

Staff Report

SOLID WASTE COLLECTION AND DISPOSAL FOLLOW-UP

May 28, 2024

BACKGROUND:

On May 16, 2023, the City Council held a workshop regarding [solid waste management](#). During that workshop, staff presented the City Council with feedback from haulers concerning the possibility of an organized collection system, in addition to the results of follow-up questions to the Waste-to-Energy Options Study.

Since the May 16, 2023 workshop, staff has been examining the overall waste collection and disposal system in the community to understand the issues that will face this system in the next few months and beyond, and to identify the available options to provide economical and environmentally responsible collection and disposal of solid waste. Some key issues were highlighted at the January 9, 2024 review of the [Seven Initial Implementation Steps](#) for the Climate Action Plan. These issues are described below in more detail, and include the following:

Issue 1 - Maintenance and Reliability Issues

The City's waste-to-energy (WTE) system relies on a consistent flow of material from one stage to the next, with some limited ability to accommodate surges in material or equipment downtime before garbage haulers are diverted to the landfill, under our current operating paradigm. The four major components involved in the WTE system are

1) the Resource Recovery Plant (approaching 50 years of operation), 2) the refuse-derived fuel (RDF) bin, 3) the Unit #7 boiler (commissioned in 1967) and 4) the Unit #8 boiler (commissioned in 1982).

The [Resource Recovery Plant](#) is subject to a comprehensive routine maintenance program and has experienced various equipment upgrades and reconfigurations since opening. Although there are space limitations in the existing facility, it remains capable of operating into the foreseeable future. The adopted FY 2023-28 Capital Improvements Plan (CIP) contains approximately \$1.75 million in primarily preventative maintenance projects for the facility.

The current [RDF bin](#) has been in service since 1996. The bin is constantly being corroded by the moisture present in the RDF. Therefore, the bin has just completed a \$1,608,028 project to repair or replace structural supports and wall panels. This work was identified as the most necessary to keep the bin operational as the City determines whether to pursue an alternative to the existing WTE system. Other significant upgrades and repairs will be necessary if the bin is to be used for the WTE system in a long-term manner. Any such additional work necessary is not reflected in the adopted Capital Improvements Plan. This maintenance and repair work can result in a chokepoint in the WTE system, as the bin's capacity is periodically reduced. When this occurs, the result is that either haulers must be diverted to a landfill, or Resource Recovery must accept the material and arrange for it to be disposed of. The latter option is operationally challenging and results in higher costs.

[Units #7 and #8](#) have undergone significant modification and repair in the past ten years, beginning with

the conversion of both units from coal-fired to natural gas-fired in 2016. Following conversion of the units to natural gas, it was observed that accelerated corrosion occurs in places where the combustion gases come into contact with boiler components. It is believed that prior to 2016, the coal and the associated ash provided a protective layer against corrosion from combusting RDF within the boiler. This protection is not present when firing RDF with natural gas.

In 2019, the Electric Utility completed a project for approximately \$8 million to replace significant portions of the Unit 7 boiler, including sections of new Inconel overlayed tubes. This special tube is more resistant to the kind of corrosion experienced when co-firing RDF and natural gas. Portions of the Unit 8 boiler were replaced with Inconel-coated tubes in 2020 at a cost of approximately \$7 million. Other portions of the boiler are protected with field-applied Inconel spray coatings. However, the spray coating does not adhere well and reapplication is required on a regular basis to maintain protection in this boiler, at a cost of approximately \$1 million per year.

Some areas of each boiler remain unprotected against corrosive gases (i.e., they are not coated with Inconel either because of the cost involved or the inaccessibility of the areas) and are therefore susceptible to premature failure. Corrosion thins the boiler tube walls and eventually results in boiler tube ruptures. These ruptures are disruptive events that require the unit to be shut down, cooled, repaired, tested, re-fired, and brought back online. This process takes at least four days for a straightforward tube repair that is swiftly addressed. More complex repairs or contractor issues may increase the downtime.

During such an outage, the ability to accept garbage from haulers may be curtailed or halted entirely, depending on storage availability and the ability to burn RDF in the other boiler. Additionally, plant outages negatively affect capacity amounts needed to meet regional electric grid requirements, causing the Electric department to purchase capacity.

