Interstate Flow of Construction & Demolition Waste Among the NEWMOA States in 2002

January 20, 2005

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 Jersey, 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 develop and sustain an effective partnership of states to explore, develop, promote, and implement environmentally sound solutions for the reduction and management of materials and waste, and for the remediation of contaminated sites, in order to achieve a clean and healthy environment." 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 the US EPA, and
- support the efficient sharing of state and federal program resources to help avoid duplication of effort and to facilitate development of regional approaches to solving critical environmental problems in the region.

Acknowledgments

NEWMOA would like to thank the members of the C&D Workgroup for their invaluable assistance with this project and report:

Judy Belaval and Frank Gagliardo, Connecticut Department of Environmental Protection
Randy McMullin and Susan Alderson, Maine Department of Environmental Protection
Brian Holdridge and Jim McQuade, Massachusetts Department of Environmental Protection
Pierce Rigrod and Donald Maurer, New Hampshire Department of Environmental Services
Bruce Witkowski and Ray Worob, New Jersey Department of Environmental Protection
Ian Beilby and Scott Menrath, New York State Department of Environmental Conservation
Walid Ali, Dan Russell, and Bob Schmidt, Rhode Island Dept. of Environmental Management
Buzz Surwilo, Vermont Department of Environmental Conservation

Introduction

This report focuses on the management of construction and demolition (C&D) waste in the NEWMOA states. C&D waste was determined by the NEWMOA Board of Directors to be a priority issue for the states to focus on as a region. Historically, much of the C&D waste was deposited directly in a landfill, either one handling municipal solid waste, or one specially designated for C&D material. However, available landfill space is becoming increasingly limited in most of the NEWMOA states and public opposition has severely limited the siting of new landfills. This diminishing landfill capacity, and the increasing cost of landfill disposal have lead to increased emphasis on the processing of C&D material to both reduce its volume for transport and disposal, and in preparation for use in a new application. This report seeks to determine the quantity of C&D waste that is disposed of in each NEWMOA state and the quantity that is processed in each state, and to characterize the interstate flow of the material. States can use this report to identify areas where regulatory or reporting changes might be beneficial and to inform the policy making process.

C&D material consists of materials such as wood, brick, concrete, glass, metal, drywall, and asphalt shingles generated during the construction, remodeling, or demolition of structures. Generally, interior finishing items such as carpets and furniture are not included as C&D waste. The definition of C&D material in each of the NEWMOA states is listed in Table 1. Overall the definitions are similar, with the exception of Connecticut which does not have a definition of C&D. In Connecticut, construction debris, with the exception of landclearing debris, is considered municipal solid waste and demolition debris is considered a bulky waste. In practice, construction debris is often recorded as a bulky waste in Connecticut, and therefore, numbers across states should be comparable.

In a 1997 EPA study, *Characterization of Building-Related Construction and Demolition Debris in the United States*, Franklin Associates estimated that 43 percent of C&D waste is generated from residential projects (5 percent from new construction, 23 percent from renovation, and 15 percent from demolition) and 57 percent is generated from non-residential projects (3 percent new construction, 21 percent renovation, and 33 percent demolition). Road and bridge projects, and landclearing debris were not included in the above figures. Based on a relatively small number of projects, the primary components of the waste stream and their apparent percentages of the total are shown in Table 2.

Table 1: State Definitions of Construction and Demolition Waste

	Connecticut	Maine	Massachusetts	New Hampshire	New Jersey	New York	Rhode Island	Vermont
Definitions of Bulky Waste and/or C&D Waste	**C&D waste:** CT does not have a definition. In the regulations, construction debris is part of MSW, but it is often categorized as bulky waste when disposed. **Bulky waste**: land-clearing debris and waste resulting directly from demolition activities (other than clean fill), including carpeting and insulation – in practice, could include construction waste and furniture. Clean fill is exempt: natural soil or rock, brick, ceramics, concrete and asphalt paving fragments that are virtually inert.	**C&D waste**: solid waste from construction, remodeling, repair or demolition of structures (includes furniture). Excludes: glues, tars, solvents, resins, paints, caulking compounds, friable asbestos and other special wastes.	**Bulky waste**: items of unusually large size, including furniture, rolls of fencing, carpets, mattresses **C&D waste:** resulting from construction, remodeling, repair or demolition of buildings, pavements, roads or other structures. Does not include landclearing debris.	**Bulky waste**: large items that cannot be handled by traditional solid waste methods such as: appliances, furniture, large auto parts, tires, tree stumps (when not buried on-site) **C&D waste**: non-putrescible waste building materials and rubble resulting from construction, remodeling, repair or demolition of structures or roads. Excludes: asbestos waste, garbage, corrugated container board, electrical fixtures containing haz materials, furniture, appliances, tires, drums, containers and fuel tanks.	**C&D waste**: building material and rubble resulting from construction, remodeling, repair, and demolition operations. Includes landclearing debris, treated and untreated wood scrap, concrete, asphalt, brick and block, plaster wallboard and roofing material, and items such as dirt, corrugated cardboard, plastic scrap, non-asbestos insulation, carpets and padding. **Bulky waste**: Large items of waste material including discarded vehicles/parts and tires.	**C&D debris**: uncontaminated solid waste resulting from construction, remodeling, repair and demolition of utilities, structures and roads, and from land-clearing. Does not include: asbestos waste, garbage, corrugated container board, electrical fixtures containing haz. liquids, fluorescent lights, carpeting, furniture, appliances, tire, drums, containers greater than 10 gallons, containers with more than 1 inch residue, and fuel tanks. Excluded: waste that has been processed so the individual components are unrecognizable, unless generated at a department-approved facility	**C&D waste**: non-haz. waste resulting from construction, remodeling, repair, and demolition of utilities and structures, and from landclearing. Does not include: asbestos waste, garbage, corrugated container board, electrical fixtures containing haz. liquids, fluorescent lights, carpeting, furniture, appliances, tire, drums, containers greater than 10 gallons, containers with more than 1 inch residue, and fuel tanks. Excluded: waste that has been processed so the individual components are unrecognizable.	**Bulky waste**: included in "other" category **C&D waste**: waste derived from construction or demolition of buildings, roadways or structures. Includes furniture and mattresses. Does not include: asbestos waste, regulated haz waste, household haz waste, haz waste from CEGs, or any material banned from landfill disposal

Table 2: Composition of C&D Waste (in percent)*

	Residential Construction	Residential Remodeling	Residential Demolition	Non-residential Demolition
Wood	42 percent	45 percent	42 percent	16 percent
Drywall	27	21	-	-
Brick	6	-	-	1
Roofing	6	28	-	1
Concrete			24	66
Plastics	2	-	-	-
Metals	2	1	2	5
Miscellaneous**	15	6	32	11

* Note: Figures for non-residential construction and remodeling were not provided.
** For construction projects includes items such as dirt, sweepings, aggregate, and refuse.

Material Not Covered

Landclearing debris such as tree limbs, brush and stumps are considered C&D debris in some states and not in others. This report does not cover landclearing debris such as brush and trees that are not processed at a C&D processing facility that handles other C&D materials as well. For the most part, landclearing debris is free of chemical contamination and can be chipped for landscaping mulch or composted. For this reason, separate facilities typically handle C&D and landclearing material. Generally, facilities that accept landclearing debris do not accept other C&D materials. In fact, the state of Maine prohibits processors of clean wood waste from accepting other wood wastes such as painted wood, treated wood, and chipboard.

Another material group that is considered part of the C&D waste stream in some states, but not others is "inert" material such as asphalt, brick and concrete (ABC). This report also does not include ABC debris unless it is generated at a facility that processes other C&D materials. The quantity of material generated by road and bridge projects often dwarfs the quantity generated from other sources. In addition, material from road projects is generally effectively recycled into aggregate for road base or an input into new asphalt or concrete. Processing of ABC from road and bridge projects often occurs at the job site or at facilities that specialize in that sector. Facilities that process ABC from road and bridge projects typically do not accept other C&D materials or ABC generated from other sources.

Discussion of Report Data Quality

This report contains data obtained from the states regarding the disposal of C&D waste and the processing of C&D waste. There are several issues that affect the quality of the data contained in this report and are discussed below:

- Landfill Data: Generally, all states collect data from landfills that dispose of C&D material. However, in many cases, the data is not reported in a format that provides useful information about the origin of out-of-state waste. For example, in several states all material received from out-of-state is reported together as one number with no breakdown of state-specific quantities. In some cases the origin states are noted, but quantities are not linked to each of them.

- C&D Processing Data: Some states do not collect information from C&D processing facilities, and most of those that do, do not collect it in format that permits identification of its source. The destination of the material after it is processed is also not documented in some states to indicate the specific quantity of each output material and its destination state.

- Waste-to-Energy and Biomass Boiler Data: Some states allow the burning of C&D wastes (mainly wood waste) at municipal solid waste WTEs and/or biomass boilers. Biomass boilers are boilers at industrial facilities such as paper mills and electricity generating plants that burn wood waste. As with the other C&D management methods, the state of origin is rarely linked to the quantity of material accepted from that state. Only one NEWMOA state, Maine reports that biomass boilers currently accept C&D waste, and their reporting requirements do not require that the state of origin of the material is differentiated. In addition, the C&D waste is typically processed first, and therefore, the state where the material was generated is often lost by the time the material is received at the boiler.

- Alternative Daily Cover (ADC): C&D waste, particularly the fines generated by processing activities are often used as alternative daily cover at landfills. Most states consider this a diversion or beneficial reuse of a waste material. However, because not all states have good data on C&D fines used as ADC, and because the material does end up in the landfill disposal environment, the available data is included in the quantity disposed figures. However, when data was provided about C&D fines used as ADC, this use and the quantity are indicated.

- Direct Haul: Given the close proximity of the NEWMOA states, there is likely to be a significant quantity of C&D waste that is hauled directly from a project site in one state to a processor or disposal facility in another state. However, the state of origin would have no record of this waste, its quantity, or its destination. Due to the lack of good data on the origin of waste accepted from out-of-state at landfills, and especially processing facilities, much of the material that is hauled directly out-of-state is not well recorded.

- C&D Wastes Not Required to Report: Several states exempt facilities that process or dispose of certain C&D materials from reporting requirements. In addition, all states allow the on-site burial of inert materials, such as concrete. Therefore, a portion of C&D wastes generated in a state might never enter facilities that provide data to the state. Subsequently, quantities discussed in this report are likely to be substantially less than the actual quantity generated.

Due to the various factors discussed above, it is difficult to characterize the interstate flow of material. The data contained in this report is that reported to the NEWMOA states by the disposal and processing facilities. Where possible, the source state for C&D disposed and processed, and the destination state for C&D processed are identified in this report. C&D disposal and processing data are presented separately, although in many cases much of the C&D that is processed ends up disposed. However, it is virtually impossible to ascertain the state of origin of the material that is disposed after it passes through a processing facility. Likewise,

C&D processors might report that a quantity of material was sent for disposal, but it often does not indicate where. Therefore, in an effort to avoid double-counting material it was determined that the information should be kept separate in the tables and graphs throughout the report. The reporting requirements for facilities that dispose and process C&D are discussed in each state-specific section.

Report Structure

The report begins with a section that provides a summary of the available data on the interstate flow of C&D in the region in 2002, along with a comparison of the data from 2001. As discussed in the previous section, the data is limited. Then the report contains a section for each state that describes the import and export information for that state. Each of the state-specific sections that follow contains some summary information about the states' C&D disposal in 2002, including bar graphs illustrating the disposition of C&D waste generated by the state (includes export data) and the origin of the material disposed of in the state (includes import data), along with comparisons to the 2001 data. Summary information on C&D processing is also included for those states with available information. In most states, a substantial quantity of material from C&D processing facilities is sent for disposal and therefore, separate graphs are included to show the quantity disposed and the quantity diverted for reuse. In several states, the use of processed C&D material at landfills for alternative daily cover (ADC) and/or grading material is considered a form of diversion. However, in this report, all material that ends up in the landfill environment is reported in the disposal graphs.

This project focused on the NEWMOA states and therefore, exports to non-NEWMOA states are aggregated into the "non-NEWMOA states" category. In addition, as discussed above, in many states exports are reported as simply going "out-of-state" and therefore the destination(s) is unknown. This data is reported in the "unknown" category. In some cases, the origin(s) and/or destination(s) of material are not reported at all, and therefore, it could be in-state or out-of-state. This material is also reported in the "unknown" category. More detail on the data shown in the figures is provided in the data tables contained in Appendix A.

Region-Wide Summary

As discussed in the Introduction section, data on C&D waste generation, processing and disposal is generally of poor quality in the NEWMOA region. The following three figures summarize the available information. Figure 1 shows the quantity of C&D waste generated by each state that is disposed, including the general destination of the material (in-state, NEWMOA state, non-NEWMOA state, or unknown). Figure 2 shows the quantity of C&D waste that is disposed in each state, including imports and a general breakdown of the origin of the waste. Figure 3 shows the quantity of C&D material that is processed in each state, including the general breakdown of the origin of the waste.

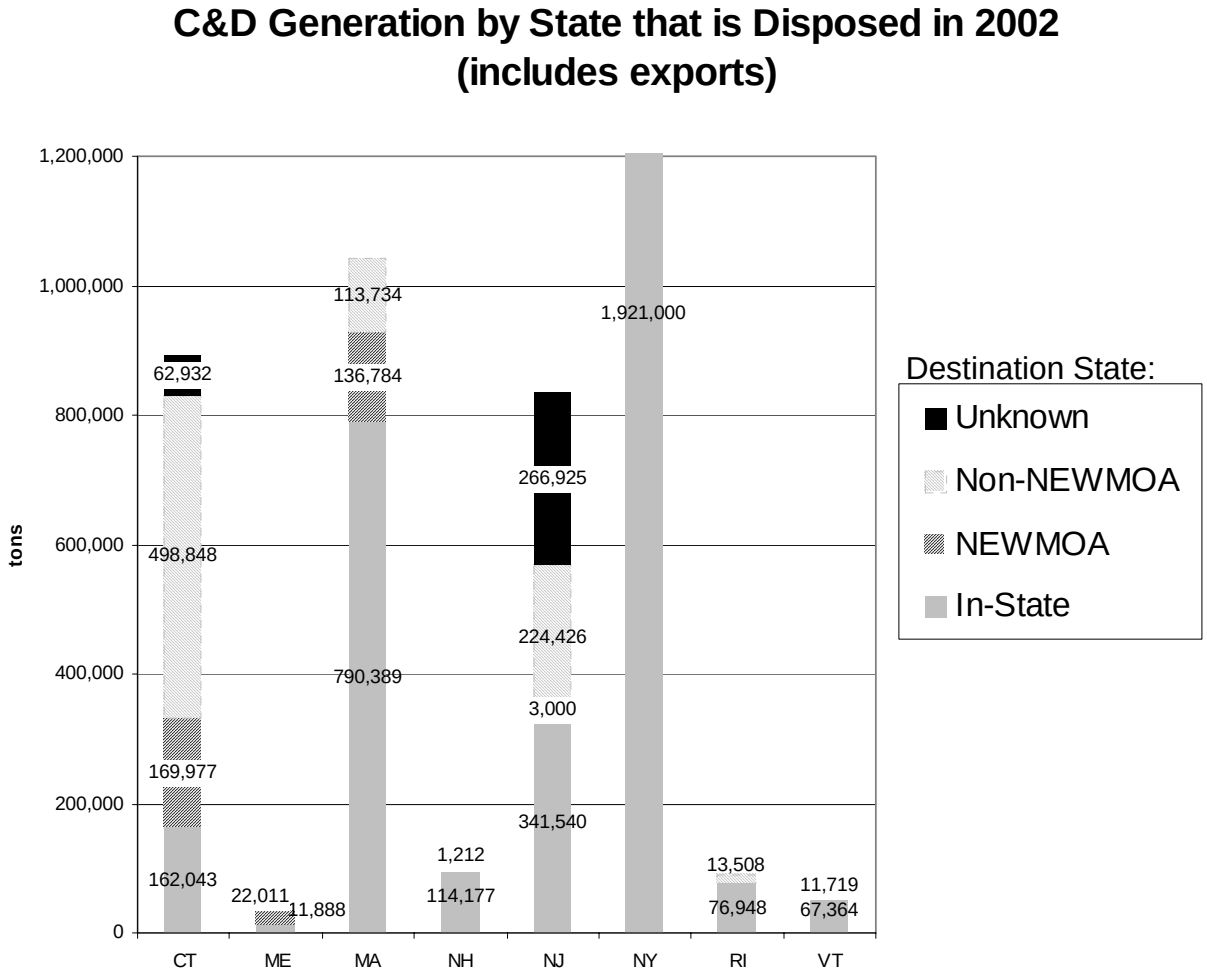


Figure 1

Notes:

ME: An additional 328,805 tons of C&D was disposed in ME in 2002. MA processing facilities report sending 40,068 tons to ME for disposal. Therefore, 288,737 tons had an unknown origin and it is likely that a good portion was generated in ME.

MA: C&D disposed in MA is reported by MA landfills. Processing facilities in MA receive C&D from out of state (OOS) and send C&D OOS for disposal. To determine the amount of C&D sent OOS for disposal that was generated in MA, the total amount each MA processing facility sent to each state was multiplied by the percent of C&D received by that processing facility that was received from in-state sources. A total of 376,385 tons used as ADC in ME (8,782 tons), MA (341,174 tons), and RI (26,429 tons) is included.

NY: Includes 109,000 tons of C&D used in NY as ADC or in roads within the containment system of the landfill.

RI: The origin of the waste RI sent to Ohio and Maine is unknown, but assumed to be from RI. 74,609 tons of C&D was processed and used for ADC at RIRRC and is included here.

VT: Includes 7,553 tons of C&D used as ADC in NH (4,957 tons) and VT (2,596 tons).

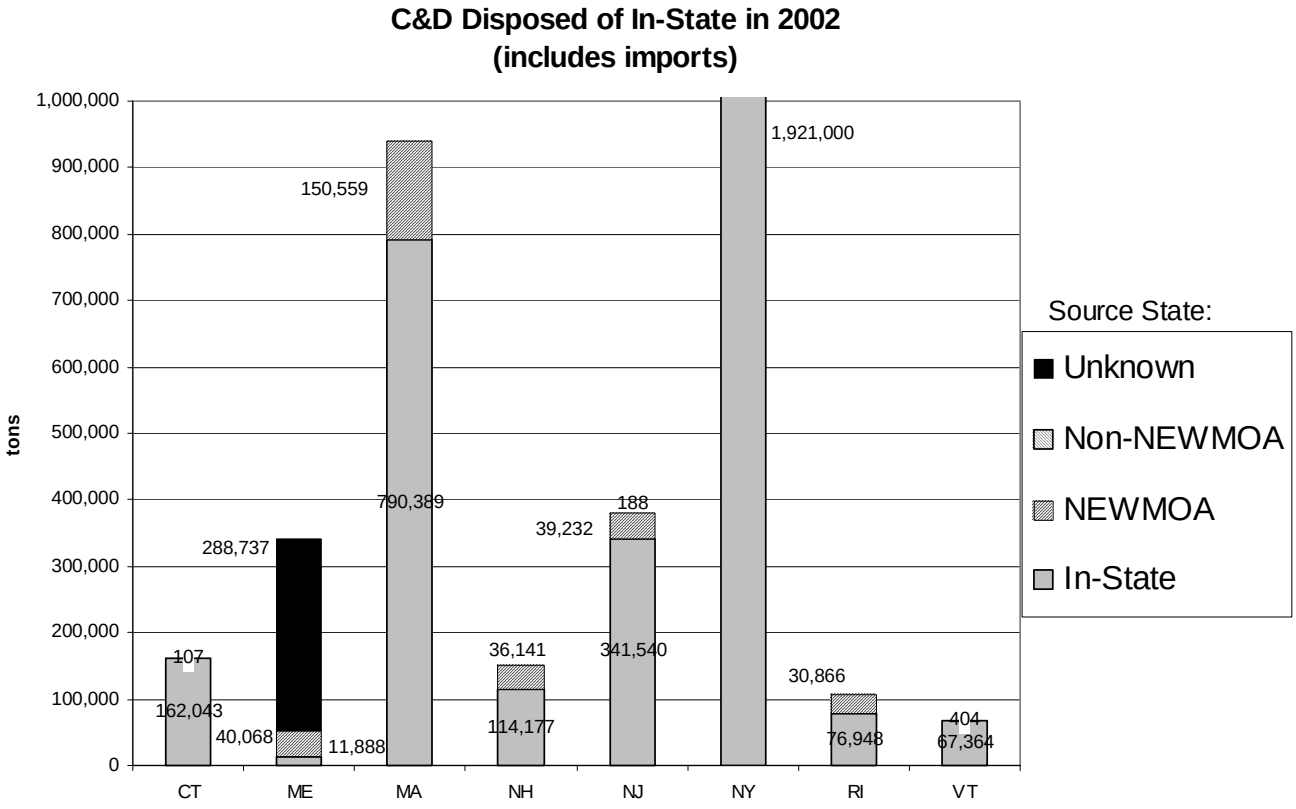


Figure 2

Notes:

ME: The origin of 288,737 tons of C&D disposed in ME was not reported. It is likely that a significant portion was generated in ME.

MA: The quantity generated in-state includes 341,174 tons of C&D used as ADC.

NH: Includes 4,957 tons used as ADC from Vermont.

NY: The quantity generated in-state includes 109,000 tons of C&D used as ADC or in roads within the containments system of the landfill.

RI: The quantity generated in-state includes 74,609 tons of C&D used as ADC. The quantity from NEWMOA states includes 26,429 tons of C&D from MA used as ADC in RI.

VT: The quantity generated in-state includes 2,596 tons of C&D used as ADC.

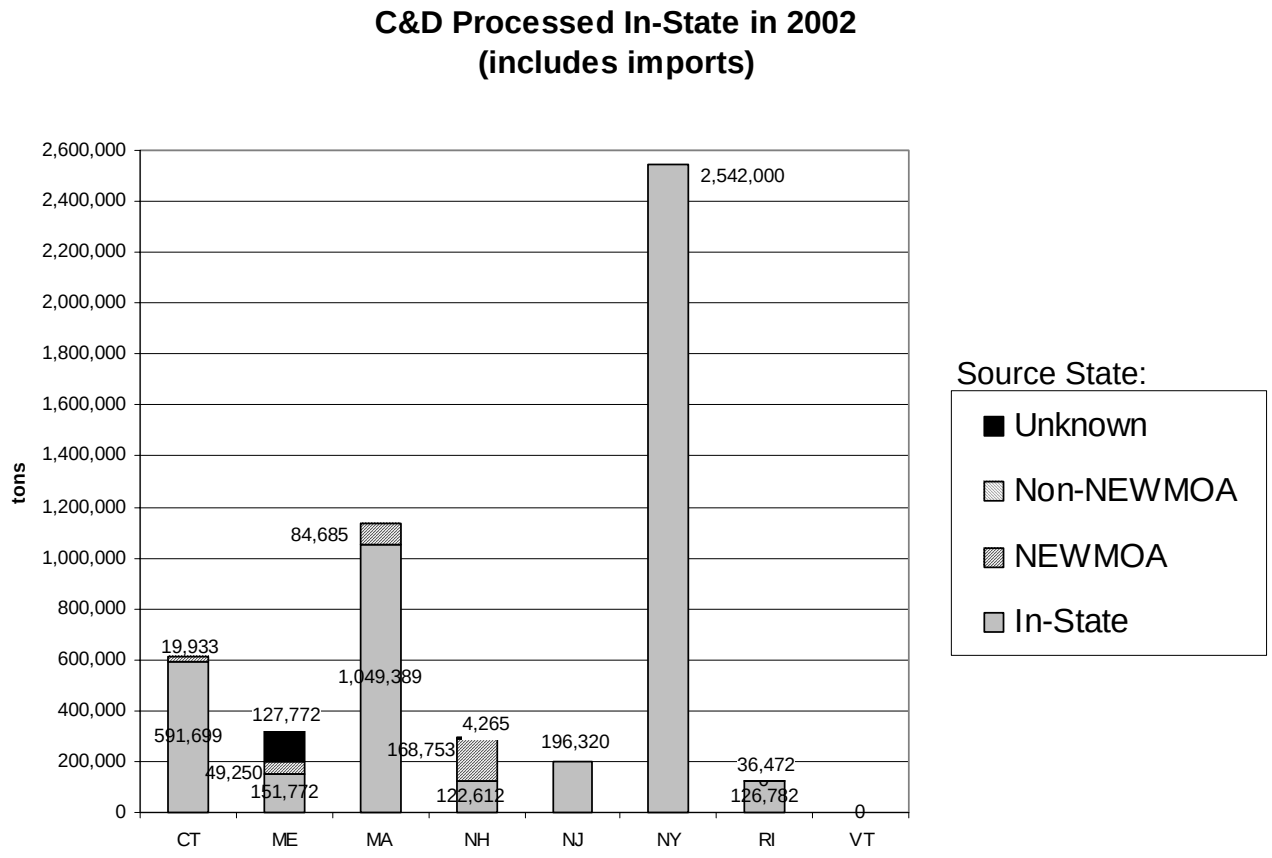


Figure 3

Notes:

1- All data supplied by processing state, except for Maine: MA reports sending 31,123 tons of C&D to the facility in Livermore Falls, ME for processing, and RI reports sending 18,127 tons of C&D to Livermore Falls. These values were subtracted from the amount ME reported as unknown and make up the quantity shown as having a NEWMOA source state.

