

Staff Report

**PRESENTATION OF R3C CONCEPTUAL DESIGN**

June 24, 2025

**BACKGROUND:**

On May 7, 2025, the City Council approved an agreement with HDR Engineering, Inc., of Omaha, NE, for professional engineering services to develop a Resource Recovery and Recycling Campus (R3C). The R3C represents a new approach for the disposal of solid waste. The new facility is intended to receive solid waste, recyclables, and yard waste. The solid waste would be consolidated and transported to a landfill for disposal; recyclable materials would be forwarded to recyclers; yard waste material would be either composted on site or hauled off-site for disposal.

The City has purchase agreements in place for approximately 9.5 acres along Freel Drive on which to construct the R3C. Geotechnical and environmental studies have been conducted. The closing for the property transactions is scheduled for July 18. **The final component of due diligence includes preliminary design efforts and a review of the proposed financial and tipping fee structure for the R3C. HDR has completed its preliminary concepts and financial modeling and is now prepared to present them to the City Council for review.**

**CONCEPTUAL DESIGN:**

HDR has developed a conceptual design for the R3C that maximizes the available space along Freel Drive. **This design is a high level overview of how operations will occur on the site and is intended to be further refined during the final design development stages of construction prior to bid documents being created.**

Commercial Entrance and Tipping Floor

For safety, commercial haulers of municipal solid waste (MSW) and recyclable materials are separated from individual car line customer traffic at the site entrance. Commercial haulers proceed directly to the transfer station's tipping floor, where MSW or recyclables are deposited. The tipping floor is sized to temporarily store several hundred tons of MSW in the event of severe weather, winter road closures, or other emergencies that may interrupt transfers to Carroll County. While such events are expected to be rare, the design includes capacity for emergency storage. The tipping floor will be designed to allow for MSW to either be loaded directly into transfer trailers or to be processed for material recovery before being loaded into the trailers.

**It is anticipated that curbside residential recycling will need to be implemented to fulfill Ames' obligations for waste diversion, and to remove recyclable materials from the**

**waste stream that cannot be easily removed via equipment (e.g., plastics, paper, glass, cardboard).** Recyclables from the proposed curbside single-stream collection will be aggregated in a designated area on the tipping floor separated from MSW to reduce contamination. Once a full load is accumulated, materials will be transferred via trailer from the tipping floor.

#### Car Line Traffic

Individual car line traffic will be directed either to the tipping floor (if unloading garbage, commingled recyclables, or bulky items such large electronics) or to the customer convenience area. Tipping floor traffic will be charged fees based on car-load, truckload, or by weight. The customer convenience area contains an area for drop-off of household hazardous waste (HHW) and a covered space with separate bins where sorted residential recyclables can be dropped off at no charge.

#### Processing Equipment

The MSW delivered to the tipping floor will be conveyed to equipment where it will be lightly shredded. This will allow the garbage to be broken out of bags and shredded into 8-inch or smaller pieces, which are easier to handle. The shredded materials will then pass through a ferrous recovery system (rotating drum magnet) and a non-ferrous metal recovery system (eddy current separators). After processing, non-recyclable shredded materials return to the tipping floor, where they are loaded into transfer trailers.

#### Transfer Tunnel

MSW (either raw or processed) and commingled recyclables that are collected on the tipping floor will be loaded into transfer trailers that will access a tunnel running under a portion of the tipping floor. The transfer trucks and trailers, once loaded, will loop through the site to return to the scalehouse, then haul MSW to the landfill and recyclables to recyclers.

#### Yard Waste

A designated yard waste area is planned along the east side of the site, accessible via the service entrance on the south side of the R3C property. Staff anticipates consolidating the City tree debris/mulch site (currently south of the Parks Maintenance facility on 13th Street) into this site.

#### Office, Equipment Storage, and Fueling

The facility will include office and locker room space for staff, as well as an education center. The current Resource Recovery Plant (RRP) regularly hosts educational tours for community groups of all ages. Public education regarding solid waste and recycling is critical to the future success of the R3C and the City's sustainability goals. The education center will feature a large glass wall overlooking the transfer station, allowing visitors to observe operations safely, without entering the tipping floor.

Equipment and trailer storage, along with a fuel island, will be located toward the rear of the facility. The fuel island will support R3C transfer operations and also service the City fleet's diesel fuel needs.

## **FINANCIAL AND TIPPING FEE STRUCTURE:**

A comprehensive financial model has been developed to evaluate the anticipated operating and capital expenditures over the expected 20-year term of the debt service that will finance the construction of the R3C transfer station. Capital expenditures include land acquisition, equipment, and facility construction. The model is designed to determine the tipping fee required to ensure the project is financially viable.

**The model assumes the current per-capita fee of \$10.50 charged to each partner community remains unchanged.** To generate the necessary additional revenue, only the tipping fee is adjusted. **Shifting more of the cost burden to the tipping fee introduces a user-based pricing structure, which aligns more closely with a pay-as-you-throw model. In such a model, users pay more as they dispose of more waste, encouraging increased recycling—an outcome that will be vital to the long-term success of the R3C.**

The current tipping fee at the Resource Recovery Plant is \$75 per ton. **The financial model projects that the R3C transfer station will require a tipping fee of \$95.11 per ton when it becomes operational in 2027, an increase of approximately 27%.** Following this initial adjustment, the model applies an annual escalation rate of 2.75% to the tipping fee over the 20-year period. **Because waste collection in Ames is handled by private haulers, it is difficult to estimate the impact of this tipping fee increase on individual customers. The cost for disposal only of 80 pounds per week of garbage (an amount generated by a typical 3-4 person household) would increase \$3.22 (from \$12.00 to \$15.22) per month, which could be expected to be passed directly on to customers. However, there may be some offsetting savings for haulers due to increased up-time of the new facility; currently, reliability issues and natural gas constraints at the Power Plant (along with routine maintenance) require a substantial number of days where haulers direct-haul to Boone County Landfill, which increases haulers' equipment and personnel costs.**

Staff anticipates that the R3C will be able to accept some "light" construction and demolition (C&D) debris. As a preliminary placeholder, the C&D tipping fee has been set at \$120 per ton in the financial model.