When the unit trips offline, premature wear occurs in other Power Plant components (e.g., large steam valves that operate quickly to cut off the flow of steam to the turbine). **The stress of repeated tube ruptures, a boiler environment of accelerated corrosion, and the age of Units 7 and 8 raise concerns about the long-term viability of Unit 7 and Unit 8 operation and using these units to dispose of RDF in the current manner. Electric Services staff is in the process of retaining a consultant to evaluate the remaining lifespan of the existing units. This evaluation will take into consideration the state-of-repair of the units, the conditions experienced by them, and the availability of replacement parts and equipment.**

Issue 2. - Natural Gas Prices and Carbon Footprint

The Power Plant's Air Permit limits the amount of RDF that may be burned. RDF may make up no more than 10% of the total fuel by Btu in a calendar quarter. **Therefore, significant quantities of natural gas must be purchased to burn the RDF within the permit limits.**

The electric production costs during the first several years of the Power Plant's operation on natural gas benefitted from favorable pricing for natural gas commodity and transport contracts. The natural gas pricing in effect through the end of calendar year 2023 was \$2.77 per MMBtu. This pricing allowed the utility to purchase enough natural gas to burn approximately 30,000 tons of RDF per year.

On September 8, 2023, a natural gas delivery contract was approved for calendar year 2024 at a price of \$3.60/MMBtu. This pricing is a 30% increase in the unit price of gas compared to the 2023 contract. To reduce the impact to electric service customers bills for the increased cost of natural gas, less gas will be purchased in the winter months of January, February, March, November, and December. This

arrangement tempered the overall budget increase for natural gas. The fuel expenses for FY 2023/24 increased approximately \$1,500,000 over FY 2022/23, while also requiring a decrease in the amount of RDF delivered to the Power Plant in months where less gas is purchased.

The result is a decrease in RDF throughput from 30,000 tons per year to 27,000 tons per year for FY 2023/24, and further reduced to 25,000 tons in FY 2024/25. The material that cannot be burned must therefore be diverted from the waste stream before arriving at Resource Recovery (through diversion/recycling) or must be landfilled. Additional electricity is purchased on the open market to compensate for the reduction of electricity produced by the Power Plant during the winter months.

The quantity of natural gas being purchased through this strategy is estimated to cost an additional 3% on electric customers' bills once fully phased in (through the Energy Cost Adjustment, calculated on a rolling 12-month period). **If natural gas prices continue to increase in future years (calendar year 2025 and beyond), holding the budget flat will cause staff to purchase less natural gas. The Power Plant would have to further curtail acceptance of RDF in order to avoid more substantial cost increases to electric customers.**

Independent of the cost issues associated with natural gas purchases, **the natural gas required to be combusted in the current system also presents an obstacle to achieving the goals associated with the Climate Action Plan.** In a report provided to the City Council on January 9, 2024, staff indicated that "[...] approximately 47.31% of the City's electricity is produced by the Ames Power Plant as an indirect result of burning RDF. **Given the ratio of gas to RDF that is required by our permit to be burned in our boilers, we will be prevented from achieving more than a 55% carbon reduction**" if the RDF combustion continues in the process currently used.

It should be noted, however, that the waste-to-energy process does offset some greenhouse gas emissions that would be emitted compared to most alternative scenarios involving a landfill. Landfills are usually located farther away from the population concentration, resulting in longer truck trips and associated emissions. Additionally, landfills produce methane and other greenhouse gases (unless methane capture equipment is in place, capturing a portion of the methane), which are not produced in a waste-to-energy system.

Issue 3. - Capital Investment Required for WTE Options Study Alt. 2A

The issues described in #1 and #2 above were intended to be avoided or resolved through solutions identified in the Waste-to-Energy Options Study (final report delivered in 2022). However, the least costly alternative identified in that study (which involves reusing a significant amount of existing infrastructure and constructing a small, dedicated RDF boiler and associated pollution control equipment) was estimated to cost approximately \$120 million to construct.

The dedicated boiler would use only a small amount of natural gas to initiate the waste combustion, thereby eliminating the need to procure and burn approximately 3.8 million MMBtu per year of natural gas (4.4 million MMBtu prior to 2024). Electricity produced at the Power Plant would be significantly decreased and would be offset by purchases on the day-ahead/real-time energy markets, or by investing in new generation, such as wind and solar projects.

