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Department of Environmental Protection

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2021 Solid Waste Data Update

June 2023

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Goals and Methodology Summary

MassDEP’s current waste reduction goal in the *2030 Solid Waste Master Plan* is to reduce disposal by 1.7 million tons from a 2018 baseline of 5.7 million tons to 4.0 million tons by 2030, a 30 percent reduction in tons disposed. The 2030 Solid Waste Master Plan also includes a longer-term goal to reduce disposal by 5.1 million tons, by 2050, a 90 percent reduction. Table 1 summarizes the methodology for the disposal reduction calculation.

Table 1: Methodology Summary		
		Equation
Disposal Tonnage	=	In State Disposal (Landfill & Municipal Waste Combustor) + Export for Disposal – Import for Disposal
Disposal Tonnage Reduction	=	2018 Disposal Tons – Current Year (2021) Disposal Tons
Percent Disposal Reduction	=	$\frac{2018 \text{ Disposal Tons} - \text{Current Year (2021) Disposal Tons}}{2018 \text{ Disposal Tons}}$

Progress in Meeting Current Disposal Reduction Milestone

Total disposal in 2021 was 6,220,000 tons, an increase of 560,000 tons, or 10 percent, from 2018. However, this increase was driven entirely by the disposal of non-Municipal Solid Waste, which includes materials like construction and demolition wastes, contaminated soils, and sludges that are disposed of in solid waste facilities. From 2018 to 2021, non-MSW disposal increased by 800,000 tons, a 70 percent increase. During this same period, municipal solid waste (MSW) (regular trash from households and businesses) disposal decreased by 210,000 tons, a 2 percent decrease. Looking at MSW, Massachusetts is making progress toward meeting our goal of a 30 percent reduction by 2030. The concern with this data is the continually growing increase in non-MSW disposal.

Solid Waste Management Overview

Table 2 highlights how solid waste disposal changed from 2020 to 2021, measured in tonnage and percent change. From 2020 to 2021, total disposal increased by 300,000 tons, or 5.1 percent. Of the total waste that required disposal, 3,660,000 tons were disposed in-state, of which 600,000 tons were landfilled and 3,060,000 tons were combusted. Total in-state disposal decreased by 1 percent, or 40,000 tons, from 2020 to 2021.

Massachusetts collectively exported 2,920,000 tons for disposal and imported 360,000 tons, and thus was a net exporter of about 2,570,000 tons of waste requiring disposal. This was an increase of 350,000 tons, or 15.8 percent, from 2020 to 2021. Of the net export, 750,000 tons was Municipal Solid Waste (MSW) and 1,820,000 tons was non-MSW. See Table 6 for a more detailed picture of disposal import and export data by state.

Table 2 Solid Waste Tonnage and Percent Change Summary: 2020 - 2021						
			2020	2021	Tons Change	% Change
Disposal (Incl. Net Exports)			5,920,000	6,220,000	300,000	5.1%
In-State Disposal			3,700,000	3,660,000	(40,000)	-1.1%
	Landfill		660,000	600,000	(60,000)	-9.1%
		MSW	570,000	490,000	(80,000)	-14.0%
		C&D	-	-	-	
		Other Non-MSW	90,000	110,000	20,000	22.2%
	Combustion		3,040,000	3,060,000	20,000	0.7%
		MSW	3,020,000	3,060,000	40,000	1.3%
		Non-MSW	20,000	10,000	(10,000)	-50.0%
Net Exports			2,220,000	2,570,000	350,000	15.8%
	Exports		2,470,000	2,920,000	450,000	18.2%
		MSW	1,040,000	1,050,000	10,000	1.0%
		Non-MSW	1,430,000	1,870,000	440,000	30.8%
	Imports		250,000	360,000	110,000	44.0%
		MSW	240,000	300,000	60,000	25.0%
		Non-MSW	10,000	50,000	40,000	400.0%

Note: % Change is calculated based on the rounded amounts in this table.

Percentages may not add exactly to 100% due to rounding.

Tables 3 and 4 presents solid waste disposal data from 2018-2021. Table 3 shows overall solid waste data including the Master Plan baseline year of 2018 for comparison purposes. Table 4 shows how municipal solid waste (MSW) and non-MSW disposal changed from 2018 through 2021. Since the Master Plan baseline year of 2018, MSW disposal dropped by 5 percent, while non-MSW disposal increased significantly by about 70 percent. Total disposal increased by 10 percent from 2018 to 2021.