2- For New Jersey – the data only includes the quantity that was diverted for reuse/recycling – the total quantity processed was not reported by New Jersey to NEWMOA

In addition to the data in the figures, the following observations can be made about C&D waste in the region:

- Landfill disposal data tends to be of better quality than other types of C&D data. Most states record the state of origin for material entering landfills from out-of-state. Maine is the only NEWMOA state that does not routinely collect this information.

- Connecticut, Massachusetts, New Jersey, New York and Rhode Island send substantial quantities of their C&D waste out-of-state for disposal. Connecticut, Massachusetts and Rhode Island rely on both NEWMOA and non-NEWMOA states for disposal; whereas New Jersey and New York rely primarily on non-NEWMOA states. The main non-NEWMOA state utilized is Pennsylvania.

- Four states provided detailed data from C&D processors on inputs to their facilities: Connecticut, Massachusetts, New Hampshire and Rhode Island. Note: Vermont does not have any C&D processing facilities. Connecticut, Massachusetts and New Hampshire data records the state of origin of the material; whereas Rhode Island only distinguishes between in-state and out-of-state waste.

- Only three states provided data from C&D processors on the types and quantities of outputs from their facilities, including the destination state: Connecticut, Massachusetts and New Jersey. However, New Jersey data only includes the quantity of materials that were recovered for reuse or recycle. Data on quantities sent from processors for disposal, such as fines were not reported.

- A substantial portion of the C&D waste processed at facilities in Connecticut and Massachusetts (the two states with detailed data on output from processing facilities) ends up sent for landfill disposal or use as alternative daily cover or grading material at landfills. For example, in 2002, only 8 percent of the material processed in Connecticut was recovered for reuse/recycle while 92 percent was disposed; and in Massachusetts, 10 percent was recovered for reuse/recycle, 57 percent was disposed, and another 33 percent was used as ADC at landfills.

- Processing facilities in Connecticut and Massachusetts handle mainly in-state generated C&D waste. The origin of approximately one-fifth of the waste processed in Rhode Island is unknown. Processing facilities in New Hampshire obtain over half of the material processed from out-of-state, most of this coming from Massachusetts.

- New Jersey and New York report that the origin of the material handled at processing and/or recycling facilities in their respective states is in-state material only. Maine processes mainly wood waste and does not require reporting of the origin of the waste. Almost two-fifths of the waste processed in Maine is from unknown sources. However, facilities in Massachusetts and Rhode Island report sending 15% of the waste processed in Maine.

- The primary materials diverted from disposal by C&D processing facilities are wood waste, metals, and aggregates (such as clean fill and ABC). The main market for wood waste from C&D processing facilities from states in the NEWMOA region is fuel chips used by biomass boilers in Maine.

Comparison of Data from 2001 and 2002

The following figures compare the overall C&D generated and disposed for each NEWMOA state in the years 2001 and 2002. Figure 4 shows the amount of C&D waste each state generated and disposed in-state in 2001 and 2002. As can be seen, C&D waste generated and disposed in-state in Connecticut, New Hampshire, and New Jersey remained relatively stable between 2001 and 2002. C&D waste generated and disposed in-state decreased for Massachusetts, New York, and Vermont. Rhode Island was the only state to experience an increase in the amount disposed in-state between 2001 and 2002, possibly due to the closure of a large in-state processor. In Maine it is difficult to determine if there was a decrease or increase. The 2001 data provided good information on in-state versus out of state generated waste, whereas the 2002 data contained less detail with only 11,888 tons attributable to Maine and 288,737 tons unknown.

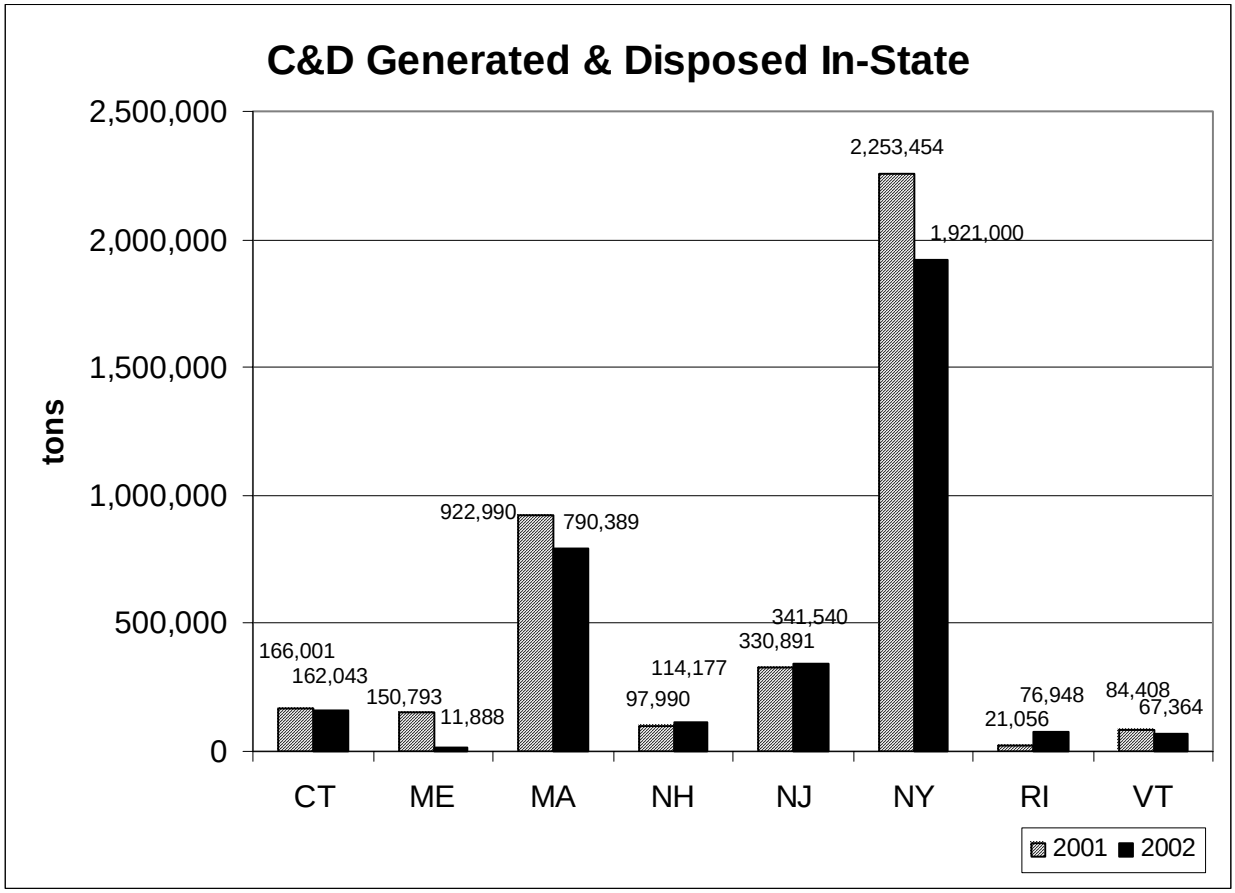


Figure 4

Note: For Maine in 2002, an additional 328,805 tons of C&D was disposed in ME. MA processing facilities report sending 40,068 tons to ME for disposal. Therefore, 288,737 tons had an unknown origin and it is likely that a good portion was generated in ME.

Figure 5 shows the amount of C&D generated by each state that was exported to other NEWMOA states. C&D waste generated and exported to NEWMOA states remained relatively stable for Vermont. Exports to NEWMOA states increased for Connecticut, Maine, New Hampshire, New Jersey and New York. Exports from Massachusetts to other NEWMOA states decreased while Rhode Island exported little to no C&D waste to other NEWMOA states.

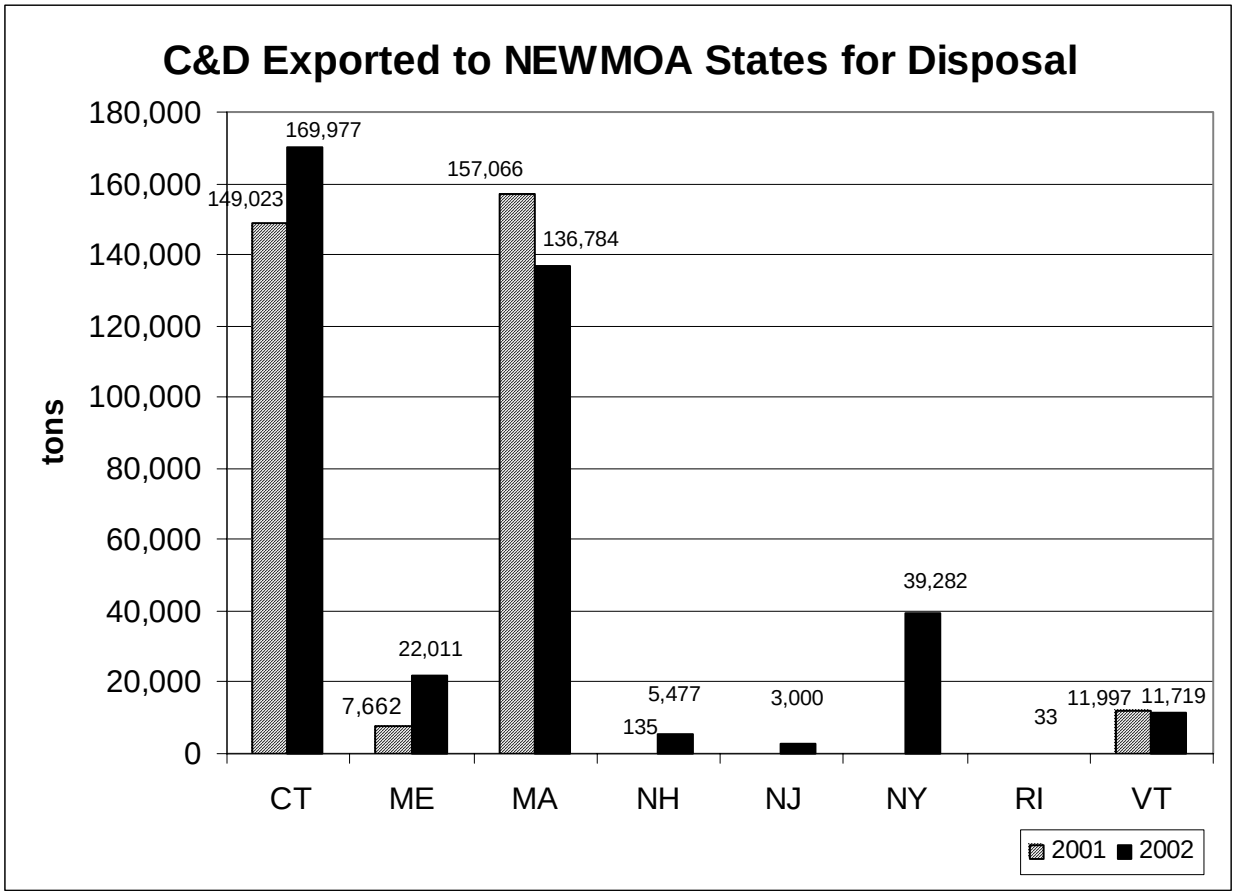


Figure 5

Figure 6 shows the amount of C&D generated by each state that was exported to non-NEWMOA states. C&D waste generated and exported to non-NEWMOA states remained stable for New Jersey and decreased for Massachusetts. Exports to non-NEWMOA states increased significantly for Connecticut and New York. Much of the increase from New York can be attributed to the cleanup of the World Trade Center tragedy. In 2002 Rhode Island began exporting C&D waste to non-NEWMOA states. Maine, New Hampshire and Vermont exported no C&D waste to non-NEWMOA states in either year.

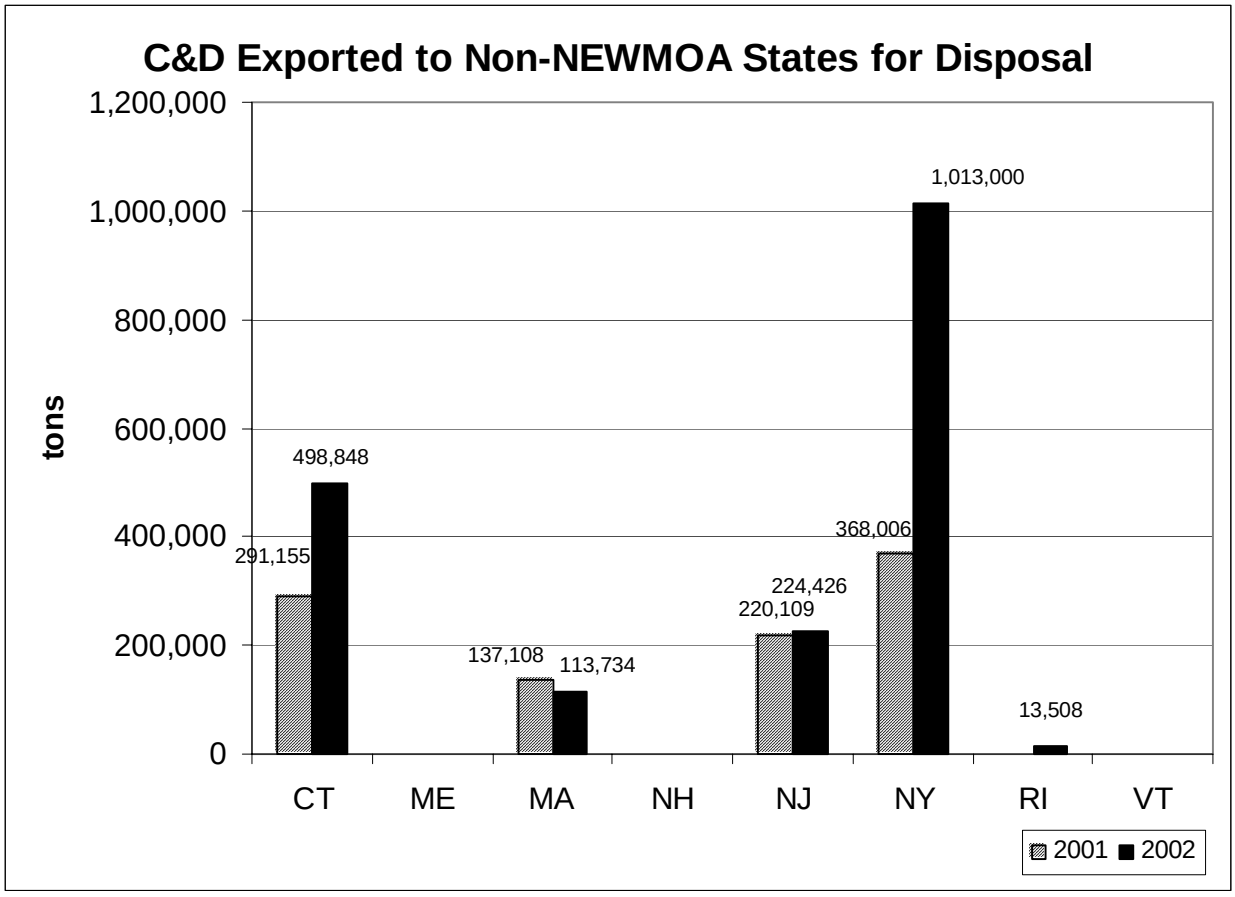


Figure 6

Note: For NJ - The disposal destination of 245,797 tons of C&D waste generated in NJ in 2001 and 266,925 tons in 2002 was not reported. Most likely this waste was exported to non-NEWMOA states. However, it is not included in the above figures. If included, exports to non-NEWMOA states would have increased from 2001 to 2002 by approximately five percent.

Figure 7 shows the amount of C&D that was imported by each state from other NEWMOA states and then disposed. Imports from other NEWMOA states decreased for Connecticut, New Jersey, New York, and Vermont between 2001 and 2002. Imports from other NEWMOA states increased for Massachusetts, New Hampshire, and Rhode Island. The situation in Maine is difficult to determine – see note below Figure 7.

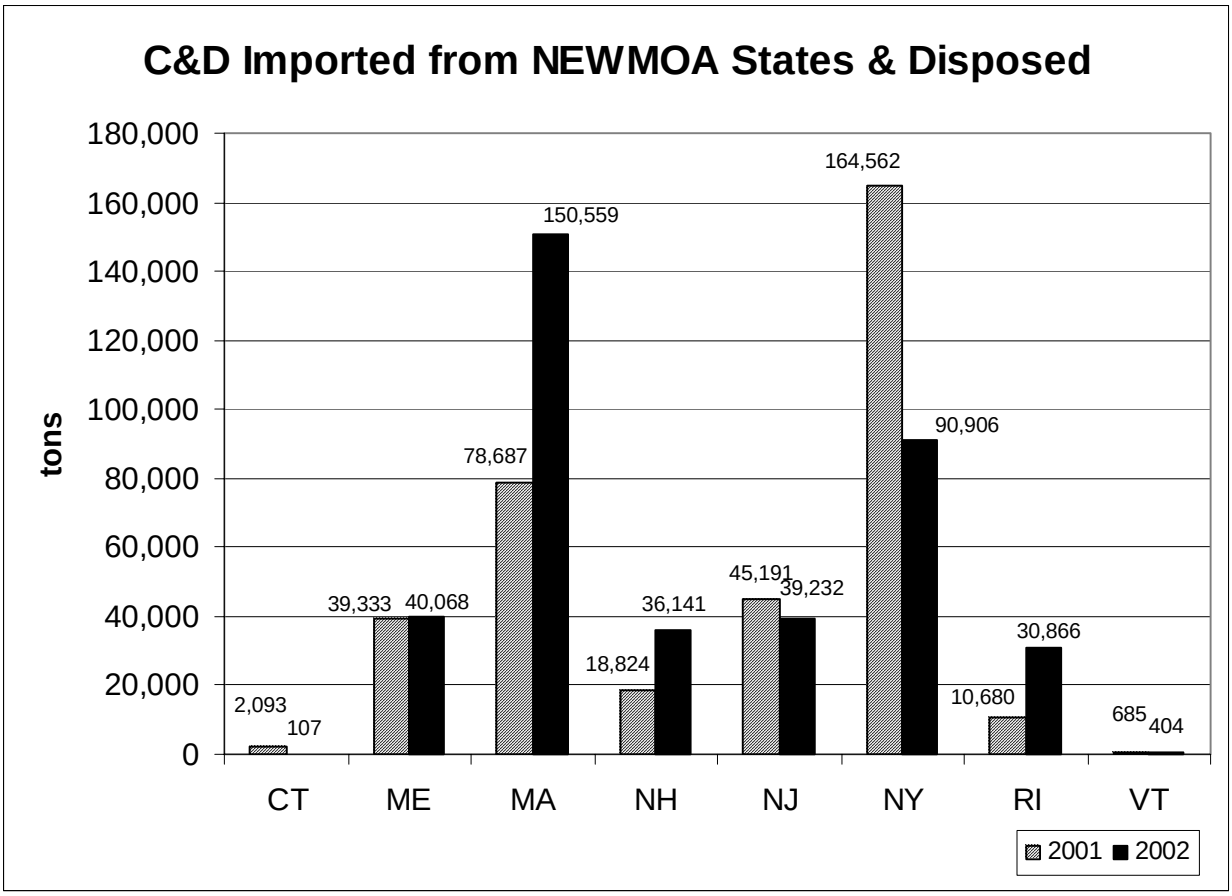


Figure 7

Note: ME – the origin of 129,391 tons of C&D waste disposed in ME in 2001 and 328,805 tons in 2002 was not reported. Processors in MA report sending 39,333 and 40,068 tons to ME in 2001 and 2002, respectively and these are shown on the graph. In 2001 most of the waste with an unknown origin was likely generated out of state. In 2002 a substantial portion of the waste with an unknown origin was probably generated in ME(approximately 150,000 tons), and an amount on the order of the 2001 data was most likely imported from out of state (approximately 170,000 tons). However, because data to determine reliable figures is not available, none of this out of state waste is included in the graph above.

Connecticut

According to Connecticut Department of Environmental Protection (DEP) records, a total of 942,531 tons of C&D was generated in Connecticut in the year 2002, up substantially from 766,162 in 2001. Connecticut does not have a definition of C&D waste. Construction debris, with the exception of landclearing debris, is considered municipal solid waste, and demolition debris is considered a bulky waste. In practice, construction debris is often recorded as a bulky waste in Connecticut, and therefore, data for bulky waste is assumed to be a close proxy for C&D waste.

C&D Disposal

According to DEP records, the amount of reported C&D or bulky waste generated by Connecticut that was disposed, either in Connecticut or elsewhere, was 893,800 tons. After examining data from other states, NEWMOA estimates this figure to be to be accurate. In terms of C&D imports and exports, Connecticut is a net exporter, sending more C&D waste out-of-state for disposal than it accepts and disposes from other states.

Imports
According to DEP records, Connecticut disposal facilities imported 107 tons of bulky waste from Massachusetts in 2002. Massachusetts reports sending only 30 tons of C&D material to Connecticut. This difference could be due to direct haul of material from job sites in Massachusetts to facilities in Connecticut. Thus the Connecticut data is likely to be more accurate and is used in this report. Disposal facilities in Connecticut did not import bulky waste from any other state, inside or outside the NEWMOA region, nor does any other state report sending any C&D to Connecticut.

Exports
According to DEP records, in 2002, Connecticut facilities exported 169,977 tons of C&D waste to disposal facilities located in NEWMOA states, 498,848 tons of C&D waste to disposal facilities located in non-NEWMOA states, and 1,013 tons where the disposal location was not reported. Specifically, Connecticut reports sending 145,049 tons of C&D to Massachusetts, 22,419 tons to New York, and 2,509 tons to Rhode Island. In contrast, Massachusetts reports receiving 132,747 tons of C&D from Connecticut, New York reports receiving 4,000 tons and Rhode Island reports receiving no C&D waste from Connecticut. In these cases, where the receiving state reports a quantity less than Connecticut, the material might first go to a transfer station or processor in the receiving state before disposal. The disposal facility might then, record the material as in-state waste. The values from Connecticut are used as there is little incentive for transfer stations to over-report waste they send out of state for disposal.

Comparison of Data from 2001 to 2002
In-state disposal of C&D waste generated from Connecticut sources decreased by 3,958 tons (2.4%) between 2001 and 2002, from 166,001 tons to 162,043 tons. Import and export comparisons for the two years are described below, along with the source of the data being compared.

Import Data: The total amount of C&D imported and disposed by Connecticut decreased by 1,586 tons (94%) between 2001 and 2002, from 1,693 tons to 107 tons. This difference was determined by using the data provided by facilities in Connecticut, as discussed previously. A state-by-state breakdown of C&D and bulky waste disposed in Connecticut is shown in Figure CT-1 and includes imports of C&D waste from other states, along with the breakdown from 2001 for comparison.

