturing and production practices.

The solid waste management system that receives and manages this waste is a blend of municipal and private service providers that has evolved over the past thirty years. Municipalities are responsible for providing “solid waste disposal services for domestic and commercial solid waste generated within the municipality and may provide these services for industrial wastes and sewage treatment plant sludge.” (38 MRS § 1305).

Where each municipality is responsible for providing solid waste disposal services, there is a wide variety and level of systems and programs in place. These services may be provided by the municipality, or by a private contractor. For example, cities utilize curbside collection of trash and recyclables, while most towns provide a transfer station to which residents and businesses can deliver their trash and recyclables. Many municipalities have established cooperative or regional programs and facilities with neighboring municipalities in an effort to benefit from economies of scale.

The same regional approach may also be found with disposal facilities, with ownership varying from public (single municipality to multiple municipalities) to corporations and even a blend of both, as in the case of the Penobscot Energy Recovery Company facility in Orrington.

Imported/Exported Municipal Solid Waste

Movement of solid waste across state lines is protected under federal interstate commerce laws from state and local restrictions, except that state-owned disposal facilities have the authority to place restrictions on the types of wastes they accept. Municipal solid waste is considered a commodity and is subject to fluctuations of supply and demand at the regional and national level.

In 2011, the following wastes were imported to Maine:

- 264,138 tons of municipal solid waste were brought into Maine and delivered to the four waste to energy facilities to meet their boiler operation needs. (See Table 4 for individual facility's tonnages.) The residuals from the combustion of this waste were landfilled.
- 250,132 tons of construction or demolition debris were trucked to facilities in Maine for processing and reuse, (35,173 tons of which were used as approved alternative daily cover material at a private landfill). The most common action was processing into a wood fuel product as a beneficial reuse activity. Those processing residues that could not be utilized as an alternative fuel were either utilized at landfills as alternative daily cover or were landfilled.

This 514,270 tons total is higher than the 467,725 tons of municipal solid wastes (including CDD) imported in 2010, but less than the 574,345 tons of wastes imported to Maine during 2009. The Department expects less future municipal waste imports due to the closure of the MERC waste incineration facility.

Exports of municipal solid waste and construction/demolition debris have continued to decline, from 43,153 tons in 2009 to 40,916 tons in 2010 and 35,989 tons In 2011.

III. Waste Diversion

Source Reduction

The Department provides technical assistance to businesses, commercial and industrial facilities to evaluate the type and quantities of wastes generated, and opportunities to reduce materials consumption. This assistance is provided during licensing, compliance reviews, and other collaborations with the Department.

Many manufacturers supplying products to Maine are implementing strategies to reduce materials use and waste throughout the lifecycle of their products. Waste prevention strategies reduce wastes generated during manufacturing and distribution, and produce goods that are more recyclable. Examples of common waste prevention activities include:

- reducing the packaging materials necessary for a product's safe transportation and sale to the consumer;
- downsizing packaging, such as smaller laundry detergent containers holding more concentrated product;
- eliminating duplicative packaging, e.g., a plastic bag within a sealed box; and
- the use of different packaging materials, such as substituting a plastic container for a glass container.

The Department also implements the Environmental Leader program, to promote and recognize efforts by Maine businesses to implement waste reduction and pollution prevention strategies. Businesses receive points toward Environmental Leader certification for practices such as: using only paper that has at least 30% post-consumer recycled content; recycling ink cartridges, used electronics, paper, plastic, glass, metal, cardboard, pallets; composting kitchen wastes; collecting vegetable oil and brown grease for bio-fuel or other energy generation; and eliminating use of styrofoam.

Diversion

The Department also implements many diversion programs, such as Dry mercuric oxide and rechargeable batteries, mercury auto switches, electronic waste, mercury thermostats, and mercury lamps. Details regarding these diversion programs are provided in the January 2013 *Implementing Product Stewardship in Maine* report.

