

# MassDEP C&D Subcommittee Fall-2023 Webinar Series (1 of 3) C&D Wood Markets

**Via Zoom Webinar**

**October 31, 2023**

**9:00 AM to 12:00 PM**



# Welcome to the Fall-2023 Webinar Series on C&D Materials Market Development (Wood, Shingles, Gypsum)

- Today's webinar is the first in a series of three monthly meetings of the MassDEP C&D Subcommittee Stakeholder Group that will focus on C&D Materials Market Development – Wood, Asphalt Shingles, and Gypsum Wallboard.
- Each meeting will explore optimization of existing markets and development of potential future markets.
- **October 31 re: Wood Markets:** [Register in advance for this meeting](#)
- **November 16 re: Asphalt Shingle Markets:** [Register in advance for this meeting](#)
- **December 14 re: Gypsum Wallboard Markets:** [Register in advance for this meeting](#)

# 72 Registrants as of 10/30/2023



C&D Processors	Recyclers/Brokers	Construction/Svc.	Transporters	Consultants	NGO/Trade Assoc.	Municipalities	State Reg.
Casella	Beneficial Reuse	Columbia	All State Waste	Epsilon Assoc.	CDRA	Augusta	CT
Cavossa	Green Mattress	Costello Dismantl.	Commonwealth Waste	Green Seal Env.	CET/Recycling Works	Boston	MA
Copper Tank	Tafisa	Northern Tree		Tetrattech	Mass Recycle	Bourne	ME
J.R. Vinagro	The Bruening Group	STO Group			NEWMOA	Lexington	NH
Republic Services	Tred'Si					NYC	RI
ReSource Waste Ser.	USA Gypsum					Yarmouth	VT
USA Recycling	Wood Energy Recyc.						
Waste Connections							
Waste Mgt./RSR							
WIN Waste Innov.							

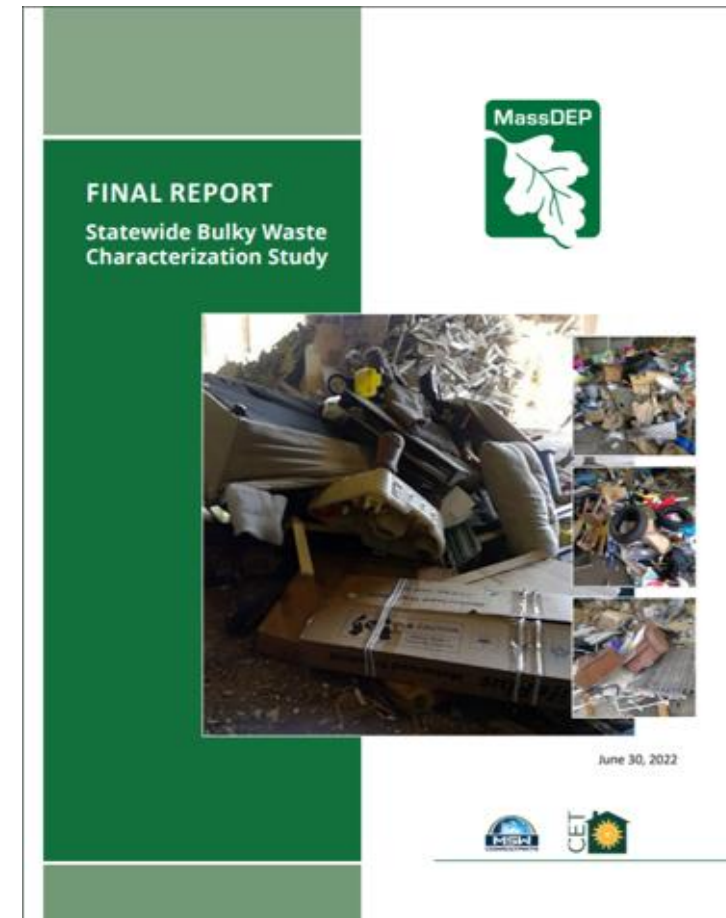
# Agenda

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- MassDEP Waste Characterization Data and C&D Wood Production Trends
- Optimization of existing markets:
  - Mr. Sylvain Martel, Director of Wood Supply, Tafisa Canada, Lac Mégantic, QC
- Development of potential future markets
  - Dr. Jonathan Parrott, Northern Tree Service, Palmer, MA: Gasification to produce Sustainable Aviation Fuel
  - Mr. Mike Taranovich, Recycling Systems Designer: Gasification to produce Renewable Natural Gas
  - Mr. Lukas Klapp, The Bruening Group, Bremen, Germany: Export of C&D wood chip as biomass fuel for EU power plants
- Industry updates/discussion