Looking at the last year alone, MSW disposal decreased by 90,000 tons, or 2 percent, from 2020-2021. However, Non-MSW disposal increased by 410,000 tons, a 27 percent increase compared with 2020.

Table 3 Solid Waste Disposal 2018-2021 (all data in tons)						
			2018	2019	2020	2021
Disposal			5,660,000	5,510,000	5,920,000	6,220,000
	Landfill		1,270,000	880,000	660,000	600,000
		MSW	1,190,000	820,000	570,000	490,000
		C&D	0	0	-	-
		Other	70,000	60,000	90,000	110,000
	Combustion		3,200,000	2,990,000	3,040,000	3,060,000
		MSW	3,180,000	2,970,000	3,020,000	3,060,000
		Non-MSW	20,000	10,000	20,000	10,000
	Net Exports		1,190,000	1,640,000	2,220,000	2,570,000
		Exports	1,820,000	1,970,000	2,470,000	2,920,000
		MSW	750,000	820,000	1,040,000	1,050,000
		Non-MSW	1,070,000	1,140,000	1,430,000	1,870,000
		Imports	630,000	330,000	250,000	360,000
		MSW	610,000	310,000	240,000	300,000
		Non-MSW	20,000	20,000	10,000	50,000

Table 4 MSW and Non-MSW Disposal 2018-2021						
	2018	2019	2020	2021	% change vs 2018	% change vs 2020
Total Disposal (Tons)	5,660,000	5,510,000	5,920,000	6,220,000	10%	5%
MSW	4,510,000	4,310,000	4,390,000	4,300,000	-5%	-2%
Non-MSW	1,140,000	1,200,000	1,530,000	1,940,000	70%	27%