Reuse

Maine residents and companies are adept at maximizing the value from everyday products. The saying 'use it up, wear it out, make it do or do without' has been the mantra for many generations. Reuse stores and businesses are located throughout the state, ranging from nationally established organizations such as Goodwill and the Salvation Army to more locally based operations such as the local thrift or 'gently used garment' stores. Construction supplies have their own reuse opportunities through enterprises such as the Maine Building Materials Exchange and the various ReStore resale outlet facilities operated by Habitat for Humanity. Additionally, many manufacturing and distribution operations 'reuse' materials or products, reducing the amount of

waste being generated; for example, reusable plastic delivery ‘totes’ for shipping products to retailers have replaced single use corrugated shipping cartons.

Many municipalities provide a ‘too good to toss’ facility at their transfer station or recycling center, supporting the concept that ‘one person’s trash is another person’s treasure’. The ubiquitous ‘yard sale’ or ‘lawn sale’ opportunities that are prevalent throughout the state during the warmer months provide for a sizeable reuse opportunity for products and items that might otherwise continue sitting unused or be simply disposed of. And of course, there’s the long-standing tradition of passing clothes along to younger members of a family or sharing with neighbors and friends, again, maximizing the value of products through reuse activities.

Most of these reuse activities occur without any tracking of materials exchanged. If a conservative estimate of 725,577 residences in Maine is used, and an average of one hundred pounds of product(s) are reused annually by each household, this totals 36,200 tons, and would add roughly another two percent to the state’s calculated recycling rate.

In accordance with 38 MRS §1304, the Department implements programs encouraging innovative uses of waste materials. Department rules provide streamlined licensing requirements for industrial facilities substituting waste materials for virgin production materials and fuel, and conducting agronomic utilization of ash, sludge and compost. In 2011, beneficial uses occurring in Maine included the use of about 40,000 tons of oil-contaminated soil, 20,053 tons of asphalt shingles, 11,922 tons of sheetrock, and 1,053 tons of boiler ash by mineral materials production facilities in Maine in asphalt and concrete products. Many facilities with boilers and kilns are licensed to burn waste materials such as fuel chips from wood wastes and construction and demolition debris, tire chips, and sludge. More than 20,000 tons of waste materials were burned in licensed boilers in lieu of fossil fuels or biomass. Additionally, 80 waste generators (including municipal waste water treatment plants and industrial facilities) are licensed to land-apply wood ash, biosolids (waste water treatment plant sludge), papermill sludges and other wastes to 136 agronomic utilization sites.

Composting

The Department provides technical assistance and licensing to municipal, commercial, institutional and industrial facilities that compost organic wastes generated on-site or collected from other sources.

There are almost 150 licensed composting facilities in Maine, including 27 that compost fish and food wastes, and 18 that compost sludge and septage. The volume of wastes diverted to these facilities is impacted by transportation costs. As more composting facilities operate across the state, shorter distances from the waste generators will increase the cost-effectiveness of commercial composting as a waste diversion strategy.

Over 100 facilities are licensed to compost leaf and yard waste, mostly at municipal transfer stations. The Department is actively engaged with more than a dozen towns that are establishing new composting operations, and expects that number to continue to increase. Municipal composting efforts generate soil amendments that are returned to residents, keeping nutrients within the communities where they are produced.

Processing

Processing facilities reduce the volume or change the chemical or physical characteristics of solid waste. Along with reducing the volume of the waste prior to disposal, processing facilities may create materials that can be beneficially used in place of virgin materials in construction products or projects, wood chips for fuel substitution, and commodities that can be sold for manufacturing of new products. Processing facilities include but are not limited to facilities that employ shredding, baling, mechanical and magnetic separation, or other stabilization techniques to reduce or otherwise change the nature of solid waste.

Examples of processing facilities include those that chip used motor vehicle tires and construction and demolition debris (CDD), and anaerobic digesters. In 2011, Maine waste processing facilities produced 25,090 tons of tire chips and more than 23,625 tons of CDD fuel chips to be used in place of fossil fuels and biomass.

