



Commonwealth of Massachusetts  
Executive Office of Energy & Environmental Affairs

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## Department of Environmental Protection

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# 2016 Solid Waste Data Update

## February 2018

## Introduction

In the *2010-2020 Solid Waste Master Plan (Master Plan)*, the Executive Office of Energy and Environmental Affairs (EEA) and the Massachusetts Department of Environmental Protection (MassDEP) established a plan and vision for Massachusetts to manage its solid waste during the 2011-2020 timeframe. To assist in implementing the *Master Plan*, MassDEP annually collects and analyzes solid waste management system data. The data are used to track progress in meeting waste reduction milestones and to evaluate solid waste management capacity needs. MassDEP has updated the solid waste data for calendar year 2016 and revised waste management capacity projections through 2022 based on the 2016 data.

MassDEP continues to implement a wide range of program initiatives to reduce waste and increase recycling and composting, while ensuring that remaining waste is managed and disposed of safely. These initiatives are described in the *Master Plan*.

## Goals and Methodology Summary

In the *Master Plan*, MassDEP established a vision to maximize the diversion of materials from the waste stream by 2020. Unlike previous plans that measured progress through waste reduction, the *2010-2020 Plan* shifted its metrics to a disposal reduction target. Thus, MassDEP will measure disposal reduction by comparing the total disposal in a future year against disposal in 2008 as a baseline year. Moreover, the *Master Plan* establishes a specific goal: reduce annual disposal by 2 million tons, or 30 percent, from 6,550,000 tons in 2008 to 4,550,000 tons in 2020. Given this change, MassDEP is no longer reporting on recycling, composting, and other diversion data on an annual basis. MassDEP believes that disposal reduction is a simpler, more direct, and more effective metric for evaluating waste reduction and diversion progress.

Table 1 summarizes the methodology for the disposal reduction calculation.

<b>Table 1 Methodology Summary</b>		
<b>Waste Reduction Rates</b>		<b>Equation</b>
Disposal Tonnage	=	In State Disposal (Landfill & Municipal Waste Combustor) + Export for Disposal – Import for Disposal
Disposal Tonnage Reduction	=	2008 Disposal Tons – Current Year [2016] Disposal Tons
% Disposal Reduction	=	$\frac{2008 \text{ Disposal Tons} - \text{Current Year [2016] Disposal Tons}}{2008 \text{ Disposal Tons}}$

## Progress in Meeting Disposal Reduction Milestone

Total disposal in 2016 was 5,610,000 tons, a decrease of 940,000 tons, or 14 percent, from 2008.

### Solid Waste Management Overview

Table 2 highlights how solid waste disposal changed from 2015 to 2016, measured in tonnage and percent change. From 2015 to 2016, total disposal increased by 1.8 percent. Of the total waste that required disposal, 4.5 million tons (80%) were disposed in-state, of which 1.3 million tons were land filled and 3.2 million tons were combusted. Massachusetts exported 1.6 million tons for disposal and imported 0.5 million tons, and thus was a net exporter of about 1.1 million tons (20%) of waste requiring disposal. See Table 4 for a more detailed picture of disposal import and export data by state.

		2015	2016	Tons Change	% Change
<b>Disposal (Incl. Net Exports)</b>		<b>5,510,000</b>	<b>5,610,000</b>	<b>100,000</b>	<b>1.8%</b>
In-State Disposal		<b>4,630,000</b>	<b>4,520,000</b>	<b>(110,000)</b>	<b>-2.4%</b>
Landfill		<b>1,380,000</b>	<b>1,330,000</b>	<b>(50,000)</b>	<b>-3.6%</b>
	MSW	1,260,000	1,170,000	(90,000)	-7.1%
	C&D	50,000	70,000	20,000	40.0%
	Other	70,000	90,000	20,000	28.6%
Combustion		<b>3,250,000</b>	<b>3,190,000</b>	<b>(60,000)</b>	<b>-1.8%</b>
	MSW	3,250,000	3,170,000	(80,000)	-2.5%
	Non-MSW	10,000	20,000	10,000	100.0%
Net Exports		<b>880,000</b>	<b>1,090,000</b>	<b>210,000</b>	<b>23.9%</b>
Exports		1,380,000	1,560,000	<b>180,000</b>	<b>13.0%</b>
	MSW	620,000	680,000	60,000	9.7%
	Non-MSW	760,000	880,000	120,000	15.8%
Imports		500,000	460,000	<b>(40,000)</b>	<b>-8.0%</b>
	MSW	460,000	420,000	(40,000)	-8.7%
	Non-MSW	50,000	40,000	(10,000)	-20.0%

Note: % Change is calculated based on the rounded amounts in this table.  
Percentages may not add exactly to 100% due to rounding.

