

Interstate Flow of Municipal Solid Waste Among the NEWMOA States

December 20, 2000

About NEWMOA

The Northeast Waste Management Officials' Association (NEWMOA) is a nonprofit, nonpartisan, interstate association. The membership is composed of state environmental agency directors of the hazardous waste, solid waste, waste site cleanup, pollution prevention and underground storage tank programs in Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont. NEWMOA was established by the governors of the New England states as an official interstate regional organization, in accordance with Section 1005 of the Resource Conservation and Recovery Act (RCRA) in 1986 and is funded by state membership dues and contracts and EPA grants.

NEWMOA's mission is to help states articulate, promote, and implement economically sound regional programs for the enhancement of environmental protection. The group fulfills this mission by providing a variety of support services that:

- facilitate communication and cooperation among member states and between the states and EPA, and
- promote the efficient sharing of state and federal program resources.

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Introduction

All the NEWMOA states gather data on solid waste imports and/or exports in order to generate more accurate information about recycling and other waste diversion activities. Several NEWMOA states expressed an interest in characterizing the flow of solid wastes among the NEWMOA states in order to better validate the information they collect. The need for this sharing of information on a regional basis is further exemplified by the recent consolidation of the solid waste management industry and the corresponding vertical integration of companies, from providing collection services to ownership of disposal facilities.

Through this project, the NEWMOA states have established an infrastructure by which information can be shared and compared on a regular basis. Continuing this information sharing and analysis effort annually can improve the quality of data and ensure that states have as much information as possible to monitor trends in waste flow in the Northeast. An important outcome of this project is the identification of the gaps in data collection and other sources of potential data inaccuracies. Each state shared the limitations of their own data and its possible impact on regional interpretation. Utilizing this information, each state can then make decisions as to what information is needed to more accurately characterize flow and what changes might be beneficial on both the state and regional level. Another potential use of the information contained in this report is to inform discussion on strengthening recycling and other waste diversion efforts in individual states and regionally.

Project Scope and Process

Representatives of each NEWMOA state met in May to resolve issues such as the timeframe this report would cover and the type of wastes that would be studied. The workgroup decided that this report should cover the 1999 calendar year. The workgroup initially decided to focus on both municipal solid waste (MSW) and construction and demolition (C&D) waste. Other materials such as incinerator ash and medical wastes were recognized as waste streams on which to focus in the future.

Over the summer the states collected and compiled the data from their facilities. Summaries of this data were provided to NEWMOA during July and August. NEWMOA developed draft tables and graphs of the available data that were distributed to the workgroup. In early September, the workgroup met again to discuss discrepancies and provide input on this draft report content and format.

At the meeting, the workgroup decided that this report should focus on MSW-only and not C&D waste for several reasons. There are greater differences in how states define and track C&D waste, than there are for MSW. In addition, a considerable amount of C&D waste is sent to processing facilities where its volume is reduced and/or a portion is extracted for reuse prior to the remainder being sent for disposal. Some states collect waste disposal information from the processing facilities and some do not. For example, Connecticut collects information from transfer stations and processing facilities separately, whereas in Massachusetts and New York this information could be combined.

Possible Sources of Data Inaccuracies

After review of the data provided and discussions with the states, the project has uncovered several possible sources of inaccuracies in the data presented in this report:

- If waste is hauled directly from the pick-up route to an out-of-state disposal facility, the waste is not included in data from the generating state. Other than Vermont, none of the NEWMOA states obtain information from waste haulers about their activities. Connecticut does require that haulers are registered by the municipalities from which they obtain their wastes.
- Not all facilities provide specific data on waste type or state of origin to allow for a state-by-state determination of the accepted quantity of a particular waste type. For example, New York facilities report the total quantity of waste accepted from each state (MSW, C&D, and others, all together) and also the total quantity of each type of waste accepted (which included in-state waste). New Hampshire's largest facility reported the quantity of waste brought to the facility by each hauler, but not where that hauler obtains the waste. Like New York facilities, this particular New Hampshire facility provided the total quantity of waste received from each state (all waste types together). Fortunately, New Hampshire is a relatively small state and has general knowledge of haulers and their routes.
- States do not define all their waste types the same, leading to a possible comparison of "apples and oranges." For example, Connecticut does not have a C&D waste category - demolition debris is a bulky waste by definition and construction debris is technically MSW, although it is usually reported as bulky waste, and white goods are included in MSW.

Generally, states believe the information from disposal facilities is fairly reliable. Data inaccuracies tend to arise from information obtained from transfer stations. However, problems with transfer station information can affect the accuracy of disposal facility information. The issues relating to transfer stations are:

- Not all states obtain data from their transfer stations that can be used to determine the quantity of waste that was received from or sent to each state. For example, Maine does not collect any relevant information from transfer stations. Some transfer stations in Vermont reported only the total quantity of waste that was sent out-of-state and did not break this down into the individual states or their respective quantities.
- Some transfer facilities could be reporting the destination facility location as the business address of the hauler rather than the facility's location. If the two are located in different states this would lead to discrepancies in the data presented in this report.
- If waste enters a transfer station from out-of-state, and is then sent to a disposal facility in the same state as the transfer station, it would not be recorded as out-of-state waste by the disposal facility (unless the transfer station provides the information to the disposal facility).
- During data interpretation, waste entering a transfer station from out-of-state was not included in the import numbers for that state, since the final disposition of that waste is unknown - it could end up at an in-state disposal facility or become transferred back out-of-state again. This practice is likely to be occurring among facilities in Connecticut, Massachusetts, New York, Vermont, and Rhode Island and creates a degree of uncertainty in the export data. These quantities would be included in the export numbers from the

first state to the second and also in the export numbers from the second state to the third. However, what is really occurring is export from the first state to the third state.

The last two items merit further discussion as they could have a potentially significant affect on the import/export data for a state. In the first instance, out-of-state waste can become in-state waste in facility reports. The state would not uncover this error unless detailed reporting is obtained from both the transfer station and the disposal facility, and the state spends the resources to closely examine the information received and reconcile it.

The second instance can lead to substantial confusion and possible double counting of the waste. The facility in the third state would record the waste as imported from the second state, when in actuality they are servicing the disposal needs of the first state, not the second. The first state might believe that a facility in the second state is providing the waste disposal capacity they rely on when in fact it is the third state. In addition, the second state might report the waste as having originated in their state when export numbers are determined, overstating the quantity of MSW exported. Again, the only way to mitigate these inaccuracies is to obtain detailed reporting from both transfer stations and the disposal facilities, and to expend state resources to closely examine the information received and reconcile it.

Report Structure

The report begins with a section that provides a summary of the MSW flow in the region. Then the report contains a section for each state that describes the import and export information for that state. After the seven state-specific sections, the report contains a Recommendations section which includes an outline of possible future efforts to improve state understanding of waste flows in the region.

Each of the state-specific sections that follow contains some summary information about the states' MSW disposal in 1999, including bar graphs illustrating the import and export data for that state. For data comparison and validation purposes, the figures shows two sets of data for each state: the number of tons the subject state reports they received from each state; and the number of tons each state reports they sent to the subject state. This project focused on data that the NEWMOA states provided. Therefore, exports to non-NEWMOA states are aggregated into an "other" category. For comparison purposes, the import and export graphs are done in the same scale, although some data resolution might be lost. More detail on the data shown in the figures is provided in the data tables contained in Appendix A.

The discrepancies that show up in the bar graphs between the data collected by the state and the data provided by other states, are discussed. The data that states collect from facilities is not consistent among the NEWMOA states. Therefore, the data collection process in the state is also summarized to provide additional information about the possible source of discrepancies. Example reporting forms from each state are included as Appendix B to this report.

Each state-specific section provides information about the total quantity, and out-of-state portion, of waste disposed of at landfills and waste-to-energy (WTE) facilities. Information was not collected about facilities that disposed of in-state waste only. Each state-specific section concludes with a summary of what has changed in the solid waste situation in that state since the 1999 data.

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Region-Wide Summary

The study found substantial movement of MSW among the NEWMOA states. Overall imports and exports for each state are illustrated on Figure 1 below. More detail about MSW flows is illustrated on the attached map.