# Used the 2022 Bulky Waste Study to Estimate Potential Quantity of Available A-wood and B-wood

- 2022 Statewide Bulky Waste Characterization Study (June 2022)
- Surveyed 5 facilities across the state in May 2022
- Applied waste characterization data to C&D Facility Annual Report data to estimate potential quantity of available A-wood and B-wood in C&D and Bulky waste loads



<https://www.mass.gov/doc/statewide-bulky-waste-characterization-study-june-2022/download>

# Study Included Both C&D and Bulky Waste Loads

- Total: 219 loads weighing 413 tons surveyed
- C&D Waste: 45 loads weighing 128 tons
- Bulky Waste: 116 loads weighing 165 tons
- Comparable weights of each waste stream
- Most recent state-wide data of materials handled by C&D facilities

Table 2-4 Load Survey Distribution by Facility

Facility Name	Bulky Loads	Mixed Loads	C&D Loads	Total Loads Surveyed
Stoughton Recycling (Win-Waste)	15	8	18	41
Trojan Recycling	29	17	27	73
Casella of Holyoke	30	13	0	43
Western Recycling	29	13	0	42
Raynham Regional C&D Processing	13	7	0	20
<b>Total Samples</b>	<b>116</b>	<b>58</b>	<b>45</b>	<b>219</b>

Table 2-6 Distribution of Visually Surveyed Tons by Truck Type

Truck Type	Bulky Loads	Mixed Loads	C&D Loads	Total Loads	Percent by Tons
Roll-off Open Top	131.3	113.5	103.1	347.9	84.1%
Box/Dump Truck	28.1	1.5	12.5	42.1	10.2%
Pickup Truck/Tow Trailer	4.9	6.0	12.5	23.4	5.7%
Rear Loader	0.5	0.0	0.0	0.5	.1%
<b>Total Tons</b>	<b>164.8</b>	<b>121.0</b>	<b>128.1</b>	<b>413.5</b>	<b>100%</b>

# C&D Waste Composition Analysis: Conversion of Mean % to Weight based on CY2022 AR Data

<b>A-Wood</b>	C&D loads	
C&D Waste Categories	% by weight	tons
Untreated dimensional lumber	4.9	59174
Wood Pallets/Crates/Spools	2.4	28983
Engineered wood	9.3	112311
Sum	<b>16.6</b>	<b>200468</b>

Actual tons of A-Wood Separated in CY2022 = 100,377 tons  
ca. 50% of potential available

<b>B-Wood</b>	C&D loads	
C&D Waste Categories	% by weight	tons
Painted/Stained wood	5	60382
Treated wood	7.5	90573
Cabinets/Countertops/Doors	2.2	26568
Predominantly wood furniture	0.1	1208
Sum	<b>14.8</b>	<b>178731</b>

Table 4-4 provides the composition of these C&D loads.

