DRAFT

Cambridge Recycling Advisory Committee (RAC) Meeting Minutes

April 14, 2021, 8:00 AM – 9:30 AM

Virtual Meeting Minute Taker: **Scott MacGrath**

Members present: Leah Beckett, Holden Cookson, Catrina Damrell, Shirley Elliot, Debby Galef, Rob Gogan, Martha Henry, Sakiko Isomichi, Susy Jones, Debby Knight, Lindsey Levine, Scott MacGrath, Janet Mosley, Richard Nurse, Diane Roseman, Meera Singh, Quinten Steenhuis, Mary Verhage, Suzanne Wong

Members absent: Ilana Bebchick, Audrey Ng, Laura Nichols, Kristen Watkins

Staff Present: Meryl Brott, Bronwyn Cooke, Camilla Elvis, John Fitzgerald, John Nardone, Owen O' Riordan, Mike Orr,

Public present: Mike Arnott, Jamie Ecker, Cheri Cousens, Brett Leavitt, Judith Nathans, Kate Riley, Helen Snively

1. **Housekeeping**

   Minutes from March approved with changes to include links.

2. **City Updates**

Early May to restart curbside food scraps collection. One challenge is new trucks, which need custom bike guards. Trucks are hybrids and have batteries where bike guards would normally go. Hopefully sending out press release in the next week or so announcing date.

Two city council meetings with commercial composting on agenda. City wants to pursue as pilot. Future discussions needed.

Owen: Mon Apr 26th Council meeting expect to have positive response. Including 200k in next year's budget, for 100 businesses.

How will this complement or be separate from small biz recycling?

There are 185 biz that do recycling program. Mike imagines there will be substantial overlap.

Will you be expanding into apartment buildings?

Yes. Expanding curbside to residents, looking to expanding to buildings not typically serviced by DPW.

We collect 8 tons currently, and expect nearly 100% increase from adding commercial. Will have to see how pilot goes. Limited capacity at outset, look to grow as we progress.

Any thought of folding in institutional food scraps?

Looking to further explore religious and other institutions, but TBD.

Frequency/container size/bagged/washed for commercial composting?

65 gallon bins with locks once or twice per week.

Major progress: approved $300k for Big Bellies on Cambridge Street from Lechmere to Inman Square.

$1.5 M budget approved by city council for residential trash bins.

Single use plastics/textiles, compared Brookline and Berkeley, we thought it might not be the best option here or make the biggest impact on trash (in terms of plastic).

Owen: We anticipate a council hearing/order response on single use plastics.

Looking to roll out textile recycling program in the fall.
Mattress recycling program 2 years old, 10k mattresses collected, still working with UTEC. 10k mattresses is approx. 300 tons.
Susy: Collab at MIT with Recycle Across America, has Cambridge ever worked with them?
No, haven't yet, but something we need to dive into more in terms of max diversion.

2. **Action Items from Previous Meeting**
none

3. **Where does Cambridge send its food waste & what are the benefits?**
Jamie Ecker, Waste Management CORe director. Composting projects/CORe facility projects in Boston.
Cheri Cousens – exec director of GLSD (Greater Lawrence Sanitary District). GLSD has history of sustainability/recycling. Organics project has been highly successful and great project with Cambridge.

Mike walked through slide deck on history of composting. See attachment at end of Minutes.

Jamie: AD has been fastest growing method in last 5 years. Composting was mainstay for many years, but as more states implemented food waste disposal bans and cities pushing the edge on how to handle, AD has grown quickly.

AD requires less time and less space, so key strategy for urban areas.

Misperception that adding food waste to co-digest will result in more biosolids, but food waste is very high in organic matter, which is readily degradable. That organic carbon is transforming to CO2 and CH4, so resulting amounts of solids from co-digestion is very small, b/c most is transformed to biogas.

Owen: 5-10% increase in biosolids as result of contribution from org material provided by commercial/communities. In terms of % of org material, how much of that remains as biosolids?
Very small proportion. Perform regular tests on food waste, it's about 90 to 92% organic matter (so 8% ash matter). Synergistic impact – presence of food waste with right biology in digester, might actually degrade more "calcitrant" parts of sludge.

Susy: The ag product GLSD has seen, inputs are more from wastewater, not from Cambridge? Any addition of Cambridge food waste didn't create more agricultural products?
Correct. Multiple studies have proven out these results.
Owen: With increase in biogas generation as result of food material. In terms of emissions, is there an increase?
Haven't analyzed emissions escaping, but contained space should limit any waste.

Are you flaring off excess methane?
Only in emergencies or for testing/repairs.
AD by definition doesn't have air. Can't just release gas to air, must go to flare. But now, effectively 99% is piped to co-gen system. Reports show 100% goes to biogas. So nothing released to air.
Chemicals in sewer system inflow?

There are two dedicated pre-treatment inspectors, who test what EPA/GLSD classify as large source/high flow. Have large effort to monitor and minimize any chemicals entering the plant that are not allowed/permitted. Meet all EPA/DEP regulations.

April 23rd, Science in the City event on 4/23 at 2:15 :
https://www.cambridgema.gov/CDD/Calendar/2021/04/23/scienceinthecity.

Owen: AD System is preferable but one area of increase is eutrophication. What are the implications?

Water use: AD not the best performer, but uses very little city water and can use complementary liquids (e.g., process water from cranberries which would go into waste water anyway).

All power for the main GLSD plant is produced, offsetting natural gas usage. Electrical bill would be approx. $3M, all offset by AD.

Rob: Concerns that combining sewage sludge with food digestate will lead to introduction of toxic/pharma chemicals into the soil, many of which we don't know the environmental impacts of. Know you test biosolids for contaminants – what can we say to counteract this argument?

