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Department of Environmental Protection

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2023 Solid Waste Data Update

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Goals and Methodology Summary

MassDEP’s waste reduction goal in the *2030 Solid Waste Master Plan* is to reduce annual 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 annual 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 (2023) Disposal Tons
Percent Disposal Reduction	=	$\frac{2018 \text{ Disposal Tons} - \text{Current Year (2023) Disposal Tons}}{2018 \text{ Disposal Tons}}$

Progress in Meeting Current Disposal Reduction Milestone

Total disposal in 2023 was 6,160,000 tons, an increase of 500,000 tons, or 9 percent, from 2018. This increase was driven by increased disposal of Non-Municipal Solid Waste (Non-MSW), which includes materials like contaminated soils or sludges. From 2018 to 2023, non-MSW disposal increased by 330,000 tons, a 29 percent increase. During this same period, municipal solid waste (MSW) (regular trash from households and businesses) disposal increased by 170,000 tons, a 4 percent increase.

Solid Waste Management Overview

Table 2 highlights the changes in solid waste disposal from 2022 to 2023, measured in tonnage and percent change. From 2022 to 2023, total disposal increased by 160,000 tons, or 2.7 percent. Of the total waste that required disposal, 3,450,000 tons were disposed in-state, of which 460,000 tons were landfilled and 2,990,000 tons were combusted. Total in-state disposal increased by 0.9 percent, or 30,000 tons, from 2022 to 2023.

Massachusetts collectively exported 3,040,000 tons for disposal and imported 340,000 tons, and thus was a net exporter of about 2,710,000 tons of waste requiring disposal. This was an increase of 120,000 tons, or 4.6 percent, from 2022 to 2023. Of the net export, 1,610,000 tons was MSW and 1,440,000 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: 2022 - 2023						
			2022	2023	Tons Change	% Change
Disposal (Incl. Net Exports)			6,000,000	6,160,000	160,000	2.7%
In-State Disposal			3,420,000	3,450,000	30,000	0.9%
	Landfill		490,000	460,000	(30,000)	-6.1%
		MSW	410,000	380,000	(30,000)	-7.3%
		C&D	-	-	-	
		Other Non-MSW	80,000	70,000	(10,000)	-12.5%
	Combustion		2,930,000	2,990,000	60,000	2.0%
		MSW	2,900,000	2,960,000	60,000	2.1%
		Non-MSW	20,000	30,000	10,000	50.0%
Net Exports			2,590,000	2,710,000	120,000	4.6%
	Exports		2,890,000	3,040,000	150,000	5.2%
		MSW	1,380,000	1,610,000	230,000	16.7%
		Non-MSW	1,500,000	1,440,000	(60,000)	-4.0%
	Imports		300,000	340,000	40,000	13.3%
		MSW	230,000	270,000	40,000	17.4%
		Non-MSW	80,000	70,000	(10,000)	-12.5%
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 present solid waste disposal data from 2018-2023. 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 2023. Since the Master Plan baseline year of 2018, MSW disposal increased by 4 percent, while non-MSW disposal increased by 29 percent. Total disposal increased by 9 percent from 2018 to 2023.

Looking at 2023 alone, MSW disposal increased by 220,000 tons, or 5 percent, from 2022-2023. However, non-MSW disposal decreased by 50,000 tons, a 3 percent decrease compared with 2022.

Table 3 Solid Waste Disposal 2018-2023 (all data in tons)								
			2018	2019	2020	2021	2022	2023
Disposal			5,660,000	5,510,000	5,920,000	6,220,000	6,000,000	6,160,000
	Landfill		1,270,000	880,000	660,000	600,000	490,000	460,000
		MSW	1,190,000	820,000	570,000	490,000	410,000	380,000
		C&D	0	0	-	-	0	-
		Other	70,000	60,000	90,000	110,000	80,000	70,000
	Combustion		3,200,000	2,990,000	3,040,000	3,060,000	2,930,000	2,990,000
		MSW	3,180,000	2,970,000	3,020,000	3,060,000	2,900,000	2,960,000
		Non-MSW	20,000	10,000	20,000	10,000	20,000	30,000
	Net Exports		1,190,000	1,640,000	2,220,000	2,570,000	2,590,000	2,710,000
		Exports	1,820,000	1,970,000	2,470,000	2,920,000	2,890,000	3,040,000
		MSW	750,000	820,000	1,040,000	1,050,000	1,380,000	1,610,000
		Non-MSW	1,070,000	1,140,000	1,430,000	1,870,000	1,500,000	1,440,000
		Imports	630,000	330,000	250,000	360,000	300,000	340,000
		MSW	610,000	310,000	240,000	300,000	230,000	270,000
		Non-MSW	20,000	20,000	10,000	50,000	80,000	70,000