Maine has two large-scale commercial CDD processors: KTI Biofuels in Lewiston and the CPRC Group in Scarborough. KTI Biofuels accepts clean wood products and CDD for processing for use as biomass fuel. In 2011, it received 177,581 tons of mixed CDD, of which 10,714 tons were generated within Maine. KTI also accepted 52,398 tons of clean wood waste, of which 10,770 tons were generated in-state. CPRC accepts multiple types of materials and ships out a variety of finished products from its Scarborough facilities, as well as offering mobile or 'on-site' services. In 2011, CPRC accepted 17,784 tons of used asphalt roofing materials, 11,308 tons from in-state sources. There are also several commercial wood chippers that move from site to site and are used to manage brush and clean CDD wood at municipal facilities.

There are two anaerobic digesters operating in Maine: Exeter Agri-Energy and McCain Foods. These facilities process waste materials generated on-site, and from other larger scale generators of organic wastes, such as farms, grocers, restaurants, and bio-fuel manufacturers. Methane gases produced by the waste digestion are used as a fuel source to generate heat and electricity for the facilities.

IV. Recycling

Statewide Recycling Rate

Recycling is defined at 38 MRS §1303-C as “the collection, separation, recovery and sale or reuse of materials that would otherwise be disposed of or processed as waste or the mechanized separation and treatment of waste, other than through combustion, and the creation and recovery of reusable materials other than as a fuel for the generation of electricity.”

The statewide recycling rate has historically been calculated by dividing the total amount of MSW recycled (including estimates of composting, reuse, and beneficial use other than fuel substitution) by the total amount of in-state generated MSW. As described previously, this does not take into account significant amounts of materials that are diverted from disposal.

For comparison against previously published estimates, the Department estimates that 702,202 tons of materials were recycled in 2011, or 39.6% of the waste stream. This is an increase from the 665,315 tons recycled in 2010 as previously reported to the legislature. Much of this increase is due to the opportunity to integrate data from additional sources beyond those traditionally available to and utilized by the former State Planning Office.

The figures used to calculate the recycling and diversion rates for Maine-generated MSW & CDD are:

	tons
MSW landfilled in state (includes WTE ash)	368,774
MSW incinerated in state (does not include residues)	351,617
MSW disposed of out-of-state	30,796
Mixed CDD landfilled in state	262,938
Mixed CDD processed/disposed of out of-state	5,193
CDD processing residue- ME component	51,563
Subtotal waste disposed	1,070,881
Beneficial use of processed CDD as fuel chip	54,960
MSW recycled - reported by municipalities*	116,216
Other MSW recycled (computers and monitors, white goods, metals, tires, vehicle batteries)	273,623
Business waste recycled	284,419
MSW composted (includes leaf & yard waste)	27,944
Total MSW recycled & composted	702,202
Total MSW & CDD generated in Maine	1,773,083
Percent recycled	39.6%

Appendix B lists the quantities of materials recycled by waste type.

Progress Toward State Goal

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 was revised in 2012 and extended to January 1, 2014. Individual municipal and regional recycling programs are not required to achieve a 50% recycling rate, but they are required to demonstrate progress towards the goal.

Using previous, more limited data collection methods, the calculated recycling rate in 2011 would be 37%. Using this consistent calculation method, Maine's recycling rate has been fairly steady for the past ten years, ranging from a low of 34.8% in 2007 to a high of 38.8% in 2009. However, the rate calculated in this way did not include all forms of recycling that occur at the municipal level, nor statewide. As described above, utilizing additional data sources to account for recycling occurring outside the municipal sector and through product stewardship programs, Maine MSW recycling rate for 2011 is 39.6%. Note that this rate still does not account for much of the reuse of materials that occurs routinely in Maine. For example, many municipal transfer stations and recycling centers set aside areas for the exchange of used goods, such as furniture, toys and books that might otherwise be disposed of. Many Maine citizens also use larger exchange networks such as *Uncle Henry's* and Craigslist. The Department estimates that more than 36,000 tons of materials each year are reused in this manner.

