



# Solid Waste Data Quality

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# Context

- Multi-state effort: CT, ME, MA, NH, NJ, NY, RI, & VT
- Compile state MSW disposal & C& D materials data to understand their fate
- Present imports & exports tonnages
- Several year lag time because some states cannot quickly gather, review, & compile data for sharing



# Value

- Understand the flow of waste in region & out
- ID changes & trends over time
- Support state SW planning efforts
- Improve data quality & consistency across the region so comparisons & analysis of waste flow is possible
- Develop understanding of the interdependency of states for waste management capacity (regional waste-shed)



# MSW Data

- 2000 – 2017: 7 publications that compile state data & focus on imports & exports of MSW for disposal
- MSW from residential & commercial sources (not all solid waste – e.g., does not include C&D materials, WTE ash, asbestos wastes, contaminated soil, industrial wastes)
- MSW shipped for landfill & incineration

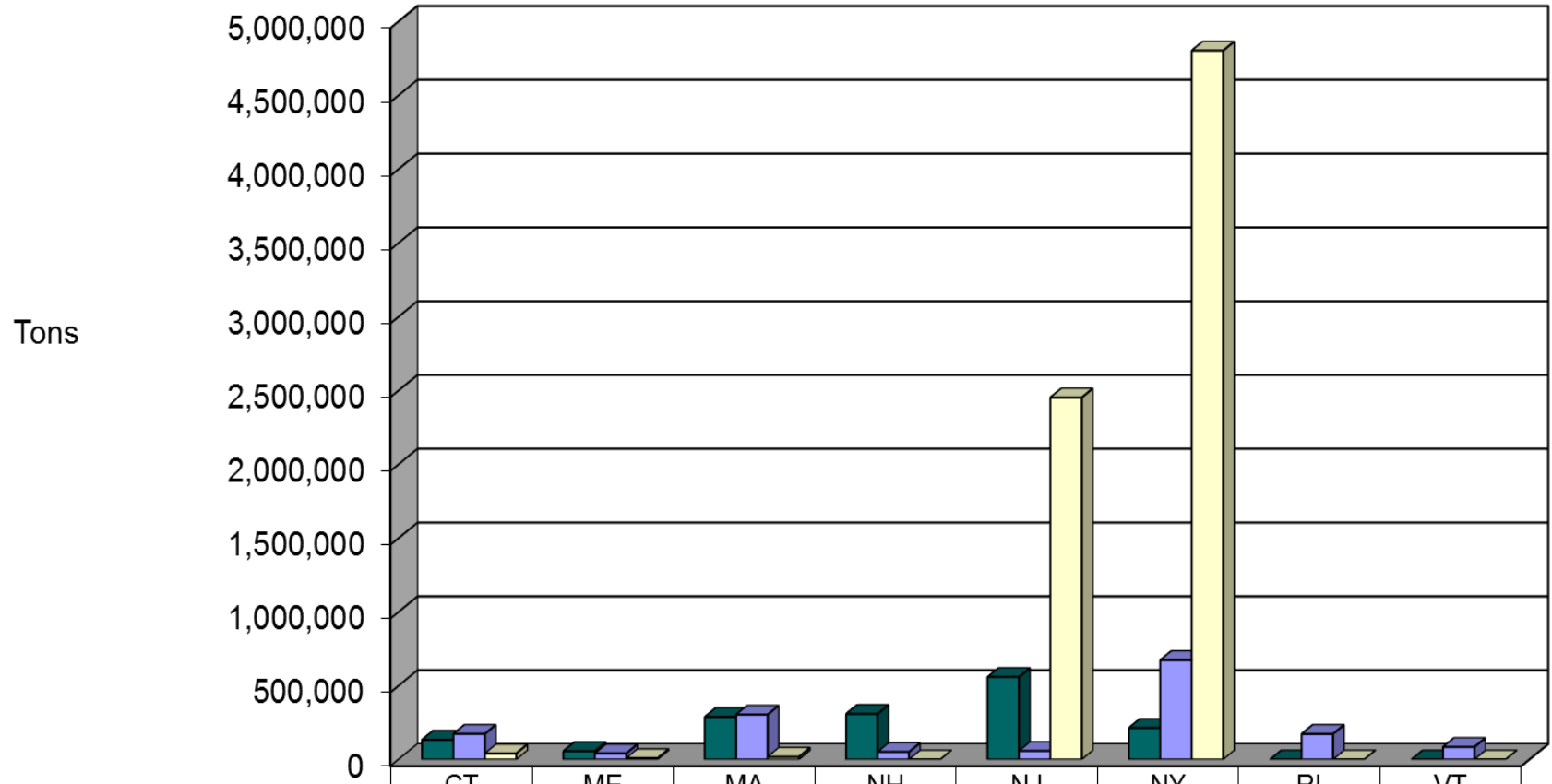
[www.newmoa.org/solidwaste/MSW2014DatatReport.pdf](http://www.newmoa.org/solidwaste/MSW2014DatatReport.pdf)



