

ANNUAL REPORT 2022



ARNOLD O.
CHANTLAND

RESOURCE
RECOVERY
SYSTEM

Email: rrp@cityofames.org

Web: www.CityOfAmes.org/ResourceRecovery

Phone: 515.239.5137

Address: 110 Center Ave
Ames, Iowa 50010



CITY OF
Ames[™]
PUBLIC WORKS



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Thank You to our partners in Sustainability!

Nevada, Story City, Huxley, Slater, Roland, Gilbert, Maxwell,
Cambridge, Zearing, McCallsburg, Kelley, Story County,
Iowa State University, Boone County Landfill

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February 28, 2023

Dear Resource Recovery System Members:

Many major capital improvements have been completed at the Ames Power Plant, providing increases in efficiency and the amount of material processed by the Resource Recovery System (RRS). Since the beginning of RRS operations in 1975, it has been an effective, efficient, and environmentally focused waste management and landfill diversion system for all the member agencies.

The partner communities and agencies generated 51,541 tons of municipal solid waste (MSW) during 2022 with approximately 46,652 tons received at the plant and processed to create 29,417 tons of Refuse Derived Fuel (RDF). An estimated 1,517 tons of metal and 256 tons of glass were recovered for recycling. Additional items diverted from the landfill included 20 tons of Household Hazardous Materials, 51 tons of organics, 720 appliances, and 943 tires. Rummage RAMPage was held once again in 2022, finding new uses and homes for approximately 72 tons of household items that would have otherwise been destined for the landfill! RRS continues to be a responsible, sustainable, local solution for waste from our partner agencies.

The per capita fee charged to member agencies will remain at \$10.50 and will be billed according to the results of the 2020 census. Based on projected financial needs to meet future operating, maintenance and capital needs, the tipping fee was raised to \$62.50 beginning July 1, 2022.

The study that evaluated alternatives for optimizing the Waste-to-Energy process, produced by RRT Design and Construction, was presented to the Ames City Council on December 20, 2022. This was a shared study between Resource Recovery and Electric Services that could lead to significant changes to improve the solid waste handling and energy production systems. City Council accepted the report and directed staff to continue further evaluation of alternative systems and partnerships. Additionally, this year staff will evaluate potential options for electronics and single stream recycling. **It should be noted that any direction for a new or updated facility could lead to increases in the tipping and per capita fees.**

We are truly grateful to the member agencies for our long-standing partnership and their **continuing commitment to sustainability!** Our continuing partners are Nevada, Story City, Huxley, Slater, Roland, Gilbert, Maxwell, Cambridge, Zearing, McCallsburg, Kelley, Story County, and Iowa State University, as well as the Boone County Landfill. If you or any of your constituents have questions about this annual report or any of the activities of the Resource Recovery System, please do not hesitate to contact me or Bill Schmitt (515-239-5137).

Sincerely,

A handwritten signature in blue ink that reads 'John C. Joiner'.

John C. Joiner, P.E.
Public Works Director

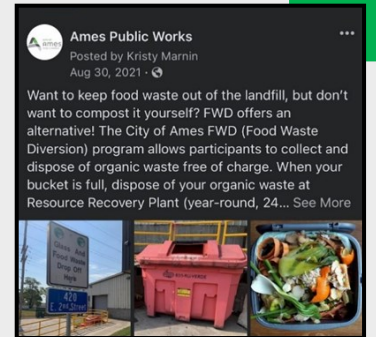
Service Highlights & Objectives

System Improvements Update

- Resource Recovery staff continues to work towards continuous improvements by implementing new and sustainable technologies within the facility and operations to maximize landfill diversion. Continuous improvements include replacing the rotor on the Primary shredder, rollers along with chains, sprockets, and bearings on the Primary and Secondary disc screens. The Primary disc screen has 13 rollers; and the Secondary disc screen has 7 rollers. These continuous improvements allow us to maximize the recovery of refuse derived fuel (RDF) and reduce the amount of material going to the landfill while continuing to send the highest quality RDF to the Power Plant.

