RAMSEY/WASHINGTON RECYCLING & ENERGY
CONNECTING VALUE TO WASTE

MEETING NOTICE
RAMSEY/WASHINGTON RECYCLING & ENERGY BOARD
FACILITY & FINANCE COMMITTEE

Date: Thursday, February 9, 2023
Time: 10:00 a.m. to 12:00 p.m.
Commissioners, Key staff, Presenters:
Ramsey County Environmental Health | 2785 White Bear Ave N. | 2nd Floor Conference Room
Maplewood, MN | 55109 | Map
Public: Members of the public are encouraged to participate remotely or may attend at the Maplewood address.
Microsoft TEAMS | Phone Conference ID: 496 817 813# | Call In (audio only): 1-323-792-6297

AGENDA

I.	**Call to Order, Introductions**		
II.	**Approval of Agenda**	Action	Page 1
III.	**Approval of Minutes** – November 14, 2022	Action	Page 2
IV.	**Business**		
	a. Organics Feedstock Supply Agreement Recommendation	Action	Page 4
V.	**Updates and Reports**	Information	Page 42
	a. R&E Center Updates		
VI.	**Adjourn**		

NEXT MEETING:
Thursday, March 9, 2023 | 10:00 a.m. – 12:00 p.m. | Ramsey County Environmental Health, Maplewood

RAMSEY/WASHINGTON
RECYCLING & ENERGY
CONNECTING VALUE TO WASTE

RAMSEY/WASHINGTON RECYCLING & ENERGY BOARD
FACILITY & FINANCE COMMITTEE MINUTES - NOVEMBER 14, 2022

A meeting of the Ramsey/Washington Recycling & Energy Facility & Finance Committee (F&F Committee) was held at 12:30 p.m. on Monday, November 14, 2022, at the Ramsey County Environmental Health Office, 2785 White Bear Avenue North, Suite 350, Maplewood, Minnesota.

MEMBERS PRESENT
Commissioners Wayne Johnson – Washington County
Commissioners Nicole Frethem, Trista MatasCastillo – Ramsey County

ATTENDING AT RAMSEY ENVIRONMENTAL HEALTH, MAPLEWOOD
Leigh Behrens, Rae Eden Frank, Sam Holl, Bill Keegan, Jennefer Klennert, Michael Reed, Jim Redmond, John Ristad, Bob Roche, Jody Tharp

ATTENDING REMOTELY
Dave Brummel, Alison Cameron, Angiulo Damiani, Dan Donkers, Samantha Ferguson, Jaimie Giesen, Tom Gratz, Kelli Hall, Sam Hanson, Kevin Johnson, Julie Ketchum, Bruce Kimmel, Randy Kiser, Juna Ly, Ryan Tritz, Renee Vought, Ami Wazlawik, Caleb Werth, Joua Yang

CALL TO ORDER/APPROVAL OF THE AGENDA
Chair Johnson called the meeting to order at 12:30 p.m. Introductions were made.

Commissioner MatasCastillo moved, seconded by Frethem, to approve the agenda as presented.
Roll call vote: Ayes: 3 Nays: 0 Motion carried.

APPROVAL OF MINUTES
Commissioner Frethem moved, seconded by MatasCastillo, to approve the May 19, 2022, minutes.
Roll call vote: Ayes: 3 Nays: 0 Motion carried.

BUSINESS
Anaerobic Digestion (AD) Negotiations Update
Leigh Behrens, R&E project and planning manager, reviewed the revised scope for resource management, strategic case and approach for AD and progress on R&E Board goals. She reviewed the approach to date in observation and engagement with AD facilities to vet viability, the two-phase request for proposals (RFP) to vet proposals specific to R&E's needs and, with the support of multiple experts, identifying the use of private AD vendors.

Sam Holl, R&E facility manager, identified the proposal review team, which includes the Joint Leadership Team (JLT), attorney Kevin Johnson, Nate Klett with engineering consulting firm Foth, Kris Wehlage, Jim Redmond, R&E's financial consultant Ehlers, and the Ramsey and Washington County attorneys. He outlined the negotiation process to date, key items for negotiations, including a 20-year feedstock supply agreement and the plan to complete negotiations.

R&E will complete negotiations with the two proposers, and JLT intends to return to the F&F Committee with a full letter of intent and recommendation on November 30, 2022. Recommendation by the F&F Committee would be presented to the R&E Board on December 15, 2022.

Commissioner Frethem said that in presenting risk mitigation information to the R&E Board, it would be important to explain risks that were considered and how they were addressed in negotiations. She asked whether trends, such as takeout containers moving to compostable versus plastics, have been considered in feedstock estimates. Holl confirmed that all foreseeable trends had been included.

Commissioner MatasCastillo asked the county attorneys whether the F&F Committee can go into closed attorney-privileged discussion when the two proposals are presented. John Ristad, Washington County Attorney, said the attorneys will evaluate the request and follow up.

Other discussions included vendor feedstock purity requirements, effect on tip fees, inclusion of the processing of the food scraps bags and the responsibility for marketing of end products.

Refuse-Derived Fuel (RDF) End Market Development
Sam Holl provided an update on efforts to date in pursuing end markets for RDF. R&E has been evaluating the handling of RDF since 2014 and has an agreement with Xcel through 2027. An RFP for vendors to handle RDF closed May 2022. The request for interest (RFI) offers Xcel an opportunity to respond with what their energy plans are past 2027 and allows multiple vendors to propose other options for the management and marketing of RDF. R&E is working with HDR Inc. to explore possibilities with multiple technologies.

Jim Redmond, R&E contract manager, reviewed the timeline for an RFI for end markets for RDF. An RFI will be issued this month to find qualified vendors. An extensive marketing effort has been done by R&E's strategic engineering consultant, HDR Inc., to identify capable potential respondents and encourage vendor responses through targeted messaging and marketing in specialized trade publications to increase awareness of the RFI. A recommendation to the F&F Committee and R&E Board is expected by May 2023.

UPDATES AND REPORTS
Sam Holl provided an update on the construction of the recyclable recovery line, the food scrap building and dust collection upgrade. He presented statistics to date and expected year-end figures for inbound/outbound tonnages for RDF, bulky waste and ferrous/non-ferrous materials.

ADJOURN
Chair Johnson declared the meeting adjourned at 1:18 p.m.

ATTESTED TO:

Approved: _____
February 9, 2023

Approved: _____
February 9, 2023

RAMSEY/WASHINGTON RECYCLING & ENERGY
CONNECTING VALUE TO WASTE

R&E BOARD FACILITY & FINANCE COMMITTEE MEETING DATE:		February 9, 2023		**AGENDA ITEM:**		VI.a
SUBJECT:	Organic Material Supply Agreement Recommendation					
TYPE OF ITEM:	☐	INFORMATION	☐	POLICY DISCUSSION	☒	ACTION
SUBMITTED BY:	Joint Leadership Team (JLT)					

FACILITY & FINANCE COMMITTEE ACTION REQUESTED:

The Ramsey/Washington Recycling & Energy (R&E) Board Facility & Finance Committee is requested to recommend to the R&E Board that it:

1. Approve the letter of intent between the Dem-Con Companies, LLC and Hitachi Zosen Inova USA LLC joint venture and the R&E Board.
2. Delegate authority to the R&E Board Chair to sign the final organic material supply agreement that will be developed in form to the key terms in the approved letter of intent.

EXECUTIVE SUMMARY:

Background

Ramsey and Washington Counties have been evaluating next-generation technologies to manage waste for nearly two decades. The R&E Board has continued this effort to achieve environmental, economic and community benefits for the East Metro. This aligns with the counties' commitment to protect and ensure the public health, safety, welfare and environment of residents and businesses through sound management of solid and hazardous waste generated in the counties. Pursuit of new solid waste management technologies to capture more value from waste is also a key strategy for the counties to meet the state's 75% recycling goal by 2030.

Both Ramsey and Washington Counties have a 20-year solid waste management plan, which is approved by the commissioner of the Minnesota Pollution Control Agency. Both counties' plans state the policy goal of maintaining and improving an integrated system of solid waste management that supports Minnesota's hierarchy of solid waste management. The plans' strategies emphasize waste reduction, reuse, recycling and composting before the remaining solid waste is managed through resource recovery. The plans' policies also affirm the processing of waste, for recovering energy, recyclables and other beneficially usable materials, as the preferred method to manage solid waste that is not reduced, reused or recycled.

The R&E vision, "vibrant, healthy communities without waste," is being pursued through a variety of efforts. R&E and each county's programs complement each other in working upstream, preventing waste and increasing source-separation of recyclables. Plans are also near completion for the R&E Center to be redesigned and repurposed to recover more value from waste. Coinciding with both

upstream and downstream efforts, R&E has worked to pursue alternative uses of high-value materials in the waste stream. R&E's Scope for Resource Management, a 10-year plan established in 2015 and re-affirmed by the board in 2019, outlines the strategic direction for solid waste management, includes management of byproducts from the R&E Center via new end-use market technologies such as anaerobic digestion.

The action before the Facility & Finance Committee at its February 9 meeting, to recommend approval of a letter of intent with an AD vendor, will move R&E to a new phase of responsible solid waste management in the East Metro. Development of AD will benefit residents and businesses by:

- Reducing the amount of waste from the two counties that is landfilled or combusted for electricity
- Moving valuable organic waste materials up the solid waste hierarchy, pivoting organics from "waste" to "resource"
- Providing a carbon-negative renewable energy product that can displace fossil fuel use as an action to address climate change
- Driving development of additional organics processing capacity in the Twin Cities Metro
- Securing a dedicated, long-term management solution for food scraps and organic-rich materials from the R&E Center
- Creating local construction and solid waste technology operations jobs

Organic Materials & Anaerobic Digestion

Facility enhancements at the Recycling & Energy Center (R&E Center) will soon facilitate source-separated food scraps recycling and the recovery of high-value materials from trash. Planning for higher use of organic materials, which currently become refuse-derived fuel (RDF) or process residue, have taken shape through several years of extensive research, reference facility site visits and engagement with technology providers.