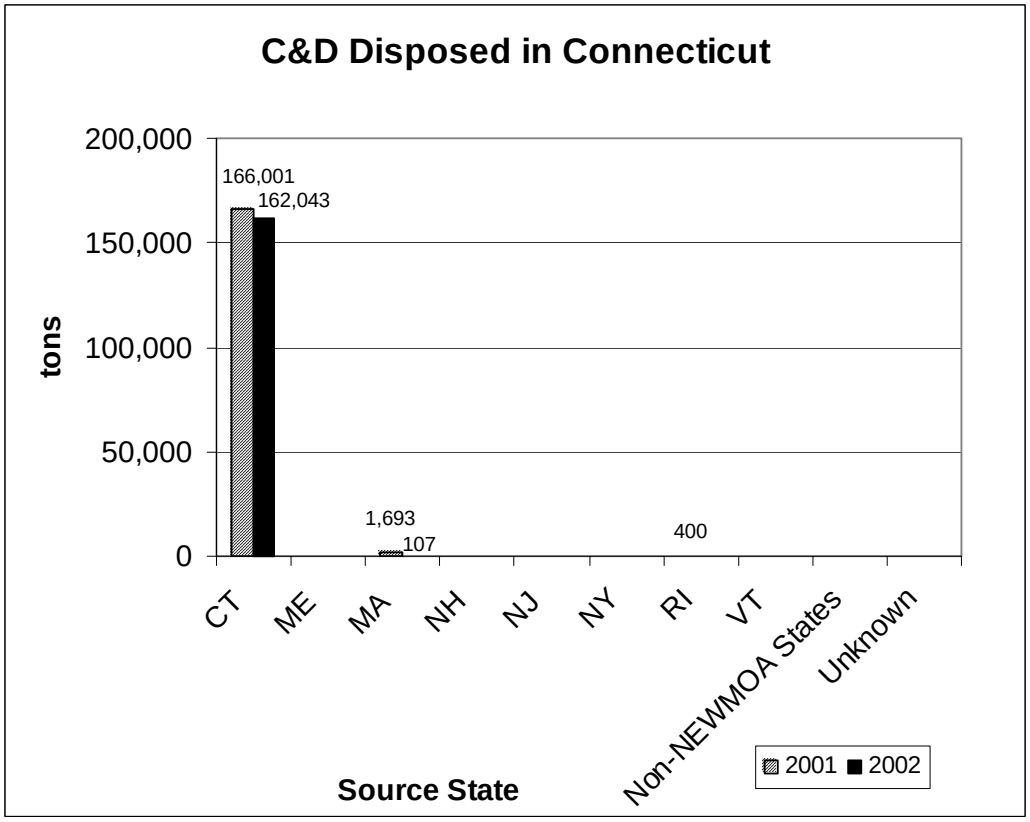


Figure CT- 1

Export Data: The total amount of Connecticut -generated C&D exported by Connecticut through Connecticut transfer stations and volume reduction facilities increased by 228,649 tons (52%) between 2001 and 2002, from 441,198 tons to 669,838 tons. This difference was determined by using the data provided by Connecticut facilities, as discussed above. A state-by-state breakdown of the destination of the C&D waste generated in Connecticut and disposed, including exports, is shown in Figure CT-2, along with the breakdown for 2001 for comparison. In 2002, a processing facility was operational but only reported the total amount sent for disposal, and did not begin detailed reporting until 2003. Therefore, the disposal destination(s) of the material processed by that facility in 2002 are not known.

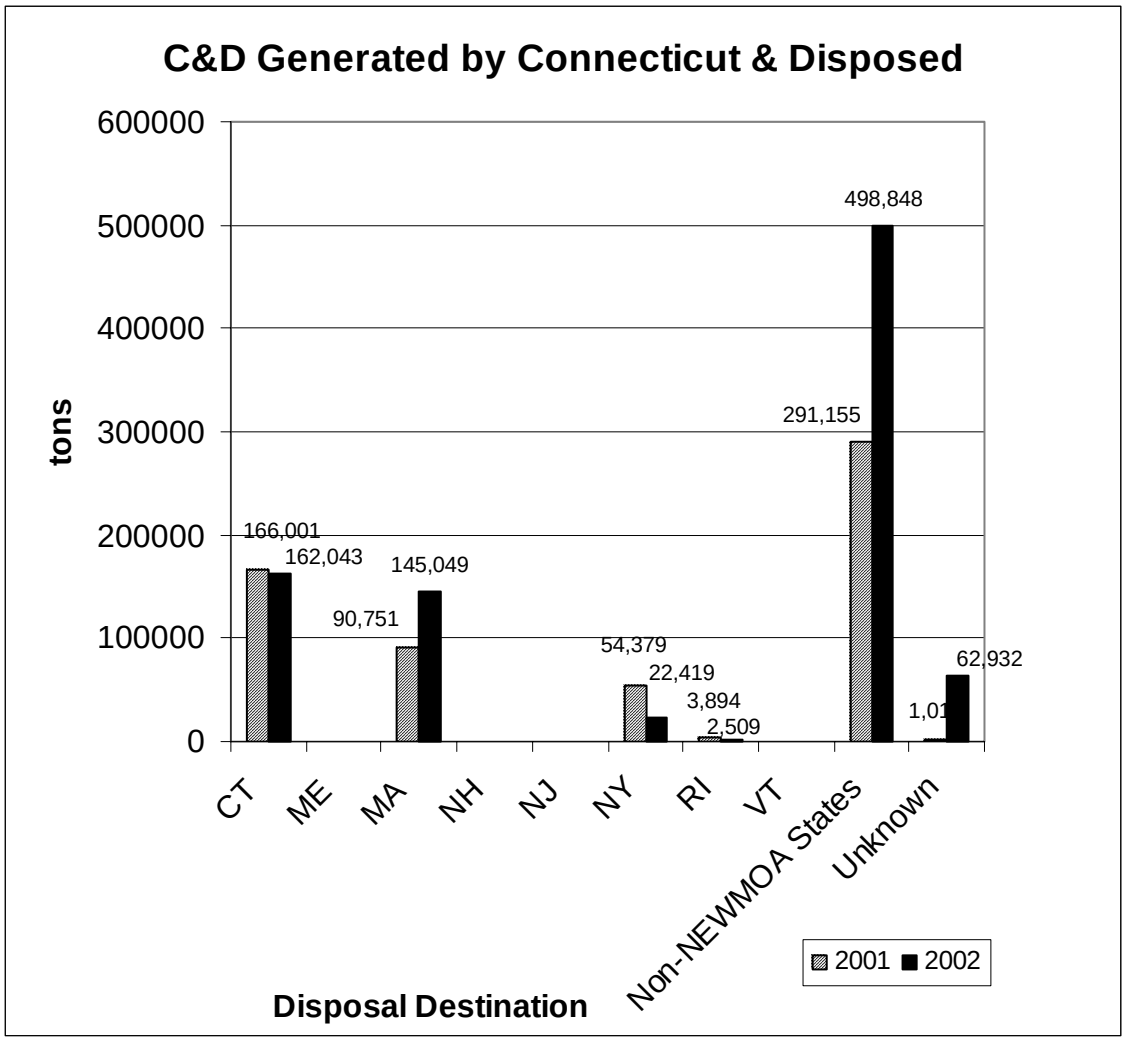


Figure CT- 2

C&D Processing

There are fourteen permitted volume reduction facilities (VRFs) operating in Connecticut. The total amount of C&D waste reported processed at Connecticut VRFs in 2002 was 611,632 tons. However, not all VRFs reported. The amount processed that was generated in Connecticut was 591,699 tons. According to DEP records, the amount of C&D waste reported received at Connecticut VRFs from out-of-state sources was 19,933 tons, all from NEWMOA states. None of the other NEWMOA states report sending C&D to Connecticut for processing.

C&D waste processed at Connecticut VRFs is either disposed or marketed. The amount of C&D waste processed and then marketed was 48,436 tons. Figure CT-3 shows the types of material marketed and to which states it was sent in 2002. The amount of C&D waste reported sent from VRFs to disposal facilities was 591,123 tons. Figure CT-4 illustrates the quantities of material VRFs sent to facilities for disposal, both in and out of Connecticut in 2001 and 2002. In 2002, a facility was operational but only reported the total amount processed, and did not begin detailed

reporting until 2003. Therefore, the output destinations of the material processed by that facility in 2002 are not known and the quantity is included in the "unknown" category in Figure CT-4.

Figure CT-5 shows the amounts of C&D waste received at Connecticut VRFs by the type of material, along with the amounts from 2001 for comparison. In 2002, 27,927 more tons were reported as marketed or disposed by VRFs than were reported as processed by VRFs. This extra waste was likely material that had been stored at VRFs from previous years. For instance, in 2000, 30,911 tons of material reported as processed by VRFs was not reported as marketed or disposed.

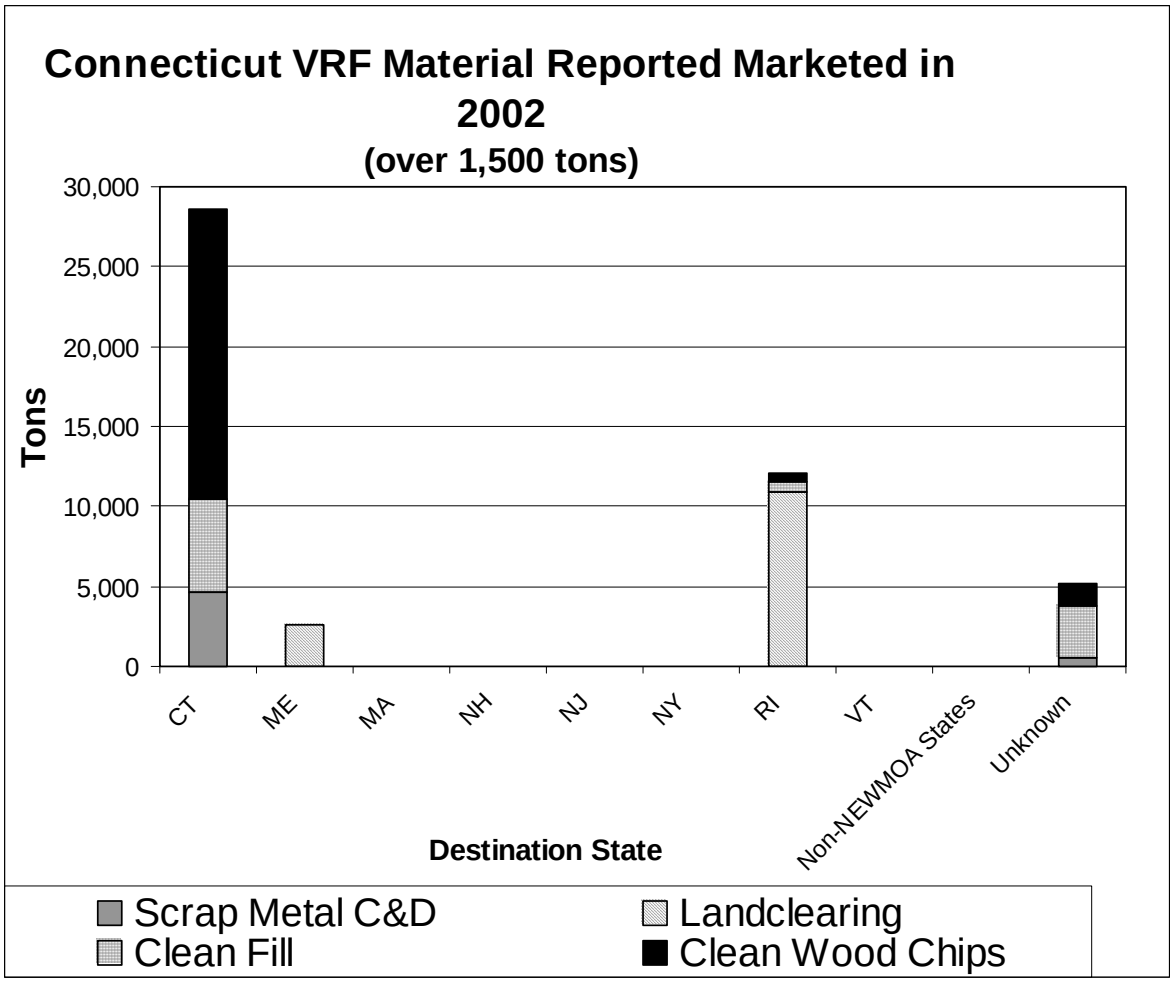


Figure CT- 3

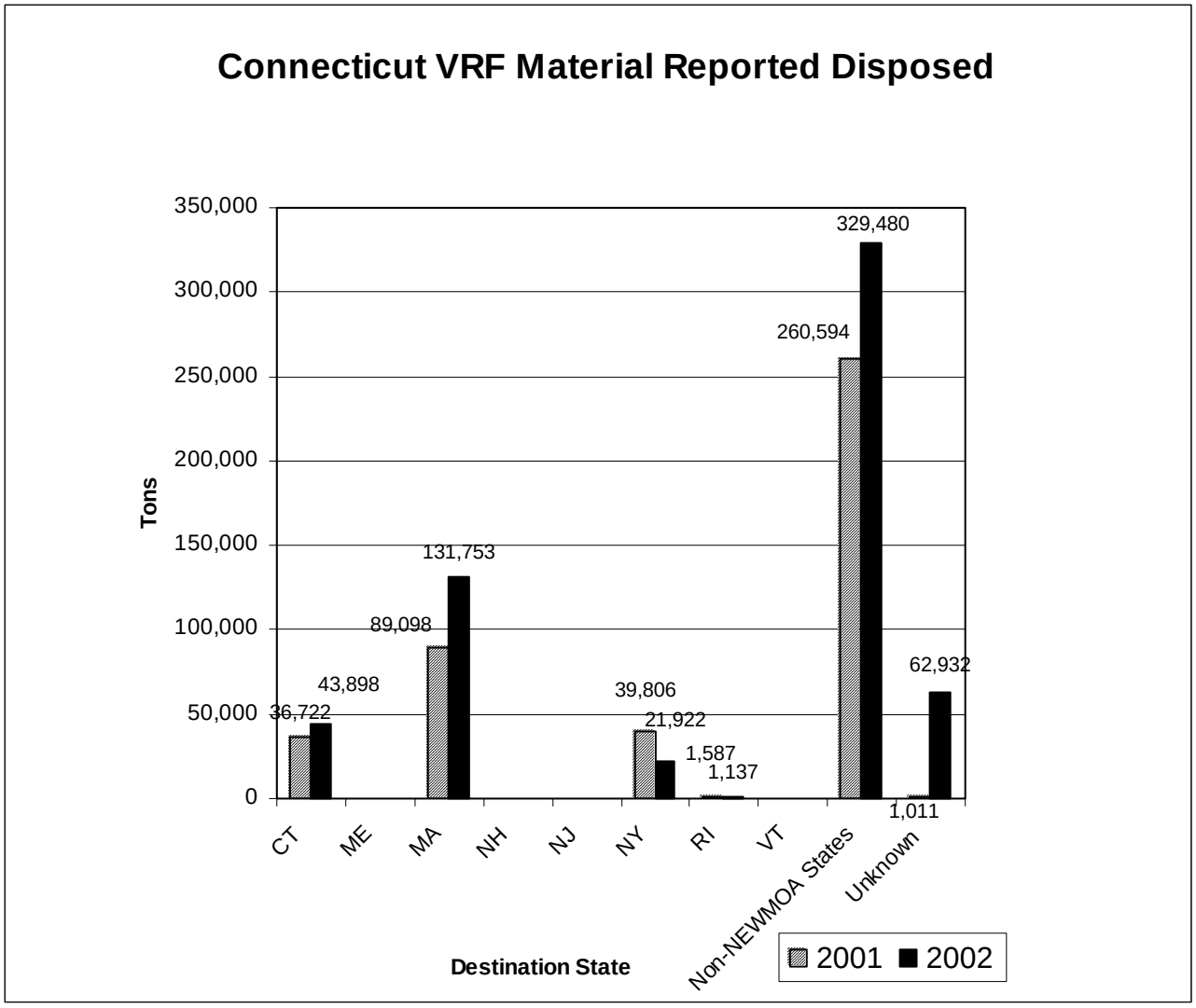
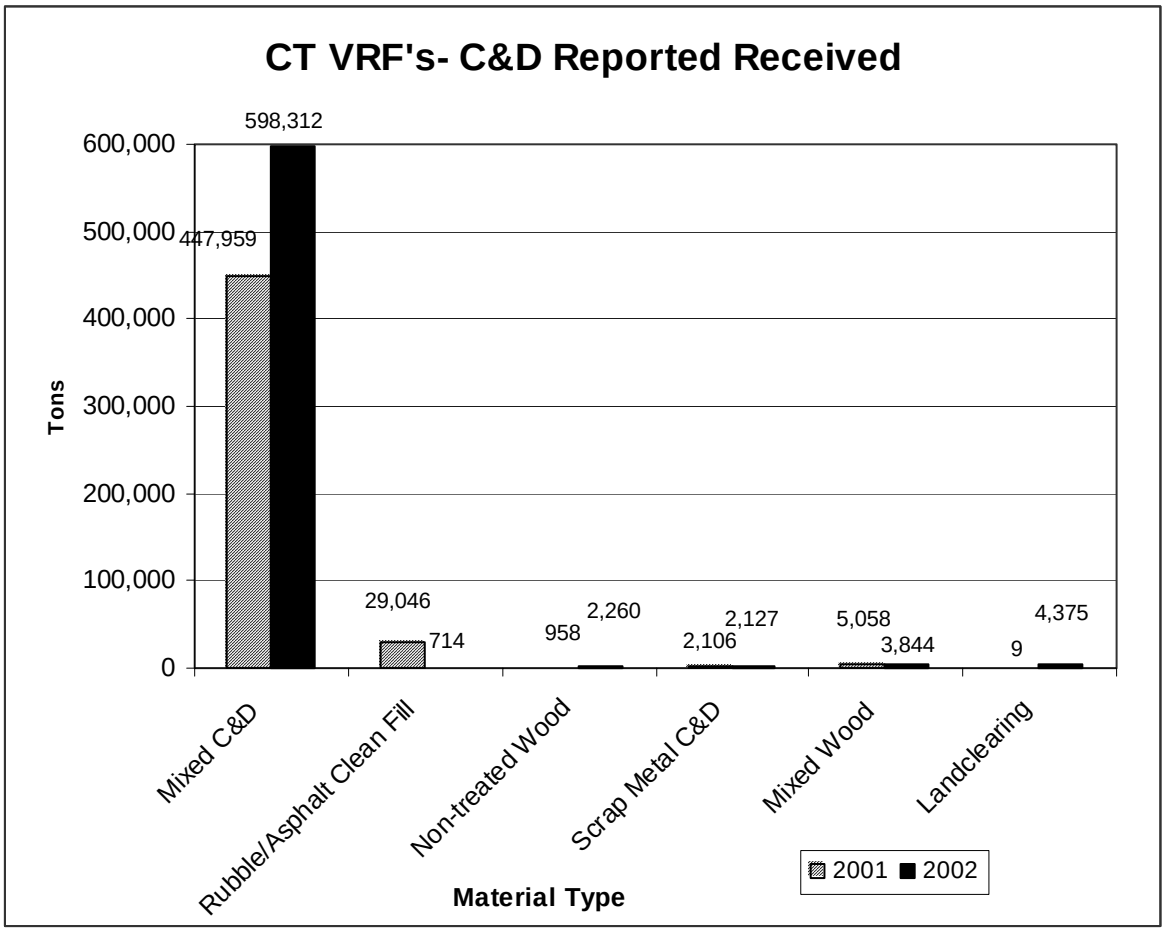


Figure CT- 4

Comparison of Data from 2001 to 2002

The total amount of C&D waste processed increased 26% between 2001 and 2002 from 485,136 tons to 611,632 tons. In-state generated C&D processed increased 26% from 470,533 tons to 591,699 tons. This increase is due to an increase in the number of processing facilities in Connecticut. Out-of-state generated C&D processed increased from 14,604 tons to 19,933 tons (36%).



Note: All C&D was received from in-state sources, except: in 2001, 8,762 tons of Mixed C&D was from MA, 958 tons of the Mixed C&D was from New York, 4,614 tons of the Rubble/Asphalt Clean Fill was from MA, 261 tons of the Mixed Wood was from MA, and 9 tons of the Landclearing was from NY. In 2002, 18,451 tons of the Mixed C&D was from MA and 1,281 tons of the Mixed C&D was from NY.

Figure CT- 5

The amount of material marketed to NEWMOA states changed between 2001 and 2002 in the following ways:

- In 2001, 10,063 tons of material classified as landclearing was reported as marketed by VRFs to Rhode Island, while in 2002, 2,574 tons of landclearing material was marketed to Maine and 10,926 tons was marketed to Rhode Island. Note that most of this marketed material was not classified as "landclearing" material when it was received by the VRF and was probably reported received as "mixed C&D".
- In 2001, no material of any kind was reported as marketed to Maine, while in 2002, a total of 2,574 tons of material was marketed to Maine (all reported as landclearing material).
- In 2001, a total of 14,086 tons of material was reported as marketed to Massachusetts (13,402 tons Clean Fill, 86 tons Scrap Metal C&D, and 597 tons Clean Wood Chips), while in 2002, no material of any kind was reported as marketed to Massachusetts.

- The total amount reported as marketed within Connecticut changed from 19,234 tons in 2001 to 28,573 tons in 2002: Clean Fill, from 8,267 tons to 5,741 tons; Scrap Metal C&D from 4,391 tons to 4,678 tons; and, Clean Wood Chips from 3,042 tons to 18,154 tons.
- The total amount reported as marketed in Rhode Island changed from 3,104 tons in 2001 to 12,062 tons in 2002: Clean Fill from 2,188 tons to 581 tons; Landclearing from 0 tons to 10,926 tons; and Clean Wood Chips from 916 tons to 555 tons.
- The total amount reported as marketed to unknown states changed from 1,230 tons in 2001 to 5,227 tons in 2002: Clean Fill from 987 tons to 3,196 tons; Scrap Metal C&D from 17 tons to 565 tons; and Clean Wood Chips from 226 tons to 1,465 tons.

Data Collection Summary

All solid waste transfer stations and VRFs 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 waste-to-energy facilities (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.

There are sources and uses of C&D waste that are not included in the data discussed in this report. For example, Connecticut allows construction and demolition projects to crush C&D rubble (for example, brick, concrete, and/or asphalt) on-site and reuse the aggregate on-site as a sub-base and/or backfill material. The quantity of C&D material reused on-site is outside the regulatory reporting system and is therefore not known. In addition there is no reporting requirement for C&D waste that goes directly out-of-state from a project site.

In addition, the placement of clean fill is exempt from solid waste regulation. Clean fill is defined in Section 22a-209 of the Regulations of Connecticut State Agencies as natural soil, rock, brick, ceramics, concrete, and asphalt paving fragments which are virtually inert and pose neither a fire threat nor a pollution threat to ground or surface water.

Capacity Summary

Currently, Connecticut's bulky waste, construction waste, and oversized MSW are sent to landfills (both MSW and bulky landfills), transfer stations (TSs), volume reduction facilities (VRFs), and resource recovery facilities (RRFs).

The DEP's projections for future bulky waste disposal capacity are based on an analysis of remaining capacity at Connecticut's bulky waste landfills and large MSW landfills that may be suitable for bulky waste disposal. It is important to note that, in addition, some bulky waste is incinerated at RRFs and some is disposed out of state. Connecticut's RRFs currently have limited capacity to incinerate bulky waste.

Of the four largest landfills that accept bulky waste, only three (Hartford LF; Manchester LF; and Windsor LF) provide regional bulky waste disposal capacity. The Hartford landfill, operated by CRRA, accepts mostly process residue and non-processibles from the Mid-Connecticut RRF and some bulky waste and oversized MSW from member towns; The Manchester landfill

accepts bulky waste and special waste, and has about 11 years of permitted capacity left; the Windsor landfill accepts MSW, Bulky waste and special wastes and has about 3 years of permitted capacity left. The Glastonbury landfill only accepts waste from its own residents. The estimated potential remaining capacity of these four landfills is approximately five million cubic yards.