Program Updates

- Participation in the Food Waste Diversion (FWD) has continued to dramatically increase. Since our pilot FWD program started in 2019, over **180,880 pounds** have been composted.
- A total of **416,520 pounds** of Household Hazardous Materials have been diverted from the landfill and properly recycled and disposed of since collection started in 1998.
- The Great Pumpkin Disposal program has continued to increase in popularity and has been a fun way to collect pumpkins, gourds, and other vegetable décor. Over **70,780 pounds** of pumpkins have been used since 2017 to feed local farm animals, some were first used by Iowa State's Student Government sponsored pumpkin-smashing event for stress relief, and the remainder went to be composted.



- Over **82,887 tons** of ferrous and non-ferrous metal have been recycled from 1976-2022 rather than being landfilled. This is enough metal to manufacture the steel components needed to make approximately 385 wind turbines.
- The City of Ames offers four no-charge yard waste days for residential drop off in the fall and spring. This past year, **549 tons** of yard and tree waste was collected and reused.
- Our waste oil collection efforts have allowed the waste oil to be turned into bituminous material for asphalt roads or refined to create new oil for consumer use.
- The glass recycling program set a record in 2022 with **256 tons** recycled. The glass is processed into usable materials for remanufacturing new glass, fiberglass insulation, and other items.

- A total of **943 tires** were collected for recycling in 2022. The recycled materials are broken down to make rubber mulch, rubberized flooring, and athletic surfaces.

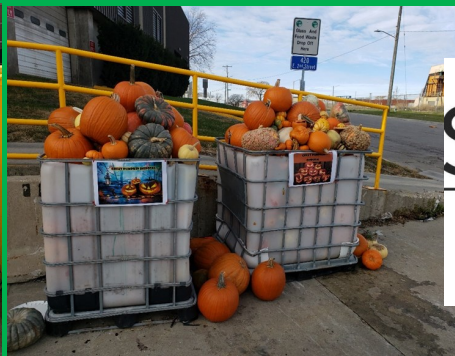
Service Highlights & Objectives

Program Updates, continued

- Resource Recovery staff has been monitoring and maintaining the City of Ames Sanitary Landfill in accordance with the Iowa Department of Natural Resources (DNR) Municipal Solid Waste Landfill permit since its closure in 1996. The City's sanitary landfill has met all requirements, continues to be in stable condition. An environmental easement was approved by the Iowa DNR, and our landfill is only one of a few statewide that has reached this milestone.



- An exciting new pilot program for recycling drop off is currently in the planning stages for implementation later this spring or summer.
- City staff is planning to implement a fee-based electronics recycling program to start in July of this year.
- The City contracted with RRT Design and Construction, a consulting firm, to complete a feasibility study to explore options for the City of Ames to continue being a: reliable, sustainable, and local solid waste disposal facility, by creating a usable energy for the community, and maximize the amount of material diverted from the landfill.
- In alignment with City of Ames sustainability goals, Iowa State University is an active participant in diverting materials from the landfill with their programs for reducing, reusing, recycling, donating, and composting materials.
- Collaborate with ISU for the community Stash the Trash event. Stash the Trash brings students and community members together to clean up areas around the community.
- Partnered with Project Aware to process collected materials from river and stream clean-ups that are not suitable for recycling but can still be recovered for refuse derived fuel.