There are pollutants in everything, not about eliminating, but about understanding the risks associated with those chemicals and the amounts present.

Biosolids is one of most studied materials over last 30 years by EPA. They are constantly reviewing this. GLSD has pretreatment, regulated program. Re PFAS issue: it is ubiquitous in environment, and wastewater is reflection of what we have put into it. Food soiled papers considered acceptable material in composting, but have higher concentration of PFAS.

Is there a simple message we can relay?

Industry isn't static. Looking at next technology. GLSD has best in class monitoring/treatment for biosolids.

Organics in urban areas one of biggest challenges this industry faces. Munis everywhere pushing forward with eliminating organics from waste stream. It results in a lot of material, and AD ends up being an incredibly elegant solution to a tricky problem.

Story of what happens to CO2:

Biogas not pure methane, all goes to engine to be burned. Biogenic CO2, not fossil fuel. So when converted to CO2, it is carbon neutral. Important to remember the source of the carbon.

4. **Sub-committees (postponed) –** Shifted to debrief on today's discussion

How do we explain that curbside composting isn't actually composting?
Important to connect the source of the carbon to the GLSD process.
Biosolids/food waste connection, it's important to highlight the difference. Only slight increase, 5-10%, from food waste, which dilutes biosolids.
Does MA have different regulations than EPA in terms of biosolids? Primary use is for non-consumption. Janet believes it is regulated at the federal level.

Shout out to Mike and Rob, Board Members of MassRecycle who are both presenting Roundtables tomorrow at the 2020 Mass Recycle Conference!

Important to know there are two organics streams. Yard waste and food waste.

Bronwyn: Do we need more AD, or should we be planning differently because we are trying to reduce total organic waste?

GLSD can take 500 tons per day, WM CORe sends 100 tons. Producing this biogas provides lots of options. There's MORE need for AD than there is opportunity to reduce food waste.
Rob: We need to get rid of the word composting in this. Need education around the term "organics" or another word. This is the root of confusion. Important to think about systems.

Closing

- Announcements
    - Mass recycle conference: https://massrecycle.org/events/conference/
    - Mike to share Science in the City event details

The meeting adjourned at **09:33**

Zoom Chat:

From Rob Gogan to Everyone: 08:03 AM
Good morning everyone!
From Susy Jones, MIT to Everyone: 08:21 AM
Rob, your dream comes true!
From Rob Gogan to Everyone: 08:26 AM
Yay! Now to select a (low) capacity tote for trash.
From Catrina Damrell (she/her) to Everyone: 08:44 AM
very cool!
From Susy Jones, MIT to Everyone: 08:49 AM
Just need to pop out for 1 minute. Back in a sec. Note, we have til about 9:05AM for this conversation :)
From Helen Snively to Everyone: 08:54 AM
next Friday presentation at Science Fair... sounds like an incredible opportunity to tell people about this process.. Can we all help publicize it?
From Lindsay Levine to Everyone: 08:59 AM
Sorry to run- have a 9am. Thanks- this was very informative!
From Helen Snively to Everyone: 09:10 AM
thanks for your question, Rob.. and answers from Mike and Jamie.. I keep hearing the question and now I have answers!
From Susy Jones, MIT to Everyone: 09:14 AM
This is such a great convo - we're letting it go a little long. If you have any quick last questions/comments, feel free to type into chat!
From Me to Everyone: 09:15 AM
Thank you Jamie and Cheri!
From Susy Jones, MIT to Everyone: 09:15 AM
Thank you both!
From Quinten Steenhuis (he/his) to Everyone: 09:15 AM
thanks so much!
From Catrina Damrell to Everyone: 09:15 AM
Thank you both!
From Owen O' Riordan to Everyone: 09:17 AM
Thanks Everyone. I need to leave at this time. Owen
From Judith Nathans to Everyone: 09:25 AM
Thanks for the invite to that Mike!
Shout out to Mike and Rob, Board Members of MassRecycle who are both presenting Roundtables tomorrow at the 2020 Mass Recycle Conference! (I will be attending the Roundtable led by John Hanselman on Food Waste and AD
From Meera Singh to Everyone: 09:26 AM
As Jamie said EDUCATION is imp. We need to think about how to readily present the education in a simple friendly concise way.
From Helen Snively to Everyone: 09:27 AM
SO glad we decided to have this convo at the end.. lots of good points coming up. We can do sub committees some other time. :)
From Meera Singh to Everyone: 09:28 AM
Shirley, Catrina nd FWR sub-comm, we need to send off the content for newsletter by today, we were going to discuss who would do that.

From Debby Knight to Everyone: 09:28 AM
Another interesting point from Jamie connected to AD vs compost:
From Shirley Elliott to Everyone: 09:28 AM
Yes
From Debby Knight to Everyone: 09:29 AM
Can be higher concentration of chemicals (PFAS) in compost than biosolids if composting program accepts food-soiled papers/containers
From Camilla Elvis to Everyone: 09:30 AM
how long is a really long time? re: AD?
Or just say Food Scraps?
From Judith Nathans to Everyone: 09:30 AM
Totally agree with Rob…change the message.
From Meera Singh to Everyone: 09:30 AM
Great point Rob
From MICHAEL ORR to Everyone: 09:32 AM
MassRecycle conference is Thurs/Fri: https://massrecycle.org/events/conference/
From Shirley Elliott to Everyone: 09:32 AM
thanks everyone
From Janet Mosley to Everyone: 09:33 AM
Camilla - a quick google search showed that the first digestion plant was built in India in 1857 and they did actually collect the biogas

City of Cambridge
Department of Public Works

Curbside Food Scrap Collection & Anaerobic Digestion

March 29 2021

CAMBRIDGE DEPARTMENT OF PUBLIC WORKS
THE WORKS

About Cambridge's Organic Waste Management

1991: Yard Waste is banned from trash disposal in MA

- 2,000 tons of yard waste composted annually.
- Marketed and sold in New England to farms/gardens.
- 2020: Cambridge and Save That Stuff pilots program to send 70 tons to The Food Project in Lincoln, MA to compost & grow food for low-income MA residents.