1999 MSW Imports and Exports (tons)

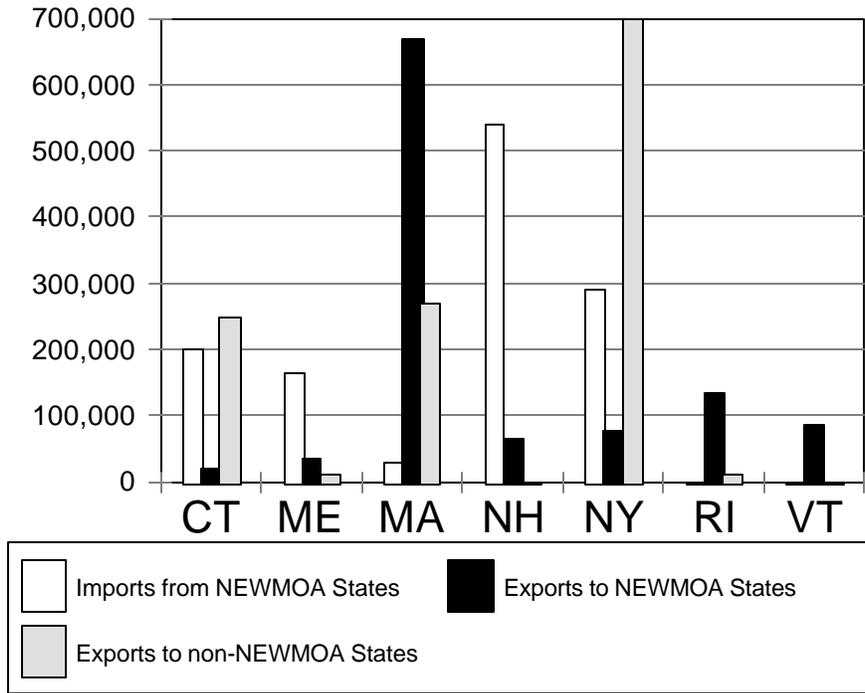


Figure 1

To place these import and export tonnages in context, the following pages contain additional figures; Figure 2 showing where the MSW generated by each state is disposed, including exports and Figure 3 showing the quantity of MSW disposed of in each state, including imports. In addition, Table 1 relates the information from Figures 2 and 3 to state population.

* For New York:

Exports to non-NEWMOA states = 5.7 million tons

Imports from non-NEWMOA states = 49,000 tons

The following general observations characterize the flow of MSW in the region in 1999:

- The majority of MSW generated in each state is managed using in-state disposal facilities.
- Generally, a substantial quantity of MSW was either imported into a state or exported from it. Connecticut is the only state that imports and exports a similar quantity.
- Significantly more MSW was imported into both Maine and New Hampshire than was exported, with the majority imported from Massachusetts.
- Due to state policies and other factors, MSW was not imported into Rhode Island and Vermont:

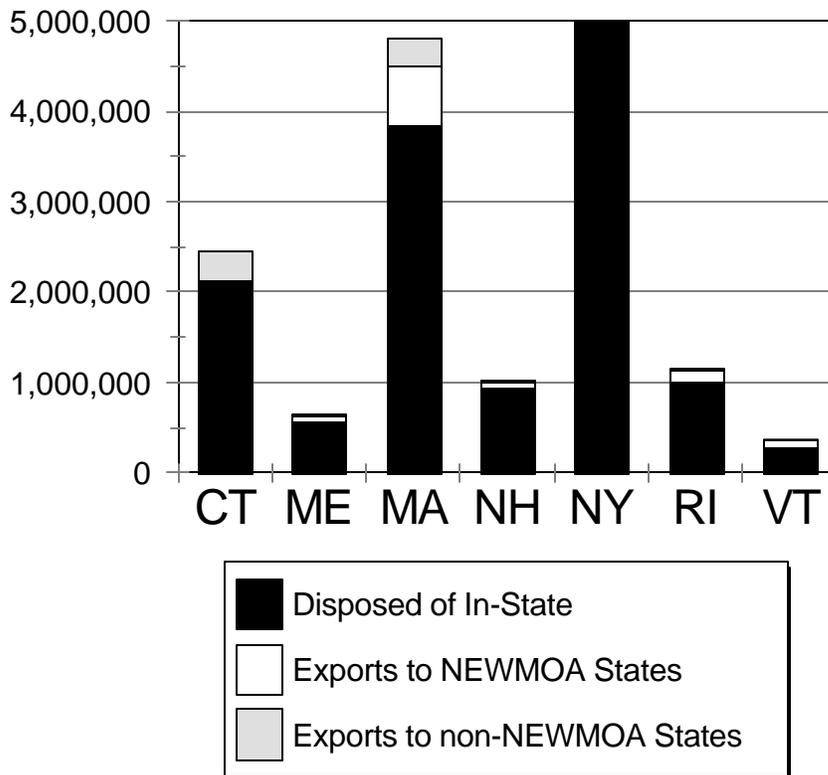
S Rhode Island's Central Landfill is the only large landfill in the state and it receives 96 percent of the municipal waste and 90 percent of the commercial waste generated in Rhode Island. The Central Landfill is owned and operated by the Rhode Island Resource Recovery Corporation, a quasi-public entity established in 1974 by an act of the Rhode Island Legislature. Legislation, as last amended in

2000, states that “No person, firm, corporation, transfer station, or any other entity... shall deposit or cause to be deposited solid waste that is generated or collected outside the territorial limits of this state at the central landfill. Each deposit in violation of the provisions of this subsection shall be punishable by imprisonment for up to three (3) years and/or a fine not to exceed five thousand dollars (\$5,000).”

S The two commercial landfills in Vermont are not large and have daily and annual limits on the quantity of MSW they can accept. In addition, the permits for these landfills require that prior to accepting waste from a municipality, the municipality must certify that yard waste, hazardous wastes, and recyclables are removed from their MSW in accordance with minimum requirements set by the state.

- Significantly more MSW is exported from Massachusetts to NEWMOA states than is imported.
- When only the NEWMOA states are considered, significantly more MSW was imported into Connecticut and New York than was exported from them to facilities in the NEWMOA states. However, facilities in Connecticut and New York, along with Massachusetts sent substantial quantities of MSW to disposal facilities located outside the NEWMOA region.
- Other than the large volumes of MSW exported from the three largest states, most importing and exporting occurred between transfer and disposal facilities located near state borders.

Disposal of MSW Generated by State (1999, in tons)



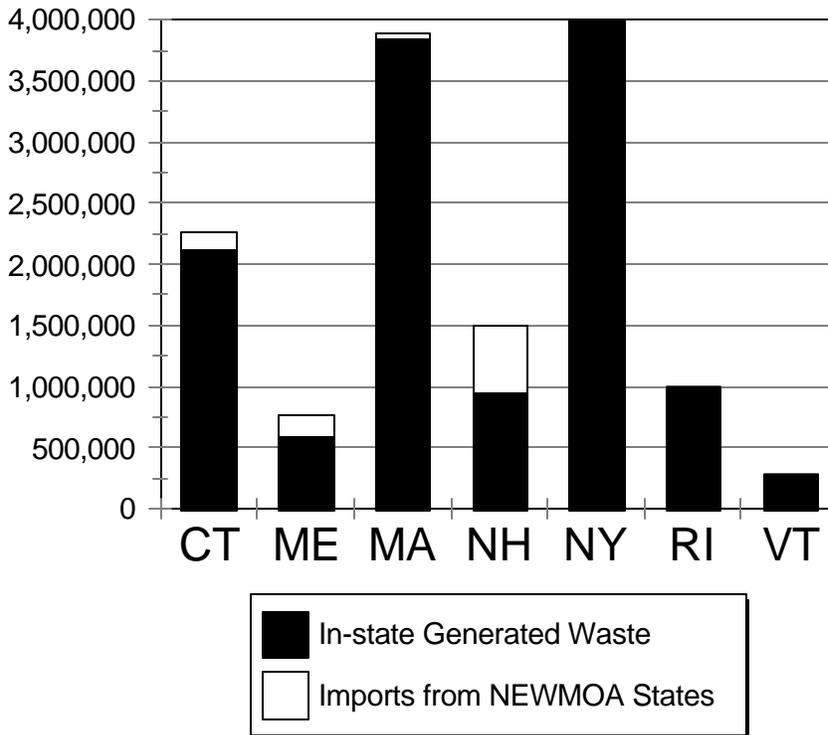
- With the exception of some facilities in New York, no disposal facilities in the NEWMOA states imported MSW generated in a non-NEWMOA state.