There are two types of organic materials that can be moved up the waste hierarchy with alternative end-market technology:

- Source-separated food scraps in food scrap bags
- Organic-rich material separated from municipal solid waste in the recyclables recovery system (RRS) at the R&E Center

Anaerobic digestion (AD) is a waste processing technology in which organic materials are placed into a container deprived of air with specialized microbes to produce biogas and digestate. Biogas, composed mainly of methane and carbon dioxide, can be used for heat or generating electricity, or it can be refined into renewable natural gas (RNG), as a substitute for fossil fuels. RNG can be used for vehicles or in the natural gas pipeline system for homes and businesses. RNG from food waste has a negative carbon intensity, which provides an environmental benefit by reducing greenhouse gas emissions in the transportation sector compared to diesel, conventional natural gas and RNG from landfills.

Digestate, the solid and/or liquid products from AD, contains plant nutrients from the breakdown of organic waste. Solid digestate can be composted to make a soil amendment or further processed into other value-added products. Liquid digestate can be used as agricultural fertilizer. Different types of digestion, such as "wet" and "dry" AD, require different feedstock mixes and moisture levels. AD is a

proven technology for managing organic wastes, with flexibility and decades of operation and success in North America and worldwide.

As a part of the project to develop a digestion facility for Ramsey and Washington county organic materials, R&E staff and engineering consultants have developed subject matter expertise on AD technology and its specific application to meeting the R&E Board's needs. Foth, one of R&E's engineering firms, has evaluated digestion solutions throughout this project, culminating in a technical evaluation memorandum of the recommended technology, attached in this meeting packet.

Solicitation Chronology

In August 2020, R&E released the first of a two-phase solicitation for vendors capable of meeting the need for processing technologies and end-use markets for byproducts from the R&E Center. Nine proposers were determined to have provided credible and complete responses and were invited to proceed to phase II. In May 2021, R&E released the phase II request for proposals (RFP) to select vendors, which requested more detailed design, operations and financial information. Eight proposals were received and thoroughly evaluated by staff and consultants using the criteria in the RFP and multiple dimensions of analysis.

After proposer interviews in early 2022, JLT brought a recommendation to the Facility & Finance Committee in April to close the RFP process and authorize direct negotiation processes with two of the AD proposers. Additionally, the three members of the Facility & Finance Committee, JLT, R&E staff and key consultants conducted site visits internationally to facilities representing the AD proposers' technologies to confirm operational capabilities with similar feedstocks and climates.

In May 2022, R&E formed a negotiation team, consisting of R&E's facility manager, procurement manager, planning manager, accounting manager, JLT, legal consultant, financial consultant, facility engineering consultant and strategic engineering consultant. This team developed an initial term sheet for each vendor, with the potential to ultimately enter into a 20-year organic material supply agreement with one of the vendors. The negotiation team conducted multiple negotiation sessions with each vendor between September and December 2022, focusing on terms for a potential agreement.

The result of these negotiations was the development of a non-binding letter of intent (LOI) between the vendor and the R&E Board. This approach allowed for key provisions to be determined and brought forward to the Facility & Finance Committee to review and determine a recommendation to the full Board.

Analysis of Recommended Letter of Intent

The following elements for the LOI were identified during negotiations:

- Site status
- Condition precedent
- Term of agreement
- Delivery amounts/conditions
- Initial composting fee
- Anaerobic digestion fee
- Pricing limits (most favored nation)
- Remedy for commencement delay

- Delivery/acceptance shortfalls
- Contamination requirement/feedstock specifications
- Performance standards
- Technology

Based on the outcome of negotiations for these key elements, R&E staff recommend that the R&E Board accept the letter of intent with the Dem-Con Companies, LLC (Dem-Con) and Hitachi Zosen Inova USA LLC joint venture (DC/HZI) and enter final negotiations for an organic material supply agreement.

Several factors were considered in recommending DC/HZI's LOI. The LOI addresses each of the key elements identified. DC/HZI is a local partner with an understanding of the solid waste system in Minnesota. DC/HZI's proposed site is the current Dem-Con recycling and solid waste management facility in Shakopee, Minnesota. R&E staff visited an HZI reference facility in Jönköping, Sweden that handles a similar post-consumer food waste and facility design will match proposed design in Shakopee, MN. DC/HZI has worked with CenterPoint Energy and Char Technologies to develop markets for the sales of RNG and biochar. DC/HZI also offers educational resources to help promote participation in the food scrap program through Dem-Con's Green Grades Education program.

Tip fees that R&E will pay to deliver organic materials have been negotiated for both organics in food scrap bags and organic-rich material from the RRS with pricing limits on the tip fee R&E will pay. DC/HZI's LOI includes a cost/revenue sharing provision that is adjusted based on commodity pricing of RNG and biochar products produced. It is recommended that R&E develop a reserve fund to reduce changes in budgeted expenses. R&E has worked with consultants to understand the potential impacts to expenses related to the cost/revenue sharing provision.

At this Facility & Finance Committee meeting, staff will provide information and a recommendation to the Facility & Finance Committee on the selection of the Dem-Con and Hitachi Zosen Inova USA LLC joint venture for entering into final negotiations on an organic feedstock supply agreement.

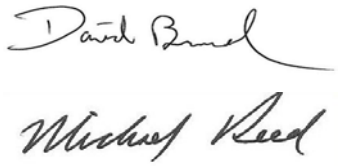
ATTACHMENTS:

1. Draft resolution
2. Letter of Intent Concerning Organic Material Supply Agreement
3. Memorandum from Foth: End Use Markets Vendor Technical Evaluation
4. Memorandum from Stoel-Rives: Analysis of a Proposed Letter of Intent with Dem-Con/Hitachi Zosen Inova
5. Memorandum from Ehlers: Financial Considerations of Dem-Con/HZI Proposal for Anaerobic Digestion Facility

FINANCIAL IMPLICATIONS:

Estimated expenses at food scrap program maturity is $6,387,600 per year with no changes to cost/revenue share. Costs will gradually increase in 2024 – 2027 with program maturity projected to hit 50,000 tons in 2028. Changes in commodity pricing for biochar and RNG will adjust the organic material tip fee.

SUBJECT: *Organic Material Supply Agreement Recommendations*

AUTHORIZED SIGNATURES		DATE
JOINT LEADERSHIP TEAM		2/8/23
RAMSEY COUNTY ATTORNEY		2/8 /23
WASHINGTON COUNTY ATTORNEY		2/8/23

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RESOLUTION R&EB-FFC-2023-01

WHEREAS, the Ramsey/Washington Recycling & Energy Board ("R&E Board") is governed by the Amended and Restated Joint Powers Agreement by and between Ramsey County and Washington County ("Counties") dated September 22, 2022 ("Joint Powers Agreement"); and

WHEREAS, Ramsey and Washington Counties have committed to continue to protect and ensure the public health, safety, welfare and environment of each county's residents and businesses through sound management of solid and hazardous waste generated in each county; and

WHEREAS, Ramsey and Washington Counties have in place County Solid Waste Management Plans ("Management Plans") approved by the Commissioner of the Minnesota Pollution Control Agency, which state the policy goal of maintaining and improving an integrated system of solid waste management that supports Minnesota's hierarchy of solid waste management, with an emphasis on waste reduction, reuse, recycling and composting before the remaining solid waste is managed through resource recovery; and

WHEREAS, the Management Plans also include policies that affirm the processing of waste, for recovering energy, recyclables and other beneficially usable materials, as the preferred method to manage solid waste that is not reduced, reused or recycled; and

WHEREAS, the R&E Board, and its predecessor the Ramsey/Washington County Resource Recovery Project Board ("Project Board"), have conducted extensive evaluation and analysis of methods to enhance recovery of value from the waste stream and have designed system changes to assist in meeting state recycling goals; and

WHEREAS, as part of that evaluation, the Project Board and R&E Board investigated and evaluated different solid waste management processing technologies, including source separation of organics and processing of mixed municipal solid waste (MSW) to remove high-value materials; and

WHEREAS, the Scope for Resource Management, which outlines the strategic direction for solid waste management, includes management of byproducts from the Recycling & Energy Center ("R&E Center") via end-use market technologies such as anaerobic digestion; and

WHEREAS, anaerobic digestion is a proven, well-established technology used throughout North America and worldwide to manage large quantities organic materials and produce biogas that can be refined into renewable natural gas as a substitute for fossil fuels; and

WHEREAS, with designation in effect, the R&E Center receives a predictable and reliable waste stream, allowing the R&E Board to work to develop end-use markets for R&E Center byproducts, including source-separated organics and organic-rich material; and

WHEREAS, at its meeting on August 20, 2020, the R&E Board approved the two-phase solicitation process for end-use markets for byproducts from the Recycling & Energy Center and authorized the Joint Leadership Team (JLT) to issue the phase I request for proposals (RFP); and

WHEREAS, JLT convened an evaluation team of staff and multiple consultant firms to assess the proposals from multiple perspectives, using the criteria in the RFP and multiple dimensions of analysis, and multiple proposals have been identified as the top solutions to meet R&E's needs for the management of organic feedstocks using anaerobic digestion; and

WHEREAS, the evaluation team has identified a strategy for working with the top proposers to ensure that the best solution is available to R&E, and the laws governing procurement through an RFP process are too restrictive to enable that process to move forward; and

WHEREAS, the R&E Board has the authority to negotiate with vendors and make purchases directly under Minn. Stat. § 473.811, subd. 4b., and direct negotiations will enable the R&E Board to employ the identified strategy for working with finalists to ensure the best solution for R&E's needs is available; and

WHEREAS, the R&E Board (R&EB-2022-08) closed the end-use markets for byproducts from the Recycling & Energy Center RFP process and authorized the JLT to pursue and negotiate contracts with select end-use market vendors who submitted proposals as part of the phase II process using the direct purchase authority as outlined in Minn. Stat. § 473.811, subd. 4b; and

WHEREAS, R&E staff and the evaluation team have negotiated key contract terms and developed a non-binding letter of intent; and

WHEREAS, the letter of intent will be used as a basis for an organic material supply agreement with an anaerobic digestion vendor; and

WHEREAS, after a competitive negotiation period, R&E staff recommend the R&E Board agree to the proposed letter of intent from Dem-Con Companies, LLC and Hitachi Zosen Inova USA, LLC.

NOW, THEREFORE, BE IT RESOLVED, the R&E Board Facility & Finance Committee recommends that the R&E Board approve the letter of intent between the Dem-Con Companies, LLC and Hitachi Zosen Inova USA LLC joint venture and the R&E Board. BE IT FURTHER

RESOLVED, the R&E Board Facility & Finance Committee recommends that the R&E Board delegate authority to the R&E Board Chair to sign the final organic material supply agreement that will be developed in form to the key terms in the approved letter of intent.