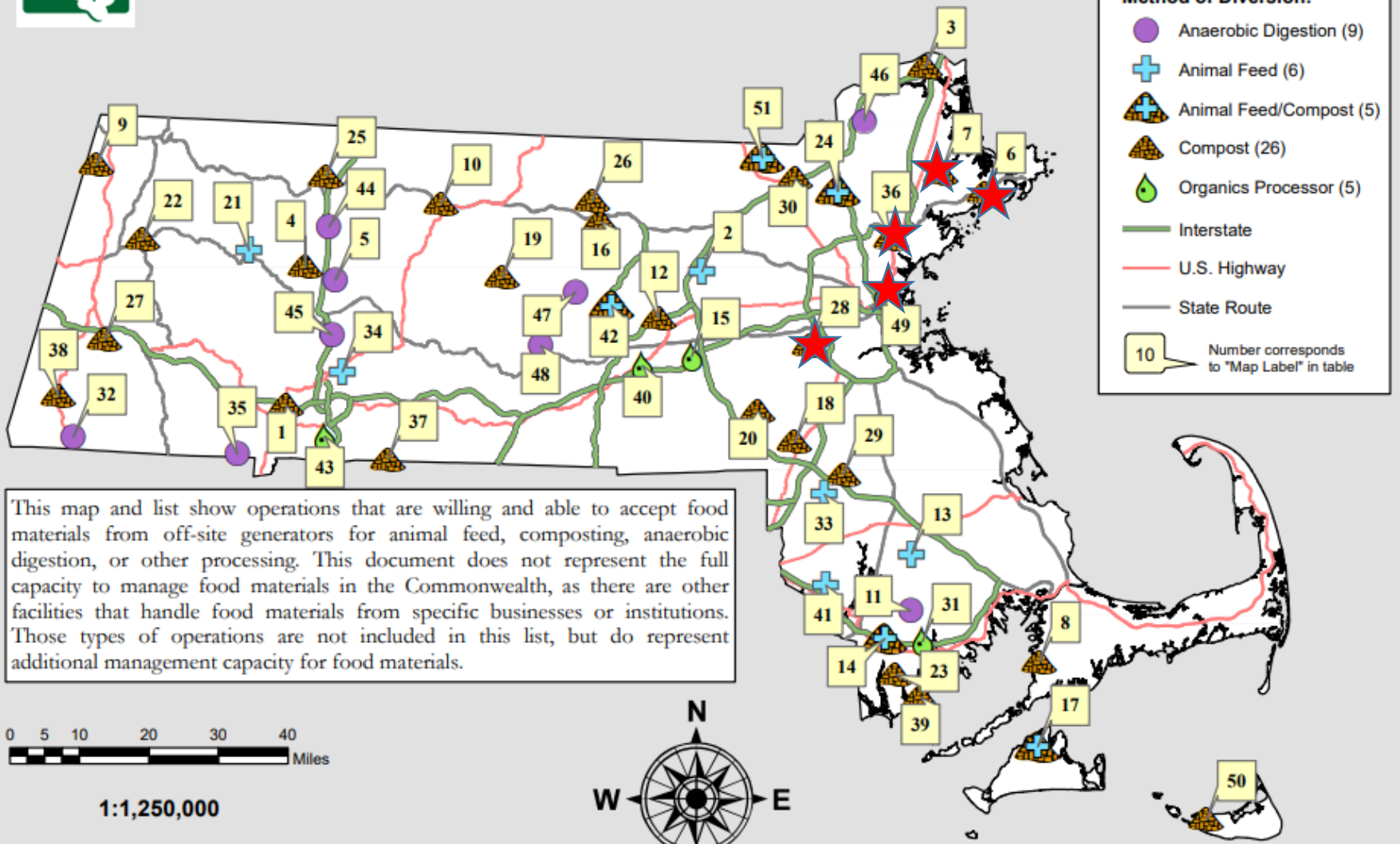
2007: Cambridge begins school & drop-off compost

- Until 2018, food waste sent to Rocky Hill Farm
- 2019: 1,800 tons collected & sent to Anaerobic Digestion (AD).

Why did Cambridge change from compost to AD?

- 2018: DPW expands curbside organics program citywide, requiring a food waste processing facility that can meet the following specifications:
  - Less than 10 miles from DPW
  - Capacity for 50+ tons per week
  - Open 7am-3pm Monday-Saturday.
  - Can accept and manage incidental contamination.

Sites Accepting Diverted Food Material



This map and list show operations that are willing and able to accept food materials from off-site generators for animal feed, composting, anaerobic digestion, or other processing. This document does not represent the full capacity to manage food materials in the Commonwealth, as there are other facilities that handle food materials from specific businesses or institutions. Those types of operations are not included in this list, but do represent additional management capacity for food materials.