The State remains committed to reaching the 50% goal in light of the value of reducing overall solid waste management costs, the positive impact on the environment, and a lessening of the need for additional solid waste disposal capacity. The Department created the Sustainability Division to focus resources on programs that will further the state's progress toward this goal.

In addition, the State has a goal to reduce the biennial generation of municipal solid waste tonnage by 5% beginning on January 1, 2009, and by an additional 5% every subsequent 2 years (38 MRS §2132(1-A)). This is a biennial goal and the baseline for calculating this reduction is the 2003 solid waste generation data gathered by the former State Planning Office. In 2009, the tonnage of municipal solid waste generated was 1,777,498 tons and in 2011 generation was 1,773,083 tons, a decrease of 4,415 tons.

V. Disposal

In 2011, Maine's solid waste disposal facilities included: two operating state-owned landfills; one commercial landfill; nine municipally-operated landfills; 19 municipal construction and demolition debris (CDD) landfills; and, four waste-to-energy facilities. The State has another landfill site, known as Carpenter Ridge, located in T2 R8 that remains undeveloped.

Landfills

Landfills receive a variety of wastes. The types of wastes permitted for disposal differ among the facilities, as requested in their licensing applications. Included in that variety of wastes is: raw garbage; construction and demolition debris; residues, such as front end processing residue and ash from waste to energy facilities; contaminated soils; sludges; ash from biomass operations; and other special wastes. This report focuses on municipal solid waste, including construction and demolition debris, as well as the residues from the processing of those wastes.

However, in projecting the consumption of landfill capacity, the Department combined the tonnages of the various cover materials and the other special wastes that were landfilled, along with the municipal solid waste tonnages, to estimate the remaining life of the landfills since all these waste types consume landfill capacity. For that reason, those wastes and their impact on landfill capacity are included in this report.

The following table provides details on each of the landfills, the types and tonnages of materials received at each, and remaining disposal capacity, as reported to the Department.

This report provides information for the calendar year 2011. In September 2011, the State acquired the Dolby Landfills in East Millinocket as part of the effort to secure a buyer and operator for the paper mills in East Millinocket and Millinocket. The Dolby landfill's use and capacity is restricted to waste generated from operations at those mills, which is industrial waste, and is not part of the solid waste stream presented in this report.

TABLE 1- ACTIVE LANDFILLS, WASTE TYPES, TONNAGES AND REMAINING CAPACITIES - 2011 DATA

Landfill	MSW (tons)	CDD (tons)	Special Wastes, Residues	Other cover materials landfilled (cubic yards)	Waste Fill Rate (tons)	Cubic Yards of Capacity Consumed (est.)	Cubic Yards of Capacity Remaining (est.)	Years of Licensed Capacity Remaining at current fill rate
Augusta (Hatch Hill)	26,438		450	17,719	26,888	56,711	1,075,366	17.9
Bath	10,282	1,575	339	18,300	12,196	38,340	298,800	8
Brunswick	3,543			500	3,543	14,286	349,678	24
Presque Isle	5,573	1,283	2,723	1,906	9,579	15,669	284,331	18
Tri-Community	14,460	2,566	1,962		18,988	42,003	1,704,366	41
ecomaine*			43,303		43,303	41,891	1,057,926	23.5
Lewiston		893	35,658		36,551	16,915	627,108	37
Crossroads	70,841	75,967	120,913		267,721	276,524	3,730,095	13
Juniper Ridge	125,565	150,536	427,759		703,860	689,044	5,866,775	8.5
MidCoast Solid Waste (Rockport)		2,822			2,822	7,950	73,175	9
Rockland		25,890			25,890	40,350	242,700	6
Totals	256,702	261,532	633,107	38,425	1,151,341	1,239,683	15,310,320	

*ecoMaine excavated 1,418 tons MSW to combust

Municipal CDD Disposal Facilities

There are 19 municipal land disposal facilities that accept locally-generated construction and demolition debris, inert fill, brush, and trees. These operations furnish a ‘short-transport’ option for the disposal of these wastes. These facilities landfilled a total of 38,579 tons of CDD in 2011, including the 28,712 tons in Rockland and Rockport as listed in Table 1.