**The capital cost for construction of the R3C transfer station, including site roads and processing equipment, is estimated at \$12,045,470. This estimate accounts for the reuse of existing equipment from the current Resource Recovery Plant, including the shredder, drum magnet, and one eddy current separator. The shredder will require a major overhaul to ensure reliable long-term operation. By reusing this equipment, staff expects to achieve cost savings of approximately \$4,000,000 compared to the purchase of all new equipment.**

**Staff believes the financial model prepared by HDR represents a conservative analysis, as staff desired to obtain. There are a number of potential additional revenue sources and expenditure reduction areas that staff is continuing to explore, all of which are expected to reduce the tipping fee requirement. These include:**

1. **EPA Solid Waste Infrastructure for Recycling Grant.** The City Council authorized staf

to apply for this funding in late 2024. Awards are anticipated to be announced in late 2025. The City's application is for up to \$5,000,000 of assistance for recycling equipment.

2. **There is potential for revenue from the backhaul of certain materials from the Carroll County Landfill.** Staff is finalizing the terms of the disposal agreement at the Carroll County Landfill. However, this agreement does not address the specific terms for the backhauling of materials to Ames from Carroll County in instances where it is more economical to both partners. Staff believes there may be opportunities to backhaul materials including yard waste, electronic waste, and some recyclable commodities, since Ames' geographic location and quantities result in more competitive pricing for disposal of these items than in western Iowa. However, the specifics of these arrangements have not yet been discussed in detail with Carroll County.
3. **Some cost-sharing is expected with Parks and Recreation.** The grinding and hauling of right-of-way and park tree debris costs between \$30,000 and \$40,000 annually. It is expected that consolidating the Parks and Recreation tree debris site at the Parks Maintenance shop on 13th Street with the R3C yard waste materials will result in more competitive per-ton costs for contracted services. Parks and Recreation will continue to contribute towards the portion of the costs generated by right-of-way and parks trees.
4. **The fueling facility is expected to be a shared cost with Fleet Services.** With the cancelation of the City's agreement with Iowa DOT to use its fueling stations, City vehicles have been publicly available gas stations. This is somewhat challenging for the City's large diesel vehicles, since there is only one nearby gas station with a large maneuvering area for diesel vehicles. Since the R3C transfer trucks will be significant diesel users in the City's fleet, the project includes a space for diesel fueling. It is anticipated that other City-owned diesel vehicles would use this infrastructure. The pumps, tanks, and a portion of paving costs would be allocated to Fleet Services rather than the R3C, and spread to the using City Departments.
5. **The scalehouse and other project components could be adjusted or phased.** HDR has indicated that the scalehouse could be reduced in cost by initially installing only a single scale, by using a job trailer-style structure rather than a purpose-built building, or both. Design decisions such as this will be analyzed by staff prior to settling on final construction designs.
6. **Staffing of the future facility requires a more thorough analysis.** The model assumes no change in the overall staffing level compared to Resource Recovery System operations. Staff believes more internal evaluation should occur to identify whether there is an opportunity to adjust staffing through attrition.

#### **STAFF COMMENTS:**

The conceptual design and financial modeling effort have produced a layout and fee structure that staff believes can handle the MSW from Ames and its partner agencies into the future. **The City has purchase options for the five parcels along Freel Drive that are set to close on July 18, 2025. The purchase agreement has due diligence clauses that allow the City to back away from the purchase option if the site is not viable to move forward with the R3C.**

**The City Council has two opportunities to decide whether to continue moving forward with these sites. The first is this evaluation of the conceptual design and proposed fee structure. If the information presented is grossly out of alignment with the Council's vision, Council can provide direction to withdraw from the purchases. If the concept**

**and proposed finances are within acceptable bounds for the Council, then staff will provide a second opportunity to consider whether to proceed at the next City Council meeting on July 8, 2025. At that meeting, staff will present the agreement with the Carroll County Solid Waste Commission for landfilling of waste from Ames and the partner communities. Should Council determine that agreement is not in alignment, Council again has the opportunity to decide not to move forward with the purchase of the properties.**

If the conceptual design and the proposed fee structure are in alignment with Council's expectations, staff will begin negotiations with HDR on a scope and fee for final design services for the layout as presented and will bring an agreement back to Council for approval at a future meeting.

**The Council should be aware that staff has not been able to identify strong alternatives to the approach presented in this report. There are limited sites at which to locate a potential facility of this nature, and it remains of critical importance to conclude both waste-to-energy and the disposal of solid waste in the Boone County Landfill some time in the first half of 2027. Staff believes the Freel Drive sites, conceptual layout, and proposed tipping fee represent the best options for Council to move forward with solid waste disposal within the community.**

**ATTACHMENT(S):**

[Ames R3C Concept Report\\_rev06202025.pdf](#)

[R3C Conceptual Design and Financial Model with HDR 6-24-25.pptx](#)