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2022 Solid Waste Data Update

November 2023

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Goals and Methodology Summary

MassDEP's 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 (2022) Disposal Tons
Percent Disposal Reduction	=	$\frac{\text{2018 Disposal Tons – Current Year (2022) Disposal Tons}}{\text{2018 Disposal Tons}}$

Progress in Meeting Current Disposal Reduction Milestone

Total disposal in 2022 was 6,000,000 tons, an increase of 340,000 tons, or 6 percent, from 2018. This increase was driven by increased disposal of Non-Municipal Solid Waste (Non-MSW). Materials like contaminated soils or sludges. From 2018 to 2022, non-MSW disposal increased by 380,000 tons, a 33 percent increase. During this same period, municipal solid waste (MSW) (regular trash from households and businesses) disposal decreased slightly by 50,000 tons, a 1 percent decrease.

Solid Waste Management Overview

Table 2 highlights how solid waste disposal changed from 2021 to 2022, measured in tonnage and percent change. From 2021 to 2022, total disposal decreased by 220,000 tons, or 3.5 percent. Of the total waste that required disposal, 3,420,000 tons were disposed in-state, of which 490,000 tons were landfilled and 2,930,000 tons were combusted. Total in-state disposal decreased by 7 percent, or 240,000 tons, from 2021 to 2022.

Massachusetts collectively exported 2,890,000 tons for disposal and imported 300,000 tons, and thus was a net exporter of about 2,590,000 tons of waste requiring disposal. This was an increase of 20,000 tons, or 0.8 percent, from 2021 to 2022. Of the net export, 1,160,000 tons was MSW and 1,430,000 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: 2021 - 2022						
			2021	**2022**	**Tons Change**	**% Change**
Disposal (Incl. Net Exports)			**6,220,000**	**6,000,000**	**(220,000)**	**-3.5%**
In-State Disposal			**3,660,000**	**3,420,000**	**(240,000)**	**-6.6%**
	Landfill		**600,000**	**490,000**	**(110,000)**	**-18.3%**
		MSW	490,000	410,000	**(80,000)**	**-16.3%**
		C&D	-	-	-	
		Other Non-MSW	110,000	80,000	**(30,000)**	**-27.3%**
	Combustion		**3,060,000**	**2,930,000**	**(130,000)**	**-4.2%**
		MSW	3,060,000	2,900,000	**(160,000)**	**-5.2%**
		Non-MSW	10,000	20,000	**10,000**	**100.0%**
Net Exports			**2,570,000**	**2,590,000**	**20,000**	**0.8%**
	Exports		2,920,000	2,890,000	**(30,000)**	**-1.0%**
		MSW	1,050,000	1,380,000	**330,000**	**31.4%**
		Non-MSW	1,870,000	1,500,000	**(370,000)**	**-19.8%**
	Imports		360,000	300,000	**(60,000)**	**-16.7%**
		MSW	300,000	230,000	**(70,000)**	**-23.3%**
		Non-MSW	50,000	80,000	**30,000**	**60.0%**

Note: In some cases, values do not add up exactly due to rounding to the nearest 10,000 tons.

Tables 3 and 4 present solid waste disposal data from 2018-2022. 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 2022. Since the Master Plan baseline year of 2018, MSW disposal decreased by 1 percent, while non-MSW disposal increased by 33 percent. Total disposal increased by 6 percent from 2018 to 2022.

Looking at the last year alone, MSW disposal increased by 160,000 tons, or 4 percent, from 2021-2022. However, Non-MSW disposal decreased by 380,000 tons, a 22 percent decrease compared with 2021.

Note: In some cases, values do not add up exactly due to rounding to the nearest 10,000 tons.

Table 4 MSW and Non-MSW Disposal 2018-2022							
	2018	2019	2020	2021	2022	% change vs 2018	% change vs 2021
Total Disposal (Tons)	5,660,000	5,510,000	5,920,000	6,220,000	6,000,000	6%	-4%
MSW	4,510,000	4,310,000	4,390,000	4,300,000	4,460,000	-1%	4%
Non-MSW	1,140,000	1,200,000	1,530,000	1,940,000	1,520,000	33%	-22%

Note: In some cases, values do not add up exactly due to rounding to the nearest 10,000 tons.