# MSW Disposal

- All states collect detailed information from regulated & permitted disposal facilities – landfills & waste-to-energy
- Most consistent & best MSW data is available from these facilities
- Transfer stations do not reliably know the disposal fate of their material

# Figure 1: 2014 MSW Imports & Exports for Disposal (Tons)



	CT	ME	MA	NH	NJ	NY	RI	VT
■ Imports from NEWMOA States	133,439	56,416	288,344	308,699	558,902	213,768	0	0
■ Exports to NEWMOA States	173,740	41,194	304,211	50,752	57,738	673,718	173,420	84,668
■ Exports to Non-NEWMOA States & Provinces	40,882	9,086	18,268	0	2,452,315	4,802,879	123	0



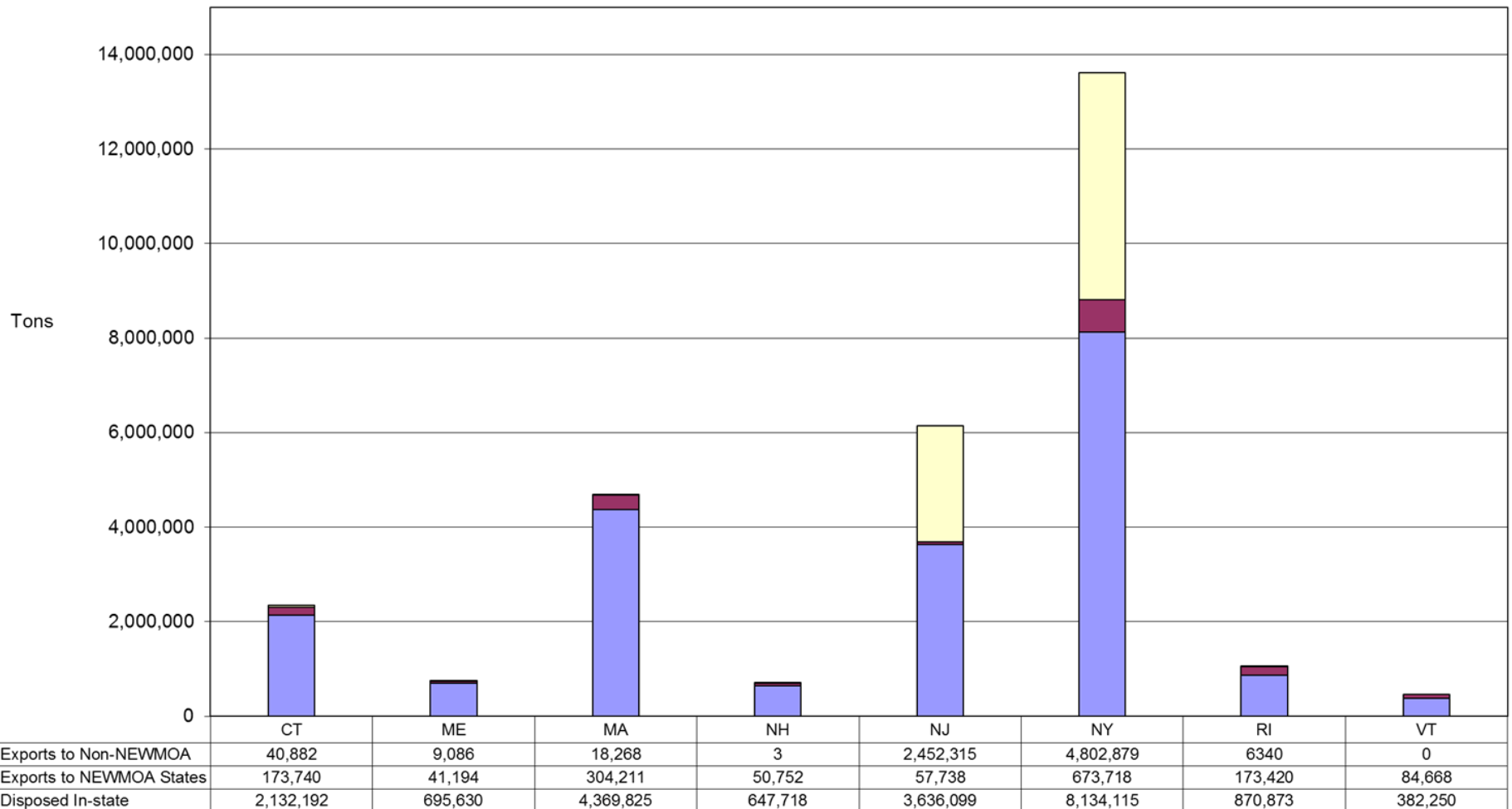
# Observations

- Facilities in all NEWMOA states export MSW for disposal
- Facilities in all NEWMOA states, except RI & VT import MSW for disposal
- Only NJ & NY relied heavily on exports to facilities in non-NEWMOA states in 2014
- Import & export tonnages for MA were similar in 2014