* For New York:

- S Disposed of In-state - 13.8 million tons
- S Exports to NEWMOA States - 77,000 tons
- S Exports to non-NEWMOA states - 5.7 million tons

Figure 2

MSW Disposed of In-State (1999, in tons)



* For New York:

In-state generated MSW - 13.8 million tons

Imports from NEWMOA States - 290,000 tons

Imports from other states & Canada - 49,000 tons

Figure 3

Normalize for Population

The population of the various northeastern states differs greatly, from 18,196,600 in New York to just 593,740 in Vermont. Correlating the data shown in Figures 2 and 3 with population can provide additional information about waste generation and management in the states. Table 1 normalizes the data in Figures 2 and 3 to account for the differences in population among the NEWMOA states. The third column shows the per capita quantity of MSW generated in a state that is disposed, including exports using the data shown in Figure 2. The fourth column shows the per capita quantity of MSW that is disposed of in the state, including imports, using the data shown in Figure 3.

Table 1: Data Normalized for Population

State	1999 Estimated Population (Source: U.S. Census Bureau)	1999 Per Capita MSW Disposed (tons/year)	1999 Per Capita MSW Disposed of At Facilities in the State (tons/year)
Connecticut	3,282,030	0.73	0.71
Maine	1,253,040	0.51	0.61
Massachusetts	6,175,170	0.78	0.63
New Hampshire	1,201,130	0.85	1.25
New York	18,196,600	1.08	0.78
Rhode Island	990,820	1.16	1.01
Vermont	593,740	0.61	0.47

As the third column of the table indicates, the per-capita amount of MSW generated in the state that is disposed of varies among the states. These differences could be attributable to a combination of the following factors:

- the proportions of commercial, industrial, agricultural and residential MSW generation vary among states;
- the definition of MSW differs among states (what gets included in the numbers);
- the type of data that is collected from facilities varies among states (the accuracy of the numbers);
- the quantity of MSW that is generated per capita could vary among states. For example, there are differences between rural and urban area MSW generation rates. Income levels have also been shown to influence waste generation rates; and/or
- the proportion of MSW that is recycled varies among the northeast states.¹

The data in Table 1 also illustrates whether a state imported or exported a significant portion of its MSW in 1999. If the numbers in column 3 and 4 are equal, then the MSW flow is at equilibrium, meaning that imports and exports are equivalent. This would mean that facilities in the state are disposing of a volume of MSW equivalent to the quantity generated in the state that requires disposal. A decrease between column 3 and column 4 indicates that in-state generated MSW is sent out-of-state for disposal. Conversely, an increase indicates that a portion of the MSW disposed of in the state is imported from other states.

¹ More information about recycling in the Northeast states can be obtained in the Northeast Recycling Coalition (NERC) report, *Northeast States Recycling Data Collection Programs, 2000*, available at www.nerc.org.

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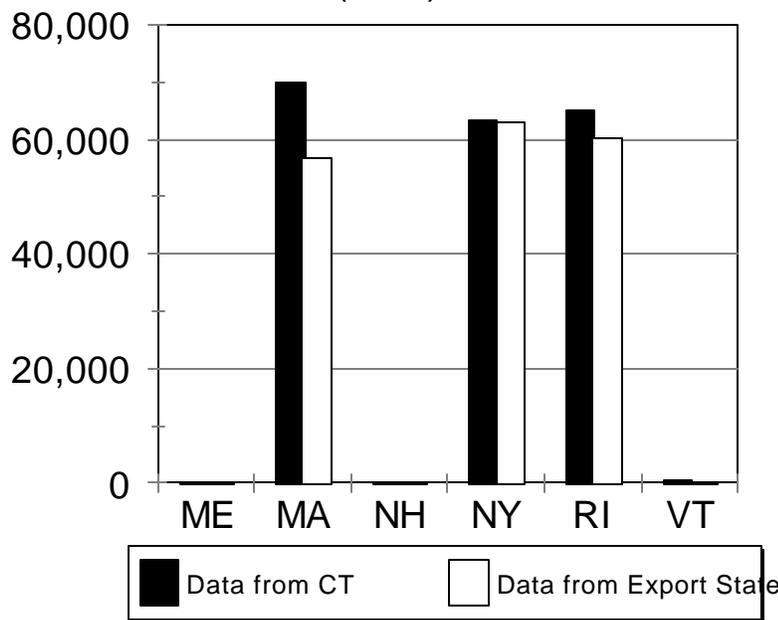
Connecticut

Connecticut disposed of 2,126,460 tons of municipal solid waste (MSW) generated from in-state sources in 1999: 195,040 tons at landfills and 1,931,420 tons at waste-to-energy (WTE) facilities. In terms of MSW imports and exports, Connecticut is a net exporter, sending more waste out-of-state than it accepts from other states.

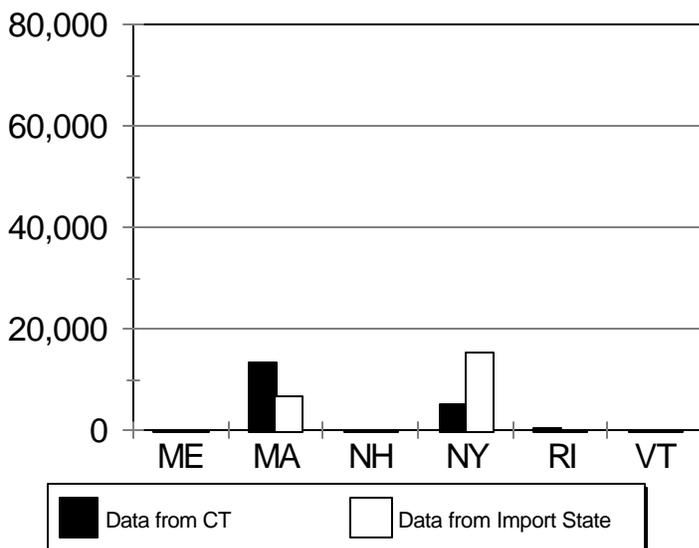
However, when only the NEWMOA states are considered, Connecticut becomes a net importer of waste, accepting significantly more MSW from the NEWMOA states than it exports to NEWMOA states. According to Department of Environmental Protection (DEP) records, Connecticut WTEs imported 199,170 tons of MSW generated from other NEWMOA states. Facilities in Connecticut did not import MSW from a non-NEWMOA state in 1999. A state-by-state breakdown of imports is shown in the figure below.

According to DEP records, in 1999 facilities in Connecticut exported 19,020 tons of MSW to disposal facilities located in NEWMOA states and 247,210 tons of MSW to facilities located in non-NEWMOA states. A state-by-state breakdown of Connecticut's exports to NEWMOA states is shown in the second figure.

1999 MSW Imports
(tons)



1999 MSW Exports to NEWMOA States*
(tons)



* Note: in 1999, Connecticut exported approximately 247,210 tons of MSW to non-NEWMOA states

Data Collection Summary

All solid waste transfer stations are required to report quarterly to the DEP. The reports contain monthly summaries of the amount, type, and source of material received and the monthly summaries of the amount, type and destination of material transferred. All WTEs and landfills are also required to report quarterly. Those reports contain monthly data on the type, amount and origin of waste received for disposal and, additionally for WTEs, the

amount, type and destination of any material sent out of the facility (such as ash and by-pass waste).

Discussion of Discrepancies

Import Data: Massachusetts facilities reported sending approximately 13,000 tons less than Connecticut facilities report receiving. There could be some MSW that is hauled directly out-of-state. The figure reported by Connecticut is likely to be more accurate. Connecticut numbers correlate well with numbers from New York and Rhode Island.

Export Data: Connecticut facilities report sending approximately 5,000 more tons of MSW to Massachusetts facilities than Massachusetts reports disposing of from Connecticut. The difference could result from Connecticut MSW being sent to a Massachusetts transfer station prior to disposal. The disposal facility would then report the waste as Massachusetts MSW. New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. New York estimated the quantity of waste received from Connecticut at a large landfill. Therefore, the lower number reported by Connecticut is likely to be more accurate for MSW.

Capacity Summary of Facilities that Accepted Out-Of-State MSW in 1999

Connecticut has six resource recovery facilities that accepted MSW from out of state in 1999. Combined, these facilities have a permitted design capacity of 7,358 tons per day. Combined these facilities received approximately 2.3 million tons of MSW in 1999, of which approximately 200,000 was from other NEWMOA states.