The estimated annual generation of construction and demolition waste from buildings alone could total as much as 740,000 tons. Assuming that one ton of bulky waste is roughly equivalent to two cubic yards of waste, the construction and demolition waste generated from buildings statewide could require 1.5 million cubic yards of landfill space each year. At this rate, the four landfills mentioned above, assuming all four are available for regional bulky waste disposal, would provide approximately 3-5 years of capacity.

There are other bulky waste landfills that are municipally owned and accept only bulky waste generated by residents of that municipality. Although these landfills are currently accepting waste, they are not included in projections of long-term statewide disposal capacity because they do not have significant remaining capacity.

Recent Changes in Connecticut

There has been an increase in the number of permitted volume reduction facilities which process C&D waste.

Maine

Facilities that process and/or dispose of C&D waste in Maine are not required to report the state of origin of the incoming waste. Therefore, it is not possible to determine the amount of in-state and out-of-state generated C&D waste. However, facilities that did differentiate reported 163,659 tons of C&D waste generated in Maine in 2002. The Department of Environmental Protection (DEP) reports that an additional 351,849 tons of C&D waste was processed and/or disposed in Maine. It is likely that some of this waste was also generated in Maine.

C&D Disposal

According to DEP records, 328,805 tons of C&D waste was disposed at the state's two commercial landfills in 2002. No breakdown is available as to the portion of this that was generated in-state, and the portion that was imported from out-of-state. Facilities in Massachusetts report sending 40,068 tons of C&D to Maine for disposal and therefore the amount whose origin is unknown is 288,737 tons. 11,888 tons of C&D was disposed of at non-commercial landfills in the state and can be assumed to have been generated in Maine. The breakdown for the portion that came from in-state versus what came from out-of-state is displayed in Figure ME-1.

Comparison With Other Available Data
Maine does not collect data regarding state of origin from C&D processors, biomass boilers, and disposal facilities. Massachusetts reported sending 40,068 tons of C&D waste to Maine for disposal (8,728 as fines for ADC) and 31,123 tons of wood chips to the Borolex facility in Livermore. C&D processing facilities in Rhode Island reported sending 18,127 tons of wood waste to Maine also to the Borolex facility.

Lastly, New Hampshire landfills report receiving 22,011 tons of C&D from Maine for disposal. Maine does not collect information about waste exports.

Comparison of Data from 2001 to 2002
The DEP does not collect data about the origin of the C&D waste received at disposal facilities in Maine and therefore a significant quantity is reported with an "unknown" origin. For example, the origin of 129,391 tons of C&D waste disposed in ME in 2001 and 328,805 tons in 2002 was not reported. Processors in MA report sending 39,333 and 40,068 tons to ME in 2001 and 2002, respectively and these are shown on Figure ME-1. In 2001 most of the waste with an unknown origin was likely generated out of state. In 2002 a substantial portion of the waste with an unknown origin was probably generated in ME (approximately 150,000 tons), and an amount on the order of the 2001 data was most likely imported from out of state (approximately 130,000 tons of the unknown). Import and export comparisons between 2001 and 2002 are described below, along with the source of the data being compared.

Import Data: Maine does not collect data regarding state of origin from C&D processors, biomass boilers, and disposal facilities. It is therefore not possible to compare imports between 2001 and 2002 using data from Maine facilities. However, Massachusetts reports sending

39,333 tons of C&D to Maine in 2001 and 40,068 tons in 2002 (31,340 tons for disposal and 8,728 tons used as ADC), an increase of 2%. This is depicted below in Figure ME-1.

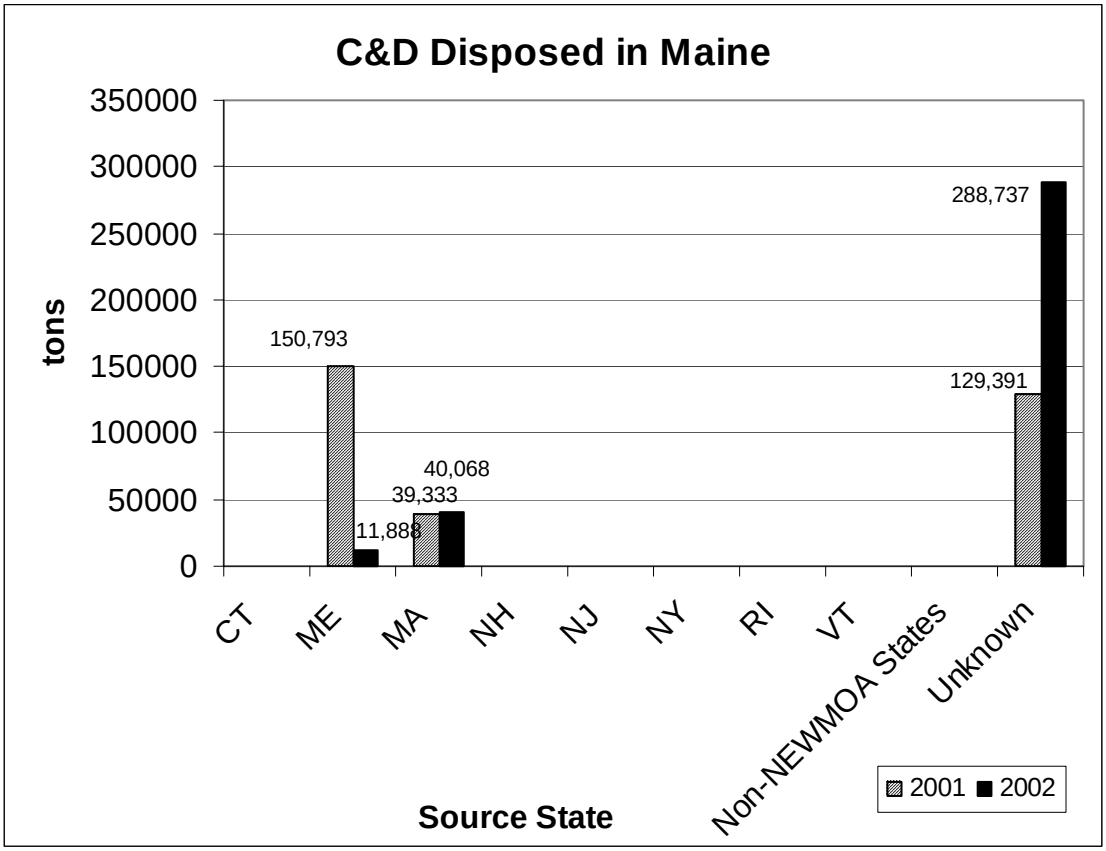


Figure ME- 1

Export Data: The total amount of C&D generated by Maine and exported increased by 14,349 tons (187%) between 2001 and 2002, from 7,662 tons to 22,011 tons, using the data provided by New Hampshire landfills. These changes are shown below in Figure ME-2.

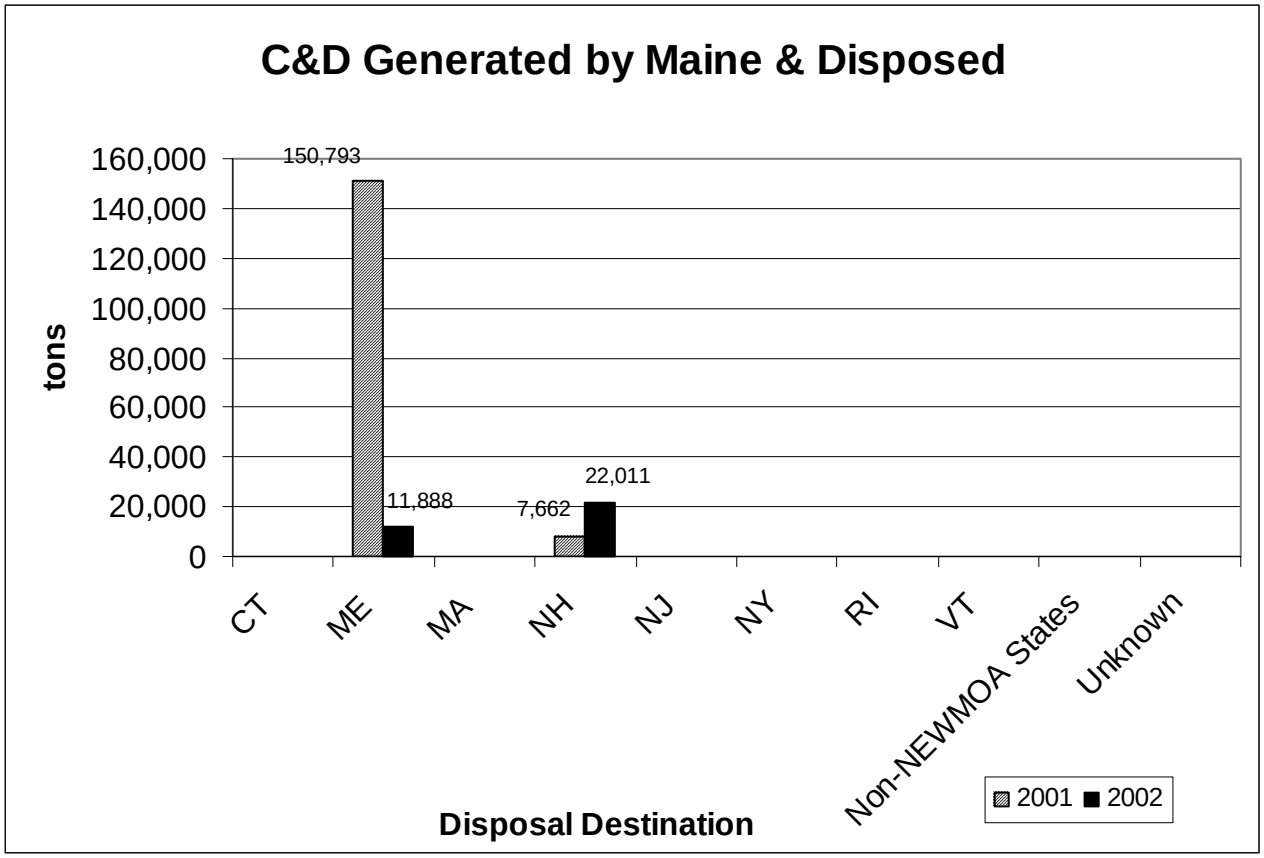


Figure ME- 2

Note: The origin of 129,391 tons of C&D waste disposed in ME in 2001 and 288,737 tons in 2002 was not reported. Some of this waste was generated in ME, particularly in 2002. However, none of this waste is included in the graph above.

C&D Processing

The amount of C&D waste processed in 2002 at Maine commercial processing facilities was reported at 328,793 tons. The majority of this (312,696 tons) was wood waste processed at biomass boilers. Bio-mass boilers are required to obtain a license from DEP's Bureau of Air Quality and a beneficial use determination from the Bureau of Waste Management in order to utilize this material as fuel. C&D waste is limited to 50% or less of the fuel consumed. The largest of these biomass boilers is Boralex, which received 306,463 tons of wood waste at its two facilities. Most of the wood waste is already chipped when it arrives at Boralex. Maine DEP reports that 145,034 tons of wood waste was generated in Maine. However, for 2002 there is no breakdown available from Maine facilities as to how much of the rest came from in-state and how much came from out-of-state, or how much from which states. Massachusetts and Rhode Island both report sending C&D in the form of wood waste to Maine biomass boilers, 31,123

tons from Massachusetts and 18,127 tons from Rhode Island. These figures are used and the remaining C&D wood waste is shown in Figure ME-3 with the source state "Unknown."

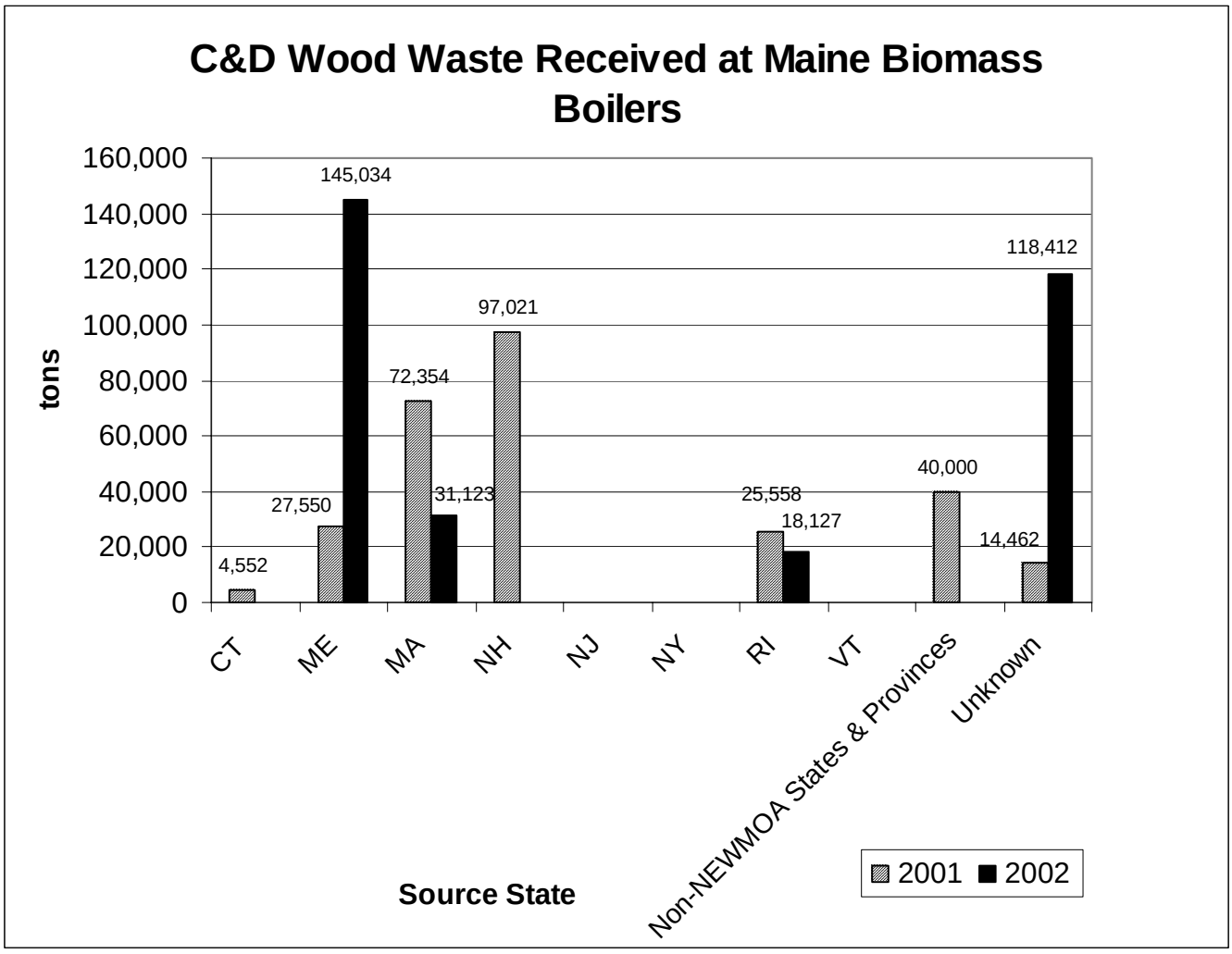


Figure ME-3

Data Collection Summary

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.

There are significant C&D waste quantities and uses that are not captured in the reporting DEP obtains. Maine exempts the on-site disposal of C&D debris, landclearing debris and wood wastes from regulation and reporting when the following conditions are met:

- the solid waste boundary(ies) encloses an area of less than one acre;
- the disposal area is located on the same parcel of land where the waste was generated;
- there is only one exempt disposal facility on the parcel;

C&D debris includes but is not limited to: building materials, discarded furniture, asphalt, wall board, pipes and metal conduits. C&D debris excludes: partially filed containers of glues, tars, solvents, resins, paints, or caulking compounds; friable asbestos, and other special wastes. In addition, Maine exempts the disposal of inert fill, whether generated on-site or off-site. Inert fill is defined as clean soil material, rock, bricks, crushed clean glass or porcelain, and cured concrete. Inert fill can also be used as drainage material in construction projects or as raw material in cement, concrete, or asphalt production. Processed cured asphalt can also be used in paving material production, and road construction and maintenance.

Capacity Summary

In 1999, the existing total remaining capacity at all landfills in Maine was 1,550,000 tons, according to the State Planning Office. This translates to between 8 and 29 years of capacity at the eight landfills in the state. Some landfills in the state are under expansion, but there are no new landfills being planned.

Recent Changes in Maine

The Maine DEP has been working with transfer stations and processors to segregate treated wood out of C&D that is processed to create a fuel chip. In order to prevent unacceptable levels of dioxin and arsenic in emissions and ash, biomass boilers currently are not allowed to burn treated wood.

The recently-licensed vertical height increase at the West Old Town Landfill may have an impact on the state's C&D management capacity. An appeal of that license is pending.

Massachusetts

According to Massachusetts Department of Environmental Protection (DEP) records, a total of 1,123,551 tons of C&D waste was generated in Massachusetts in 2002, down from 1,264,620 in 2001.

C&D Disposal

According to DEP records, the amount of C&D generated by Massachusetts that was disposed, either in Massachusetts or elsewhere, was 1,045,454 tons in 2002. When data from other states was examined, NEWMOA estimates a more accurate figure to be slightly higher at 1,045,831 tons. In addition to the amount disposed, 376,385 tons of C&D fines from Massachusetts' processing facilities were used as alternate daily cover (ADC) and grading material at landfills in Massachusetts, Maine, New Jersey, and Rhode Island. In terms of C&D imports and exports, Massachusetts is a net exporter, sending more C&D waste out-of-state for disposal than it accepts and disposes from other states.

Imports
According to DEP records, Massachusetts disposal facilities imported 137,561 tons of C&D waste from NEWMOA states. However, when data from other states is considered, this figure is more likely to be 150,559 tons. Massachusetts disposal facilities did not import C&D waste from non-NEWMOA states. Connecticut reports sending 145,049 tons of C&D to Massachusetts for disposal whereas Massachusetts reports receiving 132,051 tons. In this case, the material might first go to a transfer station or processor in Massachusetts before disposal. The disposal facility might therefore record the material as in-state waste. Transfer stations have little incentive to over estimate waste exported. Therefore, data from Connecticut is used in this report. Import data from New Hampshire correlates fairly well with Massachusetts data, differing by only 8 tons, with New Hampshire reporting sending 5,469 tons and Massachusetts reporting receiving 5,477 tons (the Massachusetts figure is used).

Exports
According to DEP records, in 2002, facilities in Massachusetts exported 141,331 tons of C&D waste to disposal facilities located in NEWMOA states and 113,734 tons of C&D waste to disposal facilities located in non-NEWMOA states.[1] When data from NEWMOA states is examined, the amount sent to NEWMOA states for disposal was determined to be 141,708 tons. Connecticut reports receiving 107 tons of C&D waste from Massachusetts, while Massachusetts reports sending only 30 tons of C&D waste to Connecticut. Similarly, Vermont reports receiving 300 tons of C&D waste from Massachusetts while Massachusetts does not report sending any C&D waste to Vermont. These differences could be due to direct haul of material from job sites

1 Some processing facilities in MA receive C&D from out-of-state (OOS) and send C&D OOS for disposal. To determine the amount of C&D sent OOS for disposal that was generated in MA, the percent of C&D received by each processing facility that was from in-state sources was determined and then applied to the total amount the MA processing facility sent to each state.

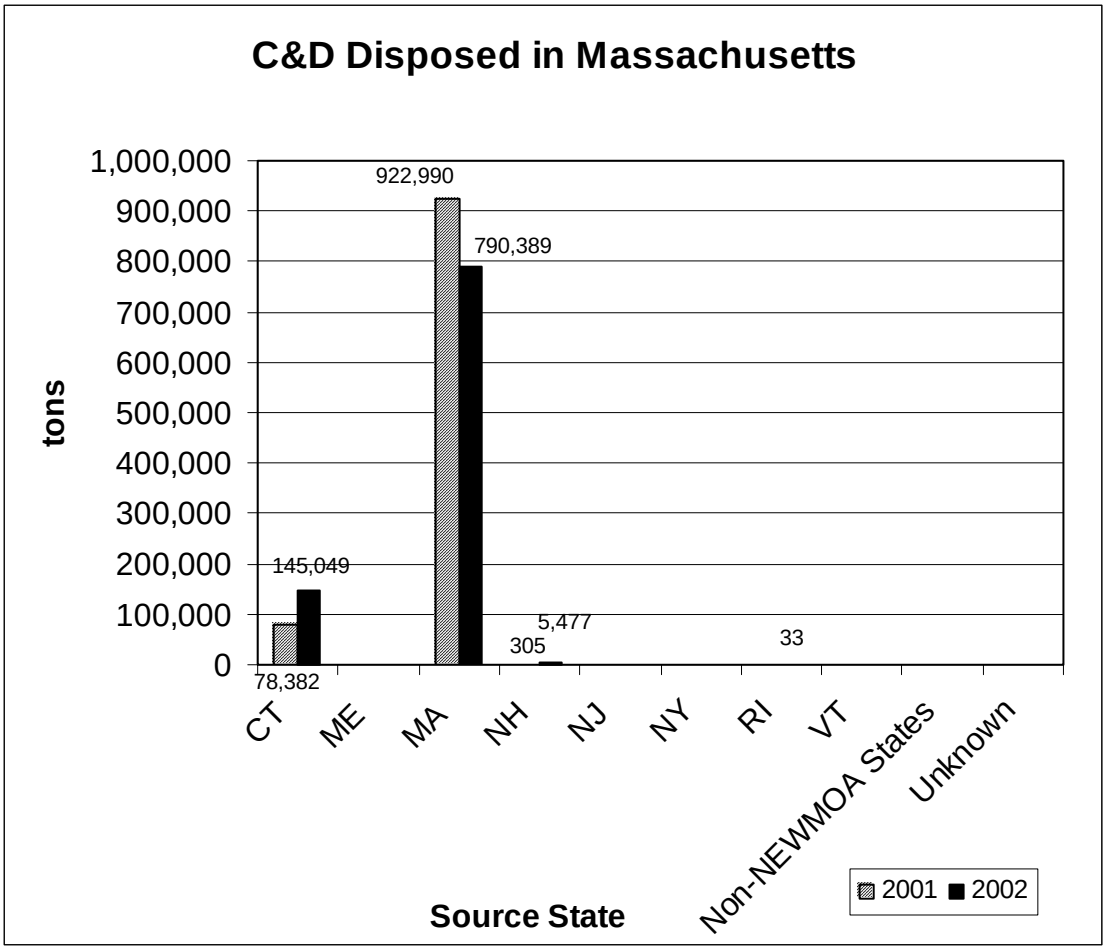
in Massachusetts to facilities in Connecticut and Vermont. Therefore, in both these cases, the receiving state's data is used.

New Hampshire reports receiving 4,562 tons of C&D waste for disposal from Massachusetts, while Massachusetts reports sending 7,886 tons of C&D waste to New Hampshire. New York reports receiving 5,000 tons of C&D material from Massachusetts, 55,012 tons less than Massachusetts reports sending. Officially, facilities in Rhode Island do not dispose of material generated out-of-state; however Massachusetts reports sending 28,357 tons there to disposal facilities, 26,429 tons of which were fines for use as ADC. In these cases, where the receiving state reports a quantity less than the sending state, the material might first go to a transfer station or processor in the receiving state before disposal. The disposal facility might then, record the material as in-state waste. Transfer stations have little incentive to over estimate waste exported. Therefore, data from the export state, Massachusetts is used.

Comparison of Data from 2001 to 2002

In-state disposal of C&D waste generated from Massachusetts sources decreased by 132,601 tons (14%) between 2001 and 2002, from 922,990 tons to 790,389 tons. Import and export comparisons for the two years are described below, along with the source of the data being compared.