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 2018-2023								
	2018	2019	2020	2021	2022	2023	% change vs 2018	% change vs 2022
Total Disposal (Tons)	5,660,000	5,510,000	5,920,000	6,220,000	6,000,000	6,160,000	9%	3%
MSW	4,510,000	4,310,000	4,390,000	4,300,000	4,460,000	4,680,000	4%	5%
Non-MSW	1,140,000	1,200,000	1,530,000	1,940,000	1,520,000	1,470,000	29%	-3%

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

Table 5 below shows the change in gross domestic product by state (GDP), compared to total disposal and MSW and Non-MSW disposal tons from 2018-2023.

Disposal tends to change consistently with changes in state level economic data, however, the rate of increase in GDP during this period is about three times the rate of the disposal increase. From 2018 to 2023, GDP grew by 32 percent while total disposal only increased by 9 percent. And, from 2022 to 2023, GDP rose by 9 percent, while total disposal increased by 3 percent.

Table 5 also shows this comparison for MSW and non-MSW disposal. While MSW disposal increased 4 percent from 2018-2023, GDP grew by 32 percent during that same period. From 2022 to 2023, GDP increased by 9 percent and MSW disposal increased by 5 percent. From 2018 to 2023, Non-MSW disposal increased by 29 percent, while GDP grew by 32 percent. From 2022 to 2023, GDP increased by 9 percent and non-MSW disposal decreased slightly by 3 percent.

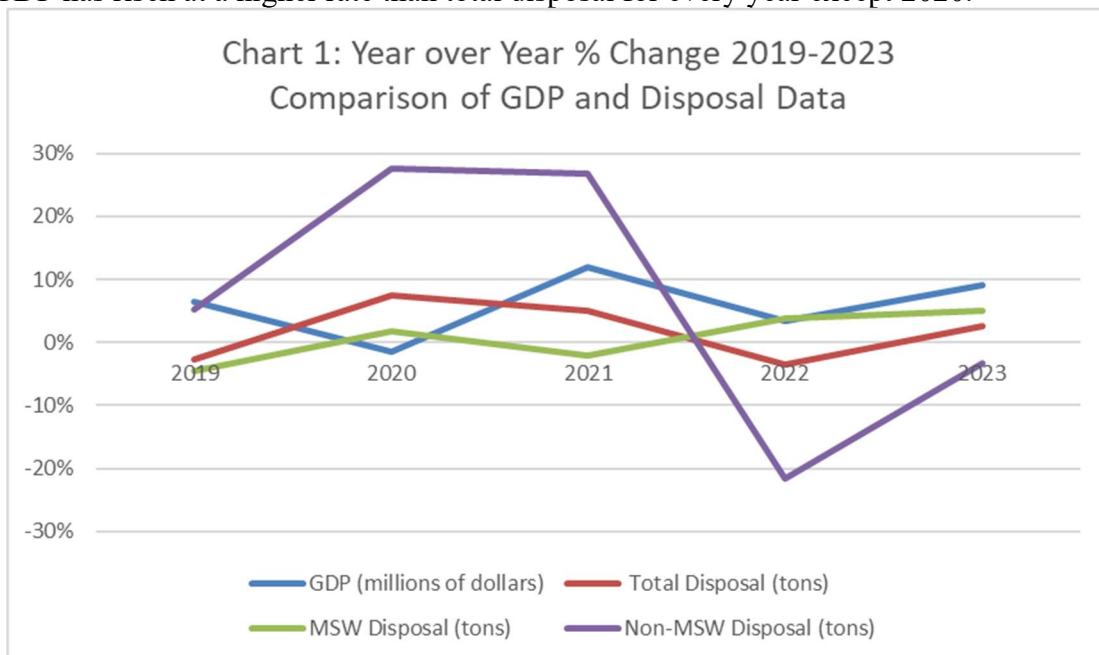
Table 5: Gross domestic product (GDP) by state (millions of current dollars)