Comparing Disposal Trends to State Economic Trends

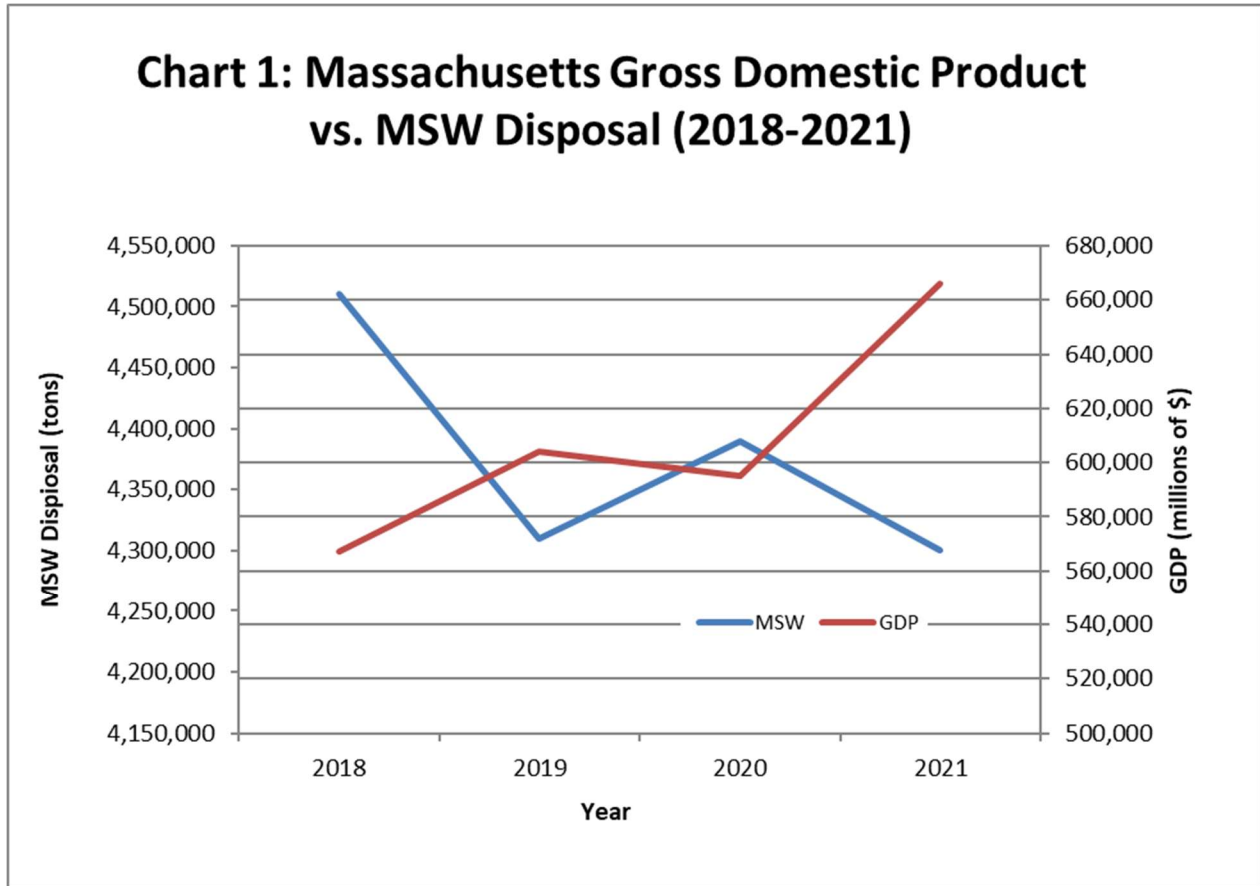
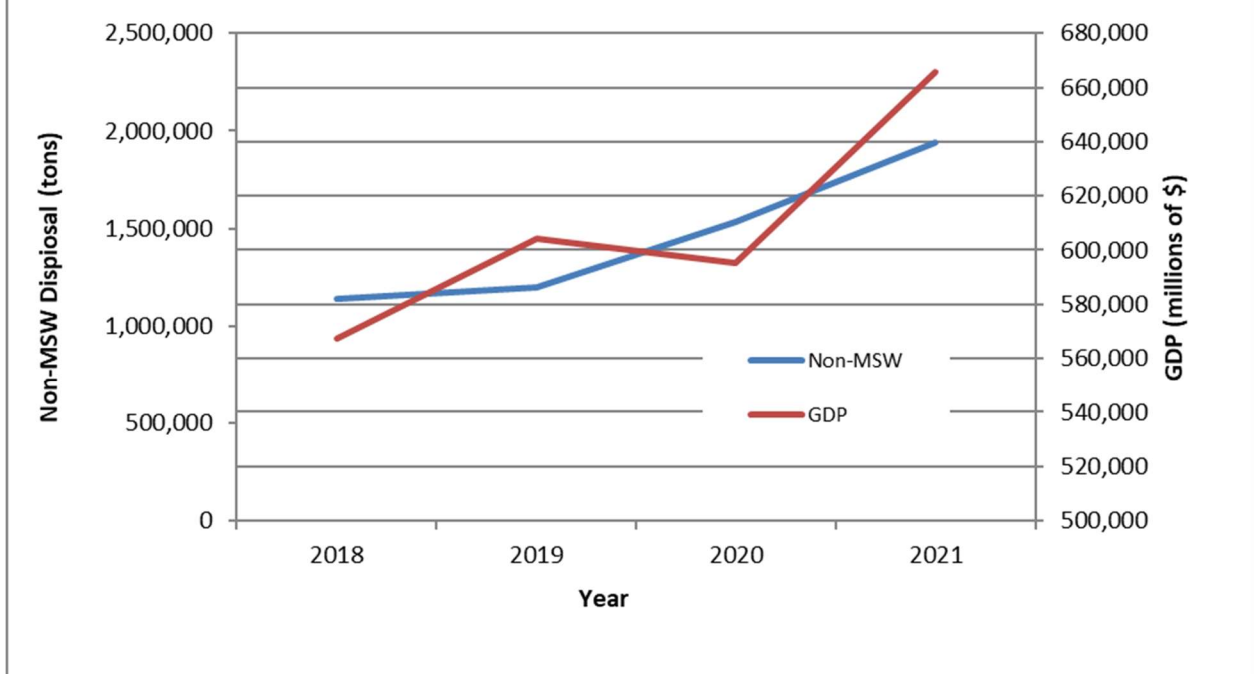


Chart 1 gives a visual representation of Massachusetts MSW disposal totals from 2018-2021 in the context of the state's Gross Domestic Product (GDP) over the same time frame, measured in millions of current dollars. While MSW disposal decreased 5 percent from 2018-2021, GDP grew by 17 percent during that same period. From 2020 to 2021, GDP increased by 12 percent and MSW disposal decreased by 2 percent.