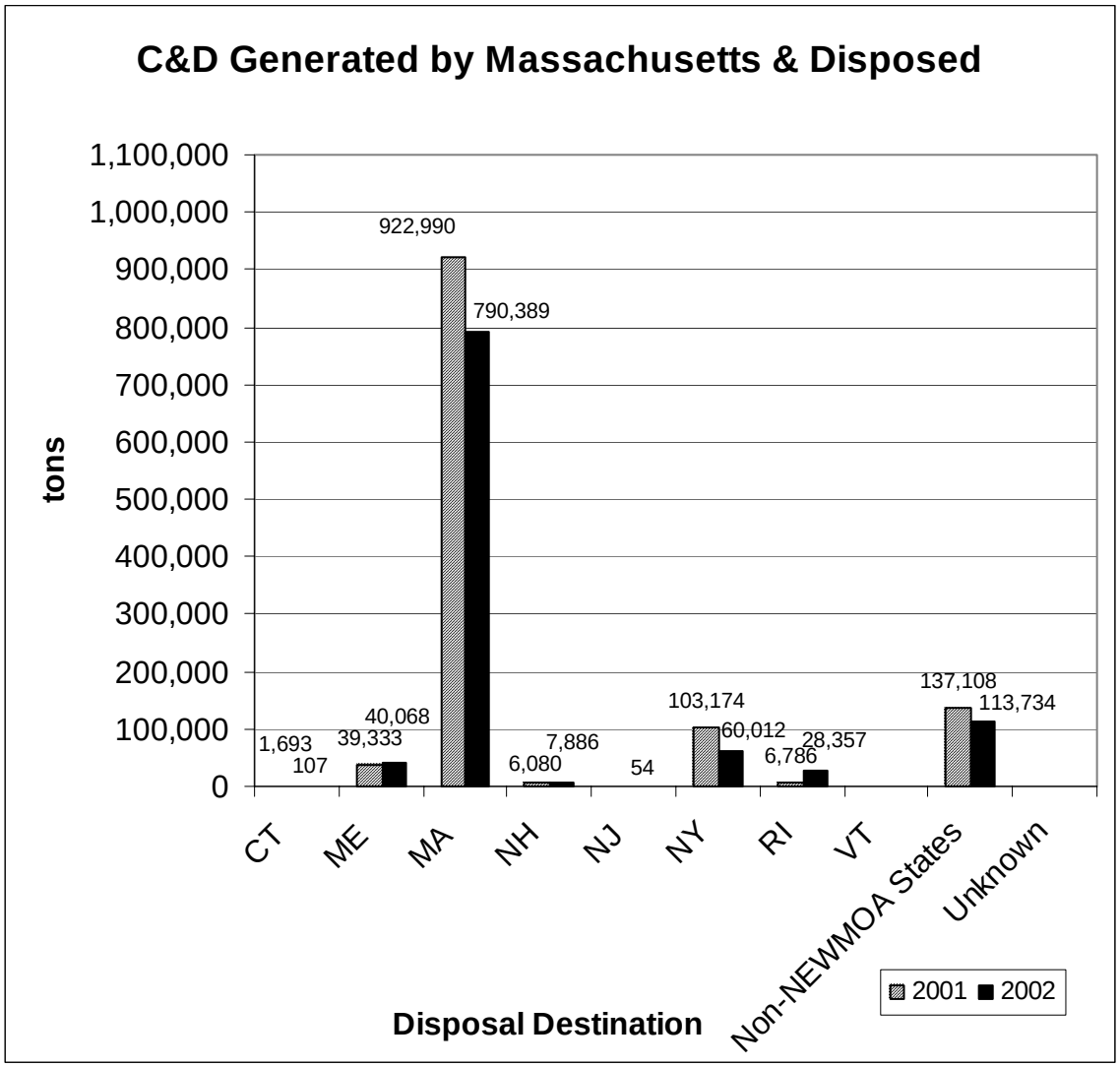
Import Data: The total amount of C&D imported and disposed by Massachusetts increased by 71,872 tons (91%) between 2001 and 2002, from 78,687 tons to 150,559 tons. This difference was determined by using the data provided by disposal facilities in Massachusetts, except for waste received from Connecticut, where the data from Connecticut transfer stations was used for 2002, as discussed above. Data from Massachusetts is used for 2001, due to more recent updates from Massachusetts. Imports from Connecticut increased from 78,382 tons to 145,049 tons. Imports from New Hampshire increased from 305 tons to 5,477 tons. A state-by-state breakdown showing the origin state of C&D disposed in Massachusetts facilities is shown in Figure MA-1, along with the breakdown from 2001.



Note: Included in the MA figures is C&D used as ADC (see Figure MA-4 for more details): 321,081 tons in 2001 and 341,174 tons in 2002.

Figure MA- 1

Export Data: The total amount of Massachusetts -generated C&D exported by Massachusetts through Massachusetts transfer stations and C&D processing facilities decreased by 42,061 tons (14%) between 2001 and 2002, from 292,579 tons to 250,518 tons. This difference was determined by using the data provided by Massachusetts facilities, except for C&D sent to Connecticut and Vermont, where data from those states' disposal facilities was used, as discussed previously. Between 2001 and 2002, exports decreased to: Connecticut (1,693 tons to 107 tons), New York (103,174 tons to 60,012 tons), Vermont (659 tons to 300 tons) and non-NEWMOA states (137,108 tons to 113,734 tons). Exports increased between 2001 and 2002 to: Maine (39,333 tons to 40,068 tons), New Hampshire (4,618 tons to 7,886 tons), New Jersey (0 tons to 54 tons) and Rhode Island (2,602 tons to 2,631 tons, not including C&D Fines used as ADC). A state-by-state breakdown of Massachusetts' C&D waste disposed, including exports, is shown in Figure MA-2, along with the breakdown from 2001 for comparison.



Note: Included in the 2001 and 2002 data is ADC used at landfills—see Figure MA-4 for more detail. (In 2001, 321,081 tons of C&D fines used as ADC in MA, 1,462 tons in NH, and 4,184 tons in RI. In 2002, 341,174 tons of C&D fines used as ADC in MA, 8,728 tons in ME, 54 tons in NJ, and 26,429 tons in RI.)

Figure MA- 2

C&D Processing

According to DEP records, the total amount of C&D waste that was received at Massachusetts processing facilities in 2002 was 1,134,074 tons. The amount of this that came from Massachusetts sources was 1,049,389 tons, with the remaining 84,685 tons coming from other NEWMOA states. This breakdown is shown in Figure MA-3. No states report sending C&D to Massachusetts for processing. Most likely this material is direct haul from the job site to the processing facility in Massachusetts.

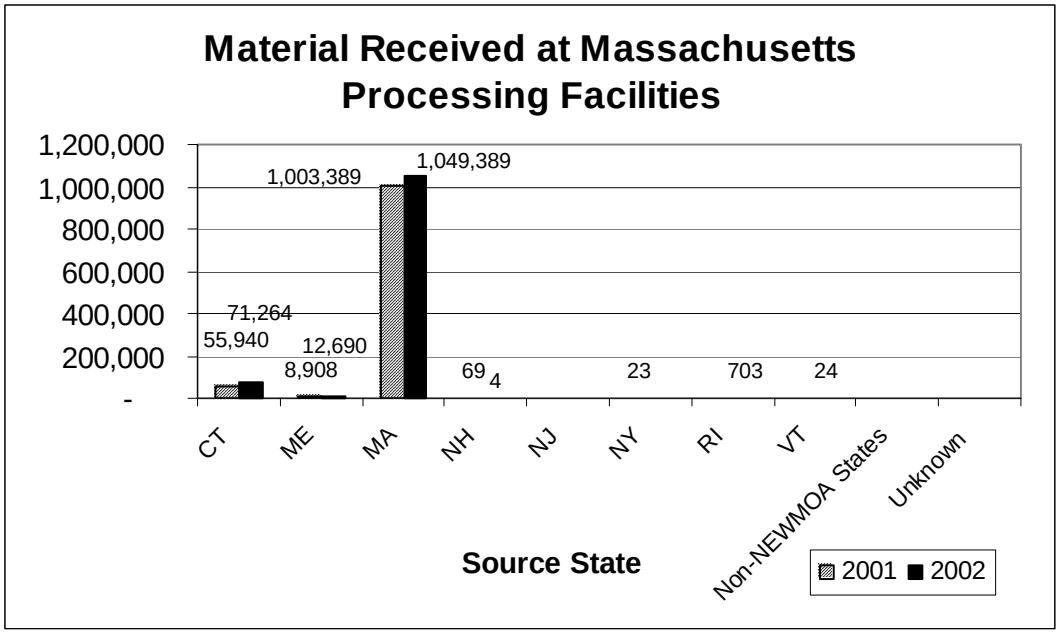


Figure MA- 3

C&D waste processed in Massachusetts is either disposed or diverted. The amount of C&D waste sent from Massachusetts processing facilities to disposal facilities in 2002 was 536,497 tons. In addition to this amount, 376,385 tons of C&D fines from Massachusetts' processing facilities were used as alternate daily cover (ADC) and grading material at landfills in Massachusetts, Maine, New Jersey, and Rhode Island. Figure MA-4 shows the amount of C&D waste sent to disposal facilities, by state. Massachusetts processing facilities also diverted a total of 110,481 tons of C&D that was marketed and did not end up in the landfill environment. Figure MA-5 shows the breakdown of the types of waste being diverted and the states to which it was sent.

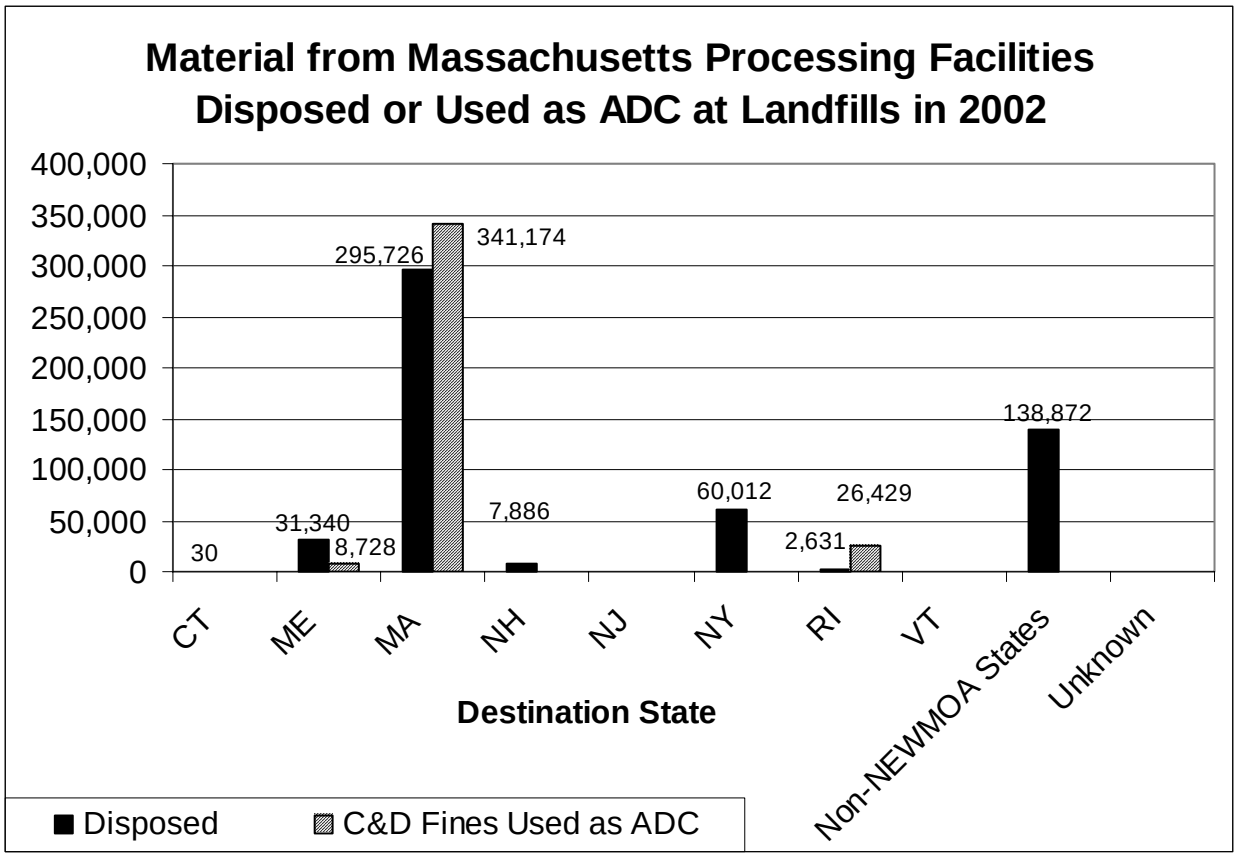

Material from Massachusetts Processing Facilities Disposed or Used as ADC at Landfills in 2002
400,000
350,000
300,000
250,000
200,000
150,000
100,000
50,000
0
30
31,340
8,728
295,726
341,174
7,886
60,012
2,631
26,429
138,872
CT
ME
MA
NH
NJ
NY
RI
VT
Non-NEWMOA States
Unknown
Destination State
Disposed
C&D Fines Used as ADC

Figure MA- 4

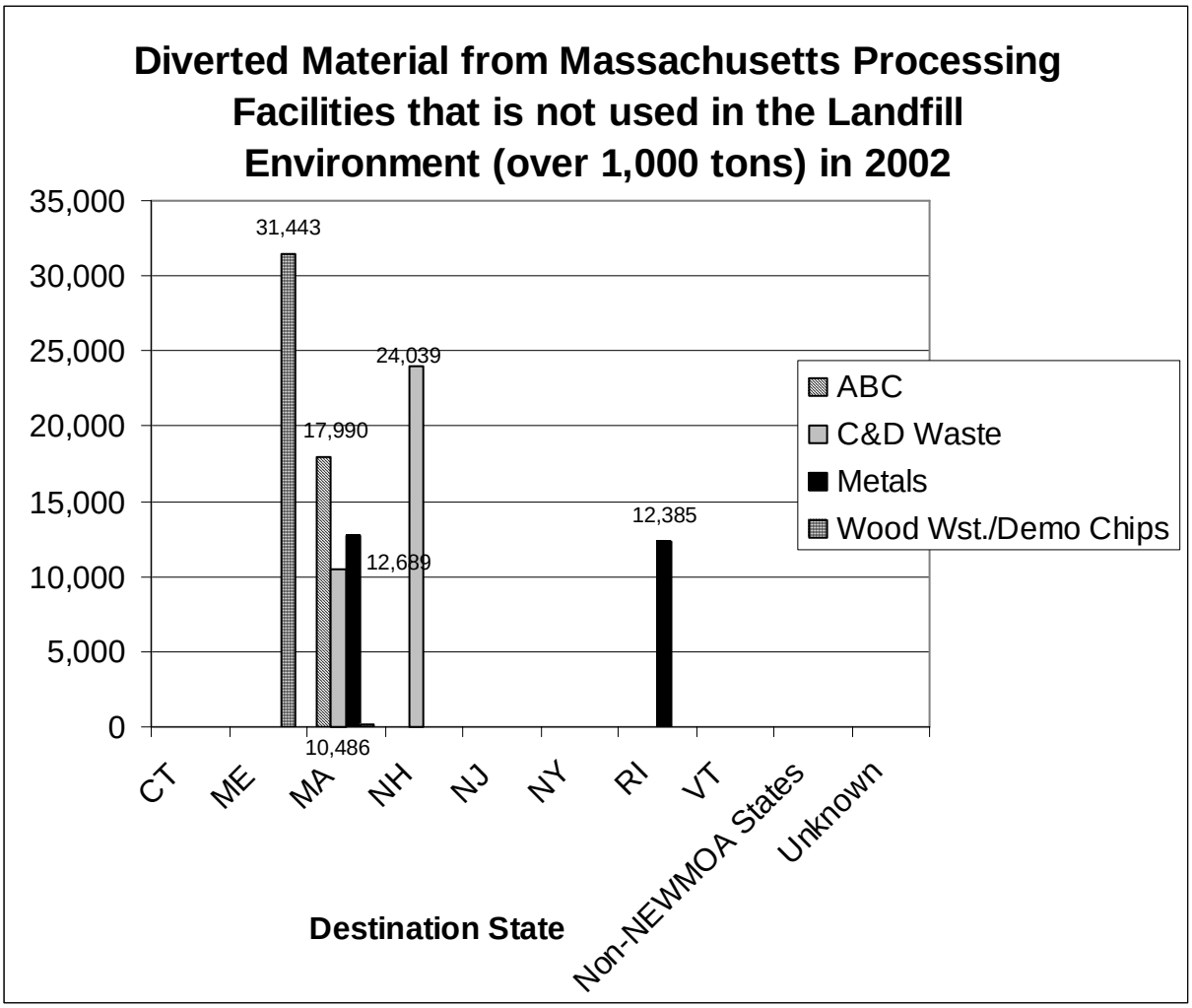


Figure MA- 5

Comparison of Data from 2001 to 2002

The total amount of C&D processed at Massachusetts processing facilities increased 6% between 2001 and 2002 from 1,068,329 tons to 1,134,074 tons. In-state generated C&D processed increased from 1,003,389 tons to 1,049,389 tons. Out-of-state C&D generated C&D that was processed in Massachusetts increased from 64,940 tons to 84,685 tons. Figure MA-3 above also shows the amounts of C&D waste received at Massachusetts processing facilities by the state of origin from 2001 for comparison.

The type, amount, and/or destination of material diverted from the landfill environment changed between 2001 and 2002 in the following ways:

- Wood waste reported as sent to Maine increased from 25,665 tons in 2001 to 31,443 tons in 2002.
- Within Massachusetts, ABC diversion increased from 14,696 tons to 17,990 tons, C&D waste increased from 8,740 tons to 10,486 tons, and metals decreased from 14,455 tons to 12,689 tons.

- C&D waste reported as sent to New Hampshire increased from 43 tons to 24,039 tons. In 2001, 1,858 tons of wood waste was sent to New Hampshire while in 2002 no wood waste was sent to New Hampshire.
- Metals reported as sent to Rhode Island increased from 11,486 tons to 12,385 tons.

Data Collection Summary

Massachusetts requires that all landfills, WTEs and handling facilities, including transfer stations and C&D processing facilities 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.

C&D waste material processors that are conditionally exempt recycling operations are not required to report to DEP. Exempt recycling facilities are those that recover materials for reuse, use as a feedstock to make a marketable product, or used as an effective substitute for a commercial product or commodity, and meet other general requirements. DEP performs an annual survey of the exempt facilities it is aware of to obtain as much data as possible. However, the vast majority of these exempt facilities process ABC from road and bridge projects exclusively and are therefore, a type of facility that is not included in this report. Therefore, data from these exempt facilities was not used in this report.

Recent Changes in Massachusetts

The Massachusetts Department of Environmental Protection's (DEP's) Beyond 2000 Solid Waste Master Plan (SWMP) sets a goal of reducing non-municipal solid waste (non-MSW) by 88 percent in 2010. To reach this goal, the SWMP proposed to increase recycling and reuse of construction and demolition (C&D) debris by banning the disposal of unprocessed construction and demolition debris in the year 2003. The DEP convened a C&D Subcommittee of the Solid Waste Advisory Committee (SWAC) to provide input to the DEP. These stakeholders are comprised of architects/engineers, building owners, contractors, haulers, C&D processors, landfill owners, transfer station owners, municipalities, environmental groups, trade associations, law firms, and consultants.

The C&D Subcommittee has recommended to the DEP a strategy that diverts specific C&D debris materials rather than the more general "unprocessed construction and demolition debris" as stated in the SWMP. Specifically, the C&D subcommittee recommended a phased-in ban on the disposal of asphalt paving, brick, concrete, metal and wood. One of the factors in targeting these specific materials was a determination that recycling and reuse markets exist for each of them. Since the C&D Subcommittee's recommendation to ban the disposal of these materials, several businesses have expressed interest in establishing additional facilities to recycle and/or reuse these materials, further enhancing the recycling and reuse markets.

The C&D Subcommittee has also recommended that the ban not target homeowners who are conducting minor home renovation projects. As a result of this recommendation, a proposed

guidance document states that solid waste handling facilities (i.e. landfills, transfer stations, municipal waste combustors, and construction and demolition debris processing facilities) do not need to conduct record-keeping or comprehensive load inspections for vehicles with less than a five cubic-yard capacity. Most passenger vehicles and pick-up trucks have less than five cubic-yard capacity. For homeowners with access to curbside pick-up, the compactor truck will be inspected at the solid waste handling facility. Loads with a cumulative total of 20 percent or less asphalt paving, brick, concrete, metal and wood will not be considered failed loads.

In July 2004, the DEP held public hearings and solicited comments on the proposed amendments to its Solid Waste Facility Regulations at 310 CMR 19.017, located at http://www.mass.gov/dep/bwp/dswm/dswmpubs.htm#regs, to initiate a disposal ban on asphalt paving, brick, concrete, metal and wood. DEP is currently reviewing and preparing responses to the comments it received and hopes to complete this process by the end of 2004.

Another challenge will be in adding additional C&D materials such as gypsum wallboard, asphalt shingles, carpet and ceiling tiles in the future. It's anticipated the C&D reuse and recycling market infrastructure for these materials will be enhanced as the C&D Subcommittee and other stakeholders continue to divert more C&D material from disposal, allowing Massachusetts to achieve its 88 percent non-MSW waste reduction goal in 2010.

New Hampshire

New Hampshire Department of Environmental Services (DES) records indicate that a total of 243,470 tons of C&D waste was generated in New Hampshire in 2002. This is up from 224,379 tons generated in 2001.

C&D Disposal

According to DES records, the amount of C&D waste generated in New Hampshire that was disposed in New Hampshire and elsewhere was 120,858 tons. When data from other states was examined, NEWMOA estimates this figure to increase by just 8 tons to 120,866 tons. In terms of C&D imports and exports, New Hampshire is a net importer, receiving more C&D waste for disposal than it sends for out-of-state disposal.

Imports
According to DES records, New Hampshire facilities imported 27,566 tons of C&D waste in 2002. However, when data from other states is considered, this total is more likely to be 36,141 tons. Vermont reports sending 6,244 tons of C&D waste to New Hampshire, whereas New Hampshire reports receiving only 993 tons of C&D waste from Vermont. Vermont's data is likely to be more accurate due to a tax that is levied on haulers or transfer stations on waste destined for disposal or incineration. Because haulers have to pay this tax, they are unlikely to over-report the amount of C&D they send for disposal. Of the amount exported by Vermont to New Hampshire, 4,957 tons of C&D waste was used as ADC at New Hampshire landfills.

Massachusetts reports sending 7,886 tons of C&D waste to New Hampshire, whereas New Hampshire reports receiving only 4,562 tons of C&D waste from Massachusetts. This material might first go to a transfer station or processor in New Hampshire before disposal. The disposal facility might then record the material as in-state waste. Since transfer stations have little incentive to over-estimate the quantity of waste they export, the Massachusetts figure is used in this report. New Hampshire reports receiving 22,011 tons of C&D waste from Maine. Maine does not collect data regarding waste exports, so the New Hampshire figure is used.

Exports
According to DES records, New Hampshire facilities exported 5,469 tons of C&D waste to NEWMOA states and 1,212 tons to unknown destinations. Massachusetts and New Hampshire data is similar regarding C&D waste sent from New Hampshire to Massachusetts. (Massachusetts reports receiving 5,477 tons and New Hampshire reports sending 5,469 tons.) The figure from Massachusetts is used, since disposal facility data is likely to be more accurate than export state data. New York reports receiving 7,000 tons of C&D waste from New Hampshire while New Hampshire does not report sending any C&D waste to New York. Data from the facility in New York that accepts most out-of-state waste reports generally, lumping all smaller quantity states together under one percentage and with no breakdown for specific waste types. Therefore, data from New York regarding New Hampshire quantities is not thought to be reliable enough to use in this report.

Comparison of Data from 2001 to 2002

In-state disposal of C&D waste generated from New Hampshire sources increased by 16,187 (17%) tons between 2001 and 2002, from 97,990 tons to 114,177 tons. Import and export comparisons for the two years are described below, along with the source of the data being compared.

Import Data: The total amount of C&D imported and disposed by New Hampshire facilities increased by 17,317 tons (92%) between 2001 and 2002, from 18,824 tons to 36,141 tons, using the data provided by New Hampshire disposal facilities, except for waste from Massachusetts and Vermont, where data from those states' transfer stations was used, as discussed previously. Imports from Maine increased from 7,662 tons to 22,011 tons. Imports from Massachusetts decreased from 9,877 tons to 7,886 tons and imports from Vermont increased from 1,285 tons to 6,244 tons. The state-by-state breakdown is shown in Figure NH-1, along with the breakdown for 2001 for comparison.