# Disposal

**Figure 2: 2014 MSW Generated by State & Disposed (Tons)**







# Observations

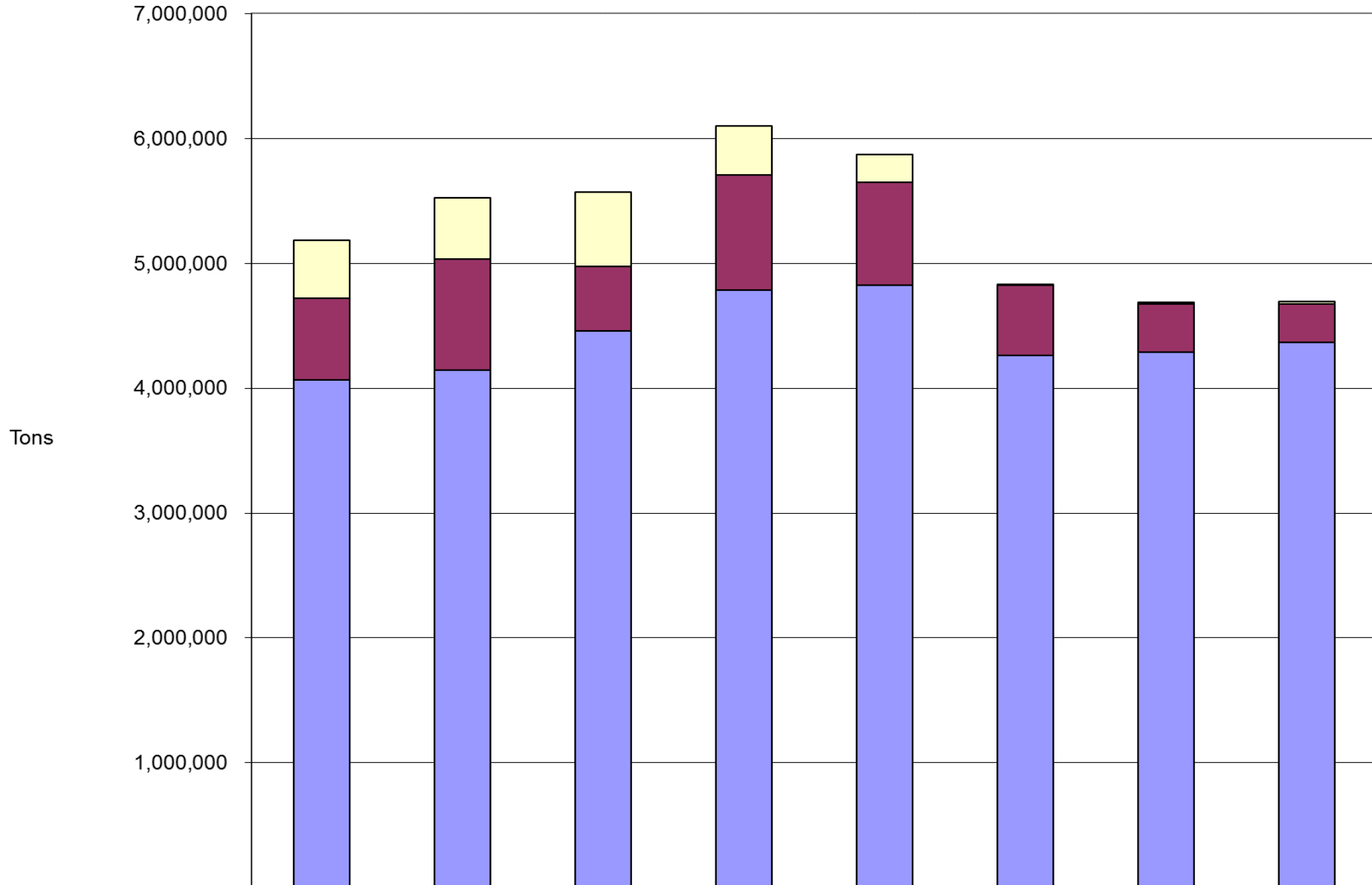
- Facilities in a state dispose of most of the MSW generated in that state
- NJ & NY export a higher percentage than others



# Per-capita Disposal in 2014 (tons)

	Generated in state (includes exports)	Disposed in state (includes imports)
CT	0.66	0.63
ME	0.56	0.57
MA	0.72	0.71
NH	0.53	0.73
NJ	0.70	0.48
NY	0.70	0.46