Staff has had conversations with another engineering firm specializing in the waste-to-energy sector in Europe. This firm believes the capital investment required to construct a WTE system for the City may be substantially less than the \$120 million estimated in 2022, but it is unclear as of the time of this writing what the true range of costs may be. **Assuming the costs remain in the neighborhood of \$100 million and above, there are limited options to finance construction. The most viable option would**

be to issue Electric revenue bonds, which would require significant increases in electric rates.

In addition, issuing bonds in the amounts necessary to construct a new waste-to-energy boiler would utilize a significant amount of the Electric utility's debt capacity. In turn, the Electric utility would be limited in its ability to finance investments necessary to maintain reliability and meet grid obligations, and limited in the ability to pursue initiatives the Council may wish to pursue to achieve the goals of the Climate Action Plan, such as investing in new renewable energy production projects.

Staff met with Metro Waste Authority (MWA) representatives on several occasions in 2023 and 2024 to discuss interest in potential partnerships regarding a variety of solid waste solutions. MWA staff indicated their interest in a waste-to-energy partnership with Ames, including the possibility of financing some of the capital investment. Although MWA's landfill facilities have substantial available capacity, waste-to-energy is seen by MWA staff as a strategy to reduce the eventual filling of the landfills in the next several decades.

City staff's impression is that the level of investment MWA may be willing to provide would be proportionate to the amount of capacity in the WTE system that would be used. The \$120 million figure developed through the Waste to Energy Options Study assumed the commissioning of a 5 MW RDF unit. Such a unit would be sufficient to dispose of 100% of the Resource Recovery System's expected daily throughput of 150 tons of RDF through 2045. Another alternative (with a higher capital cost) would be to repurpose a retired turbine-generator to construct a 12.5 MW unit for dedicated RDF combustion. This would provide the ability to handle approximately 350 tons of RDF per day, meaning capacity might exist for another 200 tons per day of RDF produced by MWA.

If an even larger, completely new RDF unit was constructed to handle a greater volume of waste from both Story County and the MWA system, it would be expected that the capital cost would be greater. Staff would explore situating such a unit in a different location from the current operation, for logistical reasons (the current site offers little room to expand and has potential for redevelopment into the future) and for strategic reasons (a site in southern Story County or northern Polk County would be ideally situated to serve both population centers with minimized truck mileage).

Issue 4. - July 2025 End of Current Comprehensive Solid Waste Plan

Increased landfilling of diverted Story County MSW puts a substantial strain on the Boone County Landfill, which is designated as the final disposition for Story County's waste. Compared to recent years, the Boone County Landfill historically received smaller quantities of unprocessed Story County MSW (an average of less than 5,000 tons of MSW annually from 2001-2017). This amount results from planned and unplanned outages at the Resource Recovery and Power Plant facilities and non-beneficial MSW.

In calendar year 2018, as the number of boiler tube ruptures at the Power Plant began to increase significantly, the tonnage of refuse not processed at RRP rose to 19,087 tons. This number peaked in 2019, with 32,030 tons of refuse not processed, and instead sent directly to Boone County Landfill. Although the amount of Story County waste going to the landfill due to reliability issues has decreased, several thousand additional tons of MSW must go to the landfill during winter months when there is not sufficient gas capacity to consume all the RDF at the Power Plant.

The "direct haul" tonnage to Boone County Landfill, in addition to being combined with rejects from the WTE process and construction and demolition material, results in more than half of the waste tonnage accepted at Boone County Landfill each year consisting of material from Story County. The

Boone County Landfill has a limited volume of airspace into which the landfill may grow in the future. In order to conserve the remaining landfill airspace, it is staff's understanding that Boone County prefers that Ames/Story County find a long-term alternative to the Boone County Landfill for disposal.

It should be noted that the City has entered into 28E agreements with most of the other cities in Story County, along with the County itself, for the operation of the waste-to-energy system. These agreements provide for Ames to take the responsibility for decision-making related to operations. The agreements also form the basis for the collection of the per-capita fee to partially fund the Resource Recovery System.