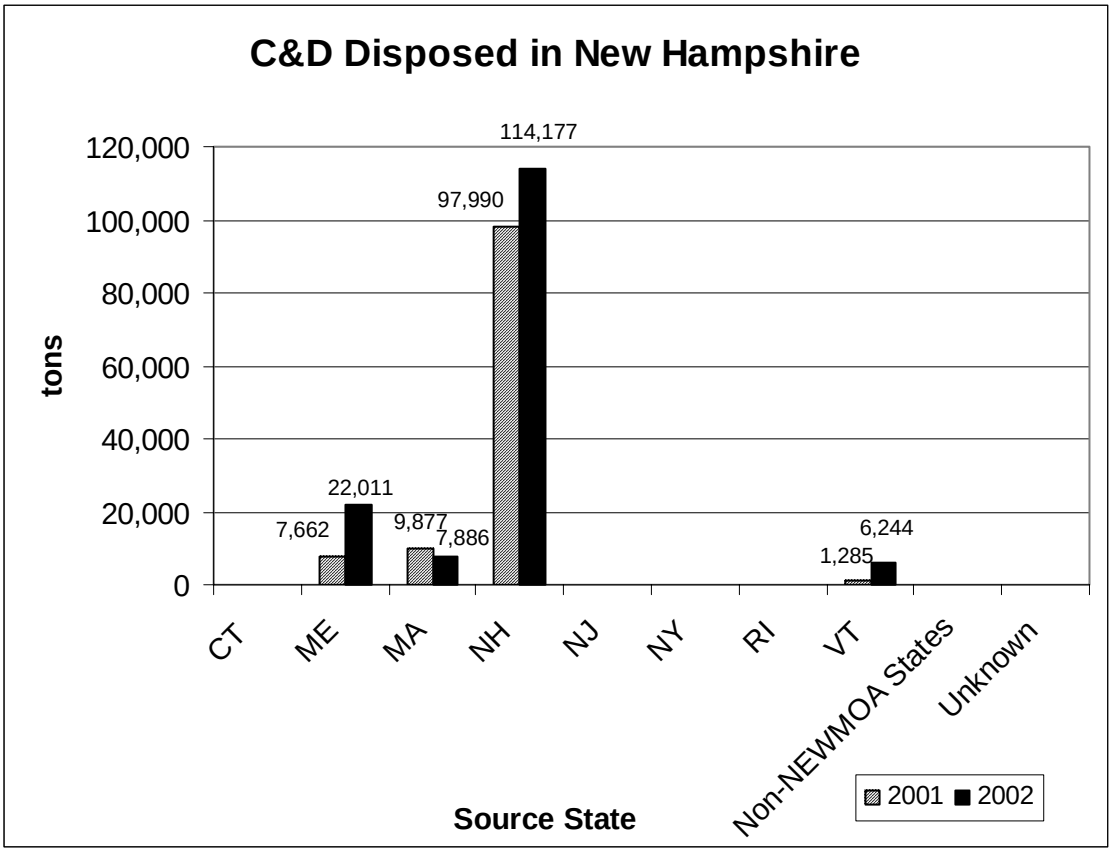


Figure NH- 1

Export Data: The total amount of New Hampshire-generated C&D exported by New Hampshire through New Hampshire transfer stations and resource recovery facilities increased by 3,774 tons (130%) between 2001 and 2002, from 2,915 tons to 6,689 tons, using the data provided by New Hampshire transfer stations except for C&D sent to Massachusetts, where Massachusetts disposal facility data was used, as discussed above. 135 tons was exported to Vermont in 2001, while no C&D was sent to Vermont in 2002. The amount of waste exported to unknown states dropped from 2,780 tons to 1,212 tons. No exports were reported sent to Massachusetts in 2001, while 5,477 tons was sent to Massachusetts in 2002. The state-by-state breakdown is shown in Figure NH-2, along with the breakdown for 2001 for comparison.

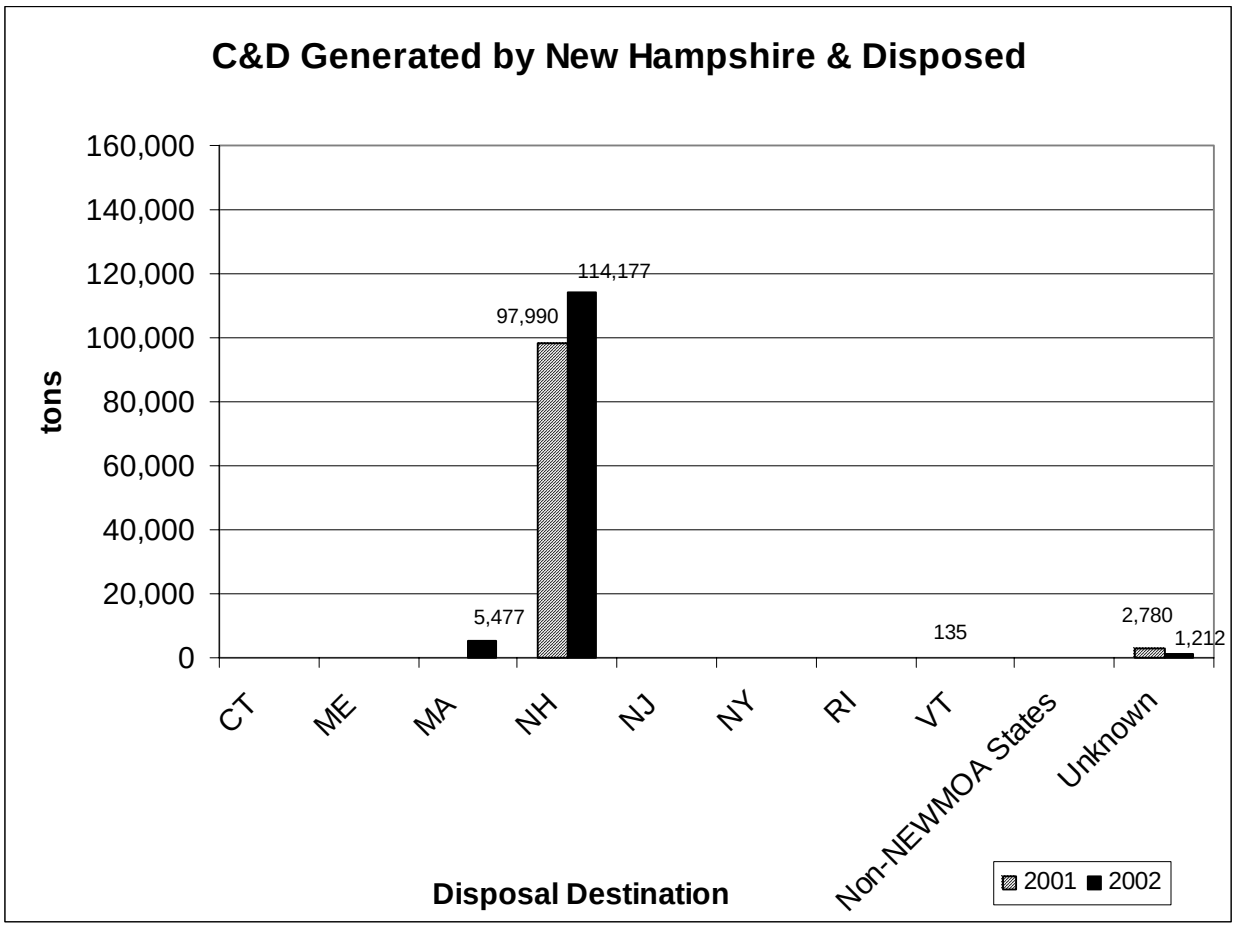


Figure NH- 2

C&D Processing

There are four permitted C&D processing facilities in New Hampshire, with two handling the majority of the C&D waste. According to DES records, New Hampshire processing facilities handled 295,630 tons of C&D waste in 2002. 122,612 tons of this waste originated in New Hampshire. 168,753 tons was imported from NEWMOA states and the source state(s) of the remaining 4,265 tons was not indicated. The amount of C&D other states say they sent to New

Hampshire for processing is not available. C&D is processed primarily into wood chips for fuel, landfill ADC, and aggregates.

Comparison of Data from 2001 to 2002

The total amount of C&D processed at New Hampshire processing facilities decreased 9.9% between 2001 and 2002 from 323,278 tons to 291,365 tons. In-state generated C&D processed in New Hampshire decreased 15% from 144,632 tons to 122,612 tons. Out-of-state generated C&D waste that was processed in New Hampshire increased from 162,681 tons to 168,753 tons. Figure NH-3 depicts the state-by-state breakdown of C&D waste processed in New Hampshire, along with the figures from 2001 for comparison.

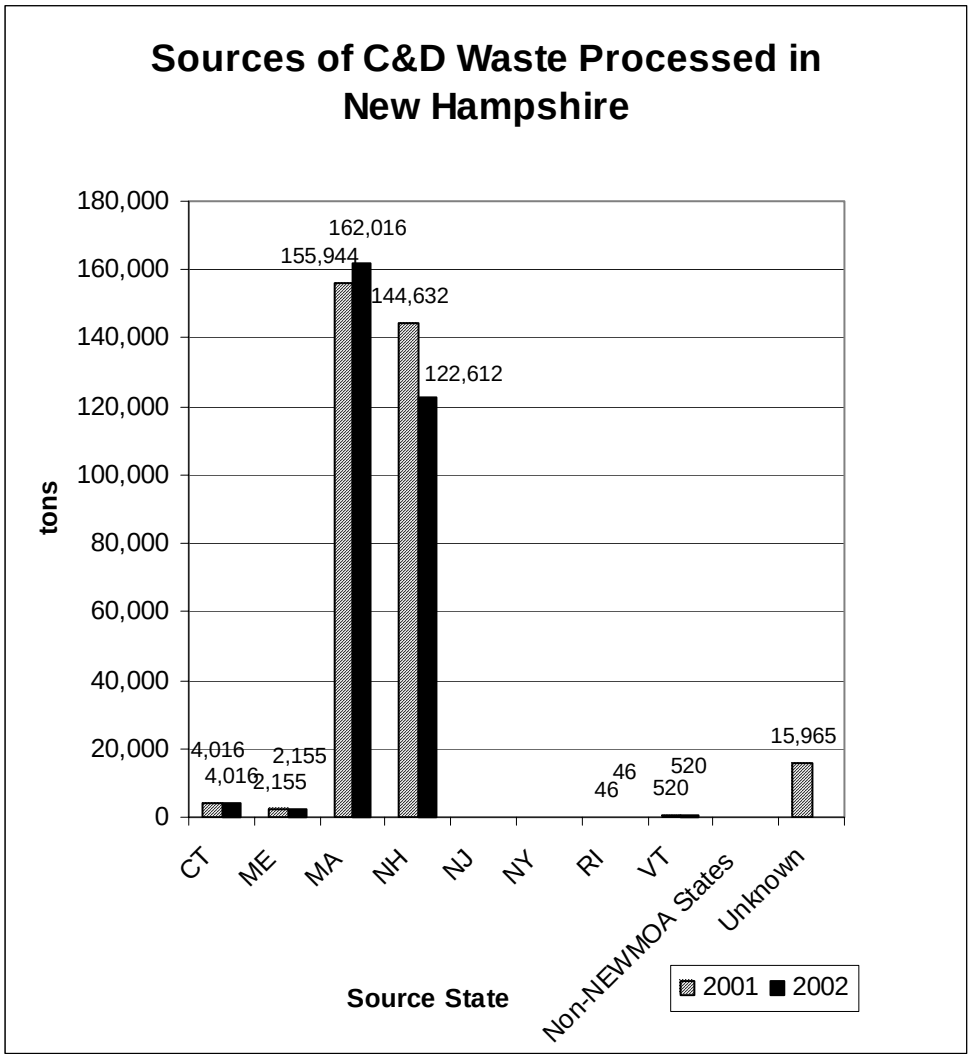


Figure NH- 3

Data Collection Summary

All solid waste facilities, including collection and storage facilities, are required to submit an Annual Facility Report. 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. Disposal facilities are also required to submit quarterly tonnage reports, which allows for real time estimates of imports and capacity.

Recent Changes in New Hampshire

None reported.

New Jersey

According to New Jersey Department of Environmental Protection (DEP) records, New Jersey generated a total of 1,030,485 tons of C&D waste in the year 2002, up from 966,422 tons of C&D waste in the year 2001, an increase of 6.6 percent.

C&D Disposal

According to DEP records, the amount of C&D waste generated by New Jersey in 2002 that was disposed was 834,165 tons. When data from other states was examined, NEWMOA estimates this figure to be slightly higher at 835,891 tons. In terms of C&D imports and exports, New Jersey is a net exporter, sending more C&D waste out-of-state for disposal than it accepts and disposes from other states.

Imports

According to DEP records, New Jersey imported a total of 39,198 tons of C&D waste from NEWMOA states—39,178 tons from New York and 20 tons from Connecticut—and 188 tons of C&D waste from non-NEWMOA states, although it is unclear whether this waste is ultimately disposed in New Jersey or shipped out-of-state for disposal. However, for purposes of this report, NEWMOA assumes that the material is disposed of in New Jersey. When data from other states is considered, this figure is more likely to be 39,232 tons. Only Massachusetts and New York report sending C&D waste to New Jersey, 54 tons and 98,000 tons respectively. The Massachusetts figure is used since transfer stations have little incentive to over-estimate the amount of waste they export. However, the data from New York is so general that it could be less reliable than the data from New Jersey, and therefore the New Jersey data is used.

Exports

According to DEP records, of the C&D waste generated in New Jersey, 341,540 tons was disposed in New Jersey, 1,274 was sent for disposal in New York, 224,426 tons was sent to landfills in non-NEWMOA states, and the disposal destination of the remaining 266,925 tons was not reported. Most likely this 266,925 tons was sent to landfills outside New Jersey and the other NEWMOA states. New York reports receiving 3,000 tons of C&D waste from New Jersey compared to the 1,274 tons New Jersey reports sending New York. This difference is likely due to waste that is direct-hauled from job sites in New Jersey into New York, and therefore, the New York figure is used.

Comparison of Data from 2001 to 2002

In-state disposal of C&D waste generated from New Jersey sources increased by 10,649 tons (3.2%) between 2001 and 2002, from 330,891 tons to 341,540 tons. Import and export comparisons for the two years are described below, along with the source of the data being compared.

Import Data: The total amount of C&D imported and disposed by New Jersey decreased by 6,999 tons (15%) between 2001 and 2002, from 46,419 tons to 39,420 tons, using the data provided by disposal facilities in New Jersey, except for C&D waste from Massachusetts, where data from Massachusetts transfer stations was used, as previously discussed. Imports from New York decreased from 45,191 tons to 39,178 tons. Imports from non-NEWMOA states decreased from 1,228 tons to 188 tons. The state-by-state breakdown of C&D waste disposed in New Jersey, including imports, is shown in Figure NJ-1, along with the breakdown from 2001 for comparison.

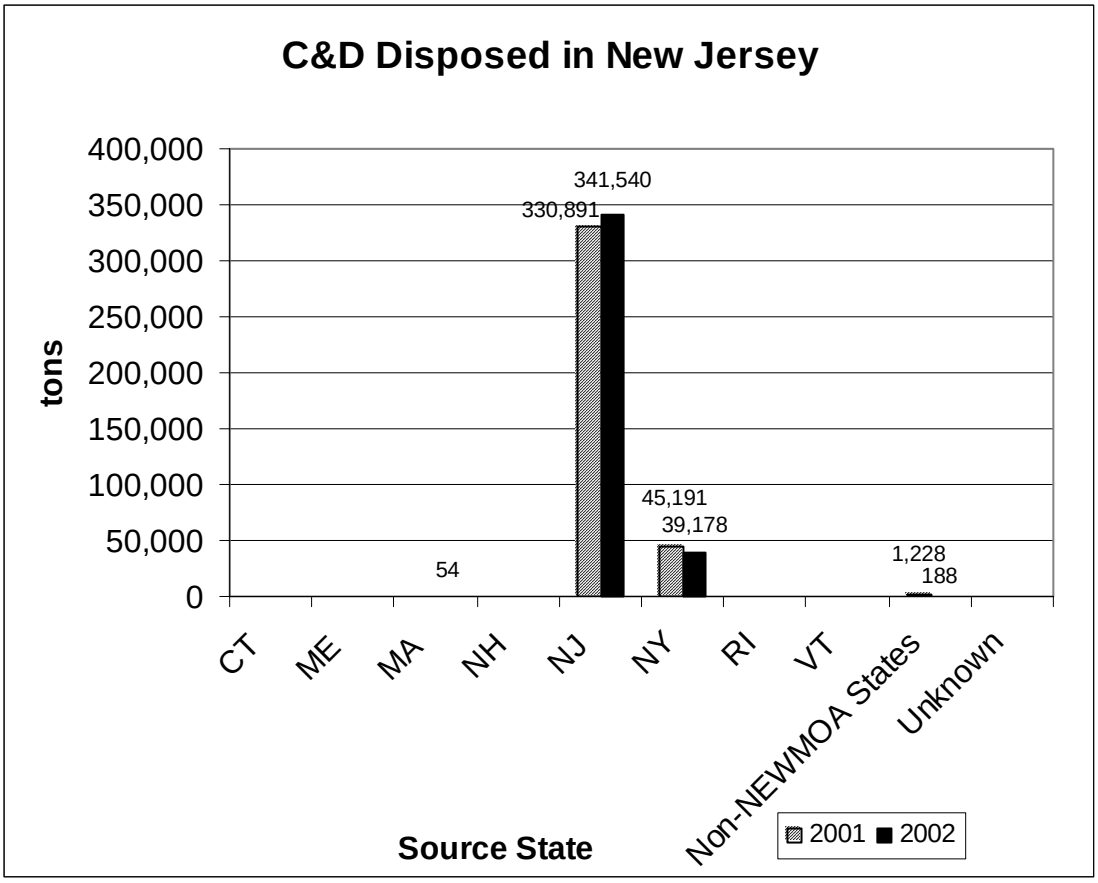


Figure NJ- 1

Export Data: The total amount of New Jersey-generated C&D exported by New Jersey through New Jersey transfer stations and resource recovery facilities increased by 28,445 tons (6.1%) between 2001 and 2002, from 465,906 tons to 494,351 tons, using the data provided by the facilities in New Jersey, except for C&D waste sent to New York, where New York disposal facility data was used, as discussed earlier. Exports to non-NEWMOA states increased from 220,109 tons to 224,426 tons. No C&D waste was reported sent to New York in 2001, while 3,000 tons was sent to New York in 2002. The state-by-state breakdown of C&D waste generated by New Jersey and disposed, including exports, is shown in Figure NJ-2, along with the breakdown from 2001 for comparison.

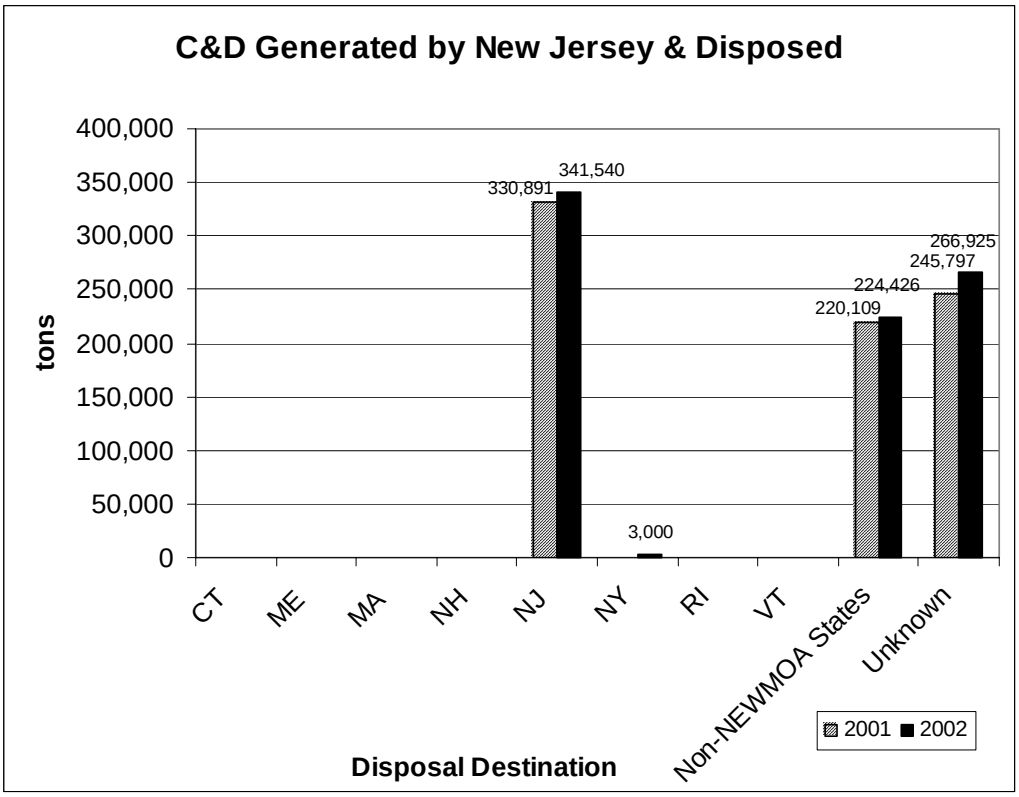


Figure NJ- 2

C&D Processing

New Jersey currently has 2 mechanized C&D processing facilities and 35 permitted transfer stations/material recovery facilities which utilize manual sorting of C&D materials from the waste stream. New Jersey also utilizes 95 Class B recycling facilities that receive source separated C&D materials. The difference between the C&D processing facilities, transfer stations/material recovery facilities and Class B facilities are that transfer stations/material recovery facilities accept both commingled waste materials and source separated materials, whereas Class B facilities can only accept source separated material. Also, transfer stations/material recovery facilities are required to submit monthly solid waste/recycling reports and the recycling facilities only have to submit annual reports.

In most instances, the end markets are located in New Jersey. DEP reports that New Jersey processing and recycling facilities did not accept C&D waste from out of state. Class B recycling facilities are not allowed to generate more than 1 percent residue.

Comparison of Data from 2001 to 2002

According to DEP records, the total amount of C&D generated in New Jersey and recycled increased from 2001 to 2002 by 26,695 tons (15.7 percent) from 169,625 tons to 196,320 tons. Virtually all of the increase occurred due to the recovery of wood scraps which increased by 27,990 tons or 33 percent from 2001 to 2002. The recovery of light iron/white goods decreased by 3,511 tons (16%) from 2001 to 2002 with cardboard increasing by 1,191 tons (5%), non-ferrous/aluminum scrap increasing by 1,093 tons (34%). Concrete recycling remained approximately the same. Other states do not report sending C&D waste to New Jersey for processing. New Jersey does not report the total quantity of material handled by processing facilities, only the amount that is diverted for reuse/recycling. Information about waste sent from C&D processing facilities for disposal or use as ADC is not available. The types and quantities of C&D material recovered by facilities in New Jersey in 2001 and 2002 are shown in Figure NJ-3.