Recent Changes in Connecticut

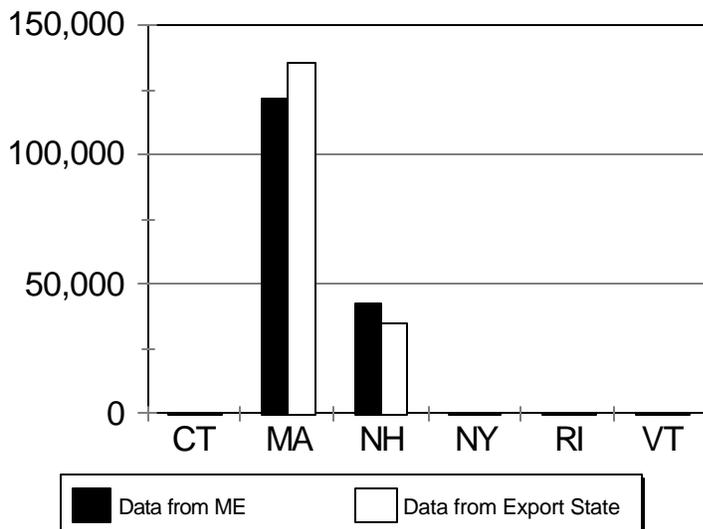
Connecticut's "*Proposed Solid Waste Management Plan: Minimizing Disposal in the 21st Century*" is close to being adopted. It is the first update of Connecticut's Solid Waste Management Plan since 1991 and addresses the management of all solid waste generated in Connecticut through the year 2020, with a focus on the next five to ten years. The plan states that public and private sectors have worked together to develop comprehensive and effective recycling programs and operate safe and controlled resources recovery facilities (RRFs) that successfully manage MSW. In FY99, most of Connecticut MSW requiring disposal was delivered to one of six in-state RRFs. As of 1999, 143 Connecticut municipalities have signed-contracts to deliver their MSW to the RRFs. The challenge now is to maximize the amount of waste reduced at its source, recycled, and composted. This increased commitment makes sense environmentally and is absolutely necessary if Connecticut is to avoid building additional disposal facilities as the population grows.

Many of the states bulky waste landfills have been filled to near capacity. Within a few short years, Connecticut and most states in our region will be facing a crisis in bulky waste management because of severely limited disposal capacity. We must begin immediately to develop processing facilities and markets to enable greater recycling and reuse of bulky waste, including landclearing debris, construction waste, demolition waste, and other special wastes. This will require a strong commitment from regional and private entities. Even with additional recycling and reuse of bulky waste and other types of special waste, Connecticut will need additional disposal capacity for the remaining waste. Therefore the plan calls for the development of lined landfills that can accept bulky and other special wastes.

Maine

Maine disposed of 595,240 tons of municipal solid waste (MSW) generated from in-state sources in 1999: 136,880 tons at landfills and 458,360 tons at waste-to-energy (WTE) facilities. In terms of MSW imports and exports, Maine is a net importer, accepting significantly more waste from out-of-state than it sends to other states. According to Department of Environmental Protection (DEP) records, facilities in Maine imported 164,000 tons of MSW generated from other NEWMOA states: 24,500 tons to landfills and 139,500 tons to WTEs. Maine did not import MSW from a non-NEWMOA state in 1999. A state-by-state breakdown of Maine's imports is shown in the figure below.

1999 MSW Imports
(tons)



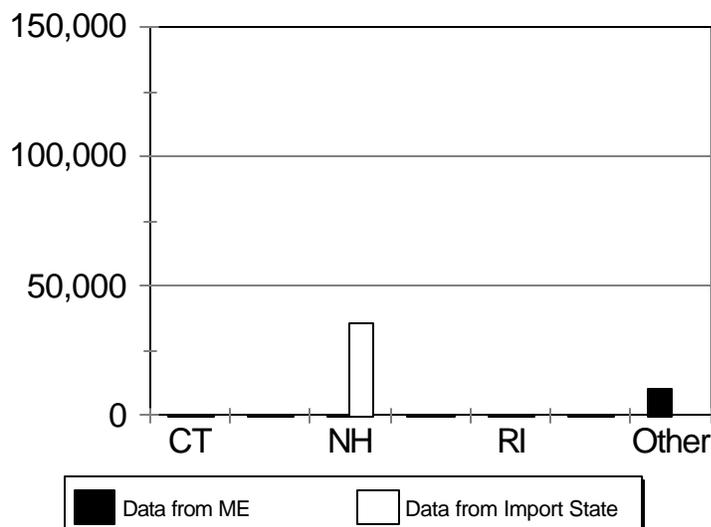
According to available records for 1999 facilities in Maine exported 35,277 tons of MSW to disposal facilities located in NEWMOA states. In addition, 10,300 tons of Maine MSW were exported out of the NEWMOA region (to New Brunswick, Canada). A state-by-state breakdown of Maine's out-of-state exports is shown in the second figure.

Data Collection Summary

Maine's imported waste information is collected from annual reports, review of the facility's license, and phone conversations with the facilities and DEP project managers. Landfills are required to submit an annual report that includes a summary of the type, quantity, and origin of waste received, and estimates of the capacity of the landfill used during the past year as well as the landfill's remaining capacity.

Incinerators are required to submit an annual report that includes a summary of the wastes accepted for incineration, the amounts and destinations of residues and ash generated by the facility, and a demonstration that sufficient disposal capacity is guaranteed for the ash and residues expected to be generated during the next year.

1999 MSW Exports
(tons)



Maine has no system for collecting export numbers. There are no relevant reporting requirements for transporters or transfer stations.

Discussion of Discrepancies

Import Data: Maine facilities report receiving approximately 14,000 tons less MSW than Massachusetts facilities reported sending. Maine facilities report receiving approximately 8,000 tons more MSW than New Hampshire facilities report sending. There could be some MSW that is hauled directly from New Hampshire to Maine. The figure reported by Maine is likely to be more accurate.

Export Data: Maine has no system for collecting MSW export numbers from their transfer stations. However, the DEP does call a landfill in New Brunswick to determine how much Maine MSW was sent during the previous year. The data provided by New Hampshire is the only other export number available and is likely to be accurate. No other state reports receiving MSW from Maine.

Capacity Summary of Facilities that Accepted Out-Of-State MSW in 1999

Maine has one landfill that accepted out-of-state MSW in 1999. The total quantity of waste (MSW and C&D) accepted at that landfill was 181,000 tons with 28,700 tons coming from out-of-state. Maine has two WTE facilities that accepted out-of-state MSW in 1999. Combined, these facilities are licensed to process 2,000 tons per day and processed 525,400 tons of MSW in 1999; 139,500 tons of which was from out-of-state.

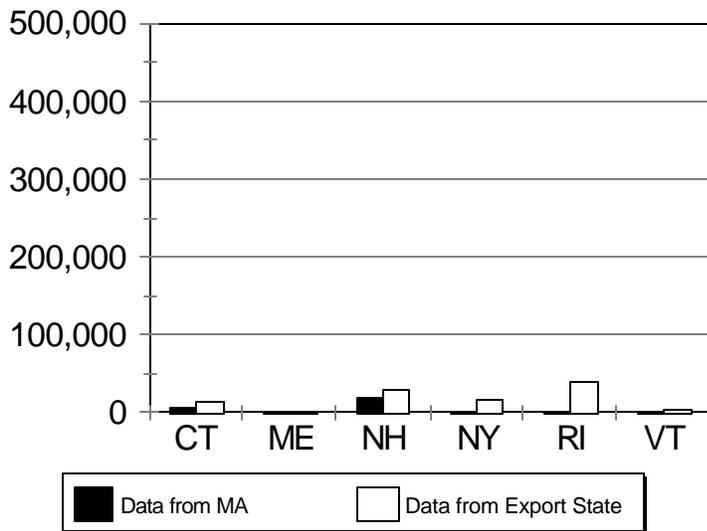
Recent Changes in Maine

There have not been any MSW capacity or policy changes in Maine since the 1999 data.

Massachusetts

Massachusetts disposed of 3,856,000 tons of municipal solid waste (MSW) generated from in-state sources in 1999: 833,000 tons at landfills and 3,023,000 tons at waste-to-energy (WTE) facilities. In terms of MSW imports and exports, Massachusetts is a net exporter, sending significantly more waste out-of-state than it accepts from other states. According to Department of Environmental Protection (DEP) records, facilities in Massachusetts imported 29,000 tons of MSW generated from other NEWMOA states: 8,000 tons to landfills and 21,000 tons to WTEs. Massachusetts did not import MSW from a non-NEWMOA state in 1999. A state-by-state breakdown of Massachusetts' imports is shown in the figure below.