Table 4-4 Detailed C&D Composition					
Material Category	Mean Percent	Margin of Error	Material Category	Mean Percent	Margin of Error
<b>Paper</b>	<b>1.4%</b>	<b>0.7%</b>	<b>C&amp;D Debris</b>	<b>52.8%</b>	<b>6.8%</b>
Uncoated OCC	0.5%	0.2%	Asphalt Pavement	0.0%	0.0%
Other Recyclable Paper	0.3%	0.2%	Brick/Block	2.6%	2.3%
Non-Recoverable Paper	0.6%	0.4%	Concrete	0.6%	1.0%
<b>Plastic</b>	<b>1.2%</b>	<b>0.3%</b>	Gypsum wallboard - CLEAN	1.0%	1.2%
Recyclable Plastic Containers	0.0%	0.0%	Gypsum wallboard - USED	6.6%	3.0%
Clean Film Plastic	0.1%	0.0%	Asphalt Shingles	13.4%	8.1%
5-gal Buckets and Plastic Toters	0.2%	0.1%	Carpet & Carpet Padding	1.6%	1.6%
Durable Plastics (Not Furniture)	0.1%	0.1%	Rock/Gravel/Dirt/Sand	0.4%	0.6%
Non-Recoverable Plastics	0.7%	0.3%	Porcelain/Plumbing Fixtures	5.8%	3.4%
<b>Metal</b>	<b>6.1%</b>	<b>2.4%</b>	Other C&D Materials	20.7%	5.0%
Recyclable Metal Containers	0.0%	0.0%	<b>Furniture</b>	<b>0.3%</b>	<b>0.3%</b>
Large Appliances (white goods)	0.0%	0.0%	Predominantly Wood	0.1%	0.2%
Ferrous/Non Ferrous Scrap	6.1%	2.4%	Predominantly Plastic	0.0%	0.0%
<b>Glass</b>	<b>0.7%</b>	<b>0.5%</b>	Predominantly Metal	0.0%	0.0%
Recyclable Glass Containers	0.0%	0.1%	Predominantly Upholstered	0.0%	0.0%
Non-Recoverable Glass	0.6%	0.4%	Predominantly Mixed	0.2%	0.2%
<b>Organics</b>	<b>1.0%</b>	<b>1.3%</b>	Mattresses	0.0%	0.0%
Land Clearing	0.0%	0.0%	Box Springs	0.0%	0.0%
Yard Waste/Green Waste	0.6%	0.7%	<b>Other Bulky</b>	<b>0.9%</b>	<b>0.6%</b>
Other Organics	0.4%	0.7%	CRTs	0.0%	0.0%
<b>Wood</b>	<b>31.3%</b>	<b>5.1%</b>	Vehicle Batteries	0.0%	0.0%
Untreated Dimensional Lumber	4.9%	1.9%	Tires	0.0%	0.0%
Engineered Wood	9.3%	2.1%	Textiles	0.3%	0.2%
Wood Pallets/Crates/Spools	2.4%	1.3%	E-Waste	0.0%	0.1%
Painted/Stained Wood	5.0%	1.2%	Other Bulky Materials	0.6%	0.5%
Treated Wood	7.5%	3.0%	<b>Mixed MSW</b>	<b>4.3%</b>	<b>2.1%</b>
Cabinetry/Countertops/Doors	2.2%	1.1%	Bagged and Loose MSW	4.2%	2.0%
			HHW/Universal Waste	0.1%	0.1%
<b>Grand Total</b>				<b>100%</b>	
<b>No. of Samples</b>				<b>45</b>	

CY2022 Total C&D Processed = C&D Accepted – Transferred = 1,545,305t – 337,663t = 1,207,641t

# Bulky Waste Compositional Analysis: Conversion of Mean % to Weight based on CY2022 AR Data

<b>A-Wood</b>	BW loads	CY2022
C&D Waste Categories	% by weight	tons
Untreated dimensional lumber	1.8	3188
Wood Pallets/Crates/Spools	1.7	3011
Engineered wood	6.3	11157
Sum	<b>9.8</b>	<b>17356</b>

<b>B-Wood</b>	BW loads	CY2022
C&D Waste Categories	% by weight	tons
Painted/Stained wood	2.8	4959
Treated wood	3.1	5490
Cabinets/Countertops/Doors	2.8	4959
Predominantly wood furniture	17.2	30461
Sum	<b>25.9</b>	<b>45868</b>