**Figure 14: MSW Generated in Massachusetts & Disposed of: 2000 through 2014 (Tons)**

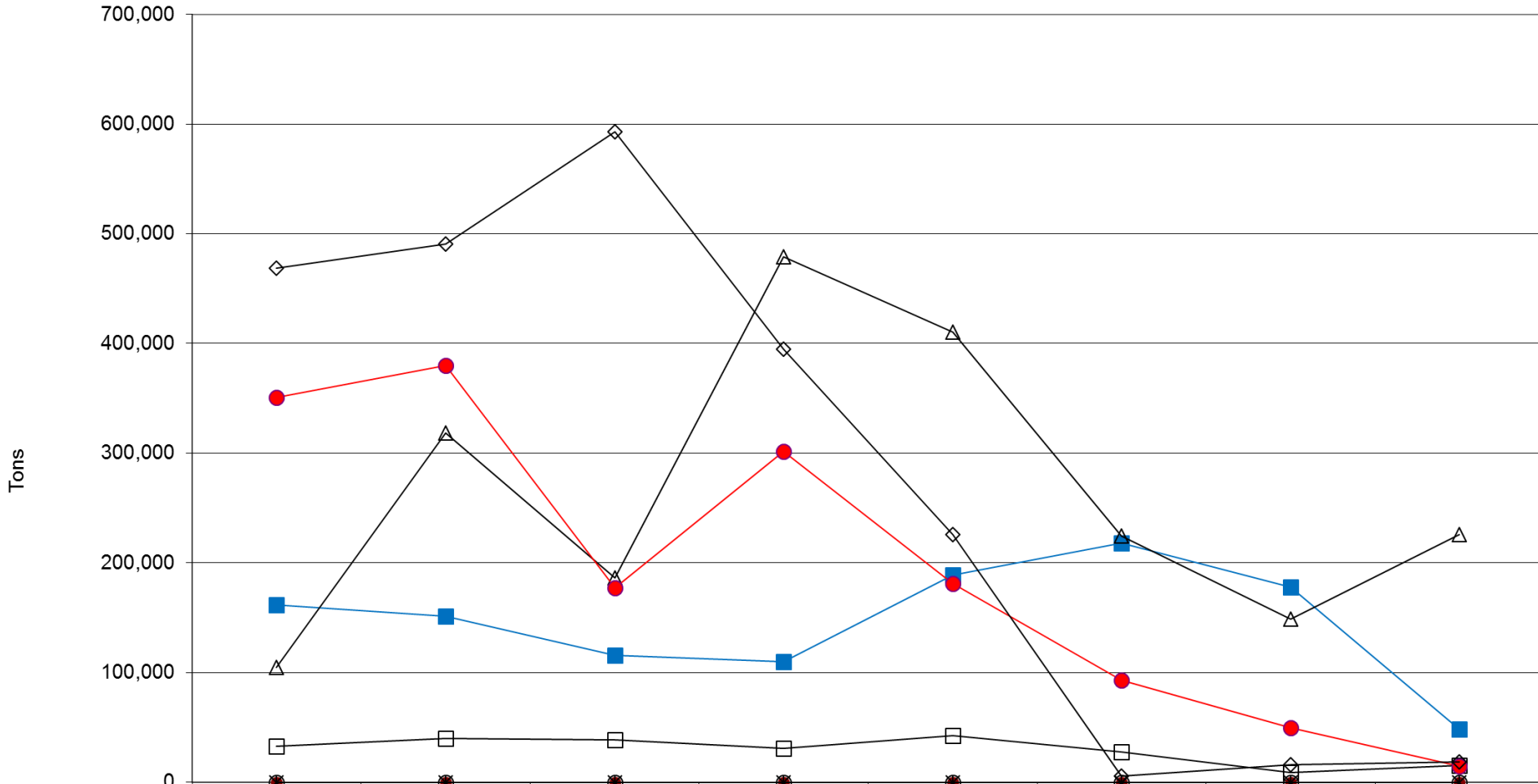


Tons

7,000,000  
6,000,000  
5,000,000  
4,000,000  
3,000,000  
2,000,000  
1,000,000  
-

	2000	2002	2004	2006	2008	2010	2012	2014
Exported to Non-NEWMOA	468,895	490,772	592,953	394,798	225,496	5499	16067	18,268
Exported to NEWMOA	649,476	889,635	517,812	921,115	822,837	562658	385512	304,211
Disposed In State	4,069,137	4,147,413	4,459,730	4,785,491	4,823,591	4262599	4289036	4,369,825