Table 3 presents solid waste disposal data from 2010-2016, excluding 2013, when MassDEP did not publish statewide solid waste data. Table 4 shows how MSW and non-MSW disposal changed from 2008 through 2016. Although total MSW disposal decreased by 70,000 tons from 2015-2016, total non-MSW disposal increased by 180,000 tons.

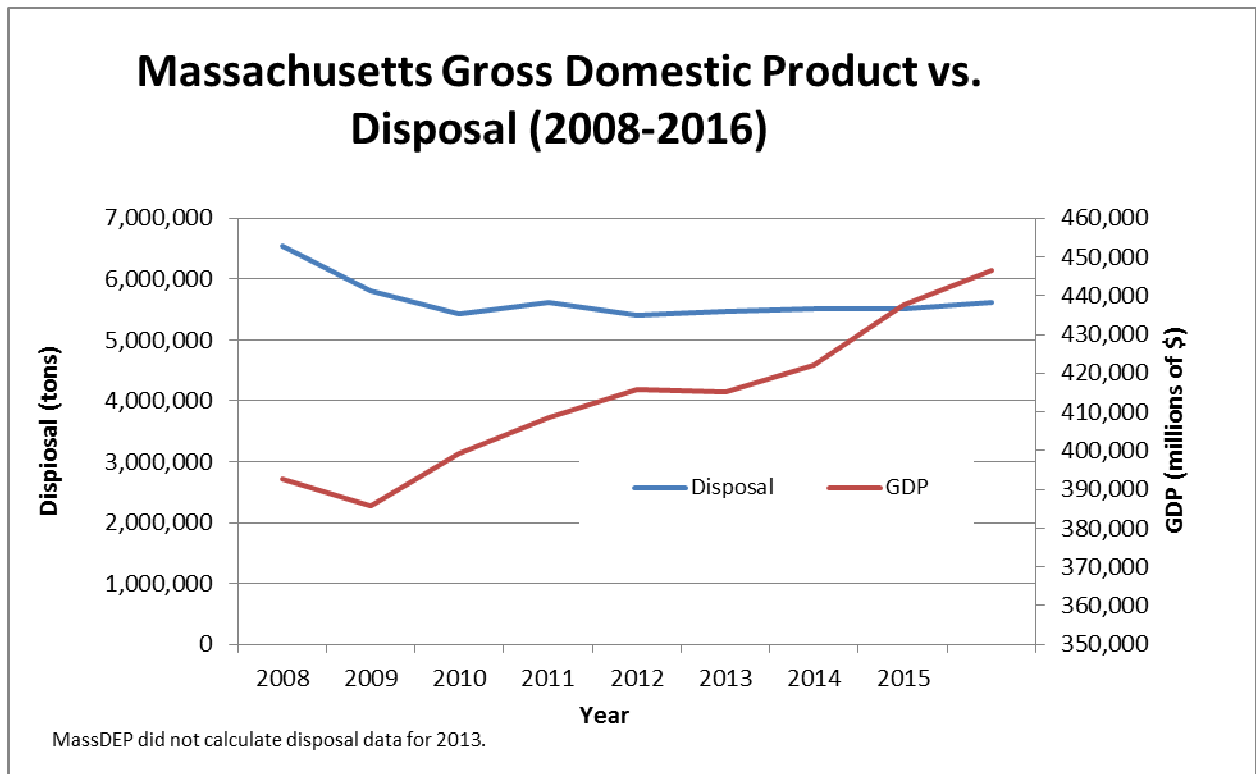
**Table 3 Solid Waste Disposal 2010-2016** (all data in tons)