The remaining capacity at individual CDD facilities varies, but conversations reflect that landfill space exists for an overall capacity for another 10-12 years. Seventeen of these facilities are small operations, with an operating area of less than six acres, which serve an immediate area’s need for disposal of waste wood, construction or demolition debris, inert fill, and similar wastes. These facilities are of local importance, providing a ‘nearby’ disposal option for these wastes, often at low cost.

Finding acceptable alternatives to land disposal for CDD continues to pose problems in Maine’s rural areas. These materials cannot be recycled or reused without investment in equipment, labor, and sufficient land area to aggregate and process them. Markets for processed CDD do exist, but given the often small scale that most Maine towns operate on, with low volume and dispersed facilities, rural operations do not often produce the scale needed for sustainable recycling efforts. CDD that has been processed to produce a fuel substitute product can be used for combustion at licensed industrial facilities. As of this report, RE-Energy (formerly Boralex), Gallop Power Greenville, Sappi (Westbrook), and Perma Treat Corporation are currently licensed for, and utilizing varying tonnages of this fuel substitute

Waste-To-Energy Facilities

In 2011, 31.5% of Maine’s municipal solid waste was sent to waste-to-energy (WTE) facilities. Maine’s WTE facilities received a total of 822,058 tons of MSW, of which 557,520 tons were from Maine sources, which represents an overall decrease in deliveries of 34,883 tons from 2010. Table 2 and Table 3 provide an overview of the four facilities and the management of the wastes delivered.

At the time of this report, the Maine Energy Recovery Company (MERC) waste-to-energy facility in Biddeford has been sold to the City of Biddeford and is now closed. The in-state generated municipal solid waste that was being delivered to the facility is now being transferred to other disposal facilities.

TABLE 2 - SUMMARY OF MAINE'S FOUR WASTE TO ENERGY FACILITIES - 2011

FACILITY	MUNICIPAL TONS OF WASTE RECEIVED	COMMERCIAL TONS OF WASTE RECEIVED	SPOT MARKET WASTE TONS	OTHER TONS OF WASTE RECEIVED	TOTAL TONS OF WASTES RECEIVED	BYPASS TONS*	FRONT END PROCESS RESIDUE TONS*	METALS RECOVERED TONS	ASH TONS*	COMBUSTED TONS (Does not include residuals)
Maine Energy	55,019	199,692		4,565	259,276	3,261	42,690	6,226	50,051	157,048
ecomaine	63,567	68,030	36,328	9,353	177,278	874	N/A	3,301	41,891	131,212
Mid ME Waste Action Corp	37,484	14,313	19,732		71,529	10,572	N/A	2,077	17,673	41,207
PERC	196,420	105,959	11,596		313,975	164	60,624	9,152	55,565	188,570
TOTALS	352,489	387,994	67,656	13,918	822,058	14,871	103,214	20,756	165,131	518,084
					<i>% of total received</i>	<i>1.81%</i>	<i>12.56%</i>	<i>2.52%</i>	<i>20.09%</i>	<i>63.02%</i>

* Definitions for these residue streams are found on the next page

The following, Table 3, shows the breakdown of source of the wastes received by each Waste-To-Energy facility:

Table 3 - Source of MSW for Waste to Energy Facilities			
Facility	In-state tons	Out of State tons	Total Tons
ecomaine	174,312	2,966	177,278
Maine Energy	89,385	169,891	259,276
Mid Maine Waste Action Corp	71,410	119	71,529
PERC	222,813	91,162	313,975
Totals	557,920	264,138	822,058

Waste to Energy facilities combust municipal solid waste to generate electricity. That process generates residues that require disposal in a landfill, but the volume of waste requiring disposal is greatly reduced by as much as ninety (90) percent, and total weight by two-thirds, reducing the need for landfill capacity as compared with landfilling of unprocessed municipal solid waste. The four waste to energy facilities have a combined generation capacity of approximately 62 megawatts of electricity.