SMART
TRASH

Service Highlights & Objectives

Resource Recovery System Public Education and Outreach

- The Rummage RAMPage continues to be an amazing event for the community, sustainability efforts and landfill diversion. The City of Ames Resource Recovery facility received recognition and was awarded the [2022 Outstanding Waste Diversion Program](#) by the Iowa Society of Solid Waste Operations at the Solid Waste Management Conference.
- Resource Recovery continues its ongoing mission to educate the public by giving tours of our facilities and operations. Tours are provided for individuals and large groups of all ages. Residents, students, engineering groups and many other communities from around the state, country and world have visited Resource Recovery Plant to see how we process materials that are not recycled into refuse derived fuel. For those that are unable to come to the plant staff will go to the organizations and present at their meetings.
- The City of Ames, in partnership with DNR's Iowa Waste Exchange (IWE) program works to divert material from the landfill. The City of Ames works with citizens, businesses, and other customers to connect them with IWE. IWE then assists clients in saving disposal and raw material costs through reducing, reusing, recycling, and renewing materials.
- Resource Recovery has worked to increase social media presence and engagement. The City of Ames – Government and also the Ames Public Works social media pages offer a great way to share plant and program information in a timely way. Additionally, these outlets have provided another opportunity to engage with residents.



MATERIALS, REVENUES & EXPENSES

RESOURCE RECOVERY SYSTEM

| Year | Total Refuse (Tons) | *Refuse Not Processed (Tons) | Refuse Processed (Tons) | % of Total Processed | Metals (Tons) | Glass (Tons) | RDF (Tons) | RDF (% of Processed) | % Total Diverted | Revenue | Expense |
|-----------------|---------------------|------------------------------|-------------------------|----------------------|---------------|--------------|----------------|----------------------|------------------|-------------------|-------------------|
| 2003 CY | 51,906 | 4,770 | 47,136 | 91% | 1,678 | 0 | 33,146 | 70% | 74% | \$3,803,639 | \$3,527,346 |
| 2004 CY | 53,788 | 2,762 | 51,026 | 95% | 2,332 | 0 | 34,334 | 67% | 72% | \$4,017,107 | \$3,462,794 |
| 2005 CY | 54,493 | 1,025 | 53,468 | 98% | 2,250 | 0 | 32,621 | 61% | 65% | \$4,285,110 | \$3,716,566 |
| **2006 CY | 55,500 | 4,511 | 50,989 | 92% | 2,229 | 54 | 30,180 | 59% | 64% | \$4,250,337 | \$4,449,985 |
| 2007 CY | 57,333 | 4,513 | 52,820 | 92% | 2,102 | 96 | 34,182 | 65% | 69% | \$4,392,686 | \$4,531,663 |
| 2008 CY | 57,470 | 4,754 | 52,716 | 92% | 2,068 | 115 | 36,060 | 68% | 73% | \$4,632,493 | \$3,725,904 |
| 2009 CY | 53,395 | 6,748 | 46,647 | 87% | 1,987 | 130 | 31,040 | 67% | 71% | \$3,956,279 | \$5,507,045 |
| 2010 CY | 58,756 | 1,262 | 57,494 | 98% | 2,347 | 129 | 37,865 | 66% | 70% | \$4,937,018 | \$4,605,121 |
| 2011 CY | 55,270 | 4,659 | 50,611 | 92% | 2,166 | 150 | 34,422 | 68% | 73% | \$4,697,573 | \$3,729,248 |
| 2012 CY | 53,106 | 3,725 | 49,381 | 93% | 2,177 | 145 | 32,329 | 65% | 70% | \$4,641,704 | \$4,089,447 |
| 2013 CY | 54,159 | 10,066 | 44,093 | 81% | 1,873 | 171 | 28,262 | 64% | 69% | \$4,062,010 | \$4,196,226 |
| 2014 CY | 55,698 | 8,204 | 47,494 | 85% | 2,104 | 173 | 29,595 | 62% | 67% | \$4,501,455 | \$4,555,974 |
| ***2015 CY | 54,394 | 6,641 | 47,753 | 88% | 2,201 | 177 | 25,194 | 53% | 58% | \$4,205,529 | \$4,342,664 |
| 2016 CY | 52,210 | 8,953 | 43,257 | 83% | 1,947 | 159 | 24,135 | 56% | 61% | \$3,818,109 | \$4,086,378 |
| 2017 CY | 51,254 | 7,997 | 43,257 | 84% | 1,804 | 131 | 21,005 | 49% | 53% | \$3,650,063 | \$4,545,420 |
| ****2018 CY | 52,863 | 19,087 | 33,669 | 64% | 1,199 | 149 | 15,656 | 46% | 51% | \$3,300,699 | \$4,383,878 |
| *****2019 CY | 53,684 | 32,030 | 21,554 | 40% | 759 | 191 | 12,475 | 58% | 62% | \$3,289,071 | \$3,785,963 |
| 2020CY | 50,061 | 9,622 | 40,162 | 80% | 1,419 | 246 | 23,486 | 58% | 63% | \$4,265,167 | \$4,120,399 |
| 2021 FY | 51,223 | 11,053 | 40,040 | 78% | 1,307 | 256 | 23,598 | 59% | 63% | \$4,514,203 | \$4,254,055 |
| 2022 FY | 52,561 | 9,471 | 43,096 | 82% | 1,459 | 250 | 27,979 | 65% | 69% | \$4,718,211 | \$4,016,792 |
| 20 Years | 1,079,124 | 161,853 | 916,663 | 85% | 37,408 | 2,721 | 567,564 | 62% | 66% | 83,938,463 | 83,632,869 |