Comparing Disposal Trends to State Economic Trends

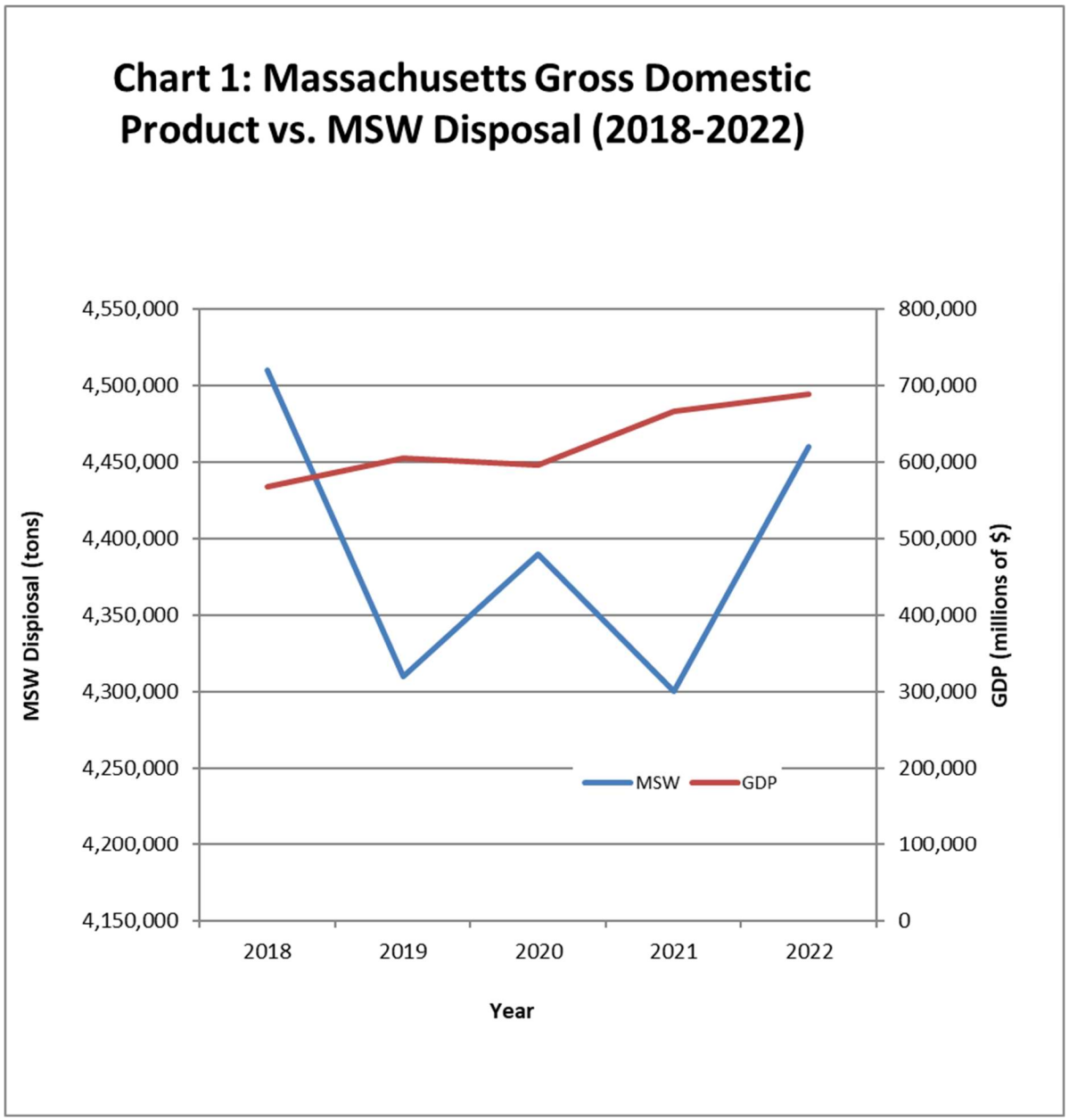
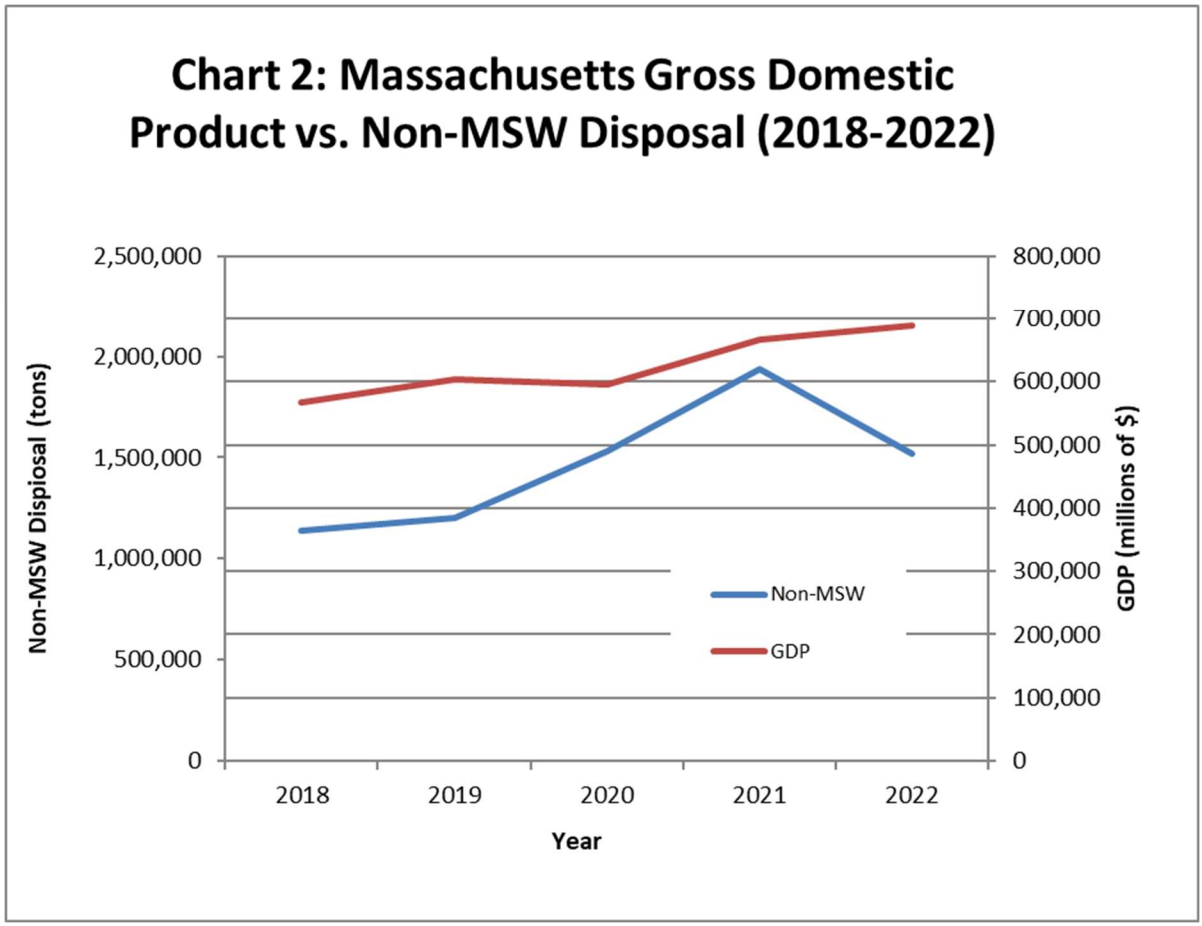