		2008	2010	2011	2012	2014	2015	2016
<b>Disposal</b>		<b>6,550,000</b>	<b>5,430,000</b>	<b>5,610,000</b>	<b>5,400,000</b>	<b>5,520,000</b>	<b>5,510,000</b>	<b>5,610,000</b>
	<b>Landfill</b>	<b>1,740,000</b>	<b>1,560,000</b>	<b>1,650,000</b>	<b>1,700,000</b>	<b>1,560,000</b>	<b>1,380,000</b>	1,330,000
	MSW	1,560,000	1,280,000	1,390,000	1,380,000	1,380,000	1,260,000	1,170,000
	C&D	130,000	120,000	70,000	100,000	50,000	50,000	70,000
	Other	50,000	170,000	190,000	220,000	130,000	70,000	90,000
	<b>Combustion</b>	<b>3,230,000</b>	<b>3,180,000</b>	<b>3,260,000</b>	<b>3,210,000</b>	<b>3,270,000</b>	<b>3,250,000</b>	<b>3,190,000</b>
	MSW	3,210,000	3,170,000	3,250,000	3,210,000	3,260,000	3,250,000	3,170,000
	Non-MSW	10,000	10,000	10,000	-	-	10,000	20,000
	<b>Net Exports</b>	<b>1,580,000</b>	<b>690,000</b>	<b>700,000</b>	<b>490,000</b>	<b>690,000</b>	<b>880,000</b>	<b>1,090,000</b>
	Exports	1,850,000	1,270,000	1,340,000	1,050,000	1,190,000	1,380,000	1,560,000
	MSW	840,000	690,000	630,000	510,000	460,000	620,000	680,000
	Non-MSW	1,010,000	580,000	710,000	540,000	730,000	760,000	880,000
	Imports	270,000	580,000	640,000	560,000	490,000	500,000	460,000
	MSW	240,000	440,000	390,000	420,000	460,000	460,000	420,000
	Non-MSW	30,000	140,000	240,000	150,000	40,000	50,000	40,000

**Table 4 MSW and Non-MSW Disposal 2008-2016**

	2008	2009	2010	2011	2012	2013	2014	2015	2016	% change vs. 2008	% change vs. 2015
Total Disposal (tons)	6,550,000	5,800,000	5,430,000	5,610,000	5,400,000	5,480,000	5,520,000	5,510,000	5,610,000	-14%	2%
MSW	5,370,000	4,991,000	4,700,000	4,880,000	4,680,000	4,660,000	4,640,000	4,670,000	4,600,000	-14%	-1%
Non-MSW	1,170,000	810,000	740,000	740,000	710,000	790,000	870,000	840,000	1,020,000	-13%	21%

### Comparing Disposal Trends to State Economic Trends



The chart above gives a visual representation of Massachusetts waste disposal totals from 2008-2016 in the context of the state's Gross Domestic Product (GDP) over the same time frame, measured in millions of chained 2009 dollars.

While GDP has grown by 14 percent from 2008-2016, disposal decreased by 14 percent during that same period. From 2015 to 2016, GDP increased by 2 percent and disposal also increased by 2 percent. Note that the 2013 disposal data in this chart is estimated based on averaging 2012 and 2014 disposal.

	2008	2009	2010	2011	2012	2013	2014	2015	2016	% change vs. 2008	% change vs. 2015
GDP (millions of dollars)	392,817	385,698	399,239	408,409	415,832	415,030	421,940	437,633	446,476	14%	2%
Total Disposal (tons)	6,550,000	5,800,000	5,430,000	5,610,000	5,400,000	5,480,000	5,520,000	5,510,000	5,610,000	-14%	2%

### Disposal Import/Export Data for 2014-2016

Table 4 shows MSW and C&D data 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 29,000 tons of MSW from Massachusetts, 29,000 tons of export was used.

MSW Exported					C&D Exported				
State	2014	2015	2016		State	2014	2015	2016	
CT	1,327	14,339	11,078		CT	0	21630.2	-	
ME	49,970	52,372	20,400		ME	9,389	11,863	0	
NH	191,192	332,804	372,210		NH	26,683	14,872	24,098	
NY	56,578	30,095	62,950		NY	31,710	68,274	144,060	
OH	142,515	181,064	209,419		OH	284,965	229,708	228,575	
RI	2,592	29	0		RI	27	827	23	
VT	13,094	9,206	0		<b>TOTAL</b>	<b>352,774</b>	<b>347,174</b>	<b>396,756</b>	
<b>TOTAL</b>	<b>457,269</b>	<b>619,909</b>	<b>676,057</b>						
MSW Imported					C&D Imported				
State	2014	2015	2016		State	2014	2015	2016	
CT	182,092	189,171	62,386		CT	129	4	14	
ME	2,479	2,182	1,095		ME	1	22	59	
NH	52,445	85,217	126,079		NH	6,066	4,801	6,439	
NY	24,326	20,357	22,622		RI	561	76	5,588	
RI	194,878	157,274	206,816		VT	24	0	0	
VT	1,751	1,202	1,741		<b>TOTAL</b>	<b>6,781</b>	<b>4,903</b>	<b>12,100</b>	
<b>TOTAL</b>	<b>457,971</b>	<b>455,403</b>	<b>420,739</b>						

## **Waste Management Capacity Projections**

The disposal capacity projections in Table 5 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 combustion 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.