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 issues 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 acquire, often through importation, wastes to make up for shortfalls.

As there are changes in any of the current waste-to-energy facilities and their operations, there could be a reduction for both the demand for out of state waste and the disposal associated with its processing. For example, the closing of the Maine Energy incinerator in Biddeford will result in a decrease of about 50,000 cubic yards of ash needing disposal each year. Also the approximately 90,000 cubic yards of MSW from Maine previously managed by MERC (54,000 of which was actually incinerated) will need to be disposed of elsewhere, potentially fulfilling the needs of the other three WTE incinerators which imported about 95,000 tons of MSW in 2011.

WTE Residues

The waste-to-energy facilities produce by-pass waste, front-end process residue (FEPR), and ash. These residues, which require disposal in landfills, comprise approximately one-third of the waste processed by these facilities. The metals are recovered for recycling.

- *Bypass Waste:* Bypass 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 bypassed if there are operational interruptions or facility shutdowns, or if the facility reaches its operational capacity and cannot accept waste that it is contractually obligated to receive. The bypass waste is typically delivered to a landfill for disposal. This category also includes waste that cannot be processed by the facility due to size or composition.
- *Front-end Process Residue:* Maine Energy Recovery Company (MERC) 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 landfills. Front-end process residue (FEPR) is removed prior to incineration, and may include ferrous metals, glass, grit, and fine organic matter. Mid-Maine Waste Action Corporation (MMWAC) and *ecomaine* use a ‘mass burn’ technology and do not produce FEPR.
- *Ash:* Ash is a by-product of combustion, classified as a special waste, and is landfilled. The ash from MERC and PERC is disposed of at the Juniper Ridge Landfill. The ash from MMWAC is disposed of at the City of Lewiston’s landfill and *ecomaine*’s ash is buried at the *ecomaine* landfill.

V. Future Waste Processing and Disposal Capacity

At 2011 disposal rates, Maine will require an estimated 22.8 million cubic yards of landfill capacity over the next 20 years to manage the municipal solid waste that is directly landfilled, along with the residues generated by the three waste-to-energy facilities and other processing facilities that also require landfilling of residues. The following table illustrates projections of anticipated disposal capacity in Maine at 2011 fill rates, with no adjustment in projections of tonnages of waste being generated requiring disposal.

Table 4: Disposal Capacity in Maine

WTE Facility Capacity	2011 Capacity – available (tons/year)	3 Years 2014 Capacity – projected remaining (tons/year)	5 Years 2016 Capacity – projected remaining (tons/year)	10 Years 2021 Capacity – projected remaining (tons/year)	20 Years 2031 Capacity – projected remaining (tons/year)
MMWAC – Auburn	70,000	70,000	70,000	70,000	70,000
ecomaine – Portland	170,000	170,000	170,000	170,000	170,000
Maine Energy - Biddeford	310,000	0	0	0	0
PERC – Orrington	304,000	304,000	304,000	304,000 ⁶	304,000
Total	854,000	544,000	544,000	544,000	544,000
Landfill Disposal Capacity at current fill rate	2011 Licensed Capacity – end of year (cubic yards)	2014 Licensed Capacity – end of year (cubic yards)	2016 Licensed Capacity – end of year (cubic yards)	2021 Licensed Capacity – end of year (cubic yards)	2031 Licensed Capacity – end of year (cubic yards)
State Landfills (2):					
Carpenter Ridge – T 2 R 8	Undeveloped	Undeveloped	Undeveloped	Undeveloped	Undeveloped
Juniper Ridge – Old Town	5,866,775	3,799,643	2,421,555	0	0
Juniper Ridge – Old Town (expansion being sought)	Unlicensed	Unlicensed	Unlicensed	Unlicensed	Unlicensed
Municipal Disposal Sites (9)					
7 - Municipal wastefills	3,712,248	3,211,221	2,877,203	2,042,158	372,068
2 - Municipal – ‘ash’	1,685,034	1,508,616	1,391,004	1,096,974	508,914
Commercial landfills (1)					
Crossroads - Norridgewock	3,726,343	2,888,515	2,329,963	933,583	0
Total	14,900,400	11,407,995	9,019,725	4,072,715	880,982