_____
Trista MatasCastillo, Committee Chair
February 9, 2023

_____
Attest
February 9, 2023

[Dem-Con/HZI Letterhead]

_____, 2023

Mr. Fran Miron
Chair
Ramsey/Washington Recycling and Energy Board
100 Red Rock Road
Newport, MN 55055

Subject: Letter of Intent Concerning Organic Material Supply Agreement

Dear Chair Miron:

This is a non-binding Letter of Intent ("LOI") with respect to a potential transaction between the Ramsey/Washington Recycling and Energy Board, a joint powers board with its principal place of business at 100 Red Rock Road, Newport, MN 55055 ("R&E"), and the Dem-Con Companies, LLC ("Dem-Con") and Hitachi Zosen Inova USA LLC ("HZI") joint venture ("DC/HZI"), with its principal place of business at 13020 Dem-Con Drive, Shakopee, MN 55379 (R&E and DC/HZI each a "Party" and collectively, the "Parties"), where R&E will deliver organic material from its mixed municipal solid waste ("MSW") processing facility in Newport, MN (the "Recycling & Energy Center" or "R&E Center") to the DC/HZI anaerobic digestion facility ("AD Facility") to be constructed, owned and operated by DC/HZI at the Dem-Con Drive location in Shakopee.

This LOI is subject to certain terms and conditions described below and the execution of a definitive and mutually acceptable agreement for delivery and processing of organic material as set forth herein. The Parties agree to cooperate in good faith to negotiate a definitive agreement necessary to consummate the proposed transaction as further described below prior to the LOI Termination Date below.

1. Non-Binding Commitment.

Except as expressly set forth in Section 4 below, this LOI not does not create, and shall not be construed as a commitment or undertaking on the part of the Parties and is not intended to be legally binding, but instead contains the general basis upon which the Parties are willing to negotiate the terms and conditions toward a proposed Organic Material Supply Agreement ("OM Agreement"). None of the terms or conditions contained in this LOI, other than those expressly noted in Section 4, will be binding on either Party until an agreement is fully negotiated, approved by both Parties' governing boards, and executed and delivered by both Parties. This LOI does not purport to summarize all of the terms, conditions, covenants, representations, warranties and other provisions that would be contained in the proposed OM Agreement. The Parties commit that they will jointly work to negotiate a proposed OM Agreement but agree and acknowledge that there are no guarantees or assurances that the Parties will reach agreement or receive the necessary approvals.

2. Proposed Transaction.

A. Project Scope and Timelines.

Beginning in 2023, R&E will produce two types of organic material ("OM") at the R&E Center. The OM will be generated by residents, businesses and institutions within Ramsey and Washington counties [collectively "Generator(s)]." The OM will consist of organic food scraps ("OFS") that are source separated by the Generator and collected and delivered by R&E that meet the OFS acceptance specification ("OFS Specification"), and organic rich material ("ORM") separated from MSW received at the R&E Center that meets the ORM acceptance specification ("ORM Specification"). Collectively the OFS Specifications and ORM Specifications comprise the OM acceptance specifications ("OM Specifications").

DC/HZI plans to utilize OM produced by R&E Center as a feedstock for the AD Facility once it is built, commissioned and fully operational. It is anticipated that commencement of operations at the AD Facility will be in _____, 2026, provided that the key milestones outlined in the "Project Timeline," included herein as Schedule A, are achieved by the expected dates outlined therein. DC/HZI shall notify R&E in writing once DC/HZI has satisfied certain conditions, which will include, at a minimum: receiving all necessary permits for the construction and operation of the AD Facility and completing commissioning of the AD Facility such that it is ready to accept and process all OM to be supplied by R&E (the "AD Commencement Date").

The OM Agreement will establish the permitting, construction, and commissioning schedule deadlines which are preliminarily outlined in Schedule A. Semiannual AD Facility status reports will be provided to R&E by DC/HZI by June 30 and December 31 of each year until the AD Commencement Date. If any status report indicates delays in the Project Schedule attributable solely to DC/HZI or that the AD Commencement Date cannot be met beyond a commercially reasonable extension period to be mutually agreed, R&E will receive compensation for delays including any increased costs incurred by R&E resulting from such delays, and a fee for unavailable processing capacity in excess of CM Maximum Diversion limits, to be further specified in the OM Agreement.

R&E shall not be obligated to fulfill the Annual Minimum delivery obligations described below until the AD Commencement Date. OM supplied by R&E which meets the OM Specifications will be used by DC/HZI to produce renewable natural gas ("RNG"), biochar ("BC"), compost material that meets MPCA Class I or Class II standards ("CM") and other potential products, all of which must be used in a manner that allows R&E's OM Material to count toward the recycling goals established under Minnesota law for Ramsey and Washington Counties.

B. Key Terms and Conditions of the OM Agreement

In addition to the terms in Section 2.A, above, the following key terms and conditions will provide the basis for the proposed OM Agreement:

1. **Initial Processing Term and AD Term.** The OM Agreement will become effective upon execution and will subject to the condition precedent outlined in

Section B.2, below. Upon execution of the OM Agreement, and up until the AD Commencement Date, DC/HZI will accept OFS from R&E that meets the OFS Specification for composting and production of CM per the estimated schedule in Section B.3 of this LOI (the "Initial Processing Term"). R&E shall pay an initial OFS Fee of $70.00 per ton ("Interim OFS Fee") of OFS delivered and accepted for composting. The Interim OFS Fee shall be adjusted as described in Section B.9, below.

The "AD Term" shall begin on the AD Commencement Date for a period of 20-years, subject to the early termination rights outlined in Section 11. Upon mutual agreement of the Parties, the OM Agreement may be extended in up to two (2), five (5)-year increments (each a "Renewal AD Term"), following the expiration of the initial AD Term.

2. Condition Precedent. R&E's obligation to proceed with implementing the OM Agreement, other than the first year of the Initial Processing Term, will be contingent upon DC/HZI providing written confirmation to R&E, within twelve (12) months of the effective date of the OM Agreement, of an initial per ton fee for OFS ("OFS Fee") of One Hundred and Seven Dollars ($107) and an initial per ton fee for ORM ("ORM Fee") of One Hundred and Fifteen Dollars ($115) and as adjusted per Section 9. B. of this LOI ("Condition Precedent"). If DC/HZI cannot satisfy the Condition Precedent within 12 months of the effective date, R&E will have the option, but not the requirement, to terminate the OM Agreement without penalty. If DC/HZI satisfies the Condition Precedent, R&E would be bound to proceed under the terms of the OM Agreement. The 12-month deadline for satisfaction of the Condition Precedent may be extended by mutual written agreement of the Parties.

3. Interim Amount for Delivery to DC/HZI. During the Initial Processing Term, DC/HZI will accept OFS per the terms and conditions of the OM Agreement, which meets the OFS Specification, from R&E for processing and production of CM up to the tonnages outlined in the estimated schedule below:

Interim OFS Tonnage Estimates

Year		Estimated Annual Volume (Tons)
1	*2023*	*48*
2	*2024*	*3,684*
3	*2025*	*10,872*
4	*2026*	*18,720*

OFS tonnage listed in the table above that is generated after the AD Commencement Date will be digested per the AD Term requirements in the OM Agreement.

4. **Amount for Delivery to the AD Facility.** During the AD Term, R&E will initially deliver an Annual Minimum as set forth in Schedule B until it achieves delivery of Fifty Thousand (50,000) tons per year in 2028. Thereafter, the Annual OM Minimum shall be 50,000 tons per year ("Annual OM Minimum"), delivered in frequencies no greater than 1,200 tons per week of OM ("Weekly Maximum)." The Parties could modify the Annual OM Minimum amounts by mutual written agreement. The composition of the 50,000 tons per year Annual OM Minimum will be approximately 30,000 tons per year of OFS, and 20,000 tons per year of ORM, each meeting their respective OM Specification. ORM will not exceed 24,000 (20,000 plus 20%) tons per year unless agreed upon by DC/HZI. So long as R&E is meeting its Annual Minimum, R&E shall have right of first access to the AD Facility for the Annual OM Minimum amount. When constructed, the AD Facility will have an annual capacity of between 70,000 and 105,000 tons per year, the "Annual OM Maximum." DC/HZI shall have the right, at its sole discretion, to contract out or otherwise procure any capacity in excess of the Annual OM Minimum.

5. **Delivery Terms:** R&E shall deliver OM to the AD Facility at its own cost. DC/HZI will be responsible for management and utilization of the OM upon delivery. DC/HZI shall report quarterly and annually to R&E on amounts of its supplied OM. Title to and risk of loss of OM accepted by DC/HZI hereunder shall pass to DC/HZI upon unloading at the AD Facility, as the case may be; provided that, no title or risk of loss shall pass to DC/HZI with respect to any Unacceptable Waste, which will be returned to or retained by R&E at R&E's expense.

6. **Characteristics of OM.** R&E shall deliver OM to the AD Facility as either OFS or ORM, which will have different characteristics. The OFS material will be delivered in BPI certified compostable bags. The OM shall meet the OM Specifications outlined in Schedule C ("OM Specification"). R&E shall not be responsible for any further refinement. R&E shall actively work in partnership with DC/HZI to maximize the quality of OM delivered to the AD Facility such that the OM meets or exceeds the OM Specifications. As between R&E and DC/HZI, DC/HZI shall be responsible for any penalties if the disposal and processing of the OM does not comply with applicable laws. DC/HZI shall not be responsible for any such penalties related to hauling and delivery of the OM, nor shall it be responsible for any penalties that may result from R&E delivering OM with contamination in excess of the OM Specifications.

7. **Performance Standards.** DC/HZI shall achieve the following performance standards in utilizing the OM so long as the OM meets the OM Specifications:

    a. Produce pipeline quality RNG, BC, and CM, or other potential products, all of which must be successfully utilized in a manner that allows R&E's OM Material to count toward the recycling goals established under Minnesota law for Ramsey and Washington Counties.

b. DC/HZI will use a high temperature pyrolysis process to reduce PFAS contamination.

c. OM, BC and CM shall not be landfilled or used as landfill cover, so long as the OM meets the OM Specifications.

d. OFS bags will be processed in the compost and AD processes such that only a de minimus amount of the OFS bag material will be included in the residual resulting from the composting or AD processes.

e. Annual monitoring and reporting on Greenhouse Gas ("GHG") emissions reductions achieved through use of R&E OM.

f. Ongoing compliance with federal, state, and local environmental laws ("Applicable Law").