Table 6 projects waste management capacity through 2022. These projections are based in part on the disposal capacity projections shown in Table 5. These projections also assume that 82% of potential landfill disposal capacity is utilized (based on 2016 capacity utilization rates). The projections also assume that 91% of the permitted combustion capacity is utilized (based on 2016 utilization rates.) The waste management capacity projections estimate two different scenarios:

- 1) Total disposal remains level from 2017 to 2022
- 2) Total disposal decreases 5.1% per year from 2017-2022, meeting the Solid Waste Master Plan goal of reducing disposal tonnage by 2 million tons from 2008 to 2020, down to 4,550,000 tons in 2020.

The projections show projected management capacity and net export through 2022. Under scenario 1, net export for disposal in 2022 is projected to be about 1.8 million tons. Under scenario 2, the projection shows projected net export of about 200,000 tons in 2022.



**Table 6: Projected Disposal Capacity 2017-2022 (Tons Per Year)**

Municipality	Permitted Capacity	End of current permitted capacity	Lifetime of LF	2017	2018	2019	2020	2021	2022
<b>Active Landfills</b>									
Bourne	30,000	2021	2024	30,000	30,000	30,000	30,000	30,000	219,000
Carver	101,125	2018	2020	101,125	101,125	101,125	101,125	0	0
Chicopee	365,000	2018	2018	365,000	91,250	0	0	0	0
Dartmouth	115,000	2018	2026	115,000	115,000	115,000	115,000	115,000	115,000
Middleborough	60,000	2020	2031	60,000	60,000	60,000	60,000	60,000	60,000
Nantucket	26,000	2020	2030	26,000	26,000	26,000	26,000	26,000	26,000
Southbridge	405,600	2018	2018	280,600	405,600	0	0	0	0
Taunton	120,120	2019	2020	120,120	120,120	120,120	120,120	0	0
Westminster	390,000	2024	2024	390,000	390,000	390,000	390,000	390,000	390,000
<b>Municipal Waste Combustors</b>									
Agawam	131,400			131,400	131,400	131,400	131,400	131,400	131,400
Haverhill	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
North Andover	460,500			460,500	460,500	460,500	460,500	460,500	460,500
Pittsfield	84,000			84,000	84,000	84,000	84,000	84,000	84,000
Rochester	1,250,000			1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Saugus	460,500			460,500	460,500	460,500	460,500	460,500	460,500
	5,131,070	3,518,225							
<b>TOTAL PERMITTED COMBUSTION CAPACITY</b>	3,518,225			3,518,225	3,518,225	3,518,225	3,518,225	3,518,225	3,518,225
<b>ADJUSTED TOTAL COMBUSTION CAPACITY*</b>				3,190,000	3,190,000	3,190,000	3,190,000	3,190,000	3,190,000
<b>TOTAL PERMITTED CAPACITY</b>				5,006,070	4,437,320	3,724,345	3,604,225	3,578,225	3,578,225
<b>TOTAL POTENTIAL CAPACITY</b>				4,677,845	4,529,095	4,032,245	4,032,245	3,811,000	4,000,000
<b>KEY:</b>									
Permitted Capacity	Number without shading								
Potential Additional Capacity	Number with shading								
<b>ESTIMATED TOTAL POTENTIAL AVAILABLE CAPACITY</b>				4,741,347	4,619,064	4,210,615	4,210,615	4,028,735	4,184,107
<b>82% of potential for LFs and 91 % of potential for combustion</b>									
<b>Actual combustion varies per year, has never reached capacity</b>									
Total Potential Landfill Capacity				1,223,122	1,100,839	692,390	692,390	510,510	665,882

Actual 2016 disposal 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.



<b>Table 7: Waste Management Capacity Projections: 2017-2022</b>							
	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>
<b>Total Disposal (baseline)</b>	5,610,000	5,610,000	5,610,000	5,610,000	5,610,000	5,610,000	5,610,000
<b>Total Disposal (reduced)</b>	5,610,000	5,323,890	5,052,372	4,794,701	4,550,171	4,318,112	4,097,888
<b>Combustion Capacity</b>	3,190,000	3,190,000	3,190,000	3,190,000	3,190,000	3,190,000	3,190,000
<b>Potential LF Capacity</b>	1,330,000	1,223,122	1,100,839	692,390	692,390	510,510	665,882
<b>In-state Disposal Capacity</b>	4,520,000	4,413,122	4,290,839	3,882,390	3,882,390	3,700,510	3,855,882
<b>Net Disposal Export (baseline disposal)</b>	1,090,000	1,196,878	1,319,161	1,727,610	1,727,610	1,909,490	1,754,118
<b>Net Disposal Export (reduced disposal)</b>	1,090,000	910,768	761,533	912,311	667,781	617,603	242,007