Chart 2: Massachusetts Gross Domestic Product vs. Non-MSW Disposal (2018-2021)



Like chart 1, Chart 2 above gives a visual representation of Massachusetts Non-MSW disposal totals from 2018-2021 in the context of the state’s Gross Domestic Product (GDP) over the same time frame, measured in millions of current dollars. Non-MSW disposal increased significantly by 70 percent from 2018-2021, while GDP grew by 17 percent during that same period. From 2020 to 2021, GDP increased by 12 percent and non-MSW disposal increased by 27 percent. This significant increase in non-MSW disposal was driven by construction and demolition (C&D) waste.

While MassDEP does not know the specific cause of this increase, national data shows a significant increase in residential renovation activities during the COVID 19 pandemic. According to a report issued by the Harvard Joint Center for Housing Studies, national remodeling expenditures increased from \$444 billion in 2020 to \$495 billion in 2021. A further increase to \$567 billion was estimated for 2022¹.

¹ <https://www.jchs.harvard.edu/improving-americas-housing-2023>, viewed June 5, 2023.

Table 5 below shows the change in GDP and MSW and Non-MSW disposal tons from 2018-2021.

Table 5: Gross domestic product (GDP) by state (millions of current dollars)						
	2018	2019	2020	2021	% change vs. 2018	% change vs. 2020
GDP (millions of dollars)	567,255	604,208	595,183	665,893	17%	12%
MSW Disposal (tons)	4,510,000	4,310,000	4,390,000	4,300,000	-5%	-2%
Non-MSW Disposal (tons)	1,140,000	1,200,000	1,530,000	1,940,000	70%	27%
Accessed from the BEA website - https://bea.gov/regional/index.htm - December 2022						

Disposal Import/Export Data for 2020-2021

Table 6 shows MSW and non-MSW exported and imported for disposal by state. The export and import data for Massachusetts was collected from annual facility reports (AFR) submitted to MassDEP and from direct correspondence with other states. In some instances, the export data provided in the AFR differed from that reported from other states. In order to calculate the most inclusive estimate of export, the higher number from the two sources was used. For example, if an AFR reported that Massachusetts sent Connecticut 10,000 tons of MSW, and Connecticut reported receiving 16,326 tons of MSW from Massachusetts, 16,326 tons of export was used. This table shows a slight increase in MSW exported and an increase in non-MSW exported. There was an overall increase in imports, particularly for non-MSW, as well as the trend of more waste travelling farther via rail transfer.

Table 6 Disposal Import/Export Data by State (tons): 2020-2021					
MSW Exported			Non-MSW Exported		
State	2020	2021	State	2020	2021
AL	23,707	85,775	CT	0	0
CT	16,326	35,314	ME	0	1,084
ME	6,520	224	NH	310,291	321,857
MI	50,962	15,760	NY	130,346	121,389
NH	398,953	401,746	OH	971,996	1,395,055
NY	346,951	338,804	VA	14,784	2,551
OH	59,633	53,765	VT	0	0
SC	102,007	96,286	MI	282	1,152
VA	37,386	26,242			
GA	664				
TOTAL	1,043,109	1,053,916	TOTAL	1,427,699	1,843,088
MSW Imported			Non-MSW Imported		
State	2020	2021	State	2020	2021
CT		33,290	CT	3,900	9,538
ME	2,045	0	ME	30	98
NH	85,697	32,995	NH	6,834	43,658
NY	2,267	499	RI	1,391	1,636
RI	110,720	232,134	VT	19	0
VT	3,257	2,064			
TOTAL	203,986	300,982	TOTAL	12,174	54,930

Management of Ash from Municipal Waste Combustors

Table 7 shows the amount of waste combustion ash generated by individual municipal waste combustors (MWC) and where it was disposed, as well as the amount of metal recovered from each. Table 7A shows the Massachusetts landfills accepting MWC ash and their anticipated lifespan according to current permit conditions.

Landfill	Projected Closure Year
Bondi's Island, Springfield	2030 ²
Peabody	2033
Ward Hill Haverhill	2022
Wheelabrator Saugus	2026
Wheelabrator Shrewsbury	2028

Combustion Facility	Ash Disposed (tons)	Disposal Facilities	Pre-Combustion Metal Recovery (tons)	Post-Combustion Metal Recovery (tons)
Haverhill	119,470	Ward Hill, Haverhill	22	15,088
Millbury	121,428	Shrewsbury	73.7	8,513
North Andover	87,714	Shrewsbury	0	7,763
Pittsfield	2,905	Bondi's Island, Springfield	70	1,606
Saugus	105,536	Saugus, Shrewsbury	0	7,434
SEMASS	166,394	Bourne, Carver/Marion/Wareham	30,634	11,436
Springfield	33,023	Bondi's Island, Springfield	15.79	2,907
Totals	636,470		30,815	54,747

Rail Transfer Capacity

Table 8 illustrates the growing trend of increased rail disposal capacity in Massachusetts, including the current permit status, tons/day, tons/year, and types of waste accepted. In addition to the capacity below, MassDEP expects several other new or expanded rail transfer operations to be permitted within the next several years.

