

## EPA 2023 Anaerobic Digestion Survey

This survey was conducted in 2023 under the authority of Information Collection Request (ICR) 2533.04 using an online survey platform.

This version of the survey has been edited for length and clarity but includes all questions as posed to survey respondents. Some numbered questions are missing because they are duplicates that appear based on previous responses or other survey logic. Italics indicate notes about survey structure and are included here for clarity.

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### **Welcome to the EPA 2023 Anaerobic Digestion (AD) Survey.**

Participating in this survey enables policymakers, investors, and interested stakeholders to gain a comprehensive picture of how food waste is being handled in AD facilities across the country. Your answers help to glean important information, such as:

- how much food waste is digested,
- what available capacity exists,
- feedstock types,
- feedstock sources,
- biogas production, and
- tipping revenue.

The information collected from the survey will allow EPA to track, facilitate, and measure the increase in ability to process wasted food via anaerobic digestion throughout the United States. When presenting information to the public, results will be aggregated so that the data provided cannot be tied to individual respondents. You will have the opportunity to indicate whether you would prefer your facility's name and city/state not be shared in any final reporting. All addresses and other contact information requested in this survey are solely for our communication with you.

Completion of this survey is voluntary. Personally identifiable information (PII) will be protected to the extent allowable under the Freedom of Information Act (FOIA). 5. U.S.C. § 552.

We sincerely appreciate your input and completion of the survey!

### **Instructions:**

- Using a computer or tablet is recommended (rather than a phone).
- This survey will ask about current operating conditions and request data from 2020 and 2021. Unless otherwise indicated, please answer questions based on operations as of the time you take this survey.

## EPA 2023 Anaerobic Digestion Survey

- Use the “Next” and “Back” buttons at the bottom of the page to navigate through the survey. Your browser’s back arrow will take you out of the survey.
  - If you leave the survey unfinished, hit “Save and Continue Later” before you go and follow instructions for returning to the survey at a later time.
  - If you are the contact for multiple AD facilities, please email [smmfood@epa.gov](mailto:smmfood@epa.gov) for instructions on how to complete multiple surveys.
  - With any questions, please contact EPA’s Sustainable Management of Food Team at [smmfood@epa.gov](mailto:smmfood@epa.gov). Please include “2023 AD Survey” in the subject line.
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### **\*1. Please select your AD facility type:**

- Stand-alone digester
- Farm
- Water resource recovery facility (WRRF)

**\*\*When filling out this survey, assume conditions are for 2023 unless otherwise indicated.\*\***

### **2. Please provide the following information about your Project/Facility.**

\*(a) Project/Facility Name:

\*(b) Street 1:

(c) Street 2:

\*(d) City/Town:

\*(e) State:

\*(f) Zip:

### **3. Please provide the following information for the person filling out the survey.**

\*(a) Title:

\*(b) Full Name:

\*(c) Telephone:

\*(d) Email Address:

**4. Please provide a contact address (if different from the AD Project/Facility address).**

(a) Project/Facility Name:

(b) Street 1:

(c) Street 2:

(d) City/Town:

(e) State:

(f) Zip:

**5. (Farms only) Is the Project/Farm located at a home address?**

- Yes
- No

**6. If you do not wish to have your facility's general information (facility name, city, state, facility type, and operational status) included in future EPA reports, please check the box below.**

- Please do not include the information above in future publications summarizing the data collected via this survey.

**\*7. (Farms only) It is assumed that your anaerobic digestion system was primarily built to process livestock manures produced on your farm. In addition to this manure waste stream, are organic wastes accepted from off-site sources and processed in your anaerobic digester (practice of co-digestion)?**

- Yes
- No

**8. (Farms only) If organic waste is currently not accepted from off-site sources and processed in your anaerobic digester, is your farm planning for or interested in receiving organic wastes from off-site?**

- Yes

- No

**9. (Stand-alone digesters only) Which of the following best describes your facility?**

- Multi-source digester
- Industry-dedicated digester
- Other (please specify) \_\_\_\_\_

**\*10. (WRRFs only) In addition to wastewater solids, is organic waste accepted and processed in your anaerobic digesters (practice of co-digestion)?**

- Yes
- No

**11. (WRRFs only) If organic waste is currently not accepted at your anaerobic digesters, is your facility planning for or interested in receiving organic wastes from off-site?**

- Yes
- No

**\*12. Please identify the status of your facility.**

- Planning stage / Design stage / Permitting process
- Under construction
- Operational
- Temporary shut-down
- Ceased operation
- Other (please specify) \_\_\_\_\_