*Reflects tons to Boone County Landfill from planned and unplanned shut downs, and non-beneficial MSW

** Closed for one month for air knife installation ***Closed for 6 weeks for power plant upgrades

**** Power Plant off for repairs for 164 days

***** Power Plant off for repairs for 227 days

CITY OF AMES, IOWA
RESOURCE RECOVERY SYSTEM
System Summary Fiscal Year 2022

| | 2020/21 | 2021/22 | 2022/23 | 2023/24 |
|---|---------------|---------------|-----------------|------------------|
| Service Accomplishments: | Actual | Actual | Adjusted | Projected |
| Tons of refuse available | 51,223 | 52,561 | 52,600 | 53,500 |
| Tons of refuse diverted to Boone landfill | 11,053 | 8,221 | 4,000 | 3,300 |
| Tons of refuse processed | 40,040 | 43,096 | 46,000 | 48,000 |
| Tons of RDF to Electric Utility | 23,598 | 27,979 | 30,500 | 31,500 |
| Tons of glass recycled | 256 | 250 | 255 | 265 |
| Tons of metal recycled | 1,307 | 1,459 | 1,550 | 1,600 |
| Pounds of HHM* collected | 25,716 | 28,454 | 28,000 | 28,500 |
| ISU tons into plant | 2,241 | 2,935 | 2,850 | 2,800 |
| Pounds diverted from landfill to Rummage RAMPage | 0 | 92,126 | 143,838 | 150,000 |
| Pounds of Organics Diverted | 27,306 | 87,060 | 120,000 | 145,000 |
| Average # of vehicles/free yard waste day | 624 | 641 | 630 | 635 |
| Efficiency and Effectiveness: | | | | |
| % of available materials processed | 78% | 85% | 91% | 93% |
| Reject disposal rate/ton (Boone County) | \$52.00 | \$52.00 | \$54.00 | \$ 58.00 |
| % of processed materials that are sent to the landfill as rejects | 34% | 32% | 30% | 28% |
| Reject transportation rate/ton | \$14.63 | \$15.15 | \$15.68 | \$ 16.23 |

* Household Hazardous Materials

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CITY OF AMES, IOWA
RESOURCE RECOVERY SYSTEM FUND
For Fiscal Year 2022

REVENUES:

| | | |
|-------------------------------|-------------|--------------------|
| Per Capita | \$912,170 | |
| Refuse Derived Fuel-Electric | \$946,051 | |
| Sale of Metals | \$317,846 | |
| Public Fees | \$93,980 | |
| Regular Customers | \$2,355,087 | |
| Bond Proceeds / Misc. Revenue | \$422,412 | |
| Other Governmental Agencies | \$8,016 | |
| I.S.U. Solid Waste Share | \$258,777 | |
| Interest Revenue | \$(3,644) | |
| Damage Claims | | |
| | | \$5,310,695 |