² Note that this landfill currently only receives ash from combustion facilities, though that could change in the future.

Facility Name	Region	Town	Current Status	Tons/Day	Tons/Year	Waste
Champion City Recovery	SERO	Brockton	Operating	1,000	286,000	C&D
Devens Recycling Center	CERO	Devens	Operating	1,500	390,000	MSW, C&D
Lenox Valley Waste Transfer Facility	WERO	Lenoxdale	Operating	250	67,250	MSW, C&D
McNamara Transfer Station	WERO	Springfield	Operating	699	218,088	MSW, C&D
New England Waste Disposal	SERO	Taunton	Operating	1,650	495,000	MSW, C&D
Tri-County Recycling	WERO	Ware	Operating	750	195,000	C&D
Trojan Recycling	SERO	Brockton	Operating	500	140,400	MSW, C&D
Upper Cape Regional Transfer Station	SERO	Falmouth	Operating	286	74,360	MSW, C&D
United Materials Management of Leominster	CERO	Leominster	Operating	1,000	300,000	MSW, C&D
Western Recycling	WERO	Wilbraham	Operating	1600	312,000	MSW, C&D
Yarmouth-Barnstable Regional Rail Transfer Station	SERO	Yarmouth	Operating	530	137,800	MSW
Casella	WERO	Holyoke	Permitted	1,250	382,500	MSW, C&D
Howard Transfer Station*	NERO	Roxbury	Permitted	810	-	MSW-
Wood Recycling, Inc.*	NERO	Peabody	Permitted	1,350	-	MSW-C&D
Parallel Products of New England	SERO	New Bedford	Seeking approval	1,500	468,000	MSW, C&D
TLA Holbrook	SERO	Holbrook	Seeking Approval	1,000	260,000	MSW
Totals				15,675	3,718,398	

Note: These facilities do not have on-site rail connections, but they do have the ability to load containers for rail transport.

Waste Management Capacity Projections

The disposal capacity projections in Table 9 reflect either actual permitted capacity, approved capacity contingent on receiving permits, or capacity based on facility contract commitments. However, some landfills may take in less than their permitted tonnage in a particular year. In these cases, capacity for a particular landfill may last beyond the date shown in these projections. In other cases, a landfill may choose to accept a different material than MSW, such as municipal waste combustor ash, so that a portion of this permitted capacity may not be available for MSW. MassDEP attempts to take these factors into account by projecting only the percent of potential landfill capacity that is actually used for MSW and C&D disposal. The combustion capacity is shown as level based on permit limits, although this actual amount managed will always be somewhat lower than these limits.

The waste management capacity projections shown in Table 10 show two scenarios:

1. Baseline Disposal Tonnage – Assumes that disposal tonnage remains at 2021 levels through 2030.
2. Reduced Disposal Tonnage – Assumes that disposal tonnage will decrease in line with achieving the proposed 2030 disposal reduction goal of 4,000,000 tons.

In table 9, the data shown for 2021 is the actual disposal data. The capacity projections shown are based on the permitted tonnage, adjusted by the percent of that tonnage that has been utilized

in recent years. Because the Agawam and Pittsfield combustion facilities have closed, under the 2030 Solid Waste Master Plan, MassDEP would then review permit applications for the same amount of replacement combustion capacity. Projected net export for 2030 ranges between 200,000 and 2.4 million tons, depending on our degree of success in meeting our waste reduction goals.