1999 MSW Imports
(tons)

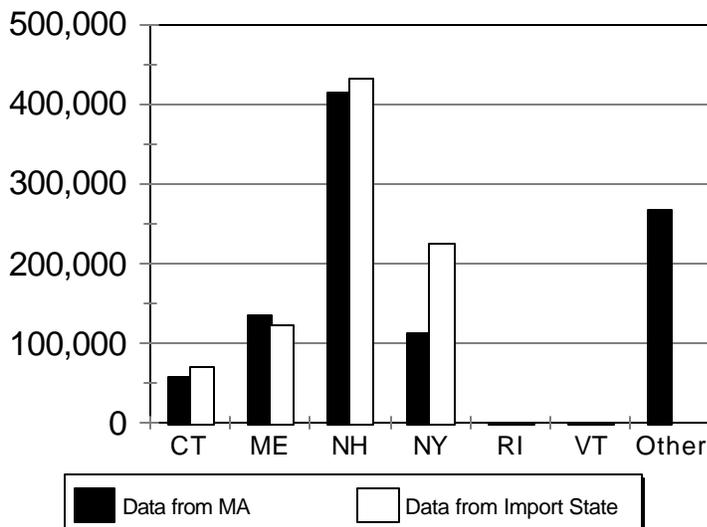


According to DEP records, in 1999 facilities in Massachusetts exported 715,700 tons of MSW to disposal facilities located in NEWMOA states and 269,000 tons of MSW to facilities located in non-NEWMOA states. A state-by-state breakdown of Massachusetts' exports is shown in the second figure.

Data Collection Summary

Massachusetts requires that all landfills, WTEs and transfer stations submit annual report forms to the DEP that include the type, tons, and state-of-origin of all waste accepted. Transfer stations must also report the type, tons, and destination facility name, town and state for all materials leaving the transfer station. Enforcement action is taken for non-reporting and therefore, the response rate from facilities is high. All annual reports are checked by DEP for accuracy, including contacting other states.

1999 MSW Exports
(tons)



Discussion of Discrepancies

Import Data: Connecticut, New Hampshire, New York, Rhode Island and Vermont all report sending Massachusetts more MSW than Massachusetts reports disposing of. The transfer station data is specific about where they send their waste and there is little motivation for a transfer

station to incorrectly report sending waste to an out-of-state facility. Therefore, the higher figures are likely to be more accurate.

Export Data: Connecticut and New Hampshire report receiving more MSW from Massachusetts than facilities in Massachusetts report sending them. There could be some MSW that is hauled directly out-of-state that does not pass through a Massachusetts transfer station. Therefore, the higher numbers reported by Connecticut and New Hampshire are likely to be more accurate. Massachusetts reported sending approximately 14,000 tons more MSW to Maine than facilities in Maine report receiving. The Massachusetts transfer station data is specific about where they send their waste, and therefore, the higher number is likely to be more accurate.

New York reports receiving substantially more waste from Massachusetts than Massachusetts reports exporting to New York. The receiving facility is too distant from the border for direct hauling to cause this discrepancy. New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. The uncertainties inherent in transfer station reporting combined with the significant uncertainties regarding New York's data lead to the conclusion that the quantity of MSW exported by Massachusetts is likely to be somewhere between the numbers that Massachusetts and New York report.

Capacity Summary of Facilities that Accepted Out-Of-State MSW in 1999

Massachusetts has four landfills that accepted out of state MSW in 1999. Combined, the total quantity of waste (MSW and C&D) accepted at the landfills was 577,000 tons with 34,000 tons coming from out-of-state. Massachusetts has three resource recovery facilities that processed out of state MSW in 1999. Combined, these facilities are licensed to process 760,000 tons per year and processed 753,000 tons of MSW (and 6,000 tons of C&D waste) in 1999, 21,000 tons of which was MSW from other NEWMOA states.

Recent Changes in Massachusetts

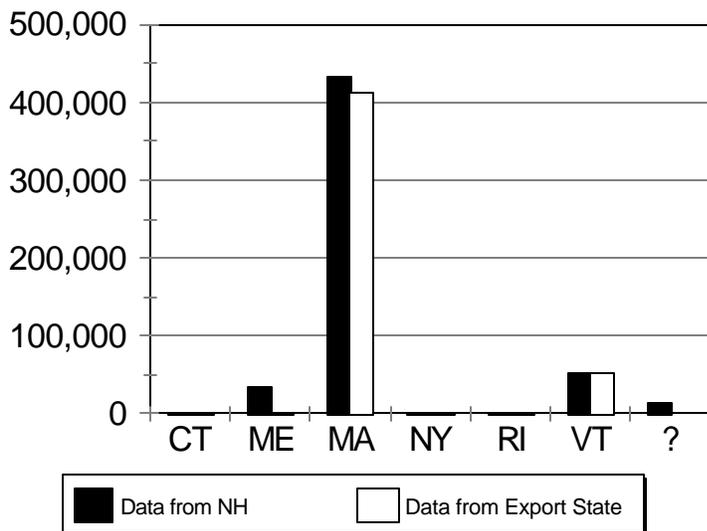
Before the end of 2000, DEP plans to publish the first update to its solid waste master plan since 1997. The *Beyond 2000 Solid Waste Master Plan* will acknowledge a substantial need for additional in-state disposal capacity and that the state will continue to be a net exporter for the foreseeable future. DEP is currently addressing the comments received on the draft plan.

Cathode ray tubes (CRTs) were banned from disposal in Massachusetts on April 1, 2000. The 92 municipalities that are using DEP's CRT grant program diverted approximately 40,000 televisions and computers from disposal and either repaired, resold, or recycled them for their parts (e.g. plastic, metals, glass). The electronic waste is being handled by a combination of DEP's two CRT recycling vendors (Superior Special Services and Electronicycle) and their charity partners (Goodwills and Salvation Armies in selected cities). In addition to the municipal tonnage, the CRT ban has prompted significant recycling of CRTs from the commercial sector. DEP's cutting edge position on CRTs is garnering national attention from state governments, legislators, non-profits and charities that are dealing with a glut of obsolete computers piling up in households and businesses. Some experts estimate that by 2002, more than 50 million computers will become obsolete annually. Working together, DEP and the municipalities and residents of the Commonwealth are making impressive strides towards safe and responsible management of electronic waste.

New Hampshire

New Hampshire disposed of 959,200 tons of municipal solid waste (MSW) generated from in-state sources in 1999: 734,400 tons at landfills and 224,800 tons at waste-to-energy (WTE) facilities. In terms of MSW imports versus exports, New Hampshire is a net importer, accepting significantly more waste from out-of-state than it sends to other states. According to Department of Environmental Services (DES) records, in 1999 facilities in New Hampshire imported 538,700 tons of MSW generated from other NEWMOA states: 508,600 at landfills and 30,100 at WTEs. New Hampshire did not import MSW from a non-NEWMOA state in 1999. A state-by-state breakdown of New Hampshire's imports is shown in the figure below.

1999 MSW Imports
(tons)

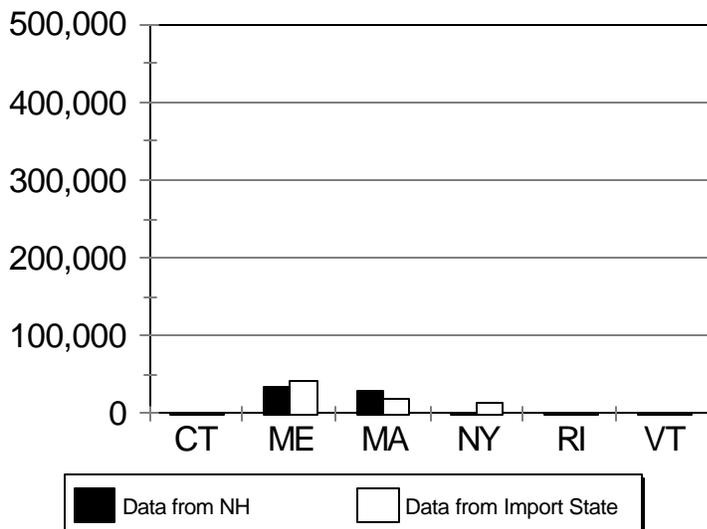


According to DES records, in 1999 facilities in New Hampshire exported 64,000 tons of MSW to disposal facilities located in NEWMOA states. New Hampshire did not export MSW to a non-NEWMOA state in 1999. A state-by-state breakdown of New Hampshire's exports to NEWMOA states is shown in the second figure.