8. **Payments.** During the term of the OM Agreement, R&E will pay DC/HZI a per ton fee for OFS ("OFS Fee") and per ton fee for ORM ("ORM Fee") accepted by DC/HZI. The OFS and ORM Fees shall be collectively referred to as the OM Fee ("OM Fee"). The OFS Fee charged to R&E shall be no more than the lowest fee paid by any Public Entity, as defined in Minn. Stat. Section 16C.073, subd. 1(g), supplying organic food scrap material to the AD Facility that is delivered with plastic compostable or other bags that require pre-processing ("Governmental Supplier"), and has the same or higher actual average contamination percentage as the OFS supplied by R&E ("Pricing Limit"). DC/HZI shall honor the Pricing Limit during the Initial Processing Term. During the AD Term, DC/HZI shall not be bound by the Pricing Limit if R&E does not meet its Low Range Annual Minimum in Schedule B. Any contracts signed when the Pricing Limit is not in effect will not be bound by the Pricing Limit for the term of said contract, even if the Pricing Limit subsequently becomes effective. When the Pricing Limit is in effect, DC/HZI shall provide access for R&E to audit pricing information from its Governmental Suppliers to document compliance with the Pricing Limit.

R&E will pay the OM Fee for the Annual Minimum described in Schedule B divided equally by Twelve (12) months each year. If R&E fails to deliver in any calendar year at least the Annual OM Minimum as described in Schedule B, R&E will pay DC/HZI the OM Fee on the difference between the Annual OM Minimum and the actual tons accepted at the AD Facility ("Delivery Shortfall"). In addition, R&E will allow DC/HZI to procure additional tonnage for digestion equal to the Delivery Shortfall and R&E will pay DC/HZI an additional 25% of the OM Fee for liquidated damages from the lost sale of RNG, BC and CM per ton of the Delivery Shortfall tonnage.. R&E will not be responsible for liquidated damages from the sale of RNG, BC, and CM generated from any additional tonnages secured, by either party, for the purposes of either partially, or fully, reducing the Delivery Shortfall tonnages.

Except for scheduled maintenance outages and force majeure events, if R&E proffers but DC/HZI fails to accept in any week Eighty Percent (80%) of the Weekly Maximum ("Acceptance Shortfall"), DC/HZI shall pay R&E One Thousand Dollars ($1000) per week toward R&E's cost to dispose of the OM comprising the Acceptance Shortfall ("Liquidated Damages").

9. Payments and Adjustments.

a. The annual Interim OFS Fee will be as set forth in the table below:

Interim OFS Fee

Year	Fee Per Ton
2023	$70.00
2024	$70.00
2025	$72.00
2026	$74.15

b. Upon satisfaction of the Condition Precedent, the initial OM Fee will consist of an OFS Fee of One Hundred and Seven Dollars ($107) per ton and an ORM Fee of One Hundred and Fifteen Dollars ($115) per ton if before January 1, 2024 or as adjusted on January 1, 2024, and every year thereafter, on the first business day of the year by the percentage increase of the US Consumer Price Index (CPI)-Urban Midwest during the prior calendar year.

c. The OM Fee shall also be adjusted monthly based on the Revenue Share attached as Schedule D ("Revenue Share Schedule").

d. DC/HZI may, in its reasonable discretion, divert up to a maximum of ten percent (10%) of accepted OFS each year such that it bypasses the AD Facility and is converted into CM. R&E shall only pay the OFS Fee for such diverted OFS material.

10. Assignment. Neither Party shall be able to assign the proposed agreement without the written consent of the other Party, which shall not be unreasonably withheld.

11. Early Termination. The OM Agreement may be terminated early as follows:

a. At any time upon mutual written agreement.

b. By either Party upon written notice that the non-terminating Party has committed a material breach of the proposed agreement, provided that the material breach is not cured within Sixty (60) days after receipt of the written notice, or that such Party has not commenced to cure such material breach within sixty (60) days after receipt of the written notice with reasonable assurance that such material breach shall be fully cured within One Hundred Twenty (120) days.

c. By one Party providing Thirty (30) days advance written notice in the event of any proceedings, voluntary or involuntary, in bankruptcy or insolvency by or against the other Party, or the appointment with or without such other Party's consent of an assignee for the benefit of creditors or of a receiver for such other Party, or the going into liquidation voluntarily or otherwise for the making of a composition with creditors of such other Party; provided such proceedings are not dismissed within such 30 days.

d. By R&E upon providing Sixty (60) days advance written notice to DC/HZI in the event DC/HZI fails to accept at least Twenty-Five Thousand (25,000) tons of OM during any six-month period or fails to accept the Annual OM Minimum in any calendar year, other than as a result of R&E's failure to deliver such OM or as a result of a force majeure; provided DC/HZI does not, within such 60 days, provide reasonable assurances of future acceptance of the Annual OM Minimum, with acceptance of such assurance at the discretion of R&E; or

e. By DC/HZI upon providing sixty (60) days advance written notice to R&E in the event R&E fails to deliver or make available for delivery at least Twenty-Five Thousand (25,000) tons of OM during any six-month period or fails to deliver the Annual OM Minimum in any calendar year, other than as a result of a force majeure; provided R&E does not, within such 60 days, provide reasonable assurances of future delivery of the Annual OM Minimum, with acceptance of such assurance at the discretion of DC/HZI.

3. Additional Terms

It is anticipated that the OM Agreement will also have provisions related to the following:

1. Delivery;
2. Payment;
3. Quarterly and Annual Reporting;
4. Data Practices;
5. Audit Rights;
6. Record Retention;
7. Maintenance Obligations;
8. Representations and Warranties;
9. Performance Bond and Insurance;
10. Indemnification;
11. Force Majeure;
12. Dispute Resolution;
13. Venue and Choice of Law; and
14. Miscellaneous.

4. Miscellaneous.

A. Expenses. Regardless of whether the proposed OM Agreement is consummated, R&E and DC/HZI will pay their respective expenses, including outside legal and accounting fees, incident to the negotiation and preparation of this LOI, any definitive agreements and all other documents prepared in connection herewith or therewith, expenses, fees, and costs associated with pursuing any permits, extensions, or regulatory approvals, if any, and other expenses incident to the consummation of the proposed OM Agreement.

B. Relationship between the Parties. The relationship between the Parties under this LOI is not intended to create a partnership or joint venture under applicable law or to give rise to any fiduciary duties between the Parties or to create any right or authority to act as agent or otherwise on the other Party's behalf or to bind the other Party to agreements with third parties, except as explicitly described herein.

C. Exclusivity. In consideration of the significant efforts and resources which DC/HZI will expend to develop the AD Facility and negotiate the proposed OM Agreement, R&E shall not: (i) engage in discussions or negotiations with any entity other than DC/HZI and its representatives concerning the supply of OM Agreement inconsistent with the proposed transaction with DC/HZI.

D. Entire Agreement; Amendment. This LOI represents the entire agreement between R&E and DC/HZI with respect to the subject matter herein. This LOI may only be modified, varied, or amended by written instrument signed by the Parties.

E. Choice of Law and Venue. This LOI and the proposed OM Agreement shall be governed by, and construed in accordance with, the laws of the State of Minnesota applicable to agreements made and to be performed within such State, without giving effect to any choice or conflict of law provision or rule (whether of the State of Minnesota or any other jurisdiction) that would cause the application of the laws of any jurisdiction other than the State of Minnesota. The parties specifically disclaim application of the United Nations Convention on Contracts for the International Sale of Goods. Each Party hereby irrevocably waives, and shall cause its subsidiaries and affiliates to waive, all right to a trial by jury in any action, proceeding or counterclaim arising out of or relating to this LOI or the transactions contemplated hereby. All actions at law or in equity brought by either Party arising out of or in connection with this LOI shall be brought exclusively in a court of competent jurisdiction the State of Minnesota, and the Parties hereby waive any provision of law providing for a change of venue in such proceedings to any other jurisdiction.

F. Termination. This LOI shall terminate sixty (60) days after the effective date of the LOI, which date may be extended on mutual written agreement of the Parties (email being sufficient for such notice).

G. No Third-Party Beneficiaries. Nothing herein contained shall be construed to benefit any third parties not a signatory to this LOI, and no such parties shall have the right to enforce any of the provisions of this LOI.

H. Counterparts. This LOI may be executed in one or more counterparts, each of which shall be an original, but all such counterparts shall together constitute but one and the same instrument. A signed copy of this LOI delivered by e-mail or other means of electronic transmission shall be deemed to have the same legal effect as delivery of an original signed copy of this LOI.

Each party acknowledges and accepts this LOI as indicated by its signature affixed below.

Dem-Con/HZI

By:_____

Printed Name:_____

Title:_____

Date:_____

Ramsey/Washington Recycling &Energy Board

By:_____

Printed Name:_____

Title:_____

Date:_____

By:_____

Printed Name:_____

Title:_____

Date:_____

As to Form:

_____

By:_____

Title:_____

SCHEDULE A
PROJECT TIMELINE

The following Project Timeline is based on the current understanding of the proposed project, material supply chains, R&E estimated schedule for approval of a Memorandum of Understanding (MOU) and subsequent OM Agreement approval, and estimated state and local permitting. Any delays in approval of the LOI and OM Agreement beyond what is stated herein will extend the schedule below an equivalent amount. R&E and DC/HZI will work in partnership to expedite the permitting and approval process. However, it is important to note that much of the permitting timeline is out of the control of either of these parties and will directly impact the proposed timeline herein. DC/HZI cannot be held responsible, nor can there be any negative contractual or financial impacts due delays in permitting, so long as both parties are making their best efforts to move the process forward.