**13. (If in planning or construction) When will your AD system become operational?**

Date: \_\_\_\_\_

**\*14. (If operational) When did your AD system become operational?**

Date: \_\_\_\_\_

**15. (If temporary shut-down) When did your AD system temporarily shut down? (If after Jan. 1, 2020, please complete the survey with what data you have from 2020 and 2021.)**

Date: \_\_\_\_\_

**16. (If temporary shut-down) What is the targeted date for your AD system to restart operations?**

Date: \_\_\_\_\_

**17. (If ceased operations) When did your AD system cease operations (If after Jan. 1, 2020, please complete the survey with what data you have from 2020 and 2021.)**

Date: \_\_\_\_\_

**18. (If ceased operations) Please state the reason your AD system ceased operations.**

\_\_\_\_\_

**19. (WRRFs only) Please indicate how organic feedstocks from off-site sources are handled upon receipt at your facility.**

- Fed into a separate digester
- Combined with wastewater solids
- Other (please specify) \_\_\_\_\_

**\*20. (Farms only) Does your facility accept and process food-based feedstocks from off-site sources?**

- Yes
- No

**\*21. (WRRFs and Stand-alone only) Does your facility accept and process food-based feedstocks?**

- Yes

- No

**Please describe the total amount of food-based feedstock accepted by your facility in 2020. Do this by typing in the amount of food waste and selecting the units, feedstock type, and feedstock source. Please do not include an added water (e.g. water added to food-based feedstock) in your reported amounts. Please include in the comments if added water cannot be excluded from your reported amounts.**

**\*22. Select Feedstock 1 Type:**

- Beverage processing industry waste
- Fats, oils and greases (FOG)
- Food processing industry waste
- Food service waste, pre- and post-consumer
- Fruits/vegetative wastes
- Retail food waste
- Slaughterhouse wastes
- Source-separated commercial, institutional or residential organic wastes
- Other

**\*23. Select Feedstock 1 Source:**

- Commercial-food retail/wholesale
- Commercial-hospitality-sports venues
- Commercial-hospitality and hotels
- Commercial-hospitality-restaurants/food services
- Industrial-manufacturing/processing
- Industrial (other)
- Institutional-offices
- Institutional-hospitals
- Institutional-correctional facilities
- Institutional-colleges/universities
- Institutional-K-12 schools
- Institutional-military installations
- Farmers markets
- Fruit/vegetable farms
- Livestock farms
- Residential
- Food banks
- Other

**\*24. Select Feedstock 1 Units.**

- Gallons
- Tons (US)

**\*25. Enter Feedstock 1 Amount.**

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***Repeat questions 22-25 for all additional food-based feedstocks processed in 2020.***

**Please describe the total amount of food-based feedstock accepted by your facility in 2021. Do this by typing in the amount of food waste and selecting the units, feedstock type, and feedstock source. Please do not include an added water (e.g. water added to food-based feedstock) in your reported amounts. Please include in the comments if added water cannot be excluded from your reported amounts.**

**\*26. Select Feedstock 1 Type:**

- Beverage processing industry waste
- Fats, oils and greases (FOG)
- Food processing industry waste
- Food service waste, pre- and post-consumer
- Fruits/vegetative wastes
- Retail food waste
- Slaughterhouse wastes
- Source-separated commercial, institutional or residential organic wastes
- Other

**\*27. Select Feedstock 1 Source:**

- Commercial-food retail/wholesale
- Commercial-hospitality-sports venues
- Commercial-hospitality and hotels
- Commercial-hospitality-restaurants/food services
- Industrial-manufacturing/processing
- Industrial (other)
- Institutional-offices
- Institutional-hospitals
- Institutional-correctional facilities
- Institutional-colleges/universities
- Institutional-K-12 schools
- Institutional-military installations
- Farmers markets
- Fruit/vegetable farms
- Livestock farms
- Residential

- Food banks
- Other

**\*28. Select Feedstock 1 Units.**

- Gallons
- Tons (US)

**\*29. Enter Feedstock 1 Amount.**

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***Repeat questions 26-29 for all additional food-based feedstocks processed in 2021.***

**30. Comments on food-based feedstocks accepted by your facility:**

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**\*31. (Farms only) Does your facility accept and process non-food-based feedstocks from off-site sources?**