The 28E agreements place the responsibility on the City of Ames to provide a safe, sanitary, and environmentally satisfactory solid waste processing system, through which all garbage and solid waste from the participating communities shall be accepted and disposed of. The agreements provide the City with broad authority to determine the processes and facilities that are used to process solid waste, reclaim materials, and reduce the remainder of the waste to a form convenient for burial in a landfill. These agreements expire in June 2034. **Although the partners have been repeatedly notified in recent years about the potential for changes to the Resource Recovery System arrangement, no discussions have yet occurred with these partners to explore a different approach for solid waste disposal in the future.**

The Comprehensive Solid Waste Management Plan for Boone County and Ames (and by extension, the other participating cities in the Resource Recovery System, plus Story County), expires in June 2025. This plan outlines the management of solid waste within the planning area, including where its final disposition will be. Boone County has expressed desire to have Story County included in another planning area at that time. This could take the form of Story County becoming its own independent service area and entering into agreements with another planning area to dispose of solid waste. Alternatively, the current members of the Resource Recovery System could split and join different planning areas already in existence to dispose of waste at that area's designated final disposition site(s).

OPTIONS FOR SOLID WASTE DISPOSAL INTO THE FUTURE:

With the above-described issues in mind, staff believes there are three options for the future disposal of solid waste in the Ames/Story County area. Each presents advantages and disadvantages, which are analyzed below:

Option 1: Maintain Status Quo

This option relies on continuing the use of the Resource Recovery Plant and Power Plant in its current configuration.

Permitting – The facilities would continue to operate under their existing permits. There is some risk that future regulations impacting the combustion of MSW would require operational changes or new pollution control equipment. Such changes could be cost prohibitive and would cause the system to no longer be able to achieve compliance. For the foreseeable future, however, the Power Plant's permit continues to limit the amount of RDF that may be combusted in proportion to the amount of natural gas combusted, meaning an increase in RDF requires an increase in natural gas use to meet permit obligations, regardless of whether the increased quantity of gas is necessary to achieve combustion.

Capital Costs – Resource Recovery continues to require approximately \$300,000 per year in capital projects to maintain the equipment in the facility. This amount is expected to remain unchanged into the foreseeable future.

The RDF Bin is undergoing a partial overhaul, pending a decision regarding the future of the waste-to-energy system. If the system is continued as-is, then it will be necessary to invest additional funds into a more comprehensive overhaul of the RDF Bin (\$2-3 million). These expenditures are not forecasted in the current 5-year Capital Improvements Plan.

The Power Plant would be subject to the capital improvement projects already planned in the CIP, but some key plant components (boiler tubes, valves, steam fittings, etc.) are susceptible to accelerated wear from combusting RDF and may require significant investments to replace. In the 5–10-year horizon, investments in the range of \$10-15 million are expected to be needed to replace boiler components such as the bullnoses and generating banks and to modify the ash pond. These expenditures are not forecasted in the current 5-year Capital Improvements Plan.

Operating Cost – The operating cost—for both the RRP and Power Plant—in this option is significantly dependent on the costs of natural gas. As natural gas prices increase, the costs of electrical production increases, with and without RDF. This requires either increases in electric rates, or a reduction in the volume of RDF that is burned. **A reduction in RDF impacts RRP’s finances by diverting haulers (significant revenue loss), landfilling an increased amount of rejects (expense increase), and by reducing the revenue from RDF sales to the Power Plant. Conversely, a reduction in RDF impacts Electric’s finances in the opposite direction by reducing purchases of natural gas (expense decrease), reduced maintenance costs (expense decrease), and the replacement of energy at a cheaper rate from the grid (significant cost savings to electric customers).**

Remaining Asset Life – Although the Resource Recovery Facility is nearing fifty years of operation, the processing equipment and structure are well-maintained and in good condition to continue operating well into the future.

The RDF bin is undergoing a project to replace some corroded sections. However, this project will only address critical areas, extending the bin lifespan perhaps another five years. If waste-to-energy continues as is, more substantial maintenance investment will be necessary for the RDF bin.

Regarding the Power Plant, the Unit #7 and Unit #8 components experience an increased level of stress due to a corrosive atmosphere inside the boiler and wear resulting from starts and stops that are more frequent than a unit that would combust only natural gas. Although repair work can be routinely performed, as these units age it becomes increasingly difficult to find replacement parts.