A project Gantt Chart has been developed which contains the following General Milestones:

Description	Expected Date of Completion
R&E Board Approval of LOI	December 15, 2022
OM Agreement Execution	February 1, 2023
State Permitting (18 months)	Q1 2023 – Q3 2024
Grant Procurement (14 months)	Q1 2023 – Q2 2024
Additional Volume Procurement (14 months)	Q1 2023 – Q2 2024
Local Permitting (6 months)	Q1 2024 – Q3 2024
Site Preparation (2 months)	Q3 2024
Foundation (3 months)	Q3 – Q4 2024
Building Construction (6 months)	Q4 2024 – Q1 2025
HZI Equipment Installation Start (24 months)	October 2023
Basic Engineering (140 days)	Q1 2023 – Q3 2023
Detail Engineering/Procurement (290 days)	Q3 2023 – Q3 2024
Equipment Installation (245 days)	Q4 2024 – Q4 2025
AD Commissioning (115 days)	Q4 2025 – Q1 2026

SCHEDULE B
ANNUAL OM MINIMUMS

OFS & ORM Minimum Annual Tonnage					
Year	**OFS TYP Low**	**OFS TYP High**	**ORM**	**Low OFS/ORM Total**	**High OFS/ORM Total**
2026	**16,244**	**18,720**	**20,000**	**36,224**	**38,720**
2027	**22,786**	**26,292**	**20,000**	**42,786**	**46,292**
2028	**26,634**	**30,000**	**20,000**	**46,634**	**50,000**
2029	**30,000**	**30,000**	**20,000**	**50,000**	**50,000**

The Annual Minimum shall begin on the AD Commencement Date and shall be the High OFS/ORM total listed in Schedule B for each year until 2028 at the point R&E delivers 50,000 tons of OM. Thereafter, the Annual Minimum shall be 50,000 tons per year. However, for purposes of the Pricing Limit in Section 8, the Annual Minimum shall be the Low OFS/ORM Total.

SCHEDULE C

R&E Organic Materials (OM) Specification

1. R&E Organic Materials

R&E will supply the DC/HZI digester with Organic Materials (OM) which consist of Source Separated Organics (SSO) in Durable Compostable Bags (DCBs) and Organic Rich Materials (ORM) which is screened from the Municipal Solid Waste (MSW).

2. Contaminants in Organic Materials

The OM shall not contain any substances that can contaminate the output, such as hazardous waste, heavy metals, ash, treated wood, glass, non-organic fertilizers, chemicals, toxins, etc., that will cause the end products to be outside the requirements of Minnesota Rule specifications for compost, the International Biochar Initiative (IBI) specifications for biochar, or the United States Environmental Protection Agency (EPA) hazardous waste standards.

3. Process Damaging Substances

The OM shall be free of any process damaging substances, which may inhibit or stop the biological processes during digestion, including, but not restricted to pesticides, medical drugs (including all sorts of antibiotics), solvents, etc. If such substances are present in the OM all performance and process guarantees are void and the load will be rejected.

4. Organic Materials Characteristics

The design and process calculations, related to the Kompogas® Anaerobic Digestion, are based on the characteristics of the OM delivered to the plant and ultimately fed (after pre-treatment) into the Kompogas® Anaerobic Digester.
OM loads not in compliance with the limiting values listed in Tables below are subject to rejection and/or additional charges.

TABLE 1: Organic Waste Characteristics for Organic Materials

Parameter	Limiting value [1]	
	Min	Max
Total Solids [%TS of OM by weight]	25%	90%
Volatile Solids [% of TS by weight]	50%	100%
Biogas Yield [Nl of biogas per kg]	150	
pH-value [-]	2.0	12.5
Content of impurities in DCBs [% by volume] [1]	0%	5%
Content of impurities in ORM [% by weight][1]	0%	30%
Particle dimensions, excluding length of long pieces [inches]	0	2.5
Long Pieces length [inches] [2]	0	8
Content of Long Pieces [Volume% of OM] [2]	0	10

[1] Impurities are defined as non-organic or plastics or heavy particles (e.g. sand, gravel, stones, glass, metal, hard plastic, seashells, fruit pips, etc.)
[2] Long pieces per length limits defined in this table.

5. Heavy Metals

Heavy metals present in the OM will be present in the end products produced regardless of digestion process (i.e. high solids, low solids, etc.), pyrolysis, mechanical screening/processing, etc. There are standards set by the EPA, the State of Minnesota, and the IBI for the heavy metals content of the end products. Based on these limitations, the following table was developed which provides the maximum heavy metals content in the OM being delivered to the facility.

TABLE 2: Organic Materials Acceptance Levels – Heavy Metals

Parameter	Feedstock Limiting Value Not To Exceed (mg/kg)*
Arsenic (As)	1.06
Cadmium (Cd)	3.90
Chromium (Cr)	111.29
Cobalt (Co)	28.72
Copper (Cu)	124.95
Lead (Pb)	29.47
Mercury (Hg)	5.00
Molybdenum (Mo)	1.80
Nickel (Ni)	42.00
Selenium (Se)	4.52
PCB	0.60
Zinc (Zn)	280.00

*These Feedstock Limiting Value Not To Exceed numbers were set based on using the more conservative of the EPA biosolids land application rates, IBI standards, and MPCA Class I compost standards and a concentration factor of 10.

SCHEDULE D
REVENUE/COST SHARE SCHEDULE

1. Revenue Share of BC. Any revenue obtained by DC/HZI through the sale of BC generated by R&E's prorata share shall be shared with R&E such that for every Five Dollars ($5) per ton in revenue above One Hundred and Thirty Dollars ($130) per ton in BC revenue, the OM Fee shall be reduced by an estimated one dollar ($1.00) per ton. Similarly, for every Five Dollars ($5) per ton decrease in revenue below One Hundred and Thirty Dollars ($130) per ton in BC revenue, the OM Fee shall be increased by an estimated one dollar ($1.00) per ton. The estimated changes in the OM Fee resulting from a change in value of BC will be established as part of the OM Agreement based on the agreed upon terms and conditions.

2. Revenue Share of RNG. The sale price for RNG includes all attributes (state, federal, and other credits) in addition to the sale of the gas molecules for a total blended sale price for RNG ("Effective RNG Rate"). The initial Effective RNG Rate will be established upon DC/HZI meeting the Condition Precedent and there is no revenue or risk share at the initial Effective RNG Rate set point. The risk and reward revenue share agreement shall be applied to any changes in the initial Effective RNG Rate. Any One Dollar ($1.00) increase in the Effective RNG Rate generated by R&E's prorata share above the initial Effective RNG Rate shall yield a One Dollar and Seventy Cents ($1.70) reduction in the OM Fee. Similarly, any One Dollar ($1.00) decrease in the Effective RNG Rate generated by R&E's prorata share below the initial Effective RNG Rate shall yield a One Dollar and Seventy Cents ($1.70) increase in the OM Fee. .

3. Revenue Share of Green Hydrogen and New Technologies Benefits. If the AD Facility is adapted to produce hydrogen, or any other product resulting from new technological developments, the OM Fee will be adapted to share revenue via a reduction in the OM Fee to be negotiated by the Parties at the time the AD Facility is adapted to produce hydrogen, or another new product.

116011122.15

Memorandum

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January 23, 2023

TO: Michael Reed and David Brummel, Ramsey/Washington Recycling & Energy (R&E) Joint Leadership Team (JLT)

CC: Cami Van Abel, Foth Infrastructure & Environment, LLC (Foth)

FR: Nathan Klett, Foth

RE: End Use Markets Vendor Technical Evaluation

1. Executive Summary

Foth has been assisting R&E through the technical components of evaluating the responses to the End Use Markets Request for Proposals (RFP), responses to the End Use Markets Phase II RFP, and due diligence process associated with evaluating the preferred vendors. This memorandum provides a summary of the Anaerobic Digestion (AD) technology proposed by the Dem-Con/Hitachi Zosen proposal team and how the technical aspects of the proposed technology meets the needs of R&E.

2. Background

R&E issued an RFP and received responses in the fourth quarter of 2020. An evaluation team reviewed the responses and invited a selected group of respondents to provide a response to a Phase II RFP issued in the second quarter of 2021. Responses to the Phase II RFP were received in the third quarter of 2021 and were evaluated by the same evaluation team. There were three respondents selected for further due diligence. Due diligence included site visits to respondent's reference facilities during the second quarter of 2022. Through the remainder of 2022, negotiations with the top two respondents took place to develop a Letter of Intent (LOI) with each of the respondents. Also, during this negotiation process, one of the respondents had a new facility begin operations on the east coast, so a site visit to this facility was conducted in early 2023. Through this process, the top ranked respondents were those that were proposing to use an AD process to produce renewable natural gas (RNG) and digestate from the organics collected in food scrap bags (FSBs) and the organic rich material (ORM) that will be produced at the R&E Center once the recyclable recovery system (RRS) is operational and the FSB program is rolled out. The technology proposed by the Dem-Con/Hitachi-Zosen team is summarized in the following paragraphs and is considered a high solids or dry AD system.

3. High Solids (Dry) AD

In a high solids or dry AD system, the organic materials typically enter the AD process at between 15 and 40% solids content. The higher solids content is generally representative of the organics separated from MSW in the form of FSBs and ORM that will be captured at the R&E Center. The general process flow would involve initially receiving the FSB and ORM in an organic

waste receiving pit where it will be loaded into a shredder for size reduction and pass by a magnet for potential metals removal. The organic waste will then enter the digester where it has a retention time of approximately 14-days during which time gas is being produced and captured and cleaned to produce RNG. Once the digestate is removed from the digester it is dewatered and cured to produce compost, or in the case of the Dem-Con/Hitachi Zosen team, to produce bio-char (discussed in more detail further in this summary memorandum).

During the due diligence process, the evaluation team and several Commissioners traveled to a reference facility in Sweden where the facility was operating using the technology from Hitachi-Zosen. This facility received relatively clean source separated organics as well as pre-consumer organics from various commercial/industrial processes. The facility produced RNG as well as a digestate material that was transferred to on-site compost windrows and screened into a clean compost. Another facility employing the Hitachi-Zosen technology in San Luis Obispo, California where the facility was successfully produced RNG and clean compost from a clean yard waste feedstock was visited in the past by several members of the evaluation team. The Hitachi-Zosen technology is currently being used at a facility in Spain for digesting the organic fraction of MSW. The digestate was being used as a soil amendment at vineyards until recently when heavy metals were detected above the regulatory requirements in Spain.

Some of the advantages of a high solids AD system include:

- Require significantly less energy input into the process as compared to low solids (wet) AD and typically have more energy available for export.
- The organics separated from MSW may be able to be used directly in a high solids AD process with minimal liquids addition.
- Digestate produced requires significantly less drying than wet AD and in some cases can go directly to a compost pad for finishing prior to land application.
- Requires significantly less management of wastewater and allows for recirculation of a significant portion of the process water.