**Figure 16: MSW Exports from Massachusetts: 2000 through 2014  
(Tons)**



	2000	2002	2004	2006	2008	2010	2012	2014
□ CT	32,682	40,168	38,479	30,767	42,517	27,756	8,956	15,350
■ ME	161,573	151,338	115,857	109,831	188,828	217,731	178,028	48,242
△ NH	104,709	318,129	186,455	479,144	410,466	224,486	148,829	225,683
○ NJ	0	0	0	0	0	0	0	0
● NY	350,512	380,000	177,021	301,373	181,026	92,685	49,699	14,936
● RI	0	0	0	0	0	0	0	0
* VT	0	0	0	0	0	0	0	0
◇ Other	468,895	490,771	592,953	394,798	225,496	5,499	16,067	18,268



# C&D Materials Data

- 2005 – 2017: 3 online presentations that compile state data on C&D materials shipped for processing, recovery, & disposal
- In 2012, states reached agreement on C & D materials data set & their definitions

[www.newmoa.org/solidwaste/CandDReport2013.pdf](http://www.newmoa.org/solidwaste/CandDReport2013.pdf)



# C&D Management in the Northeast in 2013

- Materials from building construction, renovation, & demolition
- Processors: focus on “mixed” C&D
  - ❖ Facilities handling mainly ABC from road & bridge projects not included - would dwarf tonnages
  - ❖ Facilities handling mainly land clearing wood also not included
- Landfill uses not considered recovery
  - Shaping & grading
  - Roads
  - Alternative daily cover (ADC)



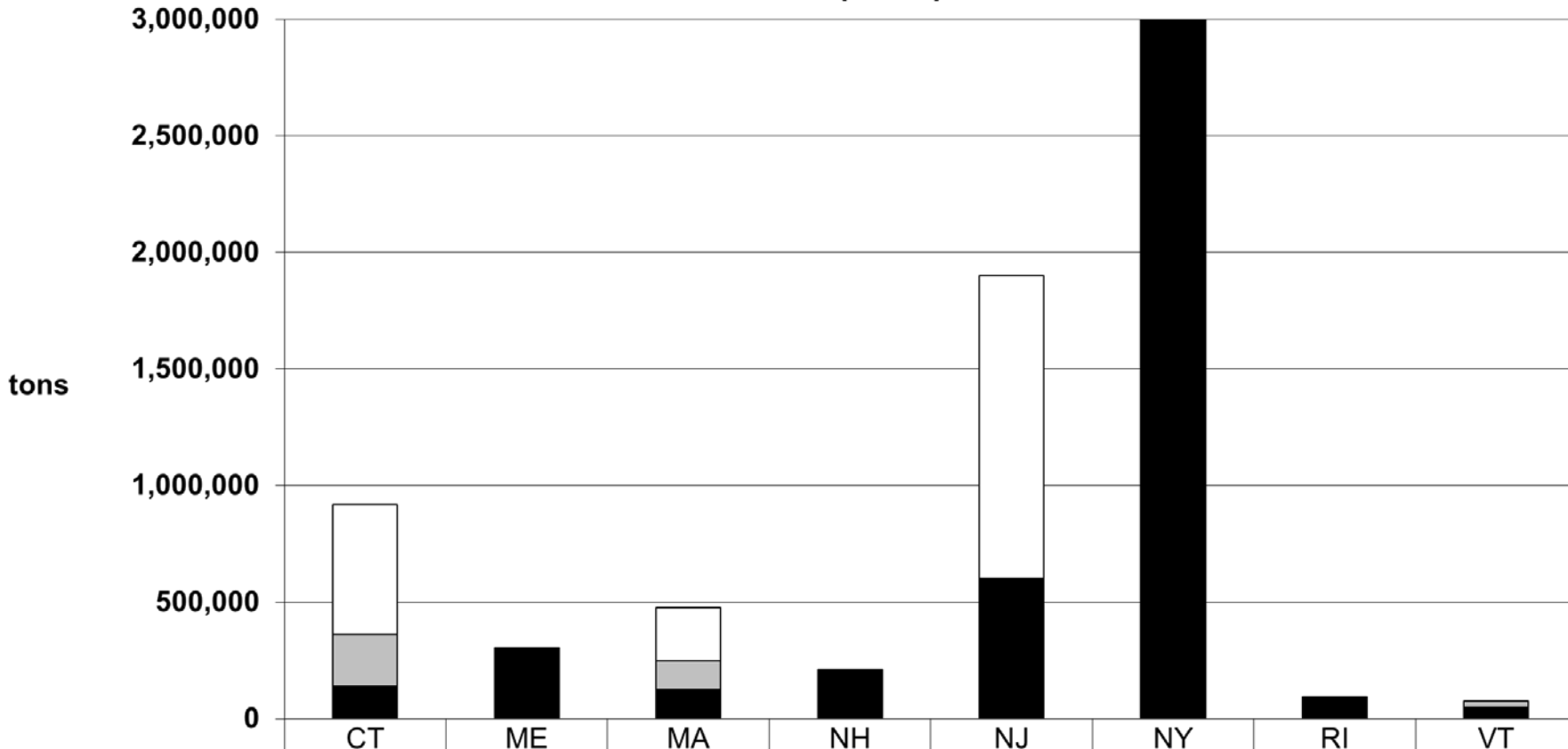
# C & D Materials Data

- Data from facilities that report to states
  - ❖ For example, data on recycling direct from job sites is not collected by states
- Latest data collection effort started in 2015
  - ❖ State resources limited
    - Follow-up with non-reporters
    - Enter data in their database systems
    - QA/QC data