CY2022 Total Bulky Waste Accepted = 177,097t

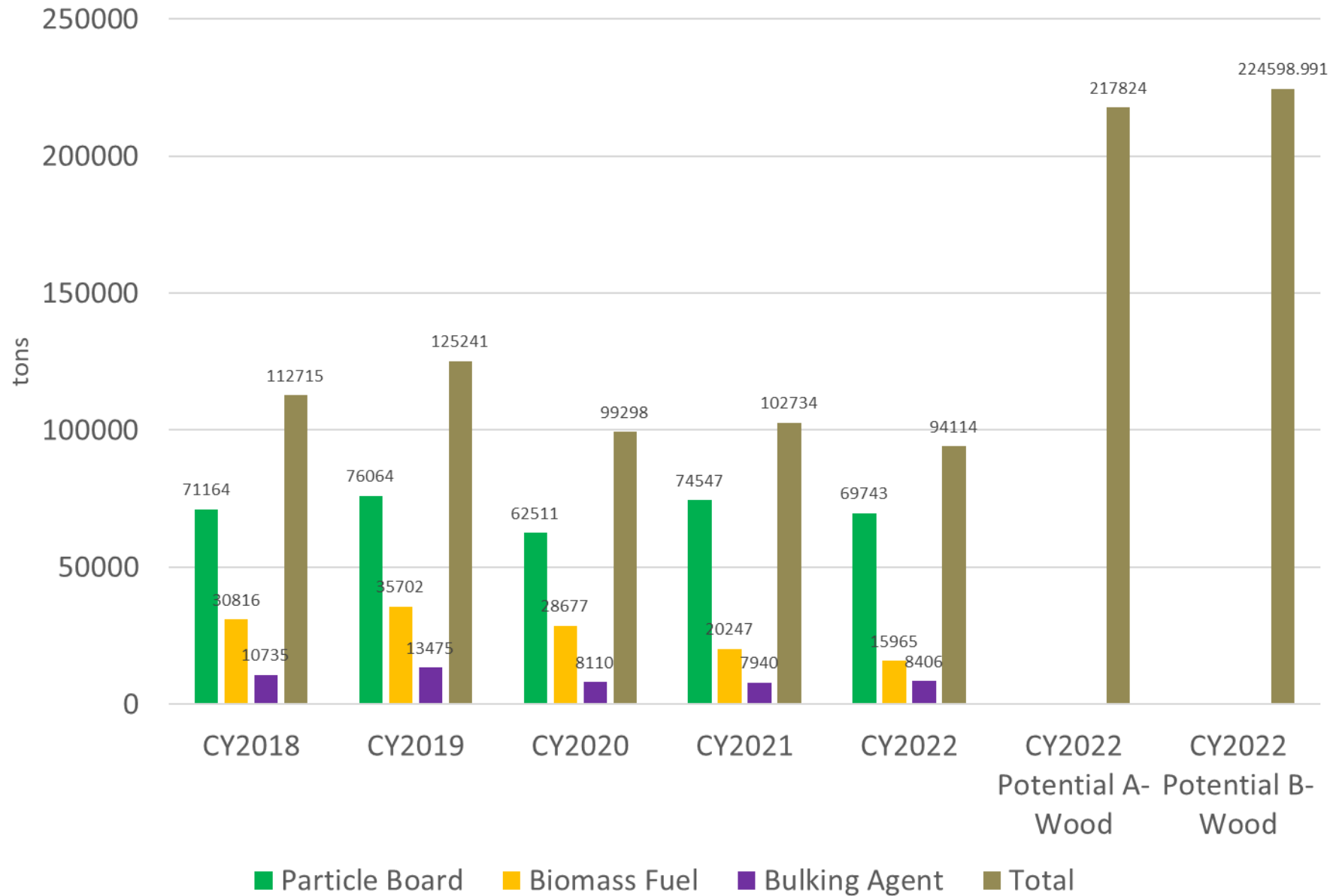
Table 4-2 Detailed Bulky Waste Composition