Table 9: Projected Disposal Capacity 2021-2030 (Tons Per Year)													
Municipality	Permitted Capacity	End of current permitted capacity	Lifetime of LF	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Active Landfills													
Bourne	30,000	2024	2040	215,915	30,000	30,000	30,000	219,000	219,000	219,000	219,000	219,000	219,000
Dartmouth	115,000	2024	2026	98,763	115,000	115,000	115,000	115,000	115,000	0	0	0	0
Middleborough	60,000	2031	2031	58,505	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Nantucket	26,000	2029	2029	3,388	26,000	26,000	26,000	26,000	26,000	26,000	26,000	26,000	0
Westminster	538,200	2030	2030	329,252	538,200	538,200	538,200	538,200	538,200	538,200	538,200	538,200	538,200
Municipal Waste Combustors													
Agawam	131,400			97,051	131,400	-	-	-	-	-	-	-	-
Haverhill	602,250			572,680	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250
Millbury	529,575			479,897	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575
North Andover	547,500			427,737	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
Pittsfield	84,000			62,674	-	-	-	-	-	-	-	-	-
Rochester	1,250,000			1,047,692	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Saugus	547,500			372,247	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
TOTAL PERMITTED COMBUSTION CAPACITY													
	3,692,225			3,059,978	3,608,225	3,476,825	3,476,825	3,476,825	3,476,825	3,476,825	3,476,825	3,476,825	3,476,825
ADJUSTED TOTAL COMBUSTION CAPACITY													
				3,059,978	3,094,041	2,981,366	2,981,366	2,981,366	2,981,366	2,981,366	2,981,366	2,981,366	2,981,366
TOTAL POTENTIAL CAPACITY LF&CMBST													
				3,765,801	3,863,241	3,750,566	3,750,566	3,939,566	3,939,566	3,824,566	3,824,566	3,824,566	3,798,566
KEY:													
Permitted Capacity	Number without shading												
Potential Additional Cap	Number with shading												
ESTIMATED TOTAL POTENTIAL AVAILABLE CAPACITY													
				3,059,978	3,863,241	3,750,566	3,750,566	3,939,566	3,939,566	3,824,566	3,824,566	3,824,566	3,798,566
100% of potential for LFs and 85 % of potential for combustion													
Actual combustion varies per year, has never reached capacity													
Total Potential Landfill Capacity				-	769,200	769,200	769,200	958,200	958,200	843,200	843,200	843,200	817,200
2021 capacity for MWCs is actual tonnage burned minus post combustion metal recovery.													
MWC disposal capacity is not a fixed tonnage amount, but rather a function of the facility's air permit and may vary slightly. Capacity projections assume Pittsfield and Springfield not available after 2022													
2020 % Landfill Capacity	100%												
2015-2020 % Permitted Combustion Capacity Used	85.75%												
Average total combustion (last five years):													
	3094040.6												
Note: Bourne 189,000 of 219,000 tons of annual capacity dedicated to SEMASS ash disposal through 2024.													

Table 10: Waste Management Capacity Projections: 2021-2030										
	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Disposal (baseline)	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000	6,220,000
Total Disposal (reduced)	6,220,000	5,922,684	5,639,580	5,370,008	5,113,321	4,868,905	4,636,171	4,414,562	4,203,546	4,002,616
Combustion Capacity	3,060,000	3,090,000	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000	2,980,000
Potential LF Capacity	600,000	769,200	769,200	769,200	958,200	958,200	843,200	843,200	843,200	817,200
In-state Disposal Capacity	3,660,000	3,859,200	3,749,200	3,749,200	3,938,200	3,938,200	3,823,200	3,823,200	3,823,200	3,797,200
Net Disposal Export (baseline disposal)	2,560,000	2,360,800	2,470,800	2,470,800	2,281,800	2,281,800	2,396,800	2,396,800	2,396,800	2,422,800
Net Disposal Export (reduced disposal)	2,560,000	2,063,484	1,890,380	1,620,808	1,175,121	930,705	812,971	591,362	380,346	205,416
Assumptions for Annual Percent Change:										
Baseline Disposal Tonnage	0.0%									
Decreased Disposal Tonnage/year	4.78%									
2021 data shows actual figures.										

Landfill Cover Material

Table 11 shows the amount of material that Massachusetts landfills reported using as cover material in 2021. This material is not included in the disposal data shown earlier in this report.

Table 11: Landfill Cover Material Use in 2021	
Material Type	Tons
Contaminated Soil	107,850
Auto Shredder Residue/Auto Fluff	60,059
Bottom Ash	51,841
Soil/Sand	45,369
Cullet (crushed glass)	9,239
Sludge Ash	14,938
Street Sweepings	16,024
Compost	21,910
C&D Fines	11,587
Wood Chips	7,474
Foundry Sand	158
Other	589
C&D Residuals	3,342
Total	350,380