Some disadvantages of a high solids AD system include:

- The potential addition of bulking agents (yard waste) for system efficiency and optimal feedstock mixture (this will be a component of the Dem-Con/Hitachi-Zosen facility).
- A high solids system cannot handle liquids as well as wet AD systems which may limit the available feedstock options.
- Higher variation in biogas and heat production requires continual management.
- May have higher capital and operational costs compared to wet digestion.

In addition to the AD process the Dem-Con/Hitachi-Zosen team is proposing, the team is planning to include a pyrolysis component for management of the digestate (when not composting the digestate) to produce a bio-char product. The next section will further discuss pyrolysis and bio-char.

4. Pyrolysis

Pyrolysis is the thermal degradation of an organic material in the absence of oxygen. The process consists of heating the carbon source in an oxygen-free environment at temperatures of 400 degrees Celsius or above until the biomass is thermally decomposed into combustible gases, bio-oil and bio-char. Most of the combustible gases produced can be condensed, and

converted into a crude oil, and/or other petroleum-based products. When this crude oil is refined, the most common co-products produced are fuel, lubricants, waxes, and Naphtha. The amount of gas, bio-oil or bio-char produced is dependent on the feed stock, temperature and heat rate of the pyrolysis process.

4.1 Feedstock

Different carbon source materials can be used as feedstock in the pyrolysis process. When plastics are used as feedstock the main goal is to produce fuel. On the other hand, when biomass is the feedstock, bio-char is the main desirable product.

A wide range of biomass feedstock can be used in pyrolysis. The efficiency of the process depends highly on the moisture content and the particle size of the feedstock used. Due to the need for rapid heat transfers through the feedstock, the feedstock particles should have a maximum size of 2 mm. In addition, the moisture content should be kept at 10% to achieve higher performance[1]. This may require the Dem-Con/Hitachi-Zosen team take additional dewatering and sizing steps to make sure the digestate moisture content is at or below 10% and has an optimal particle size.

When waste residues are used as feedstock, their decomposition favors fast heating rates with yields of more gases and less production of char.[2]

Digestate has a fast degradation process during pyrolysis due to its relatively high volatile matter content. A pyrolysis pilot study using digestate as feedstock showed that about 5% of digestate was converted to gas, while about 50% and 40% was converted to liquid and char, respectively[3].

4.2 Bio-char

The bio-char is a combination of non-combustible materials and carbon that can be used as a soil amendment increasing the soil's ability to retain water, nutrients, and agricultural chemicals. Bio-char can also be used in the manufacture of activated carbon filtration media, which has been used for removal of PFAS in certain applications.

4.3 Contaminant Reduction

A study undertaken by the United States Environmental Protection Agency (EPA) produced some results on the use of pyrolysis to destroy PFAS-contaminated media and waste. According to the study, the high temperatures and residence times achieved during pyrolysis followed directly by combustion of the heavy oil output could potentially destroy PFAS. [4] There was no mention of PFAS present in the bio-char. However, most of the available information of the pyrolysis process regarding contaminants destruction is under the academic scenario since

[1] https://www.altenergymag.com/article/2009/02/biomass-pyrolysis/502/
[2] https://onlinelibrary.wiley.com/doi/full/10.1002/ese3.503
[3] Opatokun, S.A.; Kan, T.; Al Shoaibi, A.A.; Srinivasakannan, C.; Strezov, V. Characterization of food waste and its digestate as feedstock for thermochemical processing. *Energy Fuel* **2016**, *30*, 1589–1597.
[4] https://www.epa.gov/sites/default/files/2021-01/documents/pitt_research_brief_pyrolysis_final_jan_27_2021_508.pdf

most technology providers consider this data proprietary and the existing pyrolysis facilities are in relatively early stages of development.

In regard to the fate of metals in the pyrolysis process, the literature shows that in general, more volatile heavy metals such as lead, zinc, cadmium, and selenium would tend to vaporize and recondense on fine particles. The remaining metals would mostly follow a path into the bio-char. A specific study on woody biomass with cadmium and copper content showed that about 60-70% of these metals were bound to the bio-char[5]. Therefore, the pyrolysis process does not specifically destroy metals, but rather the metals are found in the bio-char or other fine particles remaining after the pyrolysis process that would need to be evaluated prior to land application of the bio-char as a soil amendment.

In regard to air emission regulations, it was found that no regulations are currently in place for the use of pyrolysis on non-hazardous waste in Minnesota.

Other pyrolysis outputs that yield less market value and that can be considered residue are non-condensable gases such as CO_2, CO, H_2, and light hydrocarbons. When feasible, these non-condensable gases can be captured and re-enter the pyrolysis process as energy source, otherwise they need to be safely flared. However, hydrogen may have value if there is a market available.

The Dem-Con/Hitachi-Zosen team's proposed use of pyrolysis may have benefits in terms of destruction of contaminants that may be present in the ORM in particular. However, no specific examples of using a pyrolysis process with the digestate from FSBs or ORM as a feed stock were provided to confirm contaminant destruction or bio-char quality, which is of concern since the Dem-Con/Hitachi-Zosen proposal relies on the sale of the bio-char as a revenue source, which will impact tipping fees paid by R&E. There is also concern with the reasonably stringent contamination requirements proposed by the Dem-Con/Hitachi-Zosen team for the ORM, since the quality of this material is variable and dependent on the inbound waste stream. Finally, the Dem-Con/Hitachi-Zosen team is considering the production of hydrogen (H_2) from the pyrolysis process if a hydrogen market becomes available and is cost effective which may impact the tipping fees for the R&E Center.

[5] https://bioresources.cnr.ncsu.edu/resources/potential-of-pyrolysis-for-the-recovery-of-heavy-metals-and-bioenergy-from-contaminated-broussonetia-papyrifera-biomass/#:~:text=Fate%20of%20Heavy%20Metals%20During,products%20was%20not%20influenced%20significantly.

MEMORANDUM

February 9, 2023

TO: Ramsey/Washington Recycling & Energy Board
Facility & Finance Committee

FROM: Kevin Johnson, Partner
kevin.johnson@stoel.com
612-373-8803

RE: **Analysis of Proposed Letter of Intent with Dem-Con/Hitachi Zosen Inova**

I. Introduction

The purpose of this memo is to provide an overview and risk analysis of the key provisions of the proposed Letter of Intent (LOI) for a twenty (20) year organic material supply agreement (OM Agreement) with a joint venture consisting of Dem-Con Companies, LLC and Hitachi Zosen Inova USA LLC (DC/HZI). The LOI has been proposed by Ramsey/Washington Recycling & Energy Board (R&E) staff for approval by the R&E Board.

First, it is important to note that the LOI is not a binding agreement between R&E and DC/HZI. Although certain provisions specifically identified in the LOI related to the negotiation process are binding, the LOI instead provides a non-binding outline of the key provisions to be embodied in an OM Agreement to be negotiated after approval of the LOI. There will not be a final OM Agreement unless and until both parties execute that agreement.

A key feature of the LOI is that it does provide an exclusive period to negotiate with just DC/HZI for a final OM Agreement. R&E has conducted an extensive request for proposal process that resulted in direct negotiations with two potential anaerobic digestion project developers. By executing this LOI, R&E will have decided to exclusively negotiate a final agreement with DC/HZI until an agreement is reached, or the end of a 60-day negotiation period, whichever is sooner. The 60-day negotiation period could be extended of both parties so agree.

II. Overview of Key Provisions of Proposed Transaction

The LOI has two basic time periods correlating to R&E's delivery of organic materials in conjunction with DC/HZI's development of an anaerobic digestion facility (AD Facility), which is to be located at the current Dem-Con recycling and solid waste management facility in Shakopee, Minnesota.

R&E will be producing increasing amounts of organic food scrap (OFS) material from its new food scrap bag (FSB) collection program over the next several years, and the LOI sets out a four-year period beginning this year in which OFS material will be composted. In addition, R&E will later this year begin producing organic-rich material (ORM) at the Recycling & Energy Center

(R&E Center) from the new processing line that was recently installed. However, the ORM material will only be suitable for the AD Facility, which is not projected to begin operations until 2026.

The LOI establishes an interim period under which the OFS will be addressed via composting at the Shakopee Mdewakanton Sioux Community (SMSC) composting facility pursuant to an arrangement between DC/HZI and SMSC. The fee to be paid by R&E for composting of the OFS is set out in the LOI for the interim period, beginning at Seventy Dollars ($70.00) per ton in 2023 and escalating to Seventy-Four Dollars and Fifteen Cents ($74.15) per ton in 2026.

A. Condition Precedent

It is extremely important to note that before any obligations are imposed on R&E, DC/HZI must first meet a condition precedent within twelve months from the effective date of the OM Agreement to certify to R&E an initial per-ton fee for OFS at the AD Facility of One Hundred and Seven Dollars ($107.00) per ton, and an initial per ton fee for ORM of One Hundred and Fifteen Dollars ($115.00) per ton at the AD Facility. The OFS and ORM fees blended together are called the OM Fee. If DC/HZI cannot satisfy this condition within twelve (12) months of the effective date of the OM Agreement, R&E will have the option, but not the requirement, to terminate the OM Agreement without penalty. If DC/HZI satisfies the condition, R&E would be bound to proceed under the terms of the agreement.

B. Annual Minimum Deliveries

The second key period of the LOI is the AD Term, which begins when DC/HZI has commissioned its AD Facility and is ready to receive OFS and ORM from R&E. The ORM material will need to be landfilled until the time at which DC/HZI can accept it at the AD Facility.

Assuming the condition precedent on pricing can be met by DC/HZI within the 12-month time frame, R&E would then become obligated to meet delivery obligations for both OFS and ORM. The LOI provides a schedule for annual minimum amounts to be delivered upon commencement of the AD Facility, beginning in 2026 at 38,720 tons total combined OFS and ORM and ramping up to 50,000 tons in 2028, at which point the annual minimum amount would remain at 50,000 tons per year.

C. Delay in AD Facility Commencement

The OM Agreement will establish permitting, construction, and commissioning deadlines that are preliminarily outlined in the LOI. DC/HZI will provide semi-annual status reports to R&E on development of the AD Facility until the AD commencement date. If a status report indicates delays in the schedule attributable solely to DC/HZI, or that the AD commencement date cannot be met beyond a commercially reasonable extension period, R&E will receive compensation for the delays, including any increased costs incurred by R&E resulting from such delays, and a fee for unavailable processing capacity.