Material Category	Mean Percent	Margin of Error	Est. Annual Tons	Material Category	Mean Percent	Margin of Error	Est. Annual Tons
<b>Paper</b>	<b>3.1%</b>	<b>0.5%</b>	<b>9,608</b>	<b>C&amp;D Debris</b>	<b>10.0%</b>	<b>3.0%</b>	<b>30,943</b>
Uncoated OCC	1.4%	0.2%	4,328	Asphalt Pavement		Not Found	0
Other Recyclable Paper	0.8%	0.2%	2,374	Brick/Block	0.1%	0.2%	336
Non-Recoverable Paper	0.9%	0.2%	2,905	Concrete		Not Found	0
<b>Plastic</b>	<b>3.3%</b>	<b>0.4%</b>	<b>10,182</b>	Gypsum wallboard - CLEAN	0.1%	0.1%	205
Recyclable Plastic Containers	0.2%	0.0%	571	Gypsum wallboard - USED	1.1%	0.7%	3,431
Clean Film Plastic	0.0%	0.0%	152	Asphalt Shingles	0.6%	0.6%	1,880
5-gal Buckets and Plastic Toters	0.3%	0.1%	815	Carpet & Carpet Padding	3.6%	1.0%	11,134
Durable Plastics (Not Furniture)	1.2%	0.2%	3,671	Rock/Gravel/Dirt/Sand	1.0%	1.6%	2,961
Non-Recoverable Plastics	1.6%	0.2%	4,973	Porcelain/Plumbing Fixtures	1.5%	1.0%	4,501
<b>Metal</b>	<b>8.2%</b>	<b>1.5%</b>	<b>25,144</b>	Other C&D Materials	2.1%	1.2%	6,495
Recyclable Metal Containers	0.0%	0.0%	140	<b>Furniture</b>	<b>34.1%</b>	<b>5.3%</b>	<b>105,131</b>
Large Appliances (white goods)	0.3%	0.2%	876	Predominantly Wood	17.2%	3.3%	53,050
Ferrous/Non Ferrous Scrap	7.8%	1.4%	24,127	Predominantly Plastic	0.7%	0.2%	2,133
<b>Glass</b>	<b>1.3%</b>	<b>0.5%</b>	<b>3,908</b>	Predominantly Metal	3.5%	1.6%	10,732
Recyclable Glass Containers	0.1%	0.1%	214	Predominantly Upholstered	1.3%	0.4%	4,029
Non-Recoverable Glass	1.2%	0.5%	3,694	Predominantly Mixed	9.4%	4.0%	28,877
<b>Organics</b>	<b>3.6%</b>	<b>2.7%</b>	<b>10,974</b>	Mattresses	1.2%	0.3%	3,555
Land Clearing	0.0%	0.0%	75	Box Springs	0.9%	0.3%	2,755
Yard Waste/Green Waste	1.6%	1.4%	4,951	<b>Other Bulky</b>	<b>5.4%</b>	<b>1.3%</b>	<b>16,731</b>
Other Organics	1.9%	1.9%	5,948	CRTs	0.3%	0.3%	920
<b>Wood</b>	<b>18.6%</b>	<b>2.4%</b>	<b>57,308</b>	Vehicle Batteries		Not Found	0
Untreated Dimensional Lumber	1.8%	0.3%	5,667	Tires	0.3%	0.2%	803
Engineered Wood	6.3%	1.3%	19,344	Textiles	3.7%	1.1%	11,366
Wood Pallets/Crates/Spools	1.7%	0.7%	5,346	E-Waste	0.4%	0.4%	1,334
Painted/Stained Wood	2.8%	0.7%	8,756	Other Bulky Materials	0.7%	0.3%	2,308
Treated Wood	3.1%	0.6%	9,610	<b>Mixed MSW</b>	<b>12.4%</b>	<b>1.9%</b>	<b>38,198</b>
Cabinetry/Countertops/Doors	2.8%	0.7%	8,585	Bagged and Loose MSW	12.4%	1.9%	38,152
				HHW/Universal Waste	0.0%	0.0%	46
				<b>Grand Total</b>	<b>100%</b>		<b>308,127</b>
				<b>No. of Samples</b>	<b>116</b>		

Note: Est. Annual Tons shown in Table 4-2 are based on CY2021 AR Data



Wood Products Trend Chart 2018-2022



# Wood Separation Rate (WSR) by Facility (CY2022 AR Data)

- WSR = A-Wood Separated or Diverted/(C&D Mat'l. Accepted + Bulky Waste) – C&D Transferred
- WSR Industry Avg. = 7.0%
- Facilities above 2X Industry Avg. highlighted with **BOLD** font (2 fac.)
- Facilities below Industry Avg. highlighted in **RED** font. (10 fac.)
- Note: PRE-Greenleaf unplanned shut-down impacted end-market capacity for wood (5/2022-3/2023)