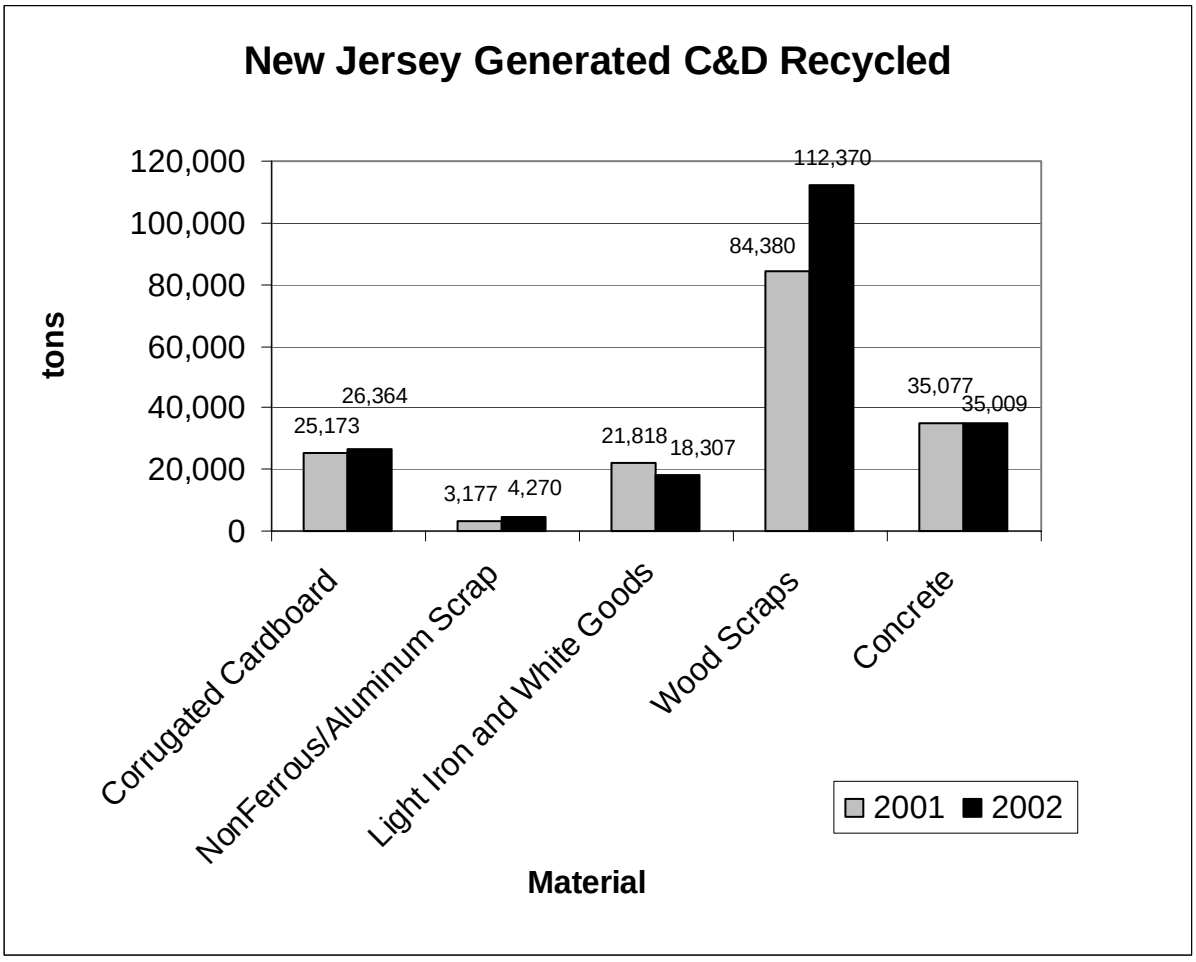


Figure NJ- 3

Data Collection Summary

All solid waste disposal facilities (landfills, incinerators and transfer stations/material recovery facilities) in New Jersey which accept solid waste, including C&D waste, are required by regulation to submit a monthly disposal report to the New Jersey DEP which includes tonnage received, waste type, origin and final destination. Also, all recycling facilities in New Jersey which accept only source separated materials, including source separated C&D materials, are required by regulation to submit an annual report to the New Jersey DEP which includes tonnage recycled, materials, origin and end markets. Additionally, by regulation, New Jersey receives annual recycling tonnage reports from all the municipalities which include tonnage, materials, origin, and end markets.

Capacity Summary

New Jersey currently has two landfills which accept only C&D waste. All other C&D disposed in New Jersey goes to 12 regional in-state landfills which accept all waste types including C&D. These facilities have a current remaining capacity of about 40 million tons.

Recent Changes in New Jersey

A recent survey was completed and entitled: *Recycling is the Answer for Builders and Demolition Contractors*. For more detailed information, refer to the New Jersey DEP website at: http://www.state.nj.us/dep/dshw/recycle/builderinfo.htm.

New York

According to New York State Department of Environmental Conservation (DEC) records, facilities in New York generated a total of 3,032,000 tons of C&D waste in the year 2002. This is up from 2,343,168 tons in 2001.

C&D Disposal

According to DEC records, the amount of C&D waste generated by New York that was disposed, either in New York or elsewhere, was 3,032,000 tons. When data from other states was examined, NEWMOA estimates this figure to be lower at 2,864,282 tons. Both quantities include 109,000 tons of C&D used as ADC in New York. In terms of imports and exports, New York is a net exporter, sending more C&D waste for disposal to other states than it accepts from other states.

Imports
According to DEC records, 1,838,000 tons of C&D waste was disposed in New York in 2002. Of the C&D waste disposed in-state, 26,000 tons was from NEWMOA states. However, when data from other states is considered, the amount from NEWMOA states is more likely to be 90,906 tons. The DEC reports that 4,000 tons of C&D waste from Connecticut, 5,000 tons from Massachusetts, 7,000 tons from New Hampshire, 3,000 tons from New Jersey and 7,000 tons from Vermont was disposed of in New York facilities in 2002. In addition, 1,000 tons of C&D was imported from Pennsylvania. In contrast, Connecticut reports sending 22,419 tons of C&D waste to New York, a difference of 18,419 tons. Massachusetts also reports sending more C&D waste to New York than New York records indicate, 60,012 tons. In these cases the Connecticut and Massachusetts data is used.

New Hampshire, New Jersey and Vermont report sending less C&D waste to New York than New York reports receiving. New Hampshire reports sending no C&D waste to New York while New York reports receiving 7,000 tons of C&D waste from New Hampshire. New Jersey reports sending 1,274 tons of C&D waste to New York while New York reports receiving 3,000 tons of C&D from New Jersey. Vermont reports sending 5,475 tons of C&D waste to New York while New York reports receiving 7,000 tons of C&D waste from Vermont. For New Jersey, the difference could be due to direct haul from job sites in New Jersey directly to a New York facility and therefore, the New York data is used. However, data from the facility in New York that accepts most out-of-state waste reports generally, lumping all smaller quantity states together under one percentage and with no breakdown for specific waste types. Therefore, data from New York regarding New Hampshire and Vermont quantities is not thought to be reliable enough to use in this report.

Exports
According to DEC records, New York exported 98,000 tons of C&D waste to disposal facilities in NEWMOA states and 1,013,000 tons to disposal facilities in Non-NEWMOA states in 2002. When data from NEWMOA states is examined, the amount sent to NEWMOA states for disposal was determined to be 39,282 tons. New Jersey reports receiving 39,178 tons of C&D waste from New York whereas New York reports sending 98,000 tons of C&D waste to New

Jersey. Data from New York is very general and therefore not thought to be as reliable as data from New Jersey, so the New Jersey data was used. Vermont reports receiving 104 tons of C&D waste from New York whereas New York does not report sending any C&D to Vermont. This material could be direct hauled from job sites in New York. The Vermont figure is used since data from disposal facilities is usually more accurate than transfer station data.

Comparison of Data from 2001 to 2002

In-state disposal of C&D waste generated from New York sources decreased by 441,454 tons (20%) between 2001 and 2002, from 2,253,454 tons to 1,921,000 tons. This could possibly be due to some C&D waste from 9/11 that was disposed in New York that was counted in 2001. It is also possible that in 2002, more on-site recycling of materials took place, thereby escaping reporting requirements. Import and export comparisons for the two years are described below, along with the source of the data being compared.

Import Data: The total amount of C&D imported and disposed by New York decreased by 112,109 tons (55%) between 2001 and 2002, from 204,015 tons to 91,906 tons. This difference was determined by using the data provided by transfer stations in Connecticut, Massachusetts, New Hampshire and Vermont, and by New York disposal facilities for waste imported from New Jersey, as discussed earlier. Imports from Connecticut decreased from 54,379 tons to 22,419 tons. Imports from Massachusetts decreased from 103,174 tons to 60,012 tons. Imports from New Hampshire decreased from 212 tons to 0 tons, imports from Vermont decreased from 6,785 tons to 5,475 tons, and imports from non-NEWMOA states decreased from 39,453 tons to just 1,000 tons. No C&D waste was sent to New Jersey in 2001, while 3,000 tons was sent to New Jersey in 2002. This breakdown, along with the breakdown from 2001, is shown in Figure NY-1.

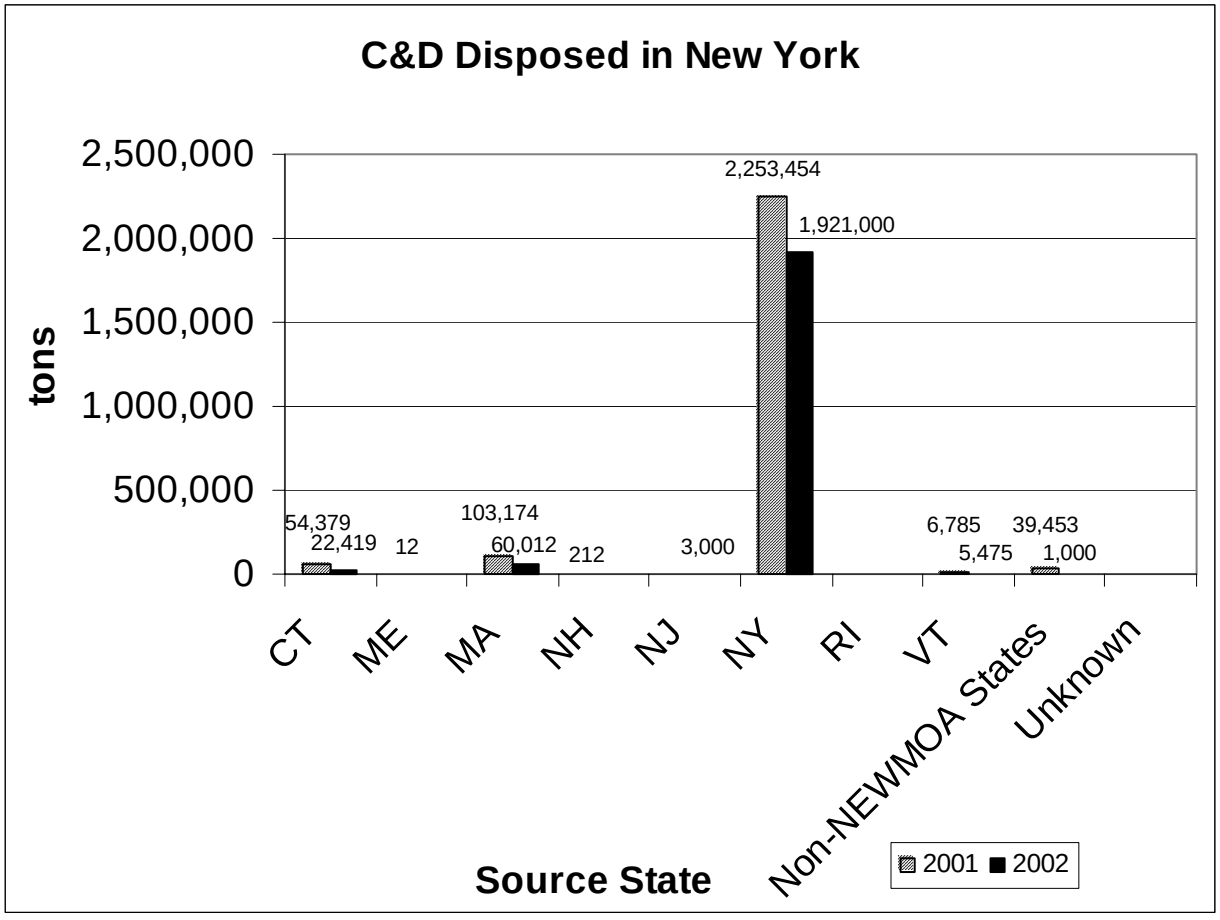
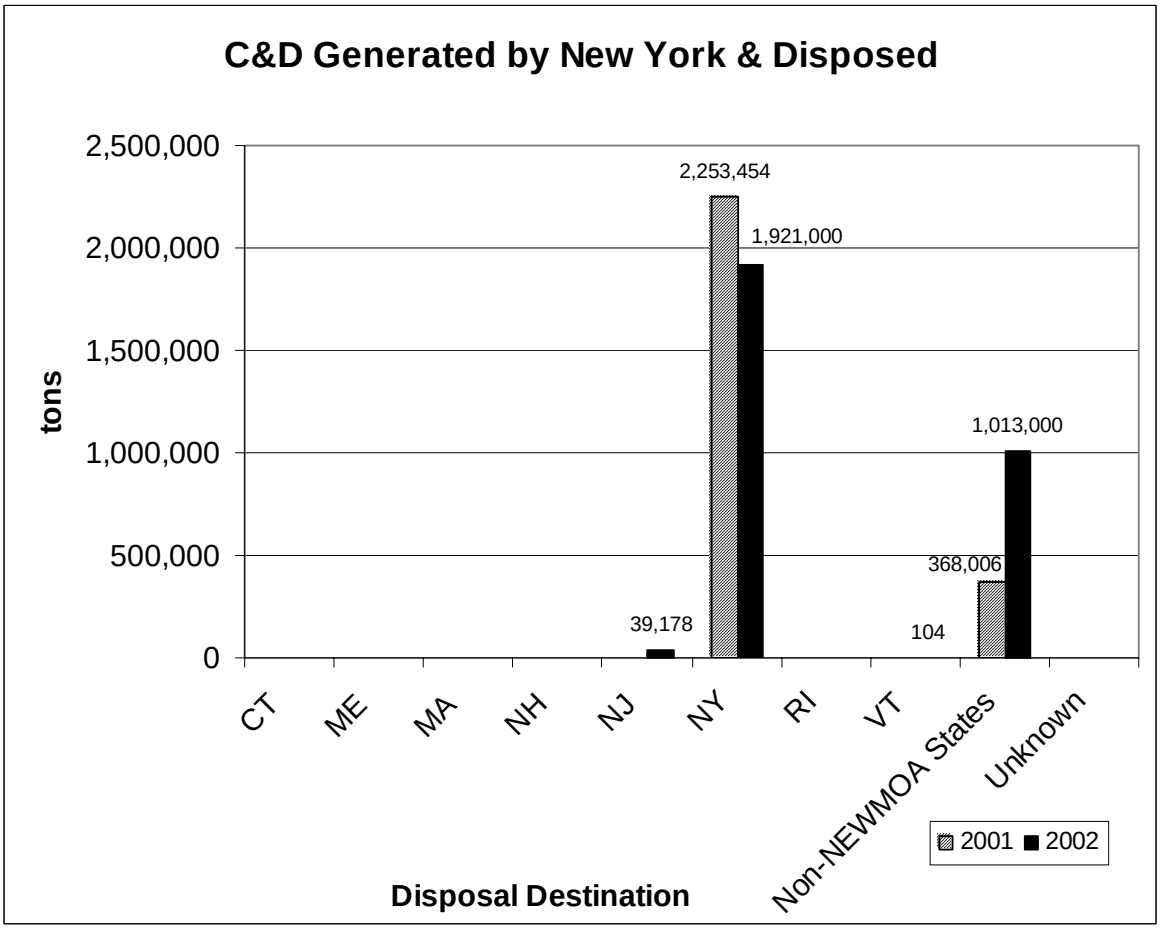


Figure NY- 1

Export Data: The total amount of New York-generated C&D exported by New York increased by 684,276 tons (186%) between 2001 and 2002, from 368,006 tons to 1,052,282 tons. This difference was determined by using the data provided by disposal facilities in New Jersey and Vermont, as discussed above, and New York data for the non-NEWMOA states. No C&D was exported to New Jersey or Vermont in 2001, while 39,178 tons was exported to New Jersey in 2002 and 104 tons was exported to Vermont in 2002. Exports to non-NEWMOA states increased from 368,006 tons to 1,013,000 tons. This increase correlates well with the increase in total generation in New York. Economics dictates where this increase in waste is sent for disposal. A breakdown is shown in Figure NY-2, along with the breakdown of exports in 2001 for comparison.



Note: Amount disposed in NY that was used as ADC or in roads within the containment system of the landfill: 2001 - 555,604 tons, 2002 - 109,000 tons.

Figure NY- 2

C&D Processing

According to DEC records, the amount of C&D waste processed in New York in 2002 was 2,542,000 tons. This was up from 2,343,168 tons in 2001, an increase of 8%. The composition of this material is unknown, as is the origin. However, no NEWMOA states report sending C&D

waste to New York for processing, and therefore, the origin of all the waste sent for processing is assumed to be New York. Most of the waste handled is mixed C&D and is generally landfilled or used beneficially at the landfill as ADC or in roads within the landfill's containment system. None of the processed waste is reported to DEC as being marketed.

Data Collection Summary

All solid waste transfer stations and C&D processing facilities are required to submit annual reports. The Division of Solid & Hazardous Materials has recently distributed a new reporting form to facilities. Use of this new form should improve the accuracy of the C&D processing data that are reported to the DEC by eliminating the confusion that was caused by previous versions of the reporting form. Data required in the form includes: monthly summary of the daily records accounting for the facility total throughput (C&D Processing); and, quantity of solid waste received by weight or volume, compiled by waste type, the total quantity of waste received during each quarter, the origin of the solid waste, the destination of solid waste, the weight or volume and type of each material recovered, etc (transfer stations). In addition, MSW landfills and C&D landfills are required to submit annual reports detailing the quantity of waste received, the service area, and any beneficial use of waste (ADC, roads on the landfill, etc).

Data that may not be captured by reporting may include inert material (concrete, asphalt, brick and other masonry materials, soil, glass, rock) that is disposed in an exempt manner. To be exempt the material recognizable (large chunks - not fines) and must be disposed during the daylight hours and no fee can be charged, or any other form of financial consideration provided. In a practical sense, when no fee can be charged this would mean burial/fill at the job site. There are also exemptions for DOT and Thruway Authority facilities.

Capacity Summary

MSW landfills that are permitted to accept C&D waste have an estimated 81 million tons of remaining capacity for all waste combined. The 20 landfills that are permitted to accept C&D only are estimated to have an additional 2.4 million tons of capacity remaining.

Recent Changes in New York

There is an electronic database that is slowly becoming more widely used by regional staff. Entry of data into this system will facilitate retrieval of the C&D processing and disposal data.

Rhode Island

According to Rhode Island Department of Environmental Management (DEM) records, Rhode Island generated a total of 153,172 tons of C&D waste in the year 2002, down from 176,017 tons in 2001.

C&D Disposal

According to DEM records, the amount of C&D generated by Rhode Island that was disposed, either in Rhode Island or elsewhere, was 90,456 tons. When data from other states was examined, NEWMOA estimates this figure to change slightly to 90,489 tons. In terms of imports and exports, Rhode Island is a net exporter, sending more C&D waste out-of-state for disposal than it accepts and disposes from other states.

Imports
Officially, Rhode Island receives no C&D waste from other states for disposal. However, Connecticut and Massachusetts report sending 2,509 and 28,357 tons to Rhode Island for disposal, respectively. Of the C&D sent to Rhode Island from Massachusetts, 26,429 tons was reported by Massachusetts as for use as alternative daily cover (ADC). Out-of-state material might first go to a transfer station or processor in Rhode Island before disposal. A Rhode Island disposal facility might then record the material as in-state waste. However, the C&D processors in Rhode Island that take in out-of-state waste also send a significant quantity of waste out-of-state for disposal, so it is possible that the waste sent to Rhode Island by Connecticut and Massachusetts (except the portion used as ADC) is in turn sent back out-of-state for disposal. For this report, NEWMOA used the data from Connecticut and Massachusetts.

Exports
According to DEM records, Rhode Island exported 13,508 tons of C&D waste to non-NEWMOA states. Massachusetts reports receiving 33 tons of C&D waste from Rhode Island, while Rhode Island does not report sending any C&D waste to Massachusetts. This material could be direct hauled from job sites in Rhode Island to a Massachusetts facility. The Massachusetts figure is used.

Comparison of Data from 2001 to 2002
In-state disposal of C&D waste generated from Rhode Island sources increased by 55,892 tons (265%) between 2001 and 2002, from 21,056 tons to 76,948 tons. There were no imports reported to the DEM in either 2001 or 2002. Export comparisons for the two years are described below, along with the source of the data being compared.

Import Data: The total amount of C&D that was imported by Rhode Island facilities increased 189% from 10,680 tons in 2001 to 30,866 tons in 2002. This difference was determined by using the data provided by disposal facilities in Massachusetts and Connecticut, as discussed earlier. This situation is shown in Figure RI-1.

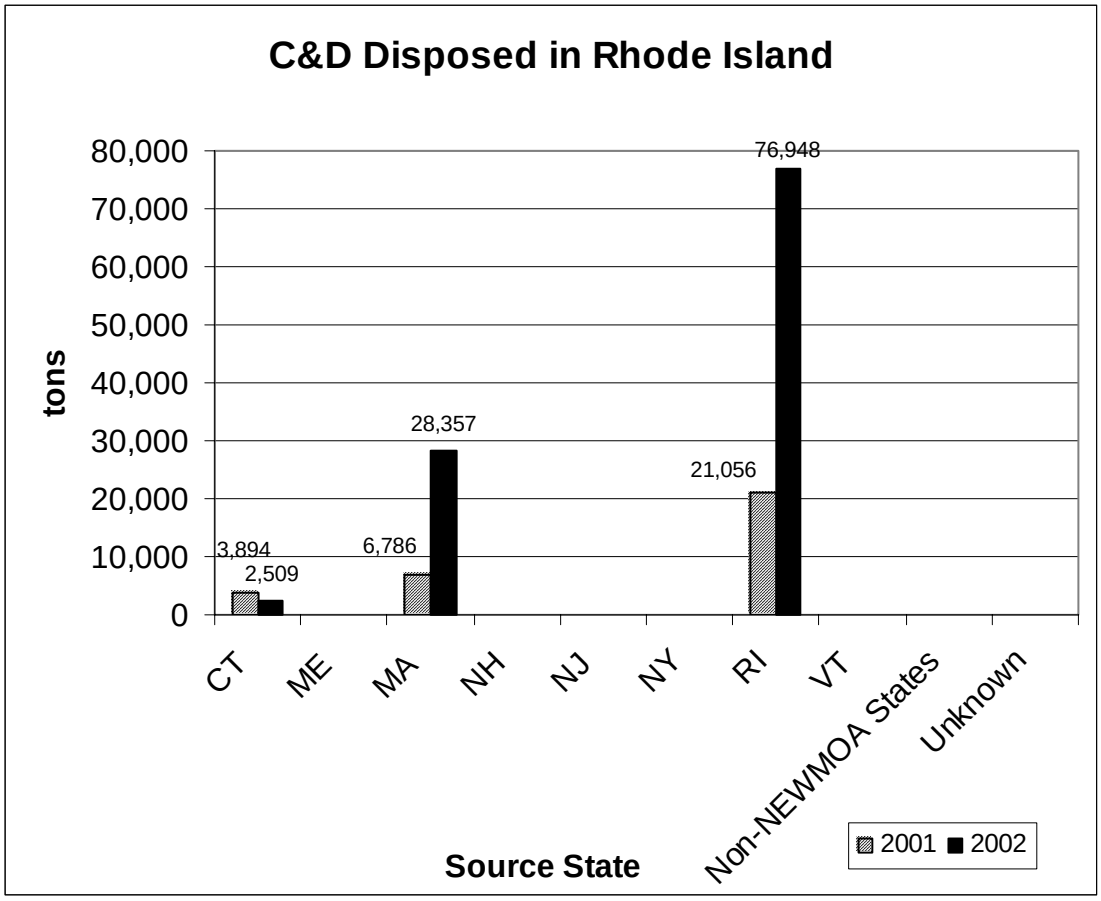


Figure RI- 1

Note: The data from MA in 2002 includes 26,429 tons sent to RI for use as ADC.

Export Data: NEWMOA was not able to determine the quantity of Rhode Island C&D waste that was exported for disposal in 2001 because several C&D processors in Rhode Island obtained waste from both in-state and out-of-state sources and then sent the waste for recycling or disposal in-state and/or out-of-state. The origin of the waste was not differentiated in the export data. All waste sent for disposal at a Rhode Island disposal facility was assumed to be material that was generated in Rhode Island. However, it is not possible to attribute the waste sent for recycling or out-of-state disposal to a particular state of origin. In 2002, Rhode Island exported 33 tons to Massachusetts and 13,508 tons to non-NEWMOA states. Massachusetts reports receiving no waste from Rhode Island in 2001. The breakdown is shown in Figure RI-2, along with the amount of Rhode Island-generated waste in 2001 for comparison.