0 5 10 20 30 40 Miles

1:1,250,000

N W E S

DATA SOURCES:
- Major Roads: MassDOT OTP, MassGIS, June 2014
- Food Material Diverters: MassDEP BAW, August 2020

Map Updated August 2020
MassDEP, BAW. J Cook

Facility	Distance (miles)	Est. Permitted Capacity (tons per week)	Can they accept 50+ tons per week?
CORe (Waste Management)	3	1500	Yes
Rocky Hill Farm	13	35	No, their permit doesn't allow it
Needham Public Works	16	105	No, they're at/near capacity
Brick Ends Farm	29	105	No, they're at/near capacity
Black Earth Compost	32	105	No, they're at/near capacity

MassDEP report on trend of food waste management

Processing Type	2016 (tons)	2019 (tons)
Anaerobic Digestion (AD)	48K	188K
Compost	80K	41K
Other	62K	77K
Total	**190K**	**306K**

DEP offers financial assistance for new compost/AD facilities. As of Spring 2021, new food waste compost sites aren't online in Greater Boston

About Waste Management CORe & GLSD

Step 1: DPW hauls to CORe facility in Charlestown

Step 2: Waste Management hauls to Greater Lawrence Sanitary District (GLSD)

Step 3: GLSD processes food waste in anaerobic digestion tanks

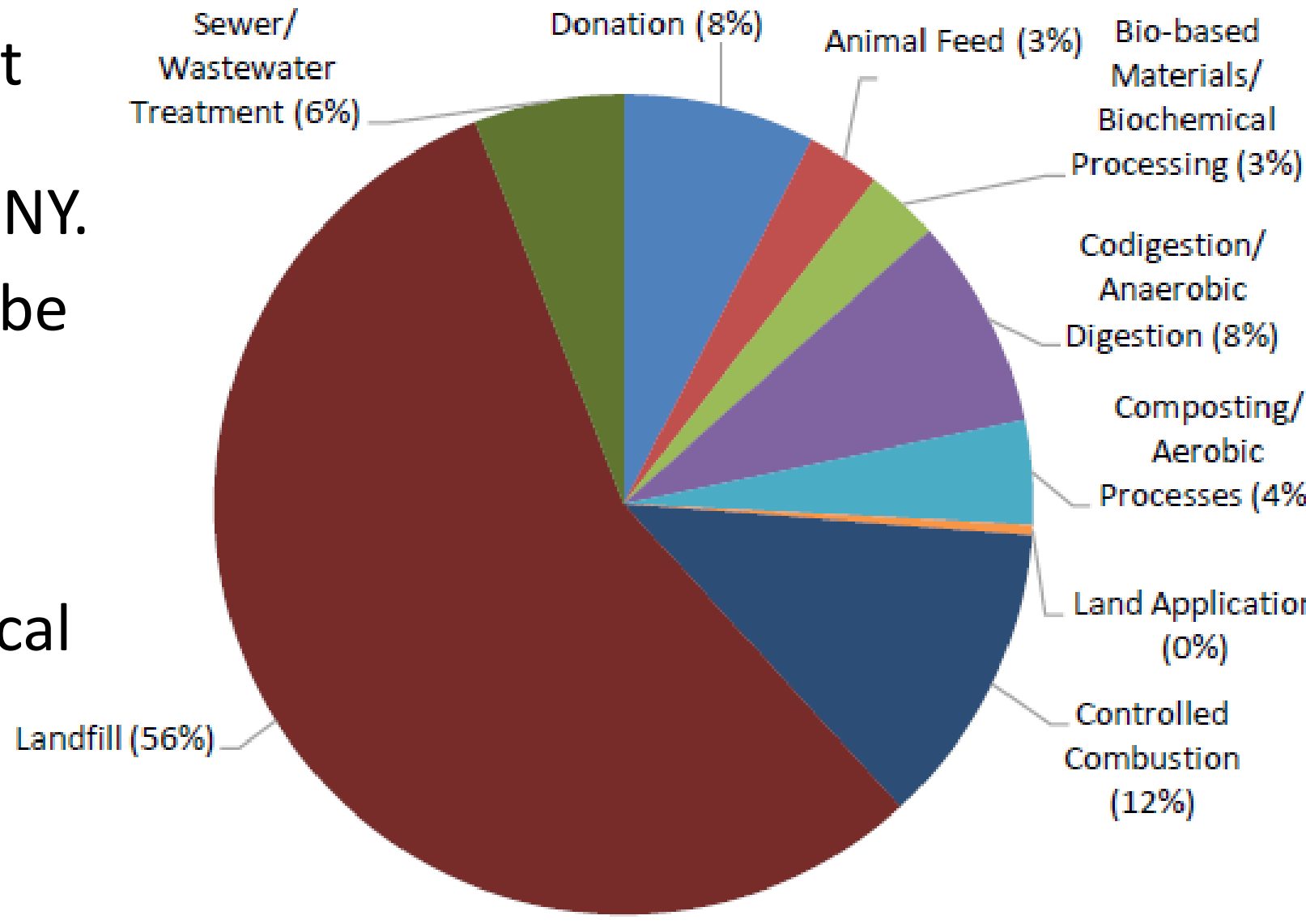
Step 4: Methane is generated & used to make electricity and heat