# Disposal

**Figure 2: 2013 C&D Generated by State and Disposed (tons)**



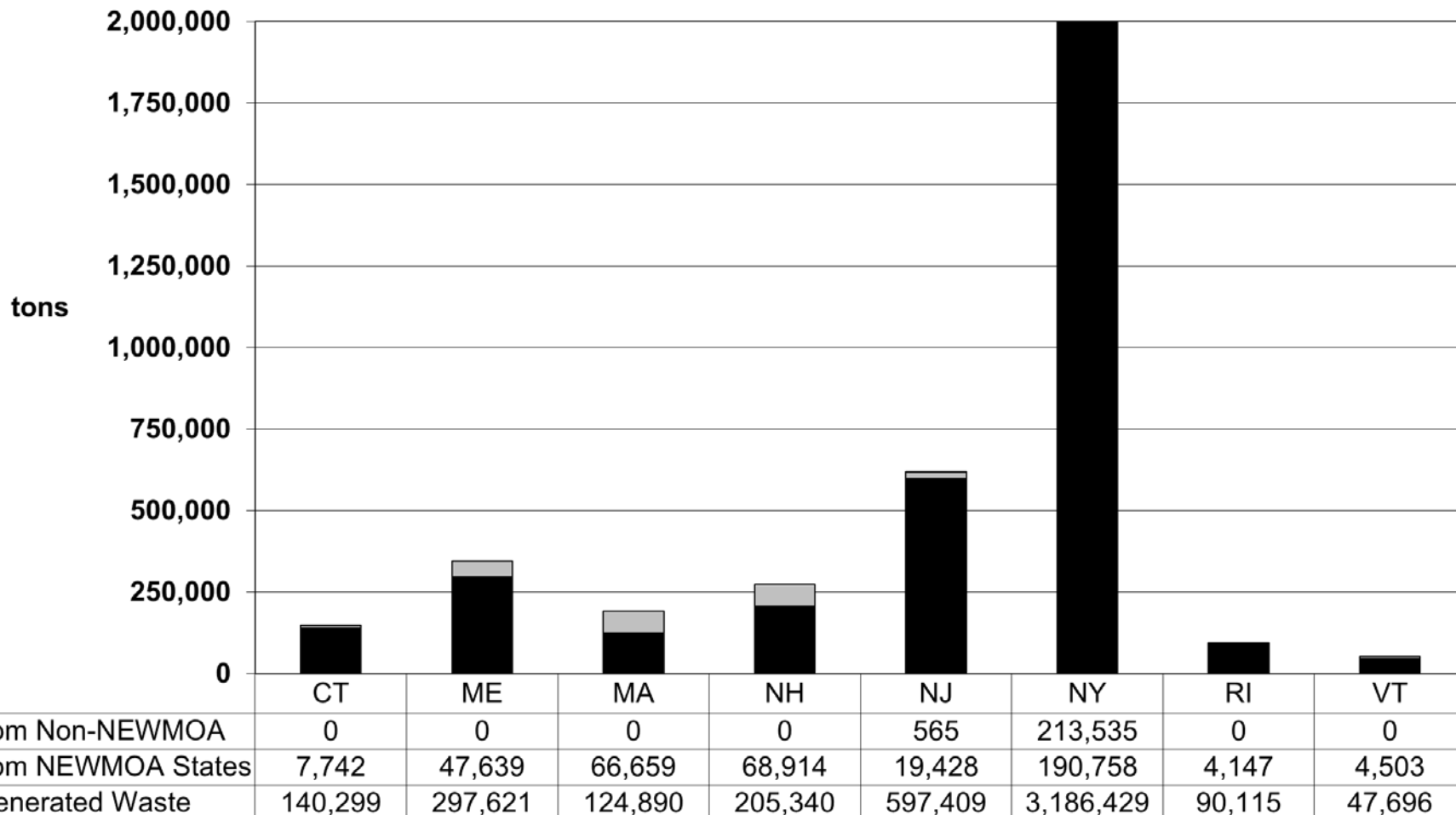
Exports to non-NEWMOA	555,191	5,536	230,398	0	1,296,350	1,143,189	0	0
Exports to NEWMOA States	221,948	2,294	122,133	5,920	4,972	21,951	3,240	27,332
Disposed of In-State	140,299	297,621	124,890	205,340	597,409	3,186,429	90,115	47,696