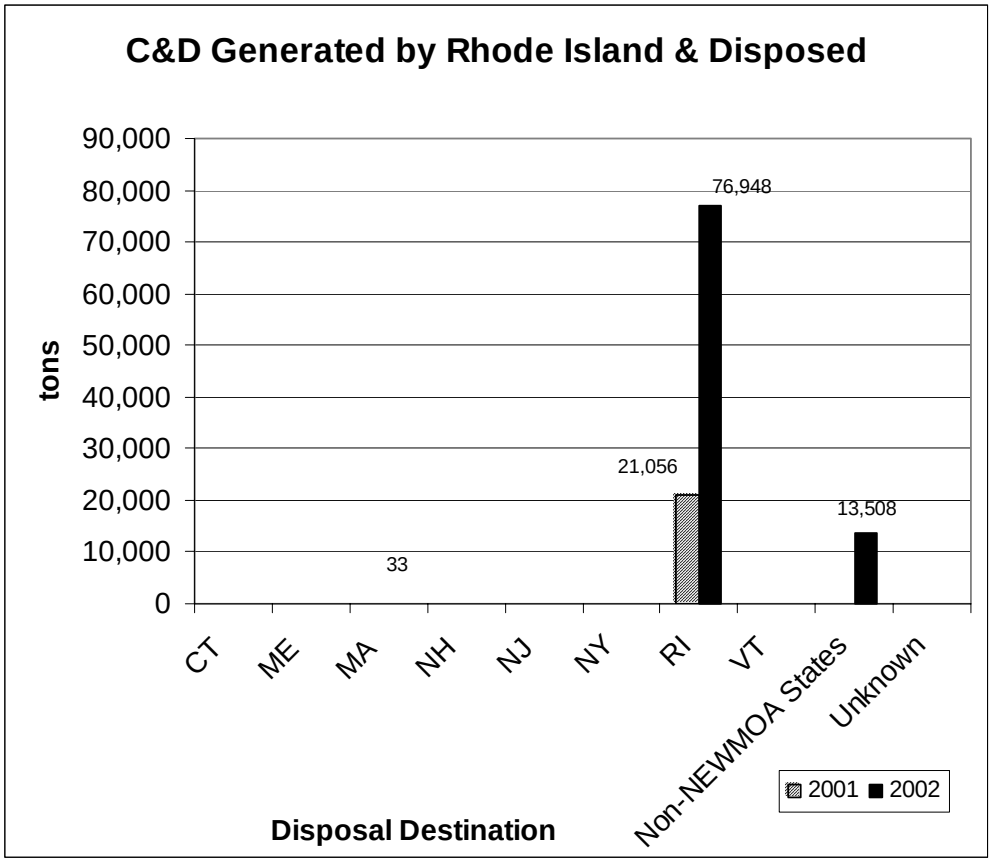


Figure RI- 2

C&D Processing

According to DEM records, the total amount of C&D waste processed in Rhode Island in 2002 was 163,254 tons. The amount of C&D waste generated in Rhode Island that was processed in-state in 2002 was 126,782 tons. The amount of C&D waste received at Rhode Island processing facilities from unspecified sources was 36,472 tons. The amount of C&D other states say they sent to Rhode Island for processing is not available.

C&D waste processed in Rhode Island is disposed, recycled, or used as ADC, but their respective quantities are unknown. The most common re-use of C&D waste is as wood chips for fuel, although the exact breakdown is not known.

According to DEM records, Rhode Island exported 18,127 tons of C&D wood waste to NEWMOA states for processing, all to Maine. Maine does not report receiving any C&D waste from Rhode Island, because Maine does not collect data regarding state of origin from C&D processors, biomass boilers, and disposal facilities. According to DEM records, this waste is sent to the Livermore Falls biomass boiler for use.

Comparison of Data from 2001 to 2002

The total amount of C&D waste processed at Rhode Island processing facilities decreased 41% between 2001 and 2002 from 275,820 tons to 163,254 tons. However, as can be seen in Figure RI-3, no detailed state breakdown is available for this waste.

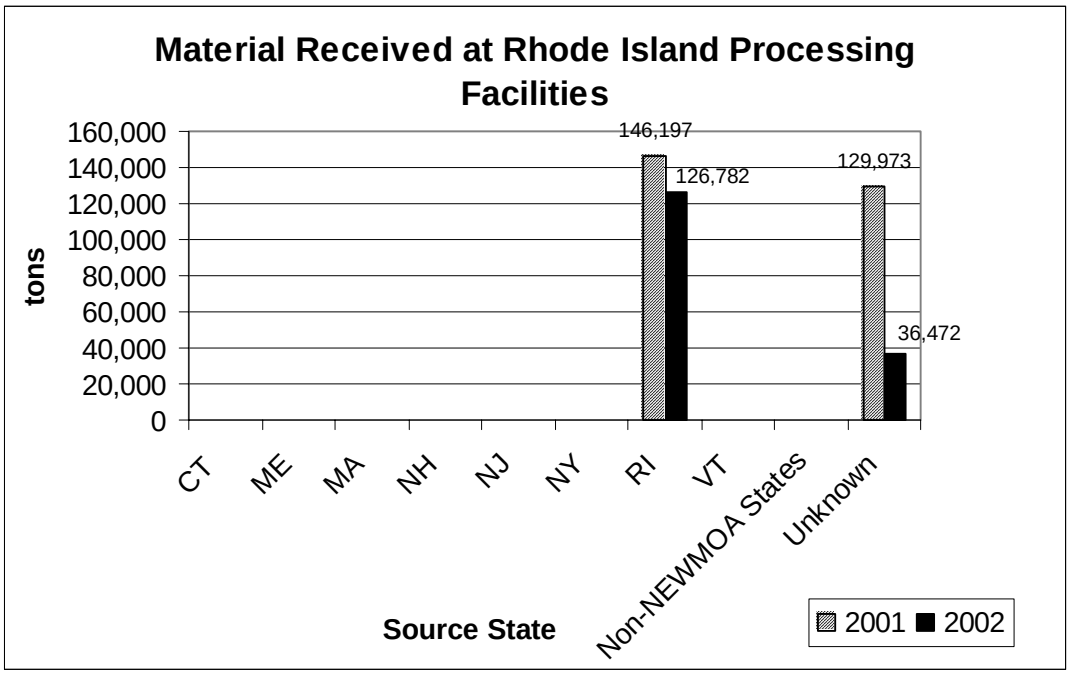


Figure RI- 3

Data Collection Summary

The Rhode Island DEM requires all licensed and registered solid waste management facilities, including landfills, transfer stations, C&D processing facilities, and composting facilities, to submit an Annual Solid Waste Survey. The Survey details the tonnages of solid waste, construction and demolition waste, recyclables, and leaf and yard waste received, stored, and removed by facilities and the tonnages of waste landfilled within Rhode Island. In addition, facilities are required to provide the amount of waste exported to other states and the destination location of those exports.

Capacity Summary

Central Landfill is estimated to be operating until at least 2012. Tiverton Landfill has six to eight years of capacity remaining. Bristol Landfill was scheduled to close in the summer of 2002.

Recent Changes in Rhode Island

None reported.

Vermont

According to Vermont Department of Environmental Conservation (DEC) records, Vermont generated a total of 79,083 tons of C&D waste in the year 2002. This was down from 97,223 tons generated in 2001.

C&D Disposal

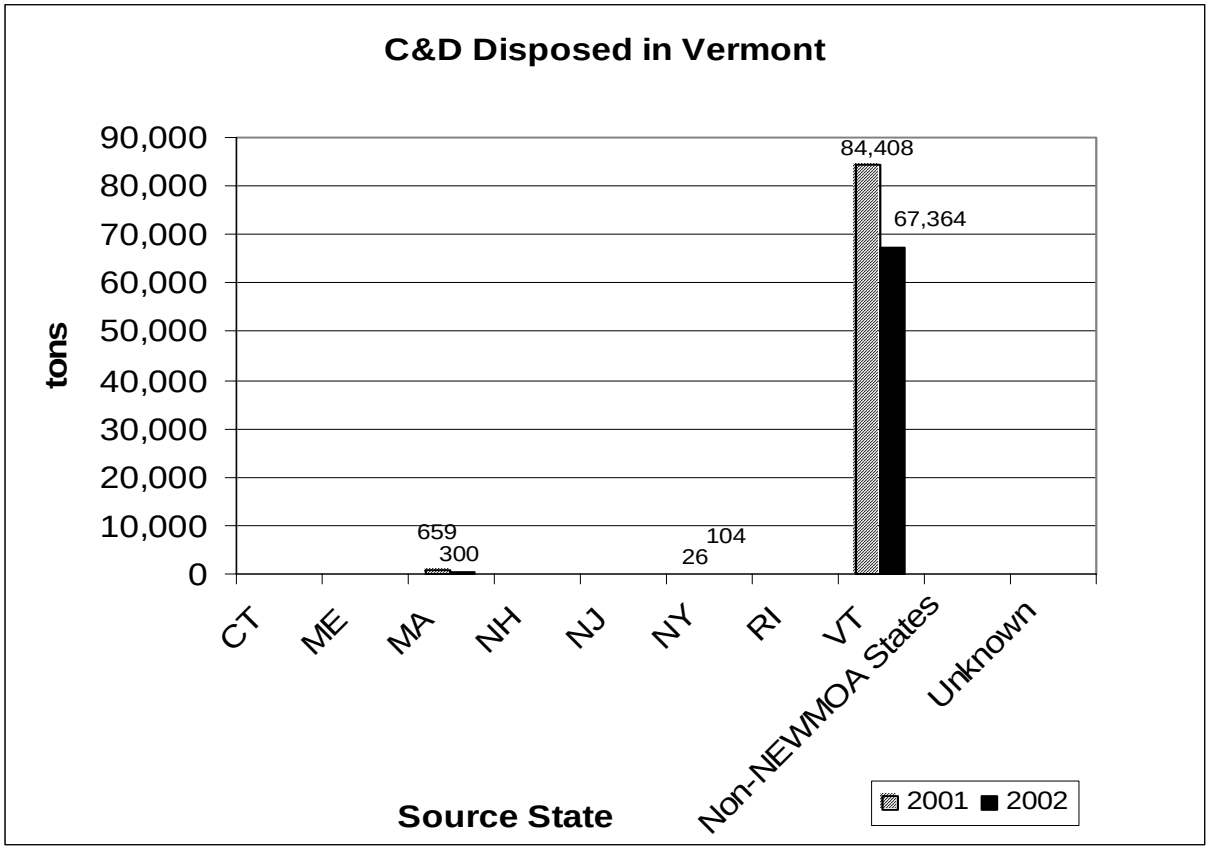
According to DEC records, the amount of C&D waste generated by Vermont that was disposed, either in Vermont or elsewhere, was 73,722 tons. After examining data available from other states, NEWMOA estimates this figure to be to be accurate. In addition to the amount disposed, 7,553 tons of C&D from Vermont was used as alternative daily cover (ADC) or as road base at landfills in New Hampshire and Vermont. In terms of imports and exports, Vermont is a net exporter, sending more C&D waste for disposal to other states than it accepts from other states.

Imports
According to DEC records, Vermont disposal facilities imported only very small amounts of C&D waste from other NEWMOA states (Massachusetts and New York), and none from non-NEWMOA states. Vermont reports receiving 300 tons of C&D waste from Massachusetts and 104 tons of C&D waste from New York, while Massachusetts and New York do not report sending any material to Vermont. This material could be direct hauled from job sites in Massachusetts and New York to a Vermont facility. Vermont data is used in this report.

Exports
According to Department of Environmental Conservation (DEC) records, Vermont exported 11,719 tons of C&D waste to disposal facilities in NEWMOA states in 2002. Vermont reports sending 6,244 tons of C&D waste to New Hampshire, while New Hampshire only reports receiving 993 tons of C&D waste from Vermont, a difference of 5,251 tons. Of the amount Vermont reports sending to New Hampshire, 4,957 tons was used as ADC. Vermont reports sending 5,475 tons of C&D waste to New York whereas New York reports receiving 7,000 tons of C&D waste from Vermont, a difference of 1,525 tons. In the first case, Vermont's data is likely to be more accurate due to a tax that is levied on haulers or transfer stations on waste destined for disposal or incineration. Because haulers have to pay this tax, they are unlikely to over-report the amount of C&D they send for disposal. Data from New York is very general and therefore not thought to be as reliable as data from Vermont. Therefore, Vermont data is used in this report.

Comparison of Data from 2001 to 2002
In-state disposal of C&D waste generated from Vermont sources decreased by 17,044 tons (20%) between 2001 and 2002, from 84,408 tons to 67,364 tons. The 2002 quantity includes 2,596 tons of C&D used as road base at Vermont landfills and the 2001 quantity includes 3,187 tons of C&D used as road base at Vermont landfills. Import and export comparisons for the two years are described below, along with the source of the data being compared.

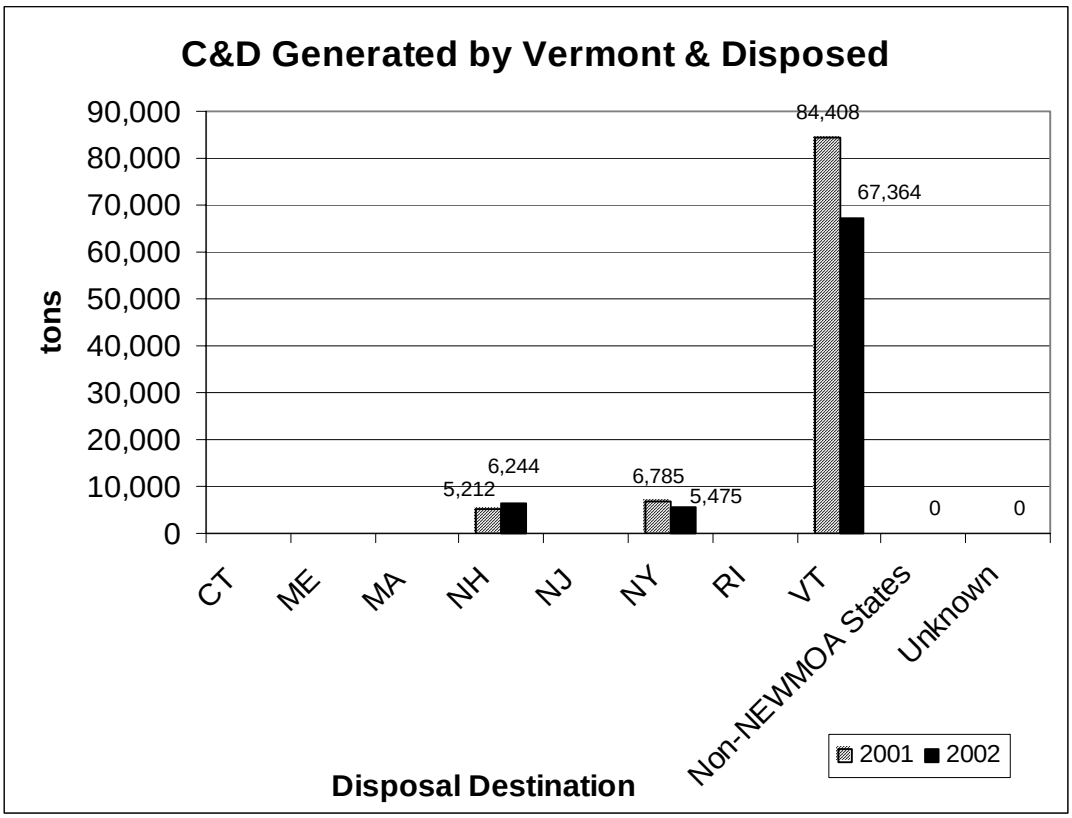
Import Data: The total amount of C&D imported and disposed by Vermont decreased by 281 tons (41%) between 2001 and 2002, from 685 tons to 404 tons, using the data provided by disposal facilities in Vermont, as discussed previously. Imports from Massachusetts decreased from 659 tons to 300 tons. Imports from New York increased from 26 tons to 104 tons. This is shown in Figure VT-1, along with the data from 2001.



NOTE: 2002 data includes 2,596 tons of C&D used as landfill road base in VT. 2001 data includes 3,187 tons used as landfill road base in VT.

Figure VT- 1

Export Data: The total amount of Vermont-generated C&D exported by Vermont through Vermont transfer stations remained relatively constant, decreasing only by 278 tons (2.3%) between 2001 and 2002, from 11,997 tons to 11,719 tons, using the data provided by facilities in Vermont, as discussed above. Exports to both New Hampshire and New York remained relatively stable—New Hampshire exports increasing from 5,212 tons to 6,244 tons and New York exports decreasing from 6,785 tons to 5,475 tons. A breakdown is shown in Figure VT-2, along with the breakdown for 2001 for comparison.



NOTE: 2002 data includes 4,957 tons of C&D used as ADC in NH and 2,596 tons used as landfill road base in VT. 2001 data includes 3,920 tons of C&D used as ADC in NH and 3,187 tons used as landfill road base in VT.

Figure VT- 2

C&D Processing

Vermont does not have any processors of C&D waste. Environmental agencies in other states estimate that Vermont sent 544 tons of C&D waste for processing in 2002 (24 tons to Massachusetts and 520 tons to New Hampshire).

Data Collection Summary

All certified solid waste management facilities submit quarterly reports to the Solid Waste Management Program. The reports document waste disposed, incinerated or treated, and are

broken down by town and state of origin. For each waste type, e.g., C&D, the destination facility must be provided.

If applicable, the facility must report on any wastes transferred for beneficial use in an in-state or out-of-state landfill, and that landfill must be identified, along with evidence of State approval for the beneficial use. Any wastes collected for off-site recycling must also be reported.

Very little asphalt, brick or concrete (ABC) waste material is processed through transfer stations or disposed of in MSW or C&D landfills. ABC can be disposed in categorically certified landfills of which there are about 20 currently active. One time only approvals for on-site disposal of this material can also be obtained. However, a significant amount of ABC waste is used as backfill on the job site without obtaining a one-time approval and therefore, DEC is not aware of this on-site disposal.

Capacity Summary

Both of the commercial MSW landfills that are lined accept C&D wastes. Total conceptual capacity for these two landfills is 2,500,000 tons for all wastes.

The existing unlined Burgess Brothers Landfill in Bennington is at capacity. An expansion was proposed, but is the subject of a variance proceeding that has delayed certification. The first phase of the expansion area has 70,000 cubic yards of capacity, and there are several conceptual phases after that.

Recent Changes and Issues in Vermont

A new unlined C&D landfill that had been proposed for Shaftsbury, in southern Vermont, has been cancelled.

In Vermont, beneficial use of materials in a landfill is not considered recycling, and neither is processing solid waste into fuel. A $6/ton franchise fee is levied on the hauler or transfer station on waste destined for disposal or incineration, but not for recycling. Through an interpretation of the law, the DEC does not require that the tax be paid on waste beneficially used in a landfill. Several issues arise with C&D. The fee should be paid on Vermont C&D waste brought to out-of-state processors and then burned for fuel or landfilled as waste. The problem is tracking the waste and the percentages recycled, burned, landfilled or otherwise once it leaves Vermont's border. The DEC would then need to rely on third party facility or other State's numbers to corroborate what the hauler or transfer station reports. Vermont is also observing more C&D leaving the state in favor of cheaper processing and disposal in other NEWMOA states.

Vermont's continued focus is on C&D waste reduction and recycled materials market development. The DEC is making a concerted effort to reduce the C&D waste stream at the source, and promoting options for recycling C&D waste. The DEC is encouraging waste reduction first in the planning stage of a project, then in the building (or demolition), and then finally at the disposal facility. Most large scale developments, over 10,000 square feet, are required to have an approved C&D waste management plan, itemizing the disposition of all

waste generated at the job site. The quality of the plans and compliance with those plans are consistently increasing over time.

In addition, Vermont manages a grant program for C&D waste reduction projects. Funding has been $40,000 per year, usually split between 3-5 projects. In the past grants were given for: contractors to track waste; to determine reuse and salvage quantities and economics; to support infrastructure improvements for used building material stores and deconstruction companies; to support C&D waste planning in the regional Solid Waste Districts; and to develop innovative recycling strategies and pilot studies.

Conclusions and Recommendations

This report examined C&D waste disposal and processing facility data from the NEWMOA states for the two years 2001 and 2002. The report show that the quality and detail of data available from states varies greatly; with Connecticut and Massachusetts supplying the most useful data, and Maine providing almost no data regarding imports and exports for disposal facilities or processors. Without more consistent data across states it is difficult to develop a complete and accurate picture of the interstate flow of C&D wastes. While C&D disposal information is somewhat more widely available – there are some states where it is difficult to ascertain the origin of the waste. With the exception of Connecticut and Massachusetts, there is little data available from C&D processing facilities, and where there is data, the type and destination of the material leaving the facility as product or waste is often not available.

With the exception of Massachusetts and Vermont, all the NEWMOA states experienced an increase in the quantity of C&D waste generated that ends up disposed. Some notable changes in C&D waste disposal from 2001 to 2002 include:

- The quantity of C&D waste generated in Connecticut and disposed in-state remained relatively constant, while the quantity exported increased by 228,647 tons – exports to NEWMOA states, primarily Massachusetts increased by 14 percent, and exports to non-NEWMOA states increased by 71 percent.
- The quantity of C&D waste generated in Massachusetts and disposed decreased by 169,738 tons – in-state disposal decreased by 14 percent, exports to NEWMOA states decreased by 9 percent, and exports to non-NEWMOA states decreased by 17 percent.
- The quantity of C&D waste generated in New Hampshire and disposed increased by 20,096 tons or 20 percent, while the quantity imported, primarily from Maine, Massachusetts, and Vermont increased by 17,317 tons or 92 percent.
- The quantity of C&D waste generated in New York and disposed in-state fell by 332,454 tons (15 percent) while the quantities exported to NEWMOA states increased by 39,282 tons (from none) and exported to non-NEWMOA states increased by 644,994 tons (175 percent) – possibly as a result of cleanup of the World Trade Center tragedy. The quantity of out-of-state C&D waste disposed in New York decreased by 112,097 or 55 percent.
- The quantity of C&D waste generated in Rhode Island and disposed increased by 55,892 tons disposed in-state (up 165 percent) and another13,508 tons was exported to non-NEWMOA states (up from none reported).
- Although the quantity of C&D waste exported from Vermont (to New Hampshire and New York) remained relatively constant, the quantity disposed in-state decreased by 17,044 tons (20 percent).

With the exception of New Hampshire and Rhode Island, all the NEWMOA states experienced an increase in the quantity of C&D material handled at processing facilities. Generally increases were between 5 and 10 percent. New Hampshire processing facilities experienced a 10 percent

decrease in the quantity of C&D material handled. Two notable changes in C&D material processing from 2001 to 2002 include:

- Connecticut processing facilities handled significantly more C&D material in 2002, up 126,496 tons or 26 percent. However, the quantity of C&D waste sent for disposal from processing facilities increased by 163,406 tons or 38 percent so reuse/recycling levels did not increase.
- Rhode Island processing facilities experienced an 112,916 ton (41 percent) decrease in the quantity of C&D material handled, with most of the decrease, 93,501 tons due to a drop in imports.

Preparation of this report by NEWMOA provided a forum for states to: reconcile data, monitor trends in C&D management and interstate flow; and discuss new or anticipated developments that could impact C&D interstate flow in the Northeast. The project also provided states with the opportunity to share information about the experiences with reporting forms and to provide information to support making changes to them.

Due to the benefits to the states, NEWMOA's Construction and Demolition Waste Workgroup recommends that the information sharing and report preparation effort continue on an annual basis. In addition, as a result of this project, the Workgroup recommends that NEWMOA undertake two activities:

1- Examine state report forms for C&D disposal and processing facilities to determine specific changes to each state's forms that might improve the comparability of data across states. However, those changes should be easily implemented and not require changes to regulations.
2- Undertake research into priority C&D topics for the Workgroup, such as on hard-to-manage components of the C&D waste stream, to provide the states with a succinct summary of available information.