Staff is undertaking an outside analysis to identify what the potential remaining lifespan is for key components of these units. Staff believes the remaining lifespan can be extended if RDF is no longer combusted, but it is not clear how long these units will be able to cost-effectively operate in the long term (i.e., into the 2030s). **Staff does not believe this is a viable long-term option without substantial investment in the Power Plant.** Finally, if RDF continues to be combusted, a project would need to be undertaken to excavate a larger ash pond confinement area. An expansion is estimated to cost \$2.5 million in addition to the \$2.6 million in a project currently underway to collect and close most of the existing ash pond.

Greenhouse Gas Emissions – **The co-firing of natural gas and RDF will not allow the City to achieve more than a 55% carbon reduction towards the Climate Action Plan goals.** Although the conversion of MSW to RDF and combusting it produces less greenhouse gas emissions than landfilling the MSW at a site without methane capture, this reduction is outweighed by the greenhouse gas

emissions resulting from the natural gas required to co-fire the RDF.

It is worth noting that the Electric Utility Operations Review and Advisory Board, appointed by the mayor, has provided a letter recommending that the City of Ames and Story County initiate efforts to find alternative methods to manage Story County's waste. The goal would be to reduce and ultimately eliminate the use of RDF at the power plant. Electric Services should begin planning for reinvestment in the electric system to improve reliability, reduce costs and improve its environmental performance. The letter is attached.

Option 2: Construct a New, Dedicated Waste-to-Energy Boiler to Burn RDF with Transfer Station for Backup, Recyclables, and Non-Combustible Waste

This option involves constructing a new, dedicated waste-to-energy boiler in partnership with an agency such as MWA. The Resource Recovery Plant would continue to be used in its current configuration. MSW from Story County and the partnering entity would be brought to Resource Recovery and processed. RDF would be combusted in a dedicated waste-to-energy boiler. Reject materials and RDF ash could be backhauled to a landfill. This option provides for construction of a new transfer station to function as the backup disposal option when the boiler is unavailable, and to handle recyclable materials and non-combustible waste on a routine basis.

Permitting – It is anticipated that the permitting process for a transfer station would take approximately 60 days to complete. Permitting a new waste-to-energy boiler would take approximately two years to complete, with an additional 2+ years to construct.

Capital Costs – The cost to construct the transfer station component is approximately \$4-6 million. The cost for the waste-to-energy boiler would be approximately \$120 million (higher if it needed to be sized to accommodate MWA participation). The capital costs associated with this option would be financed most likely with electric revenue bonds that would result in significant rate increases to our customers.

Operating Cost – This option would significantly reduce the cost of natural gas, from approximately \$15.8 million per year to approximately \$4 million per year. The operating cost for the boiler would be approximately \$3 million per year. However, this is offset by reallocating existing resources (staff, equipment, commodities). The operating cost for Resource Recovery would remain unchanged from the current costs.

Remaining Asset Life – In this option, the most pressing issue remaining would be the lifespan of the RDF bin. Substantial investment would be needed to outfit the bin for use beyond the next five years. In addition, a “dry” method of handling the ash would be included in the design to avoid needed investments in the existing ash pond. This option would likely extend the useful lifespan of Units 7 and 8 by reducing the number of hours that they actually operate and reducing their maintenance and repair costs.

Greenhouse Gas Emissions – Assuming that the energy being purchased to offset the reduced Power Plant energy production is from greener sources than natural gas, this option would substantially reduce the greenhouse gas emissions associated with combusting natural gas. Further reduction would be achieved from decreased landfilling, and from maximizing the efficiency of transportation between RRP and a partnering landfill operation. It is important to note that the capital costs of this option would result in a significant debt burden for the City, which would limit the ability to use debt for investments in other renewable energy projects that might be called for through the Climate Action Plan.

Option 3: Discontinue Waste-to-Energy and Construct a Transfer Station for MSW, Recyclables, and Other Waste

In this option, MSW would no longer be mechanically processed with recyclable metals sorted in the process and converted into RDF for the production of electricity. Instead, MSW would be consolidated for transportation to a landfill, and presorted recyclable materials could be aggregated before being transported to another facility for reuse.

With waste no longer being received at the Resource Recovery Plant, the distances to the nearest area landfills are great enough that it is uneconomical to have garbage haulers directly haul to those sites. The construction of a transfer station in Ames (where MSW/recyclables can be consolidated into semi-truck loads and hauled to a disposal/recycling site) would reduce hauler transportation costs, the amount of highway truck trips, and transportation-related greenhouse gas emissions.