Data Collection Summary

The DES uses multiple sources of information to arrive at waste generation figures and to track the flow of incoming wastes. Of primary importance is the Annual Facility Report, which is required of all solid waste facilities, including collection and storage facilities. The report details waste generation, the markets and tonnages for recycling, level of composting, the tonnages of imports and the amounts and destination of exports. Once the report is received by DES and verified for accuracy by staff, the information is entered into a database. The final numbers are compared for accuracy to the disposal amounts reported by in-state disposal facility figures, and the numbers from the disposal facilities are also compared to the data obtained from other states. Disposal facilities are also required to submit quarterly tonnage reports, which allows for real time

1999 MSW Exports
(tons)



estimates of imports and capacity. There is no tracking or permitting of solid waste haulers within New Hampshire.

Discussion of Discrepancies

Import Data: Maine has no system for collecting MSW export numbers from their transfer stations. Therefore, the data provided by New Hampshire is the only number available and is likely to be accurate. Facilities in New Hampshire reported receiving approximately 19,000 tons of MSW more than facilities in Massachusetts report sending. There could be some MSW that is hauled directly to New Hampshire facilities and therefore, the higher number is likely to be more accurate. New Hampshire and Vermont numbers correlate well, in part because Vermont generates its numbers using import data from New Hampshire's facilities. New Hampshire's largest disposal facility itemizes by hauler, not by state. In most cases, DES is knowledgeable about service routes and can determine state of origin. However, there is approximately 6,000 tons of MSW that DES is unable to attribute to a specific state.

Export Data: Facilities in New Hampshire report sending approximately 8,000 tons less MSW than facilities in Maine report receiving from New Hampshire. There could be some MSW that is hauled directly from New Hampshire to Maine. The figure reported by Maine is likely to be more accurate. Facilities in New Hampshire report sending approximately 10,000 more tons of MSW to Massachusetts than facilities in Massachusetts report disposing of from New Hampshire. The difference could result from New Hampshire MSW being sent to a Massachusetts transfer station prior to disposal. The disposal facility would then report the waste as Massachusetts MSW. New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. New York estimated the quantity of waste received from New Hampshire at a large landfill. Therefore, the small amount reported by New Hampshire is likely to be more accurate.

Capacity Summary of Facilities that Accepted Out-Of-State MSW in 1999

New Hampshire has four landfills that accepted MSW from out of state in 1999. Combined, the total quantity of waste (MSW and C&D) accepted at the landfills was 1.3 million tons with 530,000 tons coming from other NEWMOA states. New Hampshire has two waste to energy facilities that processed out of state MSW in 1999. Combined, these facilities are licensed to process 700 tons per day and processed 247,000 tons of MSW in 1999; 30,000 tons of which was from other NEWMOA states.

Recent Changes in New Hampshire

Over the last two years, there has been concern generated over the amount of imports accepted by New Hampshire disposal sites, primarily from Massachusetts' sources. The State's largest landfill, the Turnkey Facility in Rochester, is a regional facility, which is expected to operate until 2010 under the current cell. This is the result of a permit modification that was placed upon Turnkey's permit in 1999. Essentially, the modification provides a schedule for volume reductions over the next ten years such that the facility can meet its predicted life span for serving New Hampshire contracts. To meet its commitments, Turnkey is reducing the overall volume of waste accepted and increasing the percentage of New Hampshire trash accepted at the facility. As a result, New Hampshire exports will be reduced as those wastes are diverted to the Turnkey facility. Accurate information from neighboring states will be critical to confirming these reductions over the next several years. In

1999, the facility reduced imports of MSW by 200,000 tons and a further reduction of 200,000 tons is predicted for 2000.

The State has pursued legislative options to increase recycling and to address the infrastructure of solid waste management within communities. In 1999, a surcharge on MSW tonnage to be applied on disposal facilities was pursued in the legislature, as were bills addressing disposal bans of recyclables and advanced disposal fees for certain waste streams. To date, the bills have not been successful, although there is support for future disposal ban legislation.

New Hampshire currently has a Governor's Solid Waste Task force in place to provide recommendations on issues of capacity, consolidation and pricing, and it is expected that a report will be issued in the fall of 2000. There is also a solid waste management plan being drafted, which will likely be released in the spring for public comment. The waste management plan will provide specific recommendations for increasing the level of recycling, preserving and increasing capacity, and for addressing the toxicity of the waste stream.

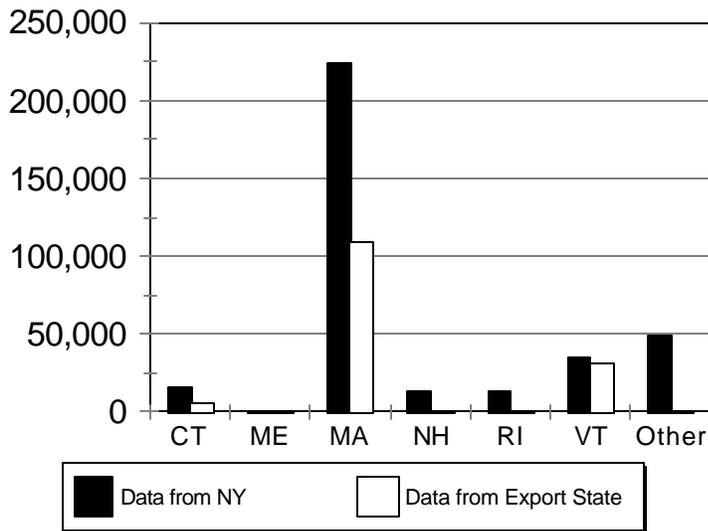
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New York

New York disposed of 13.8 million tons of municipal solid waste (MSW) generated from in-state sources in 1998: 10.1 million tons at landfills and 3.7 million tons at waste-to-energy (WTE) facilities. In terms of MSW imports versus exports, New York is a net exporter, sending more waste out-of-state than it accepts from other states. However, when only the NEWMOA states are considered, New York is a net importer, accepting more waste from the NEWMOA states than it sends to NEWMOA states. According to Department of Environmental Conservation (DEC) records, in 1999 facilities in New York imported 339,120 tons of MSW

generated from other states: 290,000 tons from NEWMOA states and 49,000 tons from non-NEWMOA states. A state-by-state breakdown of New York's imports is shown in the figure below.

1999 MSW Imports
(tons)

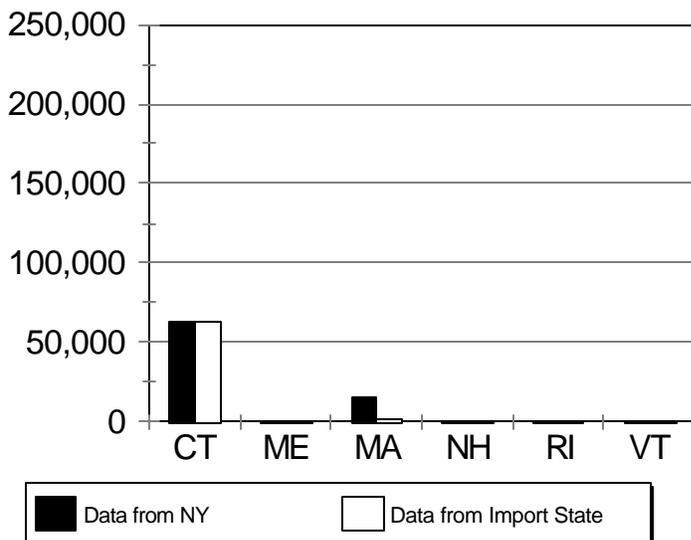


According to DEC records, in 1999 facilities in New York exported 77,000 tons of MSW to disposal facilities located in NEWMOA states and 5.7 million tons to facilities located in non-NEWMOA states. A state-by-state breakdown of New York's exports to NEWMOA states is shown in the second figure.

Data Collection Summary

New York State's import/export waste quantities are obtained from solid waste management facility annual reports submitted to the DEC. New York State's 6 NYCRR Part 360 Regulations require each facility to submit annual reports on forms acceptable to or provided by the Department. Items such as total waste quantity by type, remaining site life/capacity, groundwater/leachate quality, amount of leachate collected, operational changes, and tipping fees are required by regulation. Each facility is requested to identify the facility's service area indicating county, state, and tons; and to identify the transfer or disposal destination indicating transfer/disposal facility, county, state, and tons. In the case of WTE facilities, their

1999 MSW Exports to NEWMOA States*
(tons)



* Note: in 1999, New York exported approximately 5.7 million tons of MSW to non-NEWMOA states

preexisting annual report form was updated this year to request service area. Consequently, most WTEs did not report service area in 1999.