Facilities directly shipping separated wood to re-use/recycling end-markets	Town/City	Region	% A-Wood Sep/Div	Actual A-Wood Sep/Div	C&D Material Accepted*	BW Accepted	C&D Waste Transferred for further processing
Devens Recycling Center	Ayer	CERO	3.1%	5,149	165453	0	0
UMM-Millbury	Millbury	CERO	6.5%	10,393	149858	8907	0
E.L. Harvey C&D Processing	Westborough	CERO	<b>28.6%</b>	21,178	73997	77	0
Resource Waste Services Roxbury	Boston	NERO	5.1%	7,387	172314	10089	36976
TBI/North Andover Waste Systems	N. Andover	NERO	3.5%	648	9233	11121	1641
ELH-New Bedford	New Bedford	SERO	8.2%	3,156	38473	0	83
Raynham Regional Processing	Raynham	SERO	9.3%	8,847	60950	34123	0
Stoughton Recycling	Stoughton	SERO	9.3%	14,938	147990	12927	0
New England Recycling	Taunton	SERO	<b>15.8%</b>	21,843	133811	4077	0
Casella Lenox TS	Lenox	WERO	0.4%	82	22897	39	0
K&W Materials Recycling	W. Springfield	WERO	5.6%	1,672	20154	9738	225
Sub-Totals				95,293			
A-Wood diverted to F&G, East Windsor				5,084			
Total A-Wood				<b>100,377</b>			
Facilities separating wood for diversion to another processor for aggregation/grinding to meet end-market size specification							
UMM-Leominster	Leominster	CERO	8.0%	5,377	67003	0	0
CCR	Brockton	SERO	5.5%	217	4131	0	196
NEWD	Taunton	SERO	7.8%	2,445	31540	0	0
UCRTS	Sandwich	SERO	4.8%	1,140	18552	4964	0
Trojan Recycling	Brockton	SERO	1.3%	1,105	22058	60258	0
Western Recycling	Wilbraham	WERO	7.3%	5,084	64733	4819	0
RWSW	Ware	WERO	2.4%	60	3708	0	1175
Holyoke TS	Holyoke	WERO	8.2%	3,287	25102	15062	0
Totals				<b>18,715</b>			
		AVG	7.0%				
		MED	6.1%				
		STD	0.06				
*C&D Material Accepted = (Cat-1 Mixed C&D + C&D Wood)							

# Optimization of Existing Markets

# Particle Board Recycling

Mr. Sylvain Martel, Director of Wood Supply, Tafisa Canada, Lac Mégantic, QC

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## About Us

### Green to the core!

Leading the way is second nature at Tafisa® Canada, owner and operator of North America's largest particleboard manufacturing facility. Since its inauguration in 1992, the company has quadrupled its production, increased its employee base from 60 to 325 and firmly established itself as an industry leader.

Tafisa® operates out of the magnificent Mégantic region, where its seven-days-a-week manufacturing facility measures close to 71,000 square metres. Over the past 20 years, the company has invested more than \$400 million to ensure continuous process improvements. Tafisa® is a subsidiary of the Sonae Industria Group.

Selling to both residential and commercial markets, Tafisa® has maintained a balanced share of business between Canada and the United States. Each week, more than 700 truckloads of wood fibre are transformed into 300 truckloads of finished products – particleboard or decorative panels.