Permitting – It is anticipated that the permitting process for a transfer station would take approximately 60 days to complete.

Capital Costs – The cost to construct a transfer station is approximately \$4-6 million. This cost may vary depending on whether the facility includes accommodations for recycling, yard waste, organics, etc. Design and construction would take approximately two years to complete. Staff estimates the costs to decommission the Resource Recovery Plant and RDF bin to total approximately \$3 million.

Operating Cost – The operating cost of a transfer station alone is estimated to be approximately \$4 million per year. This option would eliminate the \$4 million annual operating cost for the Resource Recovery Plant, eliminate the co-firing of natural gas with RDF, and reduce 90% of the \$15.8 million annual expense for natural gas for the Power Plant. These reductions in cost would be partially offset with increased purchase power costs.

Remaining Asset Life – This option would likely extend the useful lifespan of Units #7 and #8 by reducing their maintenance and repair costs. The other existing WTE system assets would be repurposed or decommissioned and demolished through this option.

Greenhouse Gas Emissions – This option provides Electric staff the ability to seek greener energy options, substantially reducing the greenhouse gas emissions associated with co-firing natural gas with RDF. If the MSW was buried in a landfill without methane-capture equipment, it would be expected that greenhouse gas emissions from disposal would increase compared to conversion to RDF and co-firing RDF with natural gas in a waste-to-energy system.

EUORAB INPUT:

The Electric Utility Operations Review And Adversary Board has been brief by staff on this important issue. Their input is as follows,

"The Waste to Energy study demonstrates that all the options are very expensive to build and operate. Therefore, EUORAB does not recommend construction of a new waste to energy facility, nor does it recommend Electric Services continue to provide most of the funding to support waste management costs for Story County.

Continuing to use RDF as a fuel in the power plant is very expensive relative to other solid waste

management options. The cost to continue to burn RDF will only increase as the current natural gas contract expires at the end of 2023 and the City of Ames faces significantly higher costs for natural gas in the future.

EUORAB is recommending the City of Ames, and its Story County partners, begin discussions to transition to a more preferable method of managing our refuse. We should move to a model that includes source reduction, reuse, and recycling and cease burning RDF. The net result would be a reduction in the total cost to manage our waste, a reduction in the impact our waste has on the environment, and a reduction in carbon emissions from burning our waste."

COUNCIL DIRECTION FROM MAY 16 WORKSHOP:

At the May 16 workshop, the City Council directed staff to take action regarding four initial action steps. The steps and the follow-up actions related to each are listed below:

Alternative Disposal of Construction/Demolition Debris:

Staff has previously explained that the Boone County Landfill has raised concerns about the volume of construction and demolition debris (C&D) received from Story County. Over the past five years, Boone County Landfill has received an average of 20,469 tons per year of C&D material from Story County. This material does not compact well, and therefore it accelerates the consumption of useable remaining space in the landfill.

On June 6, 2023, Mayor Haila sent a letter to the Boone County Supervisors requesting to explore amending the solid waste comprehensive plan to require C&D to be sent to an alternative disposal site than the Boone County Landfill. The Boone County Supervisors responded to this proposal on June 28 (Attachment 1). The Supervisors indicated that an immediate change would impact the adopted FY 2023/24 landfill budget. Therefore, Boone County proposed considering potential changes in advance of finalizing the FY 2024/25 budget.

In subsequent discussions, Boone County officials have expressed a desire for Story County C&D material to be sent to an alternative disposal location effective July 1, 2024. City staff met with Marshall County Landfill and Metro Waste Authority officials to facilitate a new disposal location for this material. After further investigation, it appears the volume of waste would be greater than what Marshall County Landfill could handle on a regular basis. MWA and City staff have discussed C&D material on two occasions, and MWA is currently evaluating the potential impacts and fees.

These potential alternative disposal locations may result in a longer drive distance from Story County jobsites but will also likely charge a different tipping fee for this material compared to Boone County Landfill's fee for Story County C&D (\$76/ton). Therefore, it is difficult to determine the impact to Story County residents and businesses for such a change. Any increase in costs is likely to be passed directly onto customers of homebuilders, developers, contractors, etc. as a "cost of doing business" expense.

It is important to note that it is ultimately up to Boone County Landfill to obtain final agreement and approval for any change in the disposal location of this material —the landfill is the entity that will decide whether to release the material to another location, and if so, to find a location that will accept it.