	2018	2019	2020	2021	2022	2023	% change vs. 2018	% change vs. 2022
GDP (millions of dollars)	567,255	604,208	595,183	665,893	688,392	750,435	32%	9%
Disposal (tons)	5,660,000	5,510,000	5,920,000	6,220,000	6,000,000	6,160,000	9%	3%
MSW Disposal (tons)	4,510,000	4,310,000	4,390,000	4,300,000	4,460,000	4,680,000	4%	5%
Non-MSW Disposal (tons)	1,140,000	1,200,000	1,530,000	1,940,000	1,520,000	1,470,000	29%	-3%

Accessed from the BEA website - <https://bea.gov/regional/index.htm> - June 2024

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

Chart 1 below shows this comparison in terms of the year over year percent change for GDP, total disposal, MSW disposal and non-MSW disposal for 2019 through 2023. This graph shows that GDP has risen at a higher rate than total disposal for every year except 2020.



Disposal Import/Export Data for 2021-2023

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 of publication, data was not available from a number of other states. This table shows an increase in MSW exported and a very slight decrease in non-MSW exported. There was a slight increase in MSW imported and a very slight decrease in non-MSW imported.

In 2023, the states that received the most waste from Massachusetts were Ohio, New York, New Hampshire, and Alabama. The states that sent the most waste to Massachusetts for disposal were Rhode Island, New Hampshire, and Connecticut.

Table 6 Disposal Import/Export Data by State (tons): 2022-2023					
MSW Exported			Non-MSW Exported		
State	2022	2023	State	2022	2023
AL	226,611	180,651	ME	1,817	0
CT	43,378	38,112	NH	225,144	212,174
ME	1,709	581	NY	103,882	95,776
MI	222,520	105,395	OH	1,125,612	1,019,290
NH	365,272	292,544	VA	34,123	47,441
NY	294,089	570,582	MI		26,108
OH	118,541	184,593	RI		1560
SC	94,899	112,901	AL		34,325
VA	17,906	122,227			
TOTAL	1,384,925	1,607,586	TOTAL	1,490,578	1,436,674
MSW Imported			Non-MSW Imported		
State	2022	2023	State	2022	2023
CT	28,908	31,161	CT	13,294	8,947
ME	4,903	11,154	ME	198	301
NH	65,002	86,497	NH	51,832	48,464
NY	0	29	RI	10,649	9,502
RI	124,903	136,983	VT	6	0
VT	1,491	1,700	NJ	261	106
PA		31	PA	14	0
TOTAL	225,207	267,555	VA		255
			KY		8
			TOTAL	76,254	67,583

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 ¹
Peabody	2033
Wheelabrator Saugus	2027
Wheelabrator Shrewsbury	2031

Combustion Facility	Ash Disposed (tons)	Disposal Facilities	Pre-Combustion Metal Recovery (tons)	Post-Combustion Metal Recovery (tons)
Haverhill	117,439	Peabody Ash Monofill	221	19,306
Millbury	114,285	Shrewsbury	85	13,470
North Andover	94,482	Shrewsbury	6	11,903
Saugus	128,170	Saugus	1	8,770
SEMASS	179,714	Bourne, Carver/Marion/Wareham	27,785	9,805
Totals	634,090		28,098	63,254

Rail Transfer Capacity

Table 8 illustrates the significant rail disposal capacity in Massachusetts, including the current permit status, tons per day, tons per year, and types of waste accepted. MassDEP continues to see industry interest in increasing rail transfer due to limited in state disposal capacity.

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	Lenox	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 Tables 9 and 10 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 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. In these cases, actual capacity for a particular landfill may be smaller than

shown in the short term, but then last beyond the date shown in these projections. Therefore, for purposes of these projections, landfill capacity is reduced by a factor of 79%, based on 2023 capacity utilization. Combustion facilities do not typically operate at their full permitted capacity. So, for purposes of projecting capacity, a historical capacity utilization rate of 87% is applied.

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

1. Baseline Disposal Tonnage – Assumes that disposal tonnage remains at 2023 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 5.98 percent per year.

Projected net export for 2030 ranges between approximately 300,000 and 2.5 million tons, depending on our degree of success in meeting our waste reduction goals.