Step 5: Biosolids are dried and marketed by Casella

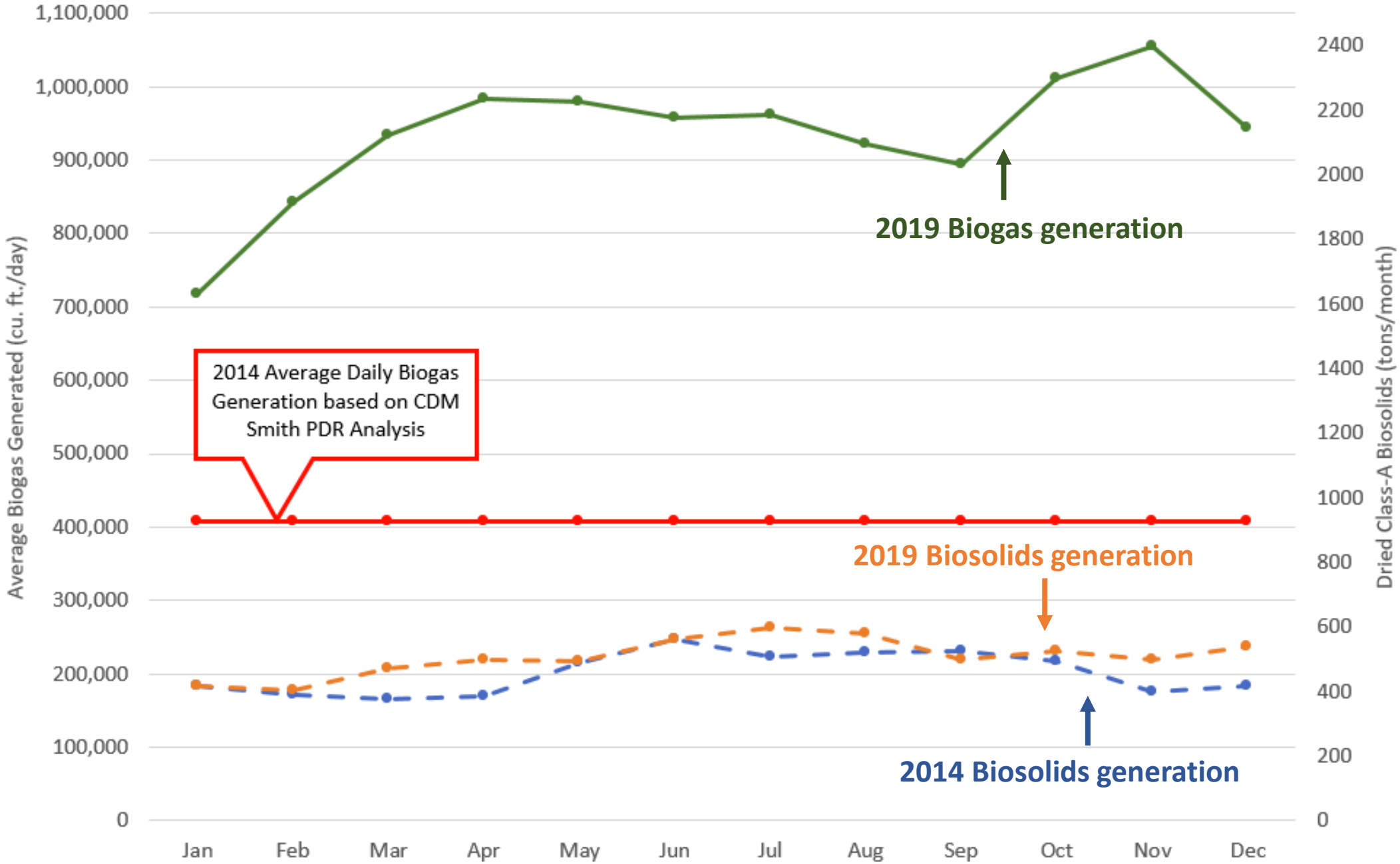
Methods for Managing Food Waste in US

Co-digesting food occurs at >100 facilities, including Oakland, LA, NYC, upstate NY.

1. In urban areas, AD can be beneficial because it requires less time and space than composting
2. Pre-processing is a critical step to managing contamination



GLSD Biogas Generation & Biosolids Product (2014 vs 2019)



Apprx:

- 200-250% increase in biogas
- 5-10% increase in biosolids

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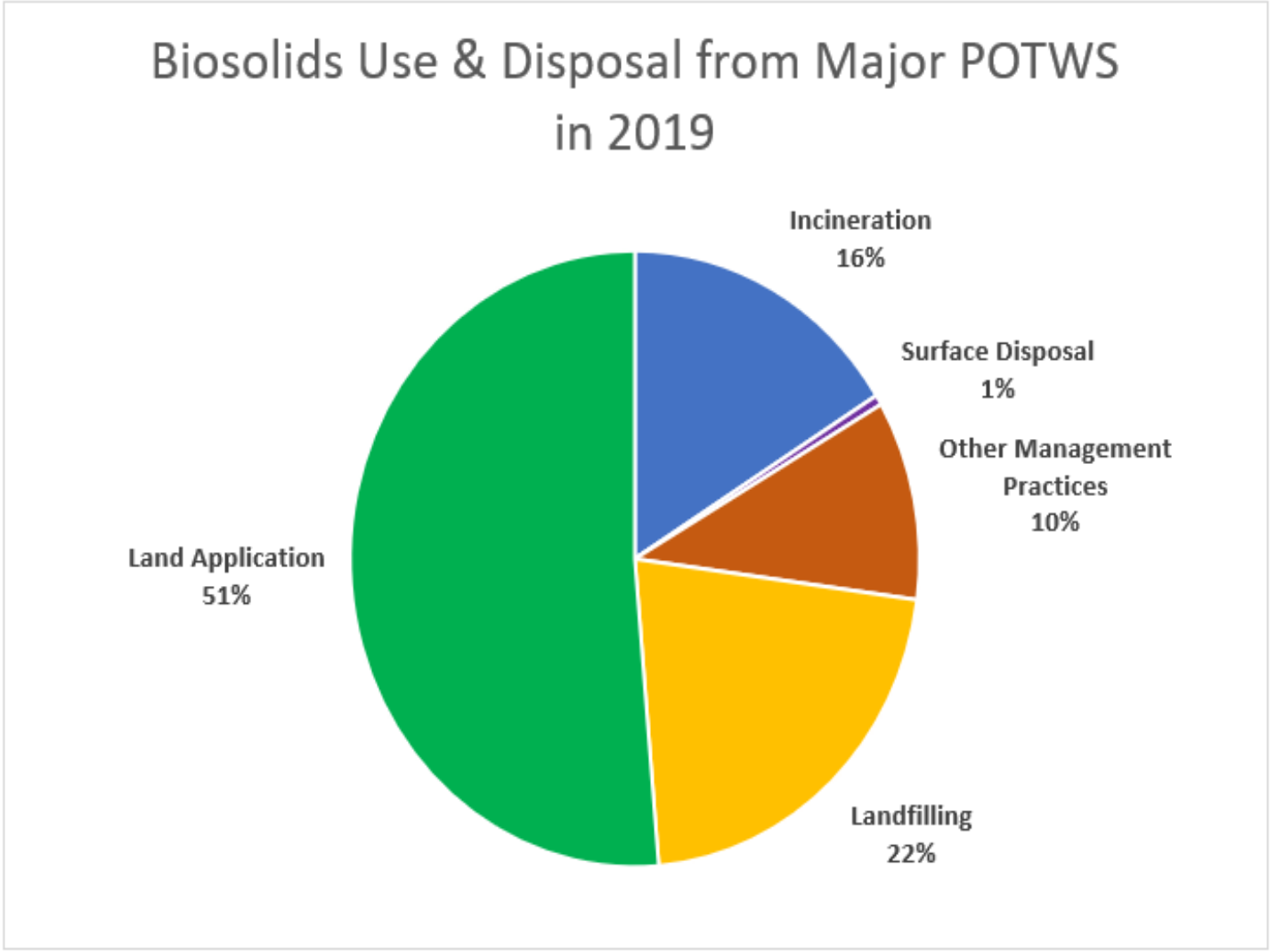
About Biosolids

- Biosolids are nutrient-rich organic byproducts resulting from treating wastewater.
- GLSD produces the highest quality, Class A biosolids.
- GLSD biosolids comply with all EPA and MassDEP regulations and testing requirements.

About Biosolids

- GLSD Biosolids are land applied
- Diverting biosolids is important for preserving valuable micronutrients and offsetting production of synthetic fertilizers
- Manufacturing chemical fertilizers releases GHG emissions
- 10 million tons of biosolids are produced in the US annually.



Source: US EPA

2018 Comments to City Council Health & Environment Committee

MassDEP:

"…MassDEP supports Cambridge's food waste collection program, as well as its partnership with Greater Lawrence Sanitary District…"

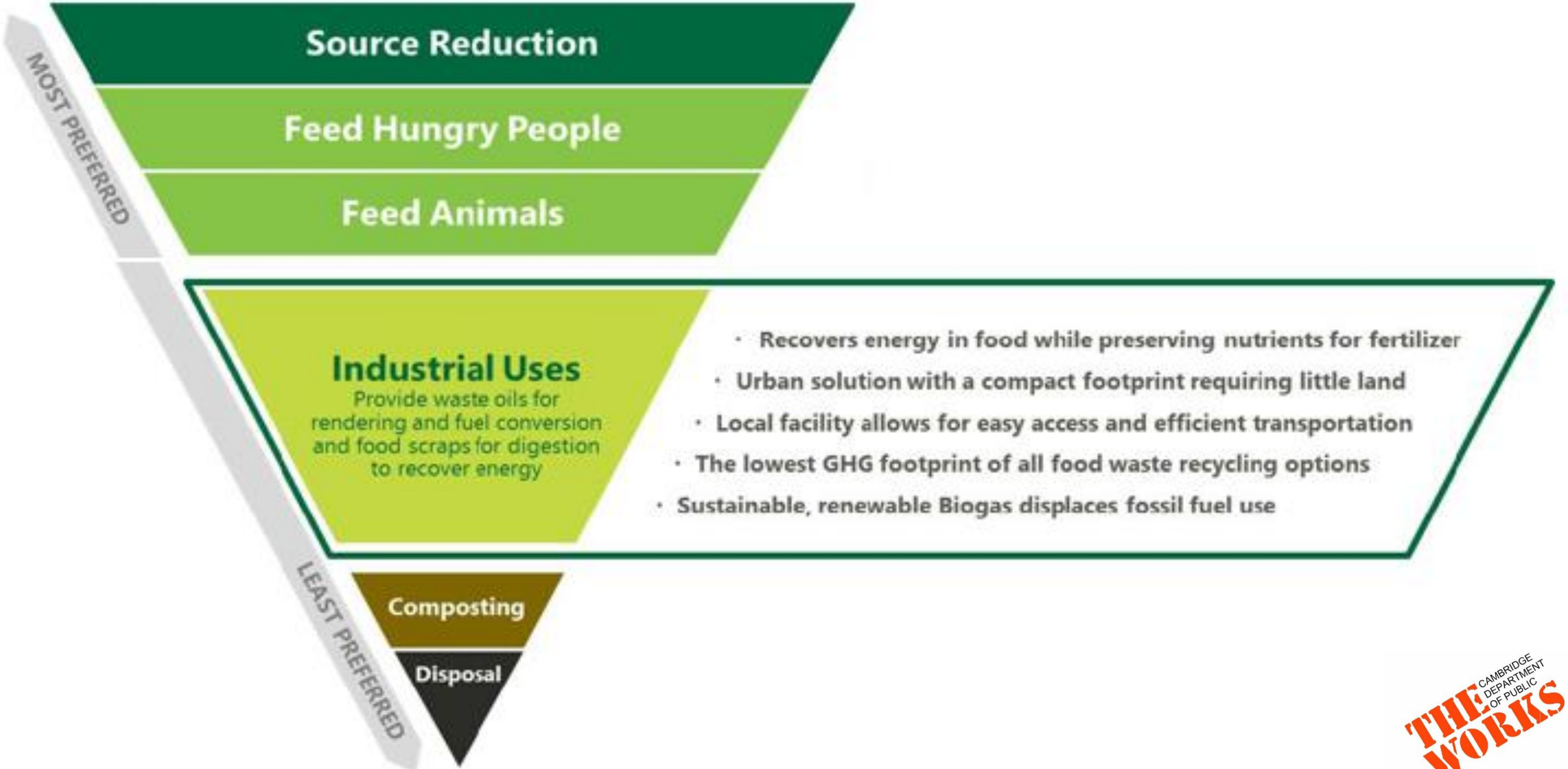
US EPA:

"EPA supports the practice of codigestion of food waste and biosolids at municipal water resource recovery facilities…"

"EPA has developed the Food Recovery Hierarchy…Anaerobic Digestion falls into the 'industrial use' category [making] it preferable to composting."

EPA United States Environmental Protection Agency

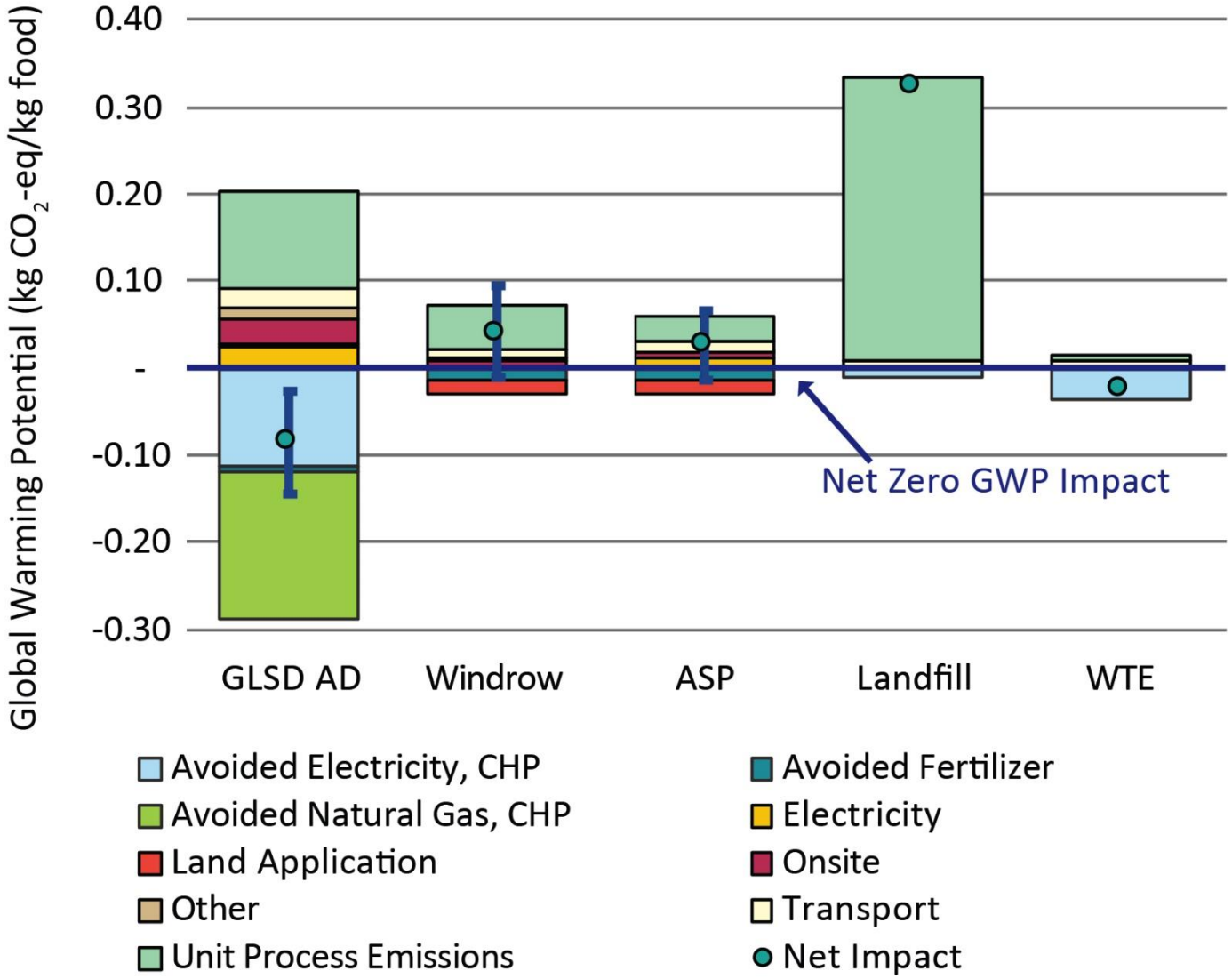
Food Recovery Hierarchy



Life Cycle Assessment of Municipal Wastewater Treatment Expansion Options for Food Waste Anaerobic Co-Digestion