# Disposed in State (includes imports)

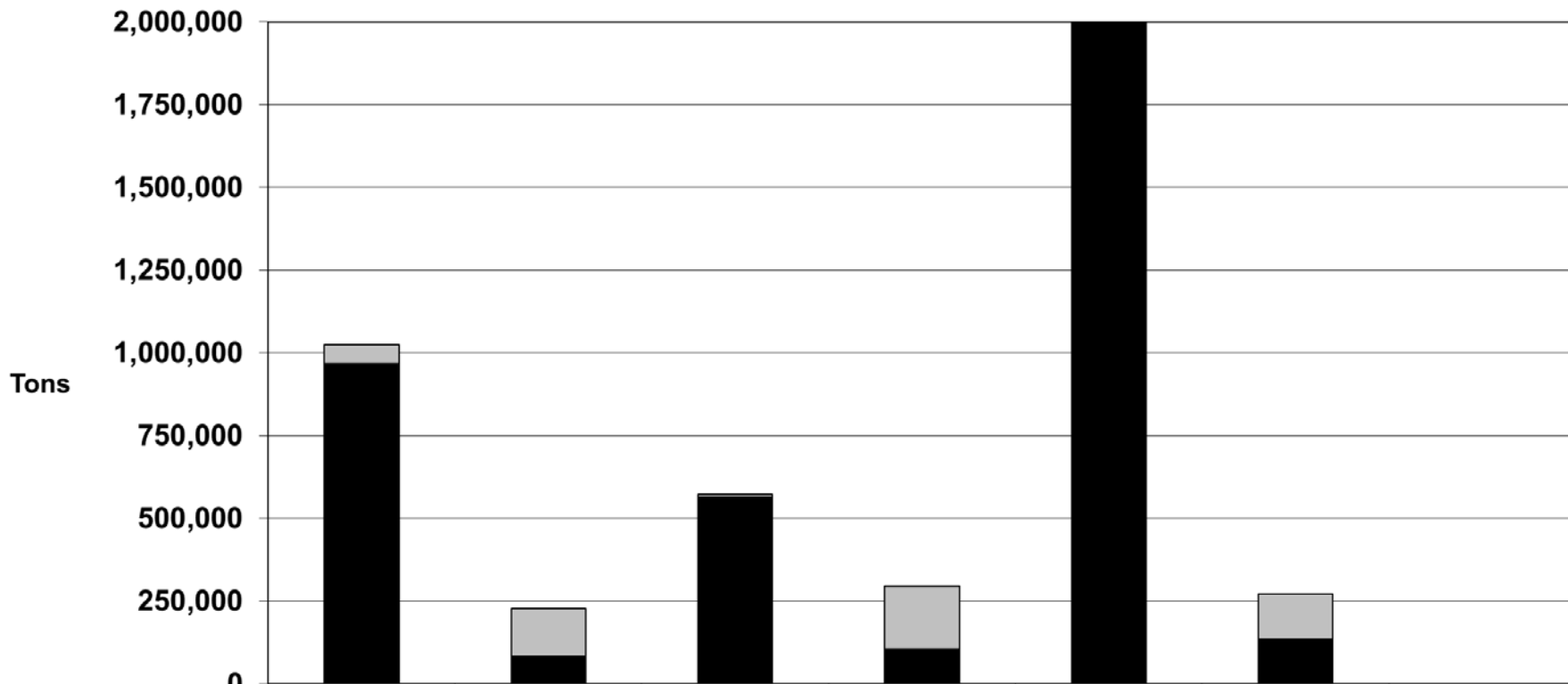
Figure 3: 2013 Total Quantity of C&D Disposed of In-State  
(tons)





# Inputs to Processors

Figure 4: 2013 C&D Inputs at Processors (tons)