Table 9: Projected Disposal Capacity 2024-2030 (Tons Per Year)

Municipality	Permitted Capacity	End of current permitted capacity	Lifetime of LF	2024	2025	2026	2027	2028	2029	2030
Active Landfills										
Bourne	30,000	2024	2040	30,000	219,000	219,000	219,000	219,000	219,000	219,000
Dartmouth	115,000	2024	2028	115,000	115,000	115,000	115,000	115,000	0	0
Middleborough	60,000	2031	2031	60,000	60,000	60,000	60,000	60,000	60,000	60,000
Nantucket	26,000	2029	2029	26,000	26,000	26,000	26,000	26,000	26,000	0
Westminster	538,200	2030	2030	538,200	538,200	538,200	538,200	538,200	538,200	538,200
Total Permitted Landfill Capacity				769,200	958,200	958,200	958,200	958,200	843,200	817,200
Adjusted Total Landfill Capacity				611,138	761,301	761,301	761,301	761,301	669,932	649,275
Municipal Waste Combustors										
Haverhill	602,250			602,250	602,250	602,250	602,250	602,250	602,250	602,250
Millbury	529,575			529,575	529,575	529,575	529,575	529,575	529,575	529,575
North Andover	547,500			547,500	547,500	547,500	547,500	547,500	547,500	547,500
Rochester	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			547,500	547,500	547,500	547,500	547,500	547,500	547,500
Total Permitted Combustion Capacity	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				3,018,041	3,018,041	3,018,041	3,018,041	3,018,041	3,018,041	3,018,041
TOTAL POTENTIAL INSTATE DISPOSAL CAPACITY				3,629,179	3,779,341	3,779,341	3,779,341	3,779,341	3,687,972	3,667,315
KEY:										
Permitted Capacity	Number without shading									
Potential Additional Capacity	Number with shading									
79% of permitted LF capacity used and 87 % of available potential combustion capacity used for purposes of projecting capacity.										
Actual combustion varies per year, has never reached total permitted capacity										
MWC permitted capacity is not a fixed tonnage amount, but rather a function of the facility's air permit and may vary slightly.										
2023 % Landfill Capacity used	79%									
2023 % Permitted Combustion Capacity Used	87%									
Note: Bourne 189,000 of 219,000 tons of annual capacity dedicated to SEMASS ash disposal through 2024.										

Table 10: Waste Management Capacity Projections: 2024-2030							
	2024	2025	2026	2027	2028	2029	2030
Total Disposal (baseline)	6,156,847	6,156,847	6,156,847	6,156,847	6,156,847	6,156,847	6,156,847
Total Disposal (reduced)	5,788,668	5,442,505	5,117,043	4,811,044	4,523,344	4,252,848	3,998,528
Combustion Capacity	3,018,041	3,018,041	3,018,041	3,018,041	3,018,041	3,018,041	3,018,041
Potential LF Capacity	611,138	761,301	761,301	761,301	761,301	669,932	649,275
In-state Disposal Capacity	3,629,179	3,779,341	3,779,341	3,779,341	3,779,341	3,687,972	3,667,315
Net Disposal Export (baseline disposal)	2,527,668	2,377,506	2,377,506	2,377,506	2,377,506	2,468,875	2,489,532
Net Disposal Export (reduced disposal)	2,159,489	1,663,164	1,337,702	1,031,703	744,003	564,875	331,212
<u>Assumptions for Annual Percent Change:</u>							
Baseline Disposal Tonnage	0.0%						
Decreased Disposal Tonnage/year	5.98%						

Landfill Cover Material

Table 11 shows the amount of material that Massachusetts landfills reported using as cover material in 2023. This material is not included in the disposal data shown earlier in this report.

Table 11: Landfill Cover Material Use in 2023	
Material Type	Tons
Contaminated Soil	168,133
Bottom Ash	59,997
Auto Shredder Residue/Auto Fluff	55,489
Sludge Ash	18,732
Street Sweepings	14,219
Other	13,572
Cullet (crushed glass)	10,162
Soil/Sand	6,930
Limestone/Sand	4,176
Wood Chips	3,719
Road Base	3,543
Compost	2,020
Catch Basin Cleanings	1,480
Dredge (fresh)	220
Foundry Sand	159
WWTP Grit	104
Total	362,655