- Yes
- No

**\*32. (WRRFs and Stand-alone only) Does your facility accept and process non-food-based feedstocks?**

- Yes
- No

**Please describe the total amount of non-food-based feedstock accepted by your facility in 2020. Do this by typing in the amount of non-food waste and selecting the units, feedstock type, and feedstock source. Please do not include an added water (e.g. water added to non-food-based feedstock) in your reported amounts. Please include in the comments if added water cannot be excluded from your reported amounts.**

**33. Select Feedstock 1 Type:**

- Crop residues
- Crude glycerin
- De-icing fluid



- Lab (or pharma) wastes
- Manures
- Mixed yard waste
- Paper mill wastes
- Septage
- Wastewater solids (sludge)
- Other

**34. Select Feedstock 1 Source:**

- Airports
- Biodiesel production
- Industrial
- Laboratories/pharmaceutical companies
- Retail stores
- Wastewater treatment plants
- Other

**35. Select Feedstock 1 Units.**

- Gallons
- Tons (US)

**36. Enter Feedstock 1 Amount.**

\_\_\_\_\_

***Repeat questions 33-36 for all additional non-food-based feedstocks processed in 2020.***

**Please describe the total amount of non-food-based feedstock accepted by your facility in 2021. Do this by typing in the amount of non-food waste and selecting the units, feedstock type, and feedstock source. Please do not include an added water (e.g. water added to non-food-based feedstock) in your reported amounts. Please include in the comments if added water cannot be excluded from your reported amounts.**

**37. Select Feedstock 1 Type:**

- Crop residues
- Crude glycerin
- De-icing fluid
- Lab (or pharma) wastes
- Manures
- Mixed yard waste
- Paper mill wastes

- Septage
- Wastewater solids (sludge)
- Other

**38. Select Feedstock 1 Source:**

- Airports
- Biodiesel production
- Industrial
- Laboratories/pharmaceutical companies
- Retail stores
- Wastewater treatment plants
- Other

**39. Select Feedstock 1 Units.**

- Gallons
- Tons (US)

**40. Enter Feedstock 1 Amount.**

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***Repeat questions 37-40 for all additional non-food-based feedstocks processed in 2021.***

**41. Comments on non-food-based feedstocks accepted by your facility.**

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**Please identify your facility's available capacity to accept additional food-based feedstocks for all digesters combined (determined by taking the total theoretical/design capacity, minus food-based feedstock processed, minus non-food-based feedstock processed).**

**\*46. Select units.**

- Gallons
- Tons (US)

**\*47. Enter amount.**

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**48. Please briefly describe how you calculated the available capacity to accept feedstocks from off-site sources.**

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**49. (Farms and WRRFs only) Please identify the number of months during the year 2020 that your anaerobic digestion system received and processed feedstocks from off-site sources.**

**50. (Farms and WRRFs only) Please identify the number of months during the year 2021 that your anaerobic digestion system received and processed feedstocks from off-site sources.**

**56. (Stand-alone only) During the year 2020, for how many months was your facility operational?**

**57. (Stand-alone only) During the year 2021, for how many months was your facility operational?**

**\*58. Do you collect tipping fees?**

- Yes
- No

**59. (If Yes above) Are you willing to share information about the tipping fees you collect?**

- Yes
- No

**60. (If Yes above) How much revenue did your facility collect in tipping fees in 2020?**

\$ \_\_\_\_\_

**61. (If Yes above) How much revenue did your facility collect in tipping fees in 2021?**

\$ \_\_\_\_\_

**62. If you would like to provide any other relevant or important information related to tipping fees, please do so below.**

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**63. Are pre-processing or de-packaging activities conducted on your feedstocks before they are added to your digester?**

- Off-site
- On-site (at your facility)
- Both
- None of the above

**64. Please identify the pre-processing or de-packaging activities that are conducted at your facility. Check all that apply.**

- Manual or mechanized de-packaging
- Screening for debris or sorting
- Grinding and/or maceration
- Third party processing
- Shredding
- Heating
- pH adjustment
- Centrifugal separation
- Liquid/solid separation
- Other (please specify) \_\_\_\_\_

**65. Please identify the operating temperature range for your digester.**

- Mesophilic
- Thermophilic
- Unheated/ambient

**66. Please indicate if your digester is "wet" or "dry."**

- Wet, low-solids system, less than 15% (by volume) solids content.
- Dry, high-solids system, greater than 15% (by volume) solids content.