<https://tafisa.ca/en>

# Development of Potential Future Markets

# Gasification to produce Sustainable Aviation Fuel (SAF)

Dr. Jonathan Parrott, Northern Tree Service, Palmer, MA

# Gasification to produce Renewable Natural Gas (RNG)

Mr. Mike Taranovich, Recycling Systems Designer



# Export of C&D wood chip as biomass fuel for EU power plants

Mr. Lukas Klapp, The Bruening Group, Bremen, Germany



BRÜNING  
GROUP

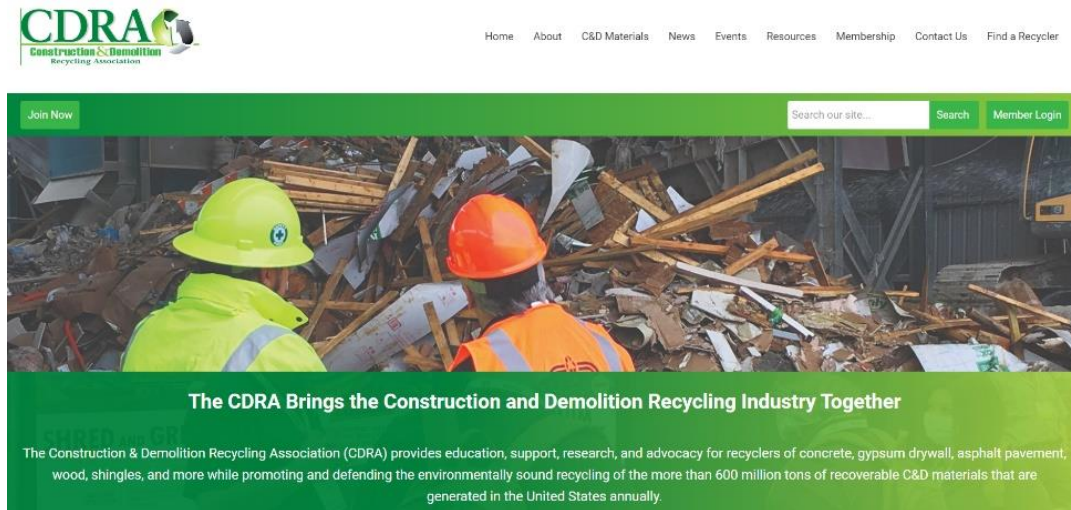
WASTE WOOD





# Industry Updates

# CDRA National Perspective



- NOI for EPA Grant
- Upcoming CDRA events

<https://cdrecycling.org/>

# Biden-Harris Administration Announces \$100 Million in Grants to Support Manufacturers of Cleaner Construction Materials as Part of Investing in America Agenda

<https://www.epa.gov/newsreleases/biden-harris-administration-announces-100-million-grants-support-manufacturers-cleaner>

- This [new grant program](#)—Reducing Embodied Greenhouse Gas Emissions for Construction Materials and Products—will **help businesses develop robust Environmental Product Declarations (EPDs)** which disclose environmental impacts across the life of a product. Embodied greenhouse gas (GHG) emissions—also called embodied carbon—refers to the amount of GHG emissions associated with the extraction, production, transport, and manufacturing stages of a product's life. EPDs facilitate the reliable tracking of emissions associated with construction materials and products to inform procurement decisions.
- EPA will **provide grants to businesses that manufacture, remanufacture, and refurbish construction materials** and products for developing and verifying EPDs, and to states, Tribes, and nonprofit organizations that will support such businesses. The EPDs generated through this grant program will make it easier for state and local governments—and other institutional buyers—to ensure the construction projects they fund are using low carbon construction materials.
- The deadline to apply to this grant competition is January 8, 2024. EPA requests the submittal of an optional Notice of Intent to apply by October 27, 2023, by sending an email to [embodiedcarbon@epa.gov](mailto:embodiedcarbon@epa.gov).
- Eligible entities include:
  - Businesses that manufacture, remanufacture, and refurbish construction materials and products, and
  - States, Tribes, and nonprofit organizations that will support such businesses.

# MassDEP is hiring!

- Consistent with a campaign pledge, the Healey-Driscoll Administration has allocated 1% of the state's operating budget for climate and the environment.
- This translates to close to 100 new vacancies at MassDEP across all programs
- Follow the MassCareers webpage if you are interested in starting a new career at MassDEP:  
<https://massanf.taleo.net/careersection/ex/jobsearch.ftl>

Any other business to  
discuss?

# For More Information:

## Point of Contact:

Mike Elliott

Asbestos/C&D Program Coordinator

MassDEP – Bureau of Air & Waste

100 Cambridge Street, Suite 900

Boston, MA 02114

[michael.elliott@mass.gov](mailto:michael.elliott@mass.gov)

617-571-0824 (work cell)