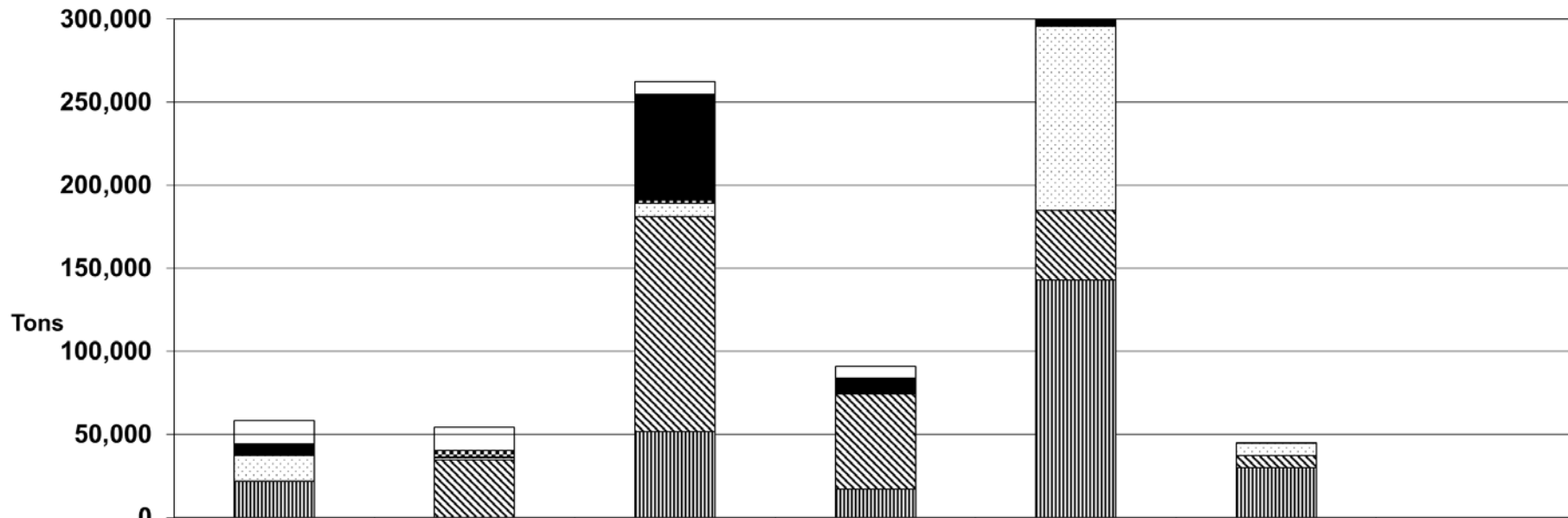


	CT	ME	MA	NH	NY	RI	VT
Imports non-NEWMOA	0	0	0	0	0	0	0
Imports NEWMOA States	56,527	145,438	8,506	189,560	0	137,972	0
In-State Generated	967,513	82,562	565,422	105,701	3,705,406	134,977	0



# Recovery from Processors

Figure 6: 2013 C&D Processor Recovered Outputs (tons)



	CT	ME	MA	NH	NY	RI	VT
Asphalt Shingles	14,009	13,990	7,484	6,832	0	0	0
Aggregate - ABC	6,040	0	63,878	9,292	340,637	0	0
Gypsum	727	3,970	1,600	215	664	33	0
Clean Wood	15,540	1,463	8,139	180	110,963	7,389	0
C&D Wood	0	34,711	129,532	57,251	42,148	7,346	0
Metal	21,762	0	51,554	17,001	142,588	29,905	0



# Programs' Cuts

- Cuts in state programs have impacted their ability to gather, manage, QA, & analyze data
- Many manually transfer data to databases
- Few have created e-reporting portals
- Lack of resources for automation



# What Matters in Data Quality?

- Definitions matter
- Authority matters
- Quality assurance matters
- Waste flows matter
- Chain of custody matters



# Definitions Matter

- MSW is a subset of solid waste
  - Landfills & WTEs need to collect data on each type of solid waste
- Definitions of recycling varies
- Example: C & D materials – states disagree about whether alternative daily cover (ADC) is a form of disposal or diversion – many facilities want to count ADC as recycling – NEWMOA considers it a landfill use



# Definitions Matter

Example: sources of C&D vary – need consistency to aggregate data meaningfully

- Road/bridge projects vs. building projects
  - ✓ Road/bridge projects generate large amounts of asphalt, brick, &/or concrete (ABC); ABC is very heavy
  - ✓ If data from facilities that process road/bridge ABC is included, tonnages are huge & obscure data on architectural C&D



# Authority Matters

- Each state has its own authority to require reporting & to develop & use definitions
- Challenging to change state laws & requirements
- No overriding federal mandatory reporting framework or data definitions





# Quality Assurance Matters

- State programs need to review facility data closely to identify discrepancies & inconsistencies – can't publish without careful QA
- Frequently find errors & inconsistencies in reports during reviews



# Waste Flow Matters

- Waste imports & exports need to be accounted for when estimating state generation
- Reports on exports from one state may not match data on imports to the destination facilities
- Direct haul & pass through are important



# Chain of Custody Matters

- Significant quantities of C&D materials go to processors – who sometimes transfer to other processors (potential double counting)
- Outputs from C&D debris processors can transfer to another facility for additional processing, disposal, landfill use, &/or recycling



# SMM Data

- Available MSW SMM data not considered as good quality as disposal
- States have inconsistent authority & spotty ability to collect data from recycling, composting, AD, & other SMM facilities
- NEWMOA has started a project to ID core common SMM metrics to help facilitate multi-state data gathering & aggregation



- Non-profit, non-partisan interstate association
- Solid waste, materials management, hazardous waste, waste site cleanup, toxics, pollution prevention, & sustainability programs
- CT, ME, MA, NH, NJ, NY, RI, & VT
- Formally recognized by EPA in 1986



# Contact

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