**67. How would you describe your anaerobic digestion system? Check all that apply.**

- Continuously stirred tank reactor (CSTR)

- Plus-flow
- Covered lagoon
- Fixed film
- Suspended media
- Percolating bed
- Upflow anaerobic sludge blanket (UASB)
- Anaerobic sequencing batch reactor (ASBR)
- Membrane bioreactor (MBR)
- Hybrid/multi-stage
- Other (please specify) \_\_\_\_\_

**Please provide the average biogas production volume at your facility during the calendar year 2020 in one of the units specified below.**

**\*68. Select units.**

- SCFD
- SCFM
- SCFY
- Other (please specify with amount)

**\*69. Enter amount.**

\_\_\_\_\_

**Please provide the average biogas production volume at your facility during the calendar year 2021 in one of the units specified below.**

**\*70. Select units.**

- SCFD
- SCFM
- SCFY
- Other (please specify with amount)

**\*71. Enter amount.**

\_\_\_\_\_

**72. What happens with the biogas produced at this facility?**

- Used on-site
- Sold
- Flared
- Other (please specify) \_\_\_\_\_

**73. Please identify how the biogas produced at this facility is used. It could be used on-site by the facility or off-site by a purchaser. Check all that apply.**

- Produce mechanical power
- Produce heat and electricity (CHP)
- Produce electricity (including net metering)
- Produce electricity (sold to grid)
- Fuel boilers and furnaces (to heat digesters)
- Fuel boilers and furnaces (to heat other spaces)
- Compressed to vehicle fuels (used for company fleet/personal vehicles)
- Compressed to vehicle fuels (sold to customers)
- Renewable natural gas (processed to inject to pipeline)
- Flared
- Other (please specify) \_\_\_\_\_

**74. Are you able to utilize all the biogas produced?**

- Yes
- No

**75. (If No above) Do you flare the excess biogas?**

- Yes
- No

**76. Do you have a gas cleaning system?**

- Yes
- No

**77. (If Yes above) What is removed by your gas cleaning system? Check all that apply.**

- Moisture
- Sulfur
- Siloxanes
- Carbon dioxide
- Compressed gas
- Hydrogen sulfide
- Particulates

- Oxygen
- Nitrogen
- VOCs
- Other (please specify) \_\_\_\_\_

**78. (WRRFs only) Are the post-digestion biosolids Class A or Class B?**

- Class A
- Class B

**79. Select how you use the solid digestate produced at your facility. Check all that apply.**

- Dewatered/dried and land applied.
- Land applied as-is with no dewatering or drying.
- Composted into a reusable or salable product.
- Processed into other salable products (e.g., flowerpots)
- (Farms only) Processed into animal bedding.
- Landfilled.
- Incinerated.
- Other (please specify) \_\_\_\_\_

**If any digestate was disposed of in landfills or incinerated in 2020, please specify the amount in tons or gallons (if known).**

**80(a). Select units for landfilled digestate.**

- Gallons
- Tons (US)

**80(b). Select units for incinerated digestate.**

- Gallons
- Tons (US)

**81(a). Enter amount for landfilled digestate.**

\_\_\_\_\_

**81(b). Enter amount for landfilled digestate.**

\_\_\_\_\_

**If any digestate was disposed of in landfills or incinerated in 2021, please specify the amount in tons or gallons (if known).**

**82(a). Select units for landfilled digestate.**

- Gallons
- Tons (US)

**82(b). Select units for incinerated digestate.**

- Gallons
- Tons (US)

**83(a). Enter amount for landfilled digestate.**

\_\_\_\_\_

**83(b). Enter amount for landfilled digestate.**

\_\_\_\_\_

**84. (If land applied) Is the de-watered/dried digestate further treated prior to land application?**

- Yes
- No

**85. Please indicate what the further treatment is and why it is necessary.**

\_\_\_\_\_

**98. How do you manage the liquid digestate produced at your facility?  
Check all that apply.**

- Beneficially reuse as fertilizer via land application.
- Recirculate through digester.
- Discharge to a wastewater treatment plant.
- Other (please specify) \_\_\_\_\_

**99. (If land applied) Is the liquid digestate further treated prior to land application?**

- Yes
- No

**100. Please describe what the further treatment is and why it is necessary.**



**101. Do you recover nutrients from your digestate?**

- No
- Yes, phosphorus recovery by chemical precipitation (e.g. struvite)
- Yes, ammonia recovery
- Other (please specify) \_\_\_\_\_

**102. If you have any additional comments, please leave them below.**

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**\*\*End of Survey\*\***