Pilot Drop-Off Recycling Program:

The City Council requested that questions related to willingness to sort various types of waste before disposing of it and preferred methods of disposing of sorted waste be included in the 2023 Resident Satisfaction Survey, to gather the public's perceptions regarding these concepts. Survey results were collected from 596 randomly selected Ames residents.

This year's survey found that, overall, most respondents were more willing to sort certain products from their garbage compared to 2022. Percent increase ranged from 10% (organics) to 32% (glass). Glass is the waste product that respondents were most willing to sort (87%), followed by metal (80%) and plastic (80%). Respondents were least willing to sort organics from their garbage with 51% indicating that they were not willing to sort organic material from their garbage.

Respondent Preferences for Sorting Waste Types from Their Garbage

<u>Waste Type</u>	<u>2022</u>	<u>2023</u>
Glass	54.9%	87.2%
Metal	64.0%	80.3%
Plastic	64.8%	80.0%
Organics	38.4%	48.8%

Survey respondents were asked their preferred method of disposal of sorted waste, with options including: 1) no-charge centralized drop-off, 2) curbside collection for a fee, 3) willingness to participate in either program, 4) not interested, and 5) other. Almost 1/3 (31%) of the respondents would participate in either program (no charge centralized drop-off or curbside collection for a fee). Another quarter of them preferred no-charge centralized drop-off, while 26% preferred curbside collection for a fee. When asked if they currently pay for curbside recycling through their garbage hauler, 10% said yes.

Preferred Method of Disposing of Sorted Waste Items

<u>Method</u>	<u>2022</u>	<u>2023</u>
Would participate in either one	30.7%	30.8%
No-charge Centralized Drop-off	30.5%	26.2%
Curbside Collection for a fee	23.0%	23.1%
Not Interested	11.0%	14.3%
Other	4.8%	5.7%

It appears from these results that there is some appetite among the community for additional opportunities to recycle, either through curbside collection or through a drop-off program.

In early summer 2023, staff obtained four cardboard collection containers from Metro Waste Authority and placed them at the Power Plant (2), Ames Public Library, and the Electric Distribution facility. Each container holds approximately 500 pounds of cardboard when full and is emptied on a weekly basis at a cost of \$75 per container per month. Staff has added four additional containers, around Main Street, an additional container at the Power Plant, and one at Fleet Services. The containers have been primarily utilized for disposal of cardboard received for City operations, although community members have also been invited to utilize the containers. However, no concerted marketing campaign has been undertaken to advertise their availability.

Staff's estimate is that approximately 0.25 tons of cardboard is collected per bin, per week. The total amount of cardboard collected with these bins continues to increase with a current average of 11 tons per month. Over 70 tons have been collected since August 2023.

In late 2023, Resource Recovery staff purchased roll-off containers and smaller bins to create a “one-stop” recycling drop-off area at the Resource Recovery Plant. Resource Recovery now accepts cardboard, scrap metal, plastic bottles with twist off lids, textiles, and mixed paper at no charge, along with the existing drop-off of glass and food waste. The collected materials are then transported by Resource Recovery to recyclers and sold based on market prices. An additional roll-off for collecting cardboard has been placed near the Parks and Recreation Administrative facility at Gateway Hills. Staff intends to expand these drop-off services with additional locations, including locations in partnering communities outside of Ames.

Continue Exploring Models for Organized Collection and Return with Feedback:

As with the topic of recycling, questions related to organized collection were included in the 2023 Resident Satisfaction Survey at the Council's request. Responses were received from 596 residents.

When asked how interested they are in a system where residential garbage collection is provided by one hauler, with the cost and services provided is determined by a city-wide contract, 41% of survey respondents were interested, 31% were not interested, and more than a quarter (29%) were uncertain. The average interest rating was 3.05 on a 5-point scale (1 being not interested at all to 5 being very interested).

STAFF COMMENTS:

For over forty years, the City's waste-to-energy system has provided a reliable and responsible method for the disposal of Story County's solid waste. The change in boiler technology to meet emissions regulations, the change in the content of municipal solid waste, and the change of fuel from coal to natural gas have impacted the reliability of this system in the past decade. Furthermore, the price of natural gas required to dispose of the municipal solid waste has increased, limiting the Power Plant's ability to burn refuse-derived fuel without increased costs. These increased costs are not competitive with the price of power that can be purchased on the market for the City's Electric customers. Finally, Boone County Landfill has limited space which is being disproportionately consumed by waste from Story County.