D. OM Specifications

The material to be delivered must meet certain characteristics, deemed OM Specifications. The LOI sets out the specifications for both OFS and ORM. OFS must not exceed five percent (5%) contamination, and the ORM must not exceed thirty percent (30%) contamination . There are more detailed standards for heavy metals, as well as other contamination limits.

E. Performance Standards

DC/HZI must meet certain performance standards, including producing pipeline quality renewable natural gas (RNG), compost material (CM), as well as biochar (BC) material. DC/HZI will utilize pyrolysis technology to produce BC material from the digestate material resulting from the AD process. Class I or II CM will also be allowed as an end product, so long as it can meet the recycling goals established under Minnesota law for Ramsey and Washington Counties. DC/HZI is planning to utilize pyrolysis to mitigate potential PFAS contamination and to enhance the marketability of the digestate material from the AD process. DC/HZI commits to not using any OM as landfill cover or landfilling of OM, so long as the R&E meets the OM specifications. With regard to the OFS bags, DC/HZI will manage and recover them via the AD and pyrolysis processes. DC/HZI commits that only a small amount of bag material would be included in the residual, primarily from the composting process. DC/HZI also commits to annual monitoring and reporting on greenhouse gas emissions reductions achieved through use of the OM from R&E.

F. Payments and Revenue/Cost Sharing

The LOI sets out a somewhat complex structure for R&E payments to DC/HZI. As noted previously, the initial payments will be for composting of the OFS material under a predetermined schedule. However, assuming the initial OM fees can be met under the condition precedent, such fees will begin to escalate at that time on an annual basis, based upon the annual Consumer Price Index percentage increase from the prior year.

In addition, the OM Fee will be adjusted monthly based upon a revenue/cost sharing formula established in the LOI, to be further developed as part of the OM Agreement. The revenue/cost sharing will occur for both RNG and BC. For RNG, there will be an initial RNG rate established upon DC/HZI meeting the condition precedent. Then, during the AD Term every One Dollar ($1.00) increase in the initial RNG rate shall yield a One Dollar and Seventy Cents ($1.70) reduction in the OM Fee. Similarly, every One Dollar ($1.00) decrease in the RNG rate below the initial rate shall yield a One Dollar Seventy Cents ($1.70) increase in the OM Fee.

For BC, any revenue obtained by DC/HZI through the sale of BC will be shared with R&E such that every Five Dollars ($5.00) per ton in revenue above One Hundred and Thirty Dollars ($130.00) per ton in BC revenue shall reduce the OM Fee by an estimated One Dollar ($1.00) per ton. Similarly, every Five Dollars ($5.00) per ton decrease in revenue below $130 per ton, shall increase the OM Fee by an estimated One Dollar ($1.00) per ton.

The revenue/cost sharing schedule also anticipates that if the AD Facility is adapted to produce hydrogen, or any other product resulting from new technological developments, the OM fee will

be adapted to share revenue via a reduction in the OM fee to be negotiated by the parties at the time the Facility is adapted to produce such products.

G. Pricing Limit

With regard to the OM Fee, there is also a pricing limit (most favored nation) provision under which DC/HZI commits to not provide a lower priced OM Fee to any other public entity, as defined in the Minnesota Statutes, that is delivering similar organic material that has the same or higher average contamination as material supplied by R&E. However, if R&E is not meeting its low range annual minimum amounts, DC/HZI will not be bound by the pricing limit and may enter into contracts with any public entity supplier at OM fees less than R&E's while R&E is not meeting its lower range annual minimums.

H. Delivery Shortfall

If R&E fails to deliver the annual minimum over a 12-month period, R&E must still pay for the tons obligated under the annual OM minimum. Further, R&E must pay DC/HZI an additional Twenty-Five Percent (25%) of the OM Fee as liquidated damages for the lost sale of RNG, BC and CM for the delivery shortfall tonnage. DC/HZI may procure additional tonnages from third parties to make up some or all of the delivery shortfall. The tonnage amount for the liquidated damages shall be measured by the actual delivery shortfall after DC/HZI and R&E have made efforts to obtain additional OM from third parties.

I. Acceptance Shortfall

At the same time, if DC/HZI fails to accept in any week Eighty Percent (80%) of the weekly maximum, which is deemed an acceptance shortfall, DC/HZI shall pay R&E One Thousand Dollars ($1,000.00) per week as liquidated damages towards R&E's cost to dispose of the OM that was not accepted.

In addition, DC/HZI, in its reasonable discretion and in particular during AD Facility shutdowns, may divert up to a maximum of Ten Percent (10%) of OFS each year such that it bypasses the AD Facility and is processed into CM. However, R&E shall only pay the OFS Fee for such diverted OFS material.

J. Early Termination

The LOI provides for potential termination of the OM Agreement at any time by mutual written agreement of the parties or in the event of a bankruptcy of either of the parties. There is also an early termination option in the event of an uncured default after One Hundred and Twenty (120) days, or in the event that there is a delivery shortfall of Twenty-Five Thousand (25,000) tons during any six-month period, or in the event there is an acceptance shortfall of at least Twenty-Five Thousand (25,000) within any six-month period.

K. Other Provisions

In addition, it is anticipated the OM Agreement will have further details and additional provisions relating to delivery and acceptance of OM, payments, quarterly and annual reporting,

data practices, auditing, record retention, maintenance obligations, representations and warranties, performance bond and insurance, indemnification, force majeure, dispute resolution, venue, choice of law, and other miscellaneous provisions.

III. Risk Analysis

A. 12-Month Condition Precedent

The 12-month condition precedent related to assurance of the initial pricing is needed by DC/HZI to determine if grant funds and other benefits from recent federal and state legislation can be brought to bear to keep the initial fees at the levels set forth in the LOI. The risk of this approach is that DC/HZI cannot meet the condition precedent within the 12-month period and thus one year will have been lost in the effort to secure an AD project. There is also the potential that DC/HZI is not able to meet the initial pricing but can come close and requests that R&E accept somewhat higher initial pricing. While R&E would not be obligated to accept this, it could be viewed as necessary to proceed with the higher initial pricing so as not to have lost the prior 12-month period.

B. OFS Composting

DC/HZI will subcontract composting of OFS material, including food scrap bags, to SMSC in Shakopee for the initial pre-AD term, and for periods when the AD Facility cannot accept OFS material. Although DC/HZI has committed to having only a de-minimus amount of food scrap bag material (primarily knots and seams) ending up in compost residual, it is possible that greater amounts of bag material could end up in compost residual and be landfilled. In this event, contractual remedies will need to be pursued to minimize and resolve the problem.

C. OM Specifications

As previously noted, R&E will initially be delivering OFS material for composting while the AD Facility is being developed. That material must meet a specification of five percent (5%) contamination or less. Because R&E is just about to begin collecting food scrap bags and of the program will be through voluntary participation and reliance upon residents to provide relatively clean food scrap material, there will be initial uncertainty regarding ability of R&E to meet the 5% contamination limit. As such, R&E and Ramsey and Washington Counties must be prepared to diligently work through communications and other methods to ensure that the contamination limit can be met on the food scrap material. The ORM is also not currently being produced, but production will begin later this year after completion of the processing line at the R&E Center. Efforts will need to be made to test the material to make sure that it can meet the ORM specifications that are discussed in the LOI and will be established in the OM Agreement. It is possible that ORM material will not initially be able to meet the specifications and further expenditures for additional processing enhancements may be required by R&E to ensure that the ORM material can meet specifications once it is eligible for delivery to the AD Facility.

D. Pyrolysis Technology

As previously noted, DC/HZI plans to utilize pyrolysis technology to process digestate material produced from the AD process into BC material. It is expected that the BC material will have

substantially greater value than the digestate material, and DC/HZI has provided initial evidence of a market for the material at approximately One Hundred Thirty Dollars ($130.00) per ton. However, there can be no assurances that the pyrolysis technology will be able to produce BC material of high enough quality to obtain the anticipated market value. In such event, DC/HZI will not be meeting its performance standards and remedies will need to be exercised under the OM Agreement either in the form of changes to the OM Fee structure or requirements imposed upon DC/HZI to improve the pyrolysis technology to the point that it can meet prior expectations. At the same time, if the pyrolysis technology performs as hoped, it could have the impact over time of mitigating potential regulatory risks related to utilization of digestate material due to increasing regulations on contaminants of concern, in particular PFAS chemicals. The U.S. Environmental Protection Agency (EPA) and Minnesota Pollution Control Agency (MPCA), as well as federal and state legislative bodies, are increasingly focused on tighter regulation of PFAS contamination in the waste management system. If the pyrolysis technology through conversion of digestate into BC can substantially mitigate the regulatory risks presented by PFAS and other contaminants, it could prove to be a significant long-term solution to a growing problem.

E. Put or Pay Annual Minimums

DC/HZI has expressed strong concerns about the ramp-up nature of R&E's annual minimum delivery obligations. Because R&E is not currently producing either OFS or ORM, there are risks as to whether R&E can meet the annual minimums and, if it cannot, will be required to pay for processing of material that it is not supplying, as well as the Twenty-Five (25%) additional fee as liquidated damages. In order to mitigate this risk, significant efforts to accomplish needed participation in the FSB program will be essential.

F. Revenue/Cost Sharing

There is also potential risk to R&E related to the revenue/cost sharing model. As outlined in the memo from Ehlers, there is a large potential upside if the RNG market is strong throughout the contract period. However, there is also significant downside risk if the market declines. In particular, the most significant risk appears to be any potential loss of current federal or state regulatory or financial subsidies for production of RNG. If such programs are curtailed or eliminated, the potential for the RNG market to decline is strong and, therefore, the potential for the price paid by R&E to increase, potentially significantly, would result. As such, R&E must be prepared to take the risk associated with the revenue/cost sharing arrangement and establish one or more mechanisms to have the financial resources to be brought to bear in the event of a decline in the RNG market. Such options could include establishment of a larger operational reserve, funded either through tipping fee revenue, contribution of county environmental charge revenues, or other sources such as federal or state grant funds or appropriations.