Discussion of Discrepancies

Import Data: New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. Another possible issue with New York's import data is that both Massachusetts and Vermont have transfer stations that report that they sent MSW to disposal facilities in New York that did not report accepting out-of-state waste. Finally, New York updated the 1999 WTE report form; however, facilities did not have enough lead time to modify their data collection methods in time for 1999 reporting. Data should be more reliable beginning with the 2000 annual reports. One facility did provide this information for 1999. However, additional facilities could also have imported waste in 1999 that was not included in New York's import number.

New York estimated the quantity of waste received from Connecticut, New Hampshire, Rhode Island, and Vermont at a large landfill. The MSW amounts reported by facilities in these states are likely to be more accurate. New York reports receiving substantially more waste from Massachusetts than Massachusetts reports exporting to New York. The receiving facility is too distant from the border for direct hauling to cause this discrepancy. The uncertainties inherent in transfer station reporting combined with the uncertainties regarding New York's data lead to the conclusion that the quantity of MSW exported by Massachusetts is likely to be somewhere between the numbers that Massachusetts and New York report. A significant portion of the waste volume could be industrial solid waste shipped directly from the generating facility in Massachusetts to the landfill.

Export Data: Connecticut and New York numbers correlate well. Facilities in New York report sending Massachusetts more MSW than facilities in Massachusetts report disposing of. The difference could result from New York MSW being sent to a Massachusetts transfer station prior to disposal. The disposal facility would then report the waste as Massachusetts MSW.

Capacity Summary of Facilities that Accepted Out-Of-State MSW in 1999

New York reported five landfills that accepted MSW from out of state in 1999. Combined, the total quantity of waste (MSW and C&D) accepted at the landfills was 2.6 million tons with 288,000 tons coming from the NEWMOA states. New York reported one waste to energy facility that accepted MSW from out of state. The facility is permitted to process 766,000 tons per year and received 755,000 tons in 1999 (with 2,000 tons from other NEWMOA states).

Recent Changes in New York

Two events have occurred in New York State since the 1999 data. The first is that the Fresh Kills Landfill is scheduled to close by December 31, 2001. Fresh Kills currently receives approximately 6,000 tons per day. The second is that New York State's 1999 Waste-To-Energy Annual Report Forms were updated to include service area and disposal destination data. DEC expects this modification to improve the state's ability to track solid waste imports and exports.

Rhode Island

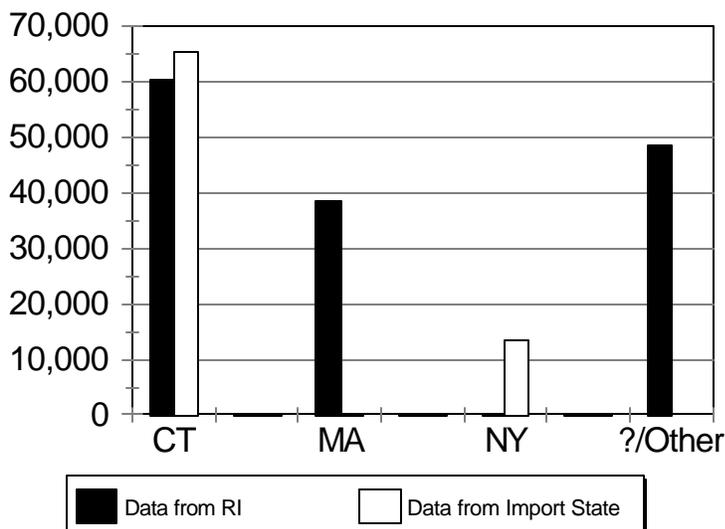
Rhode Island disposed of 1,000,879 Tons of municipal solid waste (MSW) generated from in-state sources in 1999, all at landfills. In terms of MSW imports and exports, Rhode Island is a net exporter. Officially, facilities in Rhode Island do not accept MSW from out-of-state. However, facilities in some states do report sending some small amounts of MSW to Rhode Island (413 tons from Connecticut and 708 tons from New York). According to Department of Environmental Management (DEM) records, Rhode Island transfer stations exported 146,950 tons of MSW in 1999: 98,610 tons to NEWMOA states, 11,760 tons to a non-NEWMOA state, and 36,580 tons to an unknown location(s). A state-by-state breakdown of Rhode Island's

imports and exports is shown in the two figures.

1999 MSW Imports
(tons)



1999 MSW Exports
(tons)



Data Collection Summary

1999 was the first year that Rhode Island attempted to obtain facility reports from solid waste management facilities. In December 1999 the DEM Office of Waste Management sent a questionnaire to all the solid waste management facilities in Rhode Island asking for their input on a survey that they would be asked to complete regarding management of solid waste at their respective facility. Based on the response, the survey was revised and sent to the facilities in January 2000. As of August 2000, all facilities provided the requested information. This report was generated based on the information provided by the facilities. An access database has been designed to enter the data from the annual reports and is currently undergoing revision for use in future reporting and data analysis.

Discussion of Discrepancies

Import Data: as discussed above, officially Rhode Island landfills do not accept out-of-state waste and therefore, do not report any imports. However, facilities in two states reported sending small quantities of MSW to Rhode Island

facilities. These quantities are likely to be correct as there is little motivation for incorrect reporting from these transfer facilities.

Export Data: Rhode Island and Connecticut data correlates well. Rhode Island facilities report sending MSW to Massachusetts although Massachusetts facilities do not report accepting any MSW from Rhode Island. However, Rhode Island's transfer station data is specific about where they send their waste and there is little motivation for a transfer station to incorrectly report sending waste to an out-of-state facility. Therefore, the Rhode Island figure is likely to be accurate.

New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. New York estimated the quantity of waste received from Rhode Island at a large landfill. Therefore, it is likely that Rhode Island did send significantly less MSW, if any to New York. Rhode Island facilities do report sending over 36,000 tons of MSW out of Rhode Island to an unknown location(s). Some of this waste could have gone to New York. However, it is likely that the MSW was sent to one or a combination of the states that did accept relatively large quantities of Rhode Island MSW in 1999: Connecticut, Massachusetts, or Pennsylvania.

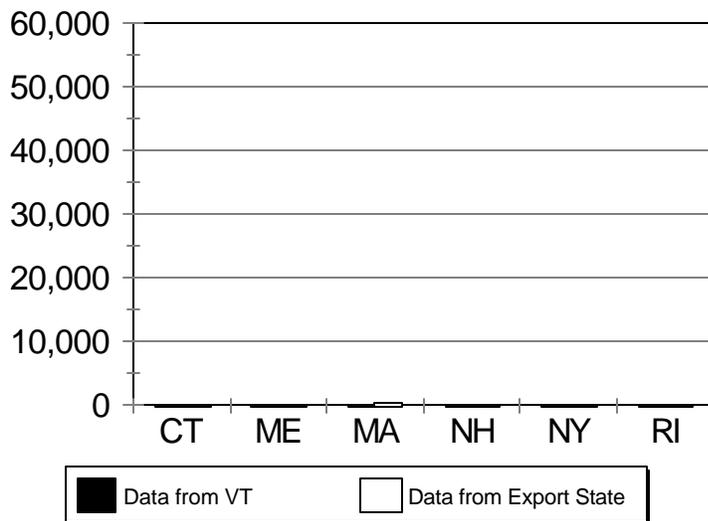
Recent Changes in Rhode Island

The main change in Rhode Island since the 1999 data is that the legislation prohibiting the disposal of out-of-state waste at the Central Landfill was revised to be as clear and restrictive as possible.

Vermont

Vermont disposed of 275,900 tons of municipal solid waste (MSW) generated from in-state sources in 1999, all at landfills. Vermont does not have any waste-to-energy facilities (WTEs) in operation. In terms of MSW imports versus exports, Vermont is a net exporter, sending more waste out-of-state than it accepts from other states. According to Department of Environmental Conservation (DEC) records, facilities in Vermont did not import MSW in 1999. However, some states report sending very small amounts of MSW to Vermont facilities (489 tons from Massachusetts and 81 tons from New York).