VI. Disposal Prices

Disposal Fees

Disposal expenses are comprised of collection and transportation costs and tipping fees on the disposal of waste. Disposal fees or tipping fees are a major factor in solid waste management costs for municipalities and businesses. Current disposal fees range from \$40 to \$135 per ton at Maine's landfills and waste-to-energy facilities. These have stabilized in most instances, allowing predictability for municipal budgeting and long-term planning.

Tipping fees at each of the four waste-to-energy facilities have been fairly consistent and reflect the commitment of the municipalities who either own the facility or have long-term contracts for disposal services.

The State, in its operating services agreement with Casella Waste Systems, established a ceiling for tipping fees that sets an upper limit on how much can be charged for wastes delivered to the Juniper Ridge Landfill, which has had a stabilizing impact on pricing for the disposal of similar materials at other solid waste facilities.

Tipping fees at waste-to-energy facilities are influenced by revenues received from the sale of the electricity they generate. The revenues reduce operating expenses, yielding a reduction in the tip fee charged for solid waste. Should electricity sales revenue drop, tipping fees may increase. Conversely, should the electricity sales value increase, the possibility exists that lower tipping fees, or maintaining current fees, would occur.

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 Department 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 supracompetitive disposal fees, because disposal prices have not experienced any significant changes during the last three years. The Department maintains a firm awareness of its responsibility to stay attuned to the possibility of supracompetitive pricing.

Appendix A

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, 2013 and annually thereafter, the department shall submit a report to the joint standing committee of the Legislature having jurisdiction over natural resources matters and the Governor setting forth information on statewide generation of solid waste, statewide recycling rates and available disposal capacity for solid waste.

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

Beginning on January 1, 2013 and every odd-numbered year thereafter, the report submitted under this section must include an analysis of how the rate of fill at each solid waste landfill has affected the expected lifespan of that solid waste landfill.

Beginning on January 1, 2014 and every even-numbered year thereafter, the report submitted under this section must include an analysis of consolidation of ownership in the disposal, collection, recycling and hauling of solid waste.

The joint standing committee of the Legislature having jurisdiction over solid waste matters may report out legislation related to the report submitted pursuant to this section

Appendix B

Quantities Recycled by Waste Type

Recyclables reported by municipalities	Tons of each waste type
Aluminum cans/foil	1,183.60
Brown/amber glass	0.91
Clear glass	276.33
Co-mingled containers	1,018.84
Co-mingled paper & OCC	1,197.72
Computers and Peripherals	510.89
Corrugated carboard (OCC)	29,703.64
Green glass	1.40
HDPE (#2) plastic	883.57
LDPE (#4) plastic	288.08
Magazines (OMG)	147.80
Mixed electronics	80.45
Mixed Glass	2,384.40
Mixed newspapers & magazines	9,850.76
Mixed paper grade	7,293.39
Mixed plastics	969.39
Mixed recycleables/Single stream	39,019.35
Newspapers (ONP)	7,415.57
Office paper grade	860.01
PETE/PET (#1) plastic	450.90
PVC (#3) plastic	145.16
Steel Cans	1,016.74
subtotal reported by municipalities	104,698.90
Other recyclables	
Metals	84,405.00
Metals - ferrous	132,841.00
Metals - non-ferrous	7,179.19
WTE metal recovered	11,724.48
Batteries - rechargeable	17.14
Vehicle Batteries	2148.33
Tires	16,983.83
Monitors & TVs	18,324.00
subtotal other recyclables	273,622.97