It should be noted that it is becoming increasingly challenging to keep the Resource Recovery Fund in positive territory beyond the next few years. It is likely impossible to maintain the current configuration of the waste-to-energy system without significant increases in costs for Electric customers, haulers, and curbside consumers. Furthermore, even with such increases, it may not be feasible to keep operating the RDF bin, Power Plant boilers, and ash pond for the long-term future. Investing significant funds into this operation is likely to limit the City's ability to maintain reliable power, be in compliance with electric grid requirements, and achieve other goals identified by the City Council in the Climate Action Plan.

In addition, the Council has been engaged in a discussion about the concept of organized collection. This model presents an additional opportunity to advance the goals of the Climate Action Plan and address several of the other challenges associated with truck traffic in residential neighborhoods.

The interrelated issues of collection, waste processing, waste disposal, climate action, and energy

production all suggest to City staff that the most advisable strategy for the City Council to pursue would be:

- **Collection** - Partner with Metro Waste Authority to implement an organized collection system meeting the City Council's requirements, including curbside collection of refuse (MSW), recyclables, and yard waste in a manner that reduces truck traffic on City streets,
- **Consolidation** - Convert the Resource Recovery operation into a transfer station model as described in Option 3, where refuse and recyclable materials can be deposited, consolidated, and loaded for transportation to processing/disposal sites, and
- **Disposal** - Transition from the Central Iowa Solid Waste Management Association planning area (Boone County Landfill) to the Metro Waste Authority planning area as the final disposition location for disposal of municipal solid waste.

A concept outlining how these roles could potentially work is shown below:

	Collection	Consolidation	Disposal
Responsible Entity:	Metro Waste Authority	City of Ames	Metro Waste Authority
Components:	Organized Curbside Collection of Recycling and MSW Hauler Contract Management	Transfer Station Customer Service Marketing/Community Outreach Story County Community Relationships Waste Reduction/Landfill Diversion/Climate Goal Initiatives and Events	Hauling and Disposal to Landfill Hauling and Disposal to Recycling Facility Hauling and Disposal of Yard Waste

In staff's view, this strategy provides several advantages. It allows the City to rely on MWA's expertise to convert to organized collection. MWA has implemented this approach in many other communities and can provide valuable insight regarding working with haulers, designing the system, and undertaking a transition from the current open collection model. This approach also

allows MWA to handle the disposal of the collected waste and recyclables, which it has ample expertise and resources to manage.

Critically, this approach keeps the community-focused component (Consolidation) with the City of Ames. This includes the interaction with drive-up customers and resources to ensure materials are disposed of in the most appropriate manner, the relationships with partnering communities in Story County to manage the administration of a waste disposal system, and the management of local waste reduction and diversion programming such as Stash the Trash, Rummage RAMPage, and EcoSmart. The City already excels in administering these customer-focused aspects of managing waste in the area. Therefore, it would be a natural fit for the City to retain the management of these functions, while partnering with MWA to manage the Collection and Disposal aspects of solid waste management.

Finally, this approach allows the City to separate energy production from waste management. Doing so allows the electric utility to pursue energy options that provide continued reliability, competitive costs, and lower greenhouse gas emissions.

Staff does not intend to ask for direction at the May 28 meeting. Instead, staff plans to present these issues and return at a subsequent City Council meeting to receive the Council's direction

If the City Council agrees with the approach outlined above, then it would be appropriate at a future meeting to direct staff to prepare a proposal to Metro Waste Authority in which 1) Metro Waste Authority would assist with managing a system of organized curbside collection for residential garbage and recyclables, 2) the City would convert the Resource Recovery System to a transfer station model, and 3) Metro Waste Authority would become the final disposition location for garbage and recyclables.

Staff would also begin to examine financing, construction, regulatory, partnership agreements, and other related matters in greater detail, including consulting with the existing Resource Recovery System partnering communities regarding these potential changes. Staff would then return to the City Council with this information as necessary to implement the Council's direction.

ATTACHMENT(S):

[Letter from Boone County Supervisors.pdf](#)