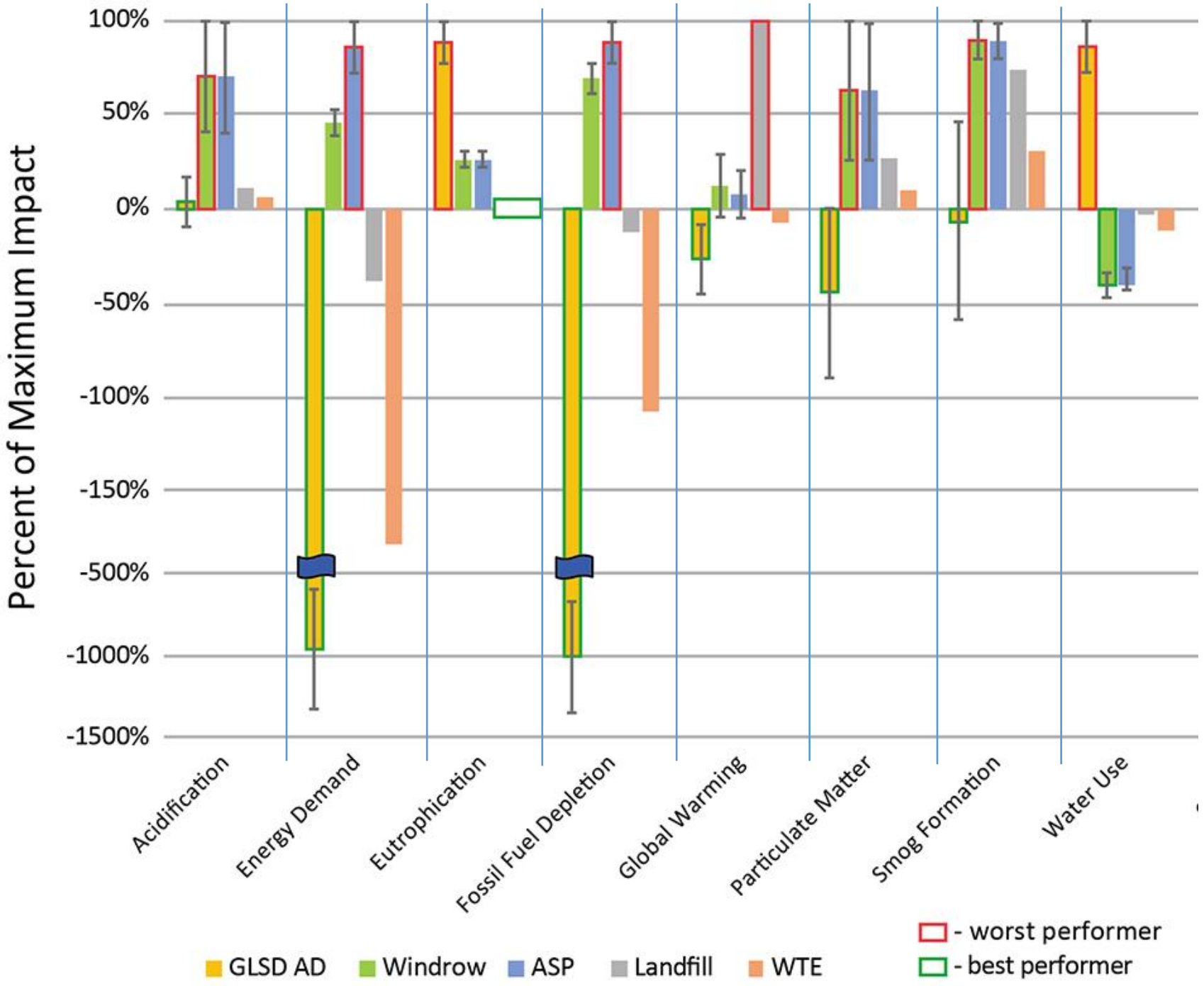
- EPA consulted with Eastern Research Group to conduct analysis of sending food waste to incineration, landfill, compost, and AD. 194-page report published in 2019 on EPA website.
  - Specifically studied the data coming from GLSD's process
  - Study examines 8 environmental impact categories to assess pros and cons of food waste management strategies.

Results of EPA's Lifecycle Analysis



Global warming potential results for five food waste recycling and disposal systems. Error bars represent a low and high range of estimated impact potential.
AD: anaerobic digestion, ASP: aerated static pile; CHP: combined heat and power; GWP: global warming potential; WTE: waste-to-energy

Summary LCA results. Bar height represents average net impact potential for each treatment option as a percentage of maximum impact. Error bars mark high and low estimates of relative impact based on AD performance scenarios and compost process emission scenarios.
AD: anaerobic digestion, ASP: aerated static pile; WTE: waste-to-energy



Results of EPA's Lifecycle Analysis

"**Results also show AD's potential to outperform composting, landfills and [waste-to-energy] facilities in most environmental impact categories**. The benefits of AD are largely tied to biogas energy recovery, and the fact that, like composting, AD recycles a fraction of nutrients in food waste for subsequent agricultural use."

Source: Biocycle, THE ORGANICS RECYCLING AUTHORITY SINCE 1960

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Conclusion

- MassDEP and EPA support Cambridge's current efforts to collect and process food waste at GLSD.
- Waste Management CORe and GLSD is the best option to haul and process Cambridge's food waste, logistically.
- Environmentally, EPA suggests that sending food waste to GLSD for anaerobic digestion may be better than composting.
- Although Cambridge may not compost food waste, DPW will continue to compost 2000 tons of yard waste each year (and return finished compost to the community each Spring).
- City will also work on educating and promoting reducing food waste and food donation.

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Questions?

Also: EPA & ERG will be presenting with DPW on 4/23 at 2:15 as part of the Science in the City event