Chart 1 gives a visual representation of Massachusetts MSW disposal totals from 2018-2022 in the context of the state's Gross Domestic Product (GDP) over the same time frame, measured in millions of current dollars. While MSW disposal decreased 1 percent from 2018-2022, GDP grew by 21 percent during that same period. From 2021 to 2022, GDP increased by 3 percent and MSW disposal increased by 4 percent.



Like chart 1, Chart 2 above gives a visual representation of Massachusetts' Non-MSW disposal totals from 2018-2022 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 by 33 percent, while GDP grew by 21 percent during that same period. From 2021 to 2022, GDP increased by 3 percent and non-MSW disposal decreased significantly by 22 percent. This is significant progress in non-MSW disposal compared with last year's 27 percent increase from 2020-2021.

Table 5 below shows the change in GDP and MSW and Non-MSW disposal tons from 2018-2022.

Table 5: Gross domestic product (GDP) by state (millions of current dollars)							
	2018	2019	2020	2021	2022	% change vs. 2018	% change vs. 2021
GDP (millions of dollars)	567,255	604,208	595,183	665,893	688,392	21%	3%
Disposal (tons)	5,660,000	5,510,000	5,920,000	6,220,000	6,000,000	6%	-4%
MSW Disposal (tons)	4,510,000	4,310,000	4,390,000	4,300,000	4,460,000	-1%	4%
Non-MSW Disposal (tons)	1,140,000	1,200,000	1,530,000	1,940,000	1,520,000	33%	-22%
Accessed from the BEA website - https://bea.gov/regional/index.htm - August 2023							

Note: In some cases, values do not add up exactly due to rounding to the nearest 10,000 tons.

Disposal Import/Export Data for 2021-2022

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. Note that, at the time this report was published, data was not available from a number of other states. This table shows an increase in MSW exported and a decrease in non-MSW exported. There was a slight decrease in MSW imported and a very slight increase in non-MSW imported.

In 2022, the states that received the most waste from Massachusetts were Ohio, New Hampshire, New York, and Alabama. The states that sent the most waste to Massachusetts for disposal were Rhode Island and New Hampshire.

Table 6 Disposal Import/Export Data by State (tons): 2021-2022					
MSW Exported			**Non-MSW Exported**		
State	**2021**	**2022**	**State**	**2021**	**2022**
AL	85,775	226,611	**ME**	1,084	1,817
CT	35,314	43,378	**NH**	321,857	225,144
ME	224	1,709	**NY**	121,389	103,882
MI	15,760	222,520	**OH**	1,395,055	1,125,612
NH	401,746	365,272	**VA**	2,551	34,123
NY	338,804	294,089	**MI**	**1,152**	**-**
OH	53,765	118,541			
SC	96,286	94,899			
VA	26,242	17,906			
TOTAL	**1,053,916**	**1,384,925**	**TOTAL**	**1,843,088**	**1,490,578**
MSW Imported			**Non-MSW Imported**		
State	**2021**	**2022**	**State**	**2021**	**2022**
CT	33,290	28,908	**CT**	9,538	13,294
ME	0	4,903	**ME**	98	198
NH	32,995	65,002	**NH**	43,658	51,832
NY	499	0	**RI**	1,636	10,649
RI	232,134	124,903	**VT**	0	6
VT	2,064	1,491	**NJ**	0	261
			PA	0	14
TOTAL	**300,982**	**225,207**	**TOTAL**	**54,930**	**76,240**

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.

Table 7A: Ash Landfills Anticipated Capacity	
Landfill	**Projected Closure Year**
Bondi's Island, Springfield	2030[1]
Peabody	2033
Wheelabrator Saugus	2026
Wheelabrator Shrewsbury	2028

Table 7: Municipal Waste Combustor Ash Management (2022)				
Combustion Facility	**Ash Disposed (tons)**	**Disposal Facilities**	**Pre-Combustion Metal Recovery (tons)**	**Post-Combustion Metal Recovery (tons)**
Haverhill	129,017	Ward Hill, Haverhill	29	16,962
Millbury	122,970	Wheelabrator Shrewsbury	74	8464
North Andover	87,134	Shrewsbury	0	7,265
Saugus	117,865	Saugus, Shrewsbury	0	8,535
SEMASS	181,931	Bourne, Carver/Marion/Wareham	31,749	9,874
Totals	**638,977**		**31,852**	**51,100**

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.

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

Table 8: Summary of Rail Transfer Facilities						
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	Sandwich	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	2000	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				**16,075**	**3,726,398**	

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 disposal based on the most recent year. 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 2022 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, a reduction of 4.95 percent per year.

In table 9, the data shown for 2022 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 the past year. 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 500,000 and 2.5 million tons, depending on our degree of success in meeting our waste reduction goals.