**1999 MSW Imports
(tons)**

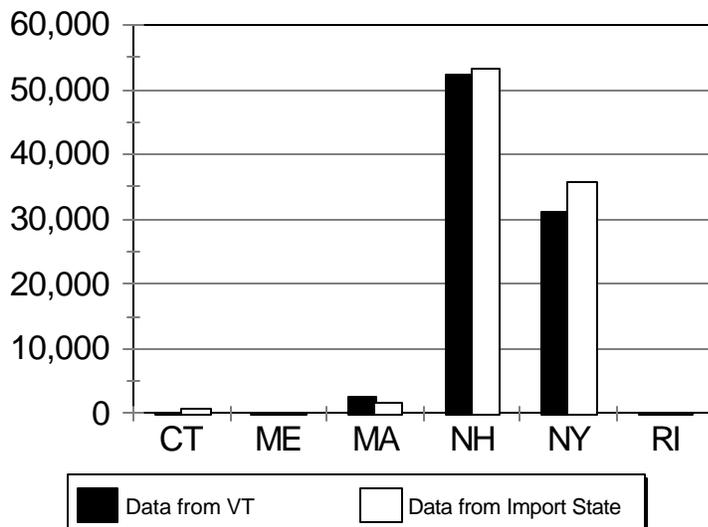


According to DEC records, in 1999 facilities in Vermont exported 88,350 tons of MSW to disposal facilities located in NEWMOA states. Approximately 32 percent of this exported MSW was incinerated at a New Hampshire facility that is under contract with a solid waste management district that consists of both Vermont and New Hampshire municipalities. Vermont did not export MSW to a non-NEWMOA state in 1999. A state-by-state breakdown of Vermont's exports to NEWMOA states is shown in the second figure.

Data Collection Summary

Vermont's import/export waste quantities are obtained from solid waste facility quarterly reports submitted to the DEC. The facilities identify whether waste was transferred out-of-state, however the exact amount and specific destinations were not required in 1999 reports. The reports are fairly accurate in terms of the total tonnage because weight records (using scales) are required for payment of a state franchise tax on all solid waste incinerated or disposed. Vermont also relies upon facility reports from transfer stations, incinerators and landfills in other states in order to obtain more accurate data for Vermont solid waste exported for incineration or disposal.

**1999 MSW Exports
(tons)**



Discussion of Discrepancies

Facilities in Vermont report sending more MSW to Massachusetts than facilities in Massachusetts report disposing. The difference could result from a Massachusetts landfill not recording the waste as originating in Vermont. Vermont and New Hampshire numbers correlate well. New York's service area and disposal destination data combine all waste types and therefore, New York's import numbers could include industrial, C&D, and/or other non-MSW wastes. New York estimated the quantity of waste received from Vermont at a large landfill. Therefore, the MSW amount reported by Vermont is likely to be more accurate.

Recent Changes in Vermont

Vermont revised the facility report form for the 2000 reporting year. Changes made to Vermont's reporting forms in 2000 are designed to provide more specific information about solid waste imports and exports. The review of reports from facilities located in other states will continue to be critical to obtaining accurate data for annual reports.

Several Vermont disposal facilities have recently requested increases to their disposal volumes. DEC anticipates that more Vermont MSW will stay in Vermont due to tonnage limits imposed at out-of-state landfills.

Recommendations

NEWMOA's Solid Waste Interstate Flow Measurement Workgroup recommends that the information sharing and report preparation effort that was undertaken for 1999 data occur on an annual basis to provide a forum for the states to: reconcile data; monitor trends in waste flow; and discuss new or anticipated developments that could impact solid waste interstate flow in the Northeast. NEWMOA should coordinate this annual effort and produce the report. The NEWMOA workgroup offers the following specific recommendations for additional efforts to share information and improve data quality and comparability:

- The NEWMOA states should undertake a similar data collection and information sharing effort for the year 2000 data. States would benefit greatly from a comparison of 1999 and 2000 data to detect changes in waste flows, including the effects of the reductions in disposal at New Hampshire's Turnkey and New York's Fresh Kills landfills, as well as the recent improvements in New York's and Vermont's facility report forms.
- States that do not currently obtain data from disposal facilities in a format that identifies the quantity of *each type of waste*² imported from each state should evaluate the feasibility of revising the facility report forms to gather this data. In order to be most useful to data validation and correlation efforts, states should also evaluate the feasibility of obtaining data from disposal facilities that identifies the out-of-state facility from which each type of waste was imported. The NEWMOA workgroup could serve as a forum for states to share information about their experiences with reporting forms and to provide insight on any proposed changes.
- The NEWMOA workgroup should serve as a forum to discuss the complex issues associated with transfer stations that were identified in this report, such as the impact of transfer station data on the accuracy of data obtained from disposal facilities, and on overall import and export data. The NEWMOA workgroup could develop recommendations for changes states could make to obtain useful, reliable data from transfer stations, if necessary.
- In order to facilitate interstate evaluation and comparison of data, states should evaluate the feasibility of using common definitions of MSW and C&D wastes. The NEWMOA workgroup could serve as a forum for states to discuss this issue.
- NEWMOA should examine the 1999 C&D waste data provided by the states and engage the NEWMOA workgroup to refine the information; identify data gaps; and develop recommendations for additional efforts. NEWMOA should generate a report similar to this one that focuses on C&D waste flows in the Northeast.

²

Including, but not limited to: MSW, C&D waste, MSW incinerator ash, and industrial solid waste.

Appendix A

DATA TABLES

Municipal Solid Waste
1999 Data (na = not applicable nc = not collected)

MSW Imported by Landfills (tons)

(Information from Receiving Landfills)

		Importing State							Export Total
		CT	ME	MA	NH	NY	RI	VT	
Exporting State	CT	na	0	5,911	0	15,464	0	0	21,375
	ME	0	na	0	35,277	0	0	0	35,277
	MA	0	23,969	na	431,092	221,701	0	0	676,762
	NH	0	519	1,755	na	13,346	0	0	15,620
	NY	0	0	0	138	na	0	0	138
	RI	0	0	0	0	13,346	na	0	13,346
	VT	0	0	7	24,664	35,671	0	na	60,342
	other*				13,786	49,116			
Import Total		0	24,488	7,673	504,957	348,644	0	0	

* for NH, origin unknown

MSW Imported by Incinerators (tons)

(Information from Receiving Incinerators)

		Importing State							Export Total
		CT	ME	MA	NH	NY	RI	VT	
Exporting State	CT	na	0	921	0	0	0	0	921
	ME	0	na	0	0	0	0	0	0
	MA	69,974	97,665	na	1,610	2,323	0	0	171,572
	NH	0	41,844	17,611	na	0	0	0	59,455
	NY	63,316	0	1,059	0	na	0	0	64,375
	RI	65,237	0	0	0	0	na	0	65,237
	VT	641	0	1,513	28,463	0	0	na	30,617
	Import Total		199,168	139,509	21,104	30,073	2,323	0	0

MSW Imported by Transfer Stations (tons)

(Information from Importing Transfer Stations)

		Importing State							Export Total
		CT	ME	MA	NH	NY	RI	VT	
Exporting State	CT	na	nc	0	0	15,974	0	0	15,974
	ME	0	na	0	0	0	0	0	0
	MA	21	nc	na	6,803	46,880	0	0	53,704
	NH	0	nc	0	na	0	0	0	0
	NY	40,653	nc	635	0	na	0	0	41,288
	RI	0	nc	0	0	0	na	0	0
	VT	0	nc	0	1,809	0	0	na	1,809
	Import Total		40,674	0	635	8,612	62,854	0	0

MSW Exported by Transfer Stations (tons)

(Information from Exporting Transfer Stations)

		Importing State							Other*	Export Total
		CT	ME	MA	NH	NY	RI	VT		
Exporting State	CT	na	0	13,268	0	5,326	428	0	247,210	266,232
	ME	nc	na	nc	nc	nc	nc	nc	10,294	10,294
	MA	56,885	135,434	na	413,696	109,544	0	489	268,510	984,558
	NH	0	34,536	29,597	na	0	0	0		64,133
	NY	63,048	0	15,783	0	na	708	81	5,741,200	5,820,820
	RI	60,220	0	38,389	0	0	na	0	48,339	146,948
	VT	0	0	2,638	52,360	30,968	0	na		85,966
	Import Total		180,153	169,970	99,675	466,056	145,838	1,136	570	

* for RI, destination unknown for 36,580 tons

Appendix B

Facility Reporting Forms*

*Facility Reporting Forms are not included in the PDF version of this Report. Please contact individual states to obtain their facility reporting forms.