EXPENSES:

| | | |
|--------------|-------------|--------------------|
| Operations | \$4,172,470 | |
| Debt Service | \$644,552 | |
| | | \$4,817,022 |

| | |
|---------------------------|------------------|
| Net Income/Expense | \$493,673 |
|---------------------------|------------------|

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CITY OF AMES, IOWA RESOURCE RECOVERY SYSTEM

POPULATION - PERCENTAGES - CHARGES

Annual Billing - Calendar 2017 at \$9.10

Annual Billing - Calendar 2019 at \$10.50

| | Population | Percent of Population | Per Capita Charge |
|---------------------|---------------|-----------------------|-------------------|
| Ames | 56,427 | 64.93% | \$592,484 |
| Story County | 8,965 | 10.32% | \$94,133 |
| Nevada | 6,925 | 7.97% | \$72,713 |
| Story City | 4,244 | 4.88% | \$44,562 |
| Huxley | 3,352 | 3.86% | \$35,196 |
| Slater | 1,543 | 1.78% | \$16,202 |
| Roland | 1,362 | 1.57% | \$14,301 |
| Gilbert | 1,211 | 1.39% | \$12,716 |
| Maxwell | 859 | 0.99% | \$9,020 |
| Cambridge | 827 | 0.95% | \$8,684 |
| Zearing | 528 | 0.61% | \$5,544 |
| McCallsburg | 353 | 0.41% | \$3,707 |
| Kelley | 304 | 0.35% | \$3,192 |
| TOTALS | 86,900 | 100.00% | \$912,450 |

Based on 2020
U.S. Census
Ames is 66,427 minus I.S.U. 10,000

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CITY OF AMES, IOWA
RESOURCE RECOVERY PLANT VOLUMES
For Fiscal Year 2022

| Generator | 2022 TRIPS | 2022 WEIGHT | PERCENT OF TOTAL WEIGHT |
|---|-----------------------|------------------------|--------------------------------|
| Non-Scale Refuse (Car line) | 5,012 | 1,327 | 2.5% |
| Commercial Haulers/ Contractors/Govt | 8,222 | 40,053 | 76.2% |
| Iowa State University | 785 | 2,935 | 5.6% |
| Directly to Boone | 1,420 | 8,221 | 15.6% |
| TOTALS | 15,439 | 52,536 | 100.0% |

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CITY OF AMES, IOWA RESOURCE RECOVERY SYSTEM FEE SCHEDULE

| YEAR | PER CAPITA | TIPPING FEE | CARLINE | |
|---------|------------------|-------------|---------|---------|
| | | | CARS | PICKUPS |
| 2002/03 | \$11.75 | \$52.75/TON | \$8.00 | \$22.00 |
| 2003/04 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2004/05 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2005/06 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2006/07 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2007/08 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2008/09 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2009/10 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2010/11 | \$10.50 | \$52.75/TON | \$8.00 | \$22.00 |
| 2011/12 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2012/13 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2013/14 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2014/15 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2015/16 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2016/17 | \$9.10 | \$52.75/TON | \$8.00 | \$22.00 |
| 2017/18 | \$9.10 / \$10.50 | \$55.00/TON | \$10.00 | \$25.00 |
| 2018/19 | \$10.50 | \$55.00/TON | \$10.00 | \$25.00 |
| 2019/20 | \$10.50 | \$58.75/TON | \$10.00 | \$25.00 |
| 2020/21 | \$10.50 | \$58.75/TON | \$10.00 | \$25.00 |
| 2021/22 | \$10.50 | \$58.75/TON | \$10.00 | \$25.00 |
| 2022/23 | \$10.50 | \$62.50/TON | \$10.00 | \$25.00 |

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