Table 9: Projected Disposal Capacity 2022-2030 (Tons Per Year)													
Municipality	**Permitted Capacity**	**End of current permitted capacity**	**Lifetime of LF**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**
Active Landfills													
Bourne	30,000	2024	**2040**	218,018	30,000	30,000	219,000	219,000	219,000	219,000	219,000	219,000
Dartmouth	115,000	2024	**2026**	91,670	115,000	115,000	115,000	115,000	0	0	0	0
Middleborough	60,000	2031	**2031**	56,403	60,000	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Nantucket	26,000	2029	**2029**	5,055	26,000	26,000	26,000	26,000	26,000	26,000	26,000	0
Westminster	538,200	2030	**2030**	265,541	538,200	538,200	538,200	538,200	538,200	538,200	538,200	538,200
Municipal Waste Combustors													
Haverhill	602,250			603,009	602,250	602,250	602,250	602,250	602,250	602,250	602,250	602,250
Millbury	529,575			491,938	529,575	529,575	529,575	529,575	529,575	529,575	529,575	529,575
North Andover	547,500			418,583	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
Rochester	1,250,000			1,051,202	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			397,618	547,500	547,500	547,500	547,500	547,500	547,500	547,500	547,500
TOTAL PERMITTTED COMBUSTION CAPACITY	*3,476,825*			*2,962,350*	*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				*2,962,350*	*3,052,041*	*3,052,041*	*3,052,041*	*3,052,041*	*3,052,041*	*3,052,041*	*3,052,041*	*3,052,041*
TOTAL POTENTIAL CAPACITY LF&CMBST				**3,599,037**	**3,821,241**	**3,821,241**	**4,010,241**	**4,010,241**	**3,895,241**	**3,895,241**	**3,895,241**	**3,869,241**
KEY:												
Permitted Capacity	Number without shading											
Potential Additional Capacity	Number with shading											
ESTIMATED TOTAL POTENTIAL AVAILABLE CAPACITY				**3,452,350**	**3,542,041**	**3,542,041**	**3,662,438**	**3,662,438**	**3,589,180**	**3,589,180**	**3,589,180**	**3,572,618**
100% of potential for LFs and 88 % of potential for combustion												
Actual combustion varies per year, has never reached total permitted capacity												
Total Potential Landfill Capacity				490,000	490,000	490,000	610,398	610,398	537,140	537,140	537,140	520,577
2022 capacity for MWCs is actual tonnage burned minus post combustion metal recovery.												
MWC permitted capacity is not a fixed tonnage amount, but rather a function of the facility's air permit and may vary slightly.												
2022 % Landfill Capacity used	64%											
2018-2022 % Permitted Combustion Capacity Used	87.78%											
Average total combustion (last four years):												
3052040.6												
Note: Bourne 189,000 of 219,000 tons of annual capacity dedicated to SEMASS ash disposal through 2024.												

Table 10: Waste Management Capacity Projections: 2022-2030									
	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Disposal (baseline)	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000
Total Disposal (reduced)	6,000,000	5,703,000	5,420,702	5,152,377	4,897,334	4,654,916	4,424,498	4,205,485	3,997,314
Combustion Capacity	2,962,350	2,962,350	2,962,350	2,962,350	2,962,350	2,962,350	2,962,350	2,962,350	2,962,350
Potential LF Capacity	490,000	490,000	490,000	610,398	610,398	537,140	537,140	537,140	520,577
In-state Disposal Capacity	3,452,350	3,452,350	3,452,350	3,572,748	3,572,748	3,499,490	3,499,490	3,499,490	3,482,927
Net Disposal Export (baseline disposal)	2,590,000	2,547,650	2,547,650	2,427,252	2,427,252	2,500,510	2,500,510	2,500,510	2,517,073
Net Disposal Export (reduced disposal)	2,590,000	2,250,650	1,968,352	1,579,629	1,324,586	1,155,426	925,008	705,995	514,386
Assumptions for Annual Percent Change:									
Baseline Disposal Tonnage	0.0%								
Decreased Disposal Tonnage/year	4.95%								
2022 data shows actual figures.									

Landfill Cover Material

Table 11 shows the amount of material that Massachusetts landfills reported using as cover material in 2022. This material is not included in the disposal data shown earlier in this report.

Table 11: Landfill Cover Material Use in 2022	
Material Type	**Tons**
Contaminated Soil	163,561
Auto Shredder Residue/Auto Fluff	52,115
Bottom Ash	51,504
Sludge Ash	12,724
Soil/Sand	12,141
Cullet (crushed glass)	5,792
Street Sweepings	5,199
C&D Residuals	2,930
Compost	2,200
Ground Asphalt	1,779
Other	635
Foundry Sand	565
WTP Fines	103
Total	**311,248**