MEMORANDUM

TO: Ramsey/Washington Recycling & Energy

FROM: Bruce Kimmel, Senior Municipal Advisor

DATE: February 6, 2023

SUBJECT: Financial Considerations of Dem-Con/HZI Proposal for Anaerobic Digestion Facility

Ramsey/Washington Recycling & Energy (R&E) has asked Ehlers, in our role as R&E's fiscal consultant, to evaluate two key financial considerations inherent in the Dem-Con/HZI proposal to fund, construct, and operate an anaerobic digestion (AD) facility for which R&E would serve as the primary feedstock provider.

Revenue Sharing Model

The first consideration is the "revenue sharing" component that Dem-Con/HZI has proposed as part of a future contract with R&E. With this mechanism, to the extent that market prices for renewable natural gas (RNG) and/or biochar exceed baseline levels set in the contract, Dem-Con/HZI would share a portion of the resulting benefit with R&E via reduced AD facility processing fees. As such, the sharing agreement would not hinge on actual Dem-Con/HZI production or resulting revenue generation, but rather the movement of RNG and biochar prices as defined in the future contract.

Ehlers believes the market price-based mechanism is superior to approaches based on AD facility revenues because the calculations will be more transparent and have far fewer inputs that could lead to future disagreements between R&E and Dem-Com/HZI. That said, the benefit sharing model introduces a degree of fiscal uncertainty that would not exist in a fixed processing fee model. We do not know how future RNG and biochar prices will change over future months and years, and while historical RNG prices firmly suggest future price increases, it is also possible that this upward trend line will be interrupted with indeterminate periods of no movement and/or downward movement.

Ehlers prepared four scenarios to gauge how a range of hypothetical future RNG price changes would affect (a) the AD facility processing fee that R&E would be obligated to pay to Dem-Com/HZI and then also (b) the REC tipping fee that R&E would need to collect from solid waste collectors / haulers. All scenarios assume unchanged biochar prices, focusing only on the effects of RNG price changes, and are detailed in the attached cashflow projections.

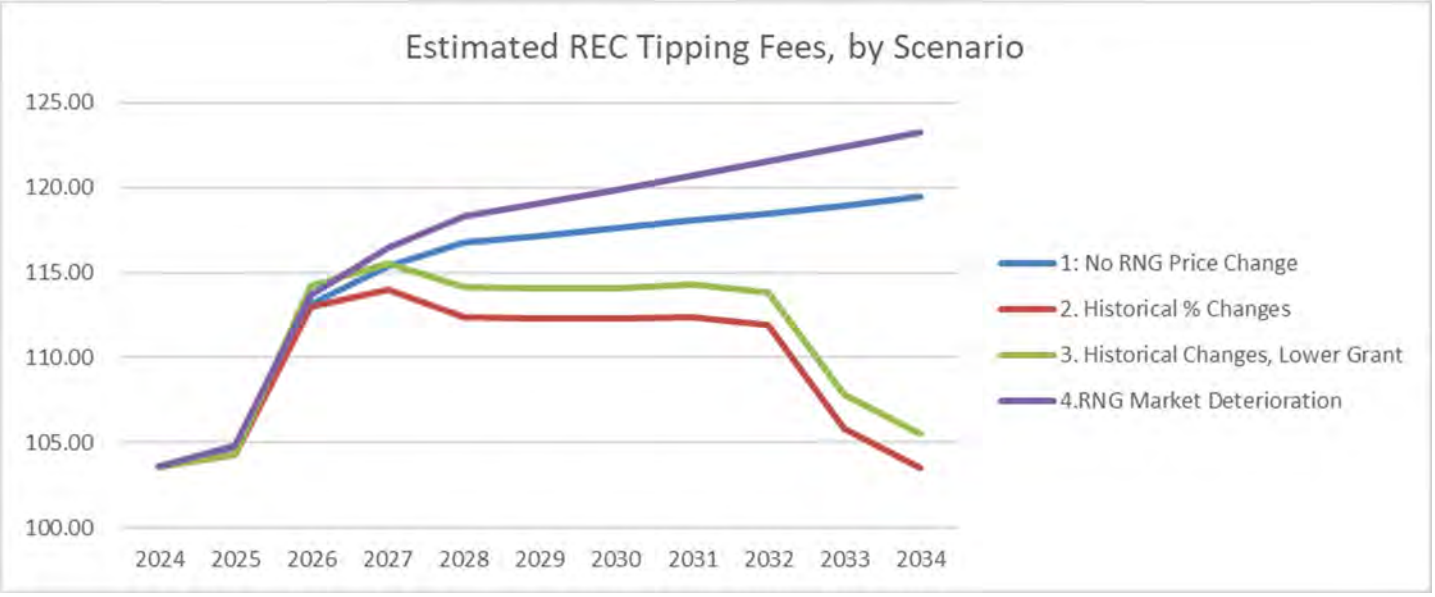
Scenario 1 assumes no future change in RNG prices from the $40 per Million BTU (MMBTU) baseline price that we drew from current market conditions.

Scenario 2 forecasts future RNG price changes using the percentage changes over the past 10 years of RNG market activity.

Scenario 3 is similar to Scenario 2 but assumes the project garners $6 million of grant funding instead of the $12.5 million that is assumed in the current Dem-Con/HZI pricing model.

Scenario 4 assumes $2 annual decreases in RNG prices, dropping the effective rate from the estimated $40 per MMBTU to $20 per MMBTU over 10 years.

The estimated REC tipping fees for these four scenarios are shown in the chart below. This estimated fees reflect just the impact of the AD facility and not other factors that could cause changes in future REC tipping fees.



Looking at 2034, the lowest projected REC tipping fee is $103.50 (Scenario 2) and the highest is $123.23 (Scenario 4), for a maximum difference of just under $20 per ton. It is impossible to know precisely what the average effective net price for RNG will be in 2024, much less 2034. That said, looking over a decade of future AD facility operations, we believe it is reasonable to expect that RNG price inflation will at least offset inflationary increases in the AD facility processing fee – and in turn achieve relative stability in the REC tipping fee.

Fiscal Capacity for Project

The second issue that Ehlers has evaluated is Dem-Con/HZI's capacity to successfully finance its proposed AD facility – or more specifically, whether there are any "red flag" concerns about the firm's fiscal ability to meet the requirements of its letter of intent with R&E. Our review here focused solely on assessing the financial capacity of each firm to develop and operate their proposed AD facilities, and not on the technical, construction timing, or logistical aspects of either proposal.

In conducting our review, Ehlers first re-evaluated the financial aspects of Dem-Com/HZI's responses to R&E's Phase 1 and Phase 2 requests for proposal (RFPs) as well as our notes from the detailed fiscal discussions that we had with each firm earlier this year. We also queried several public records databases and internet search engines for news and information relating to each firm's fiscal health.

In our review, we did not find any information that caused us to question Dem-Com/HZI's capacity to develop its proposed AD facility as anticipated. In addition, HZI's recent announcement of a $7 million dollar expansion of its North American headquarters in Tennessee reflects that firm's increasing investment and participation in projects like its proposed joint venture with Dem-Con.

Further, our brief review of other recent renewable energy projects of various types indicates strong interests among banks and other financial institutions in financing such deals, which is relevant to Dem-Con/HZI's plans to utilize bank financing for the majority of its anticipated net capital cost.

Thank you for the opportunity to assist R&E with this financial review, and please contact me at bkimmel@ehlers-inc.com or (651) 697-8572 with any questions and/or to request further analysis.

AD Facility - Comparative REC Tipping Fee Impact Analysis

DC HZI Scenario 1: $115 Starting ORM Charge, $107 Starting OFS Charge, No RNG or Biochar Price Changes

		Estimated Inflation:	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Calendar Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Estimated Inputs												
	ORM to AD Facility (Tons)			20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	ORM Processing Charge / Ton	115.00	118.45	122.00	125.66	129.43	133.32	137.32	141.44	145.68	150.05	154.55
	OFS to AD Facility (Tons)	3,684	10,872	18,720	26,292	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	OFS Processing Charge / Ton	70.00	72.00	113.52	116.92	120.43	124.04	127.76	131.60	135.54	139.61	143.80
Estimated R&E Expenses												
	ORM Processing Charges	-	-	2,440,070	2,513,272	2,588,670	2,666,330	2,746,320	2,828,710	2,913,571	3,000,978	3,091,008
	OFS Processing Charges	257,880	782,784	2,125,025	3,074,108	3,612,883	3,721,270	3,832,908	3,947,895	4,066,332	4,188,322	4,313,972
411201	To be Determined	-	-	-	-	-	-	-	-	-	-	-
	Total Expenses	**257,880**	**782,784**	**4,565,095**	**5,587,380**	**6,201,554**	**6,387,600**	**6,579,228**	**6,776,605**	**6,979,903**	**7,189,300**	**7,404,979**
Estimated Revenue Sharing (Expense Offset)												
	Assuming No Revenue Sharing											
	Annual Revenue Requirement	**257,880**	**782,784**	**4,565,095**	**5,587,380**	**6,201,554**	**6,387,600**	**6,579,228**	**6,776,605**	**6,979,903**	**7,189,300**	**7,404,979**
	Required REC Tipping Fee Revenue	257,880	782,784	4,565,095	5,587,380	6,201,554	6,387,600	6,579,228	6,776,605	6,979,903	7,189,300	7,404,979
divided by:	Tons Budget	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000
equals:	**Required Tipping Fee per REC Ton:**	**0.57**	**1.74**	**10.14**	**12.42**	**13.78**	**14.19**	**14.62**	**15.06**	**15.51**	**15.98**	**16.46**

DC HZI Scenario 2: $115 Starting ORM Charge, $107 Starting OFS Charge, Annual RNG Rate Changes Matching Last 10 Years (as % of Previous Year)

		Estimated Inflation:	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Calendar Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Estimated Inputs												
	ORM to AD Facility (Tons)			20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	ORM Processing Charge / Ton	115.00	118.45	122.00	125.66	129.43	133.32	137.32	141.44	145.68	150.05	154.55
	OFS to AD Facility (Tons)	3,684	10,872	18,720	26,292	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	OFS Processing Charge / Ton	70.00	72.00	113.52	116.92	120.43	124.04	127.76	131.60	135.54	139.61	143.80
Estimated R&E Expenses												
	ORM Processing Charges	-	-	2,440,070	2,513,272	2,588,670	2,666,330	2,746,320	2,828,710	2,913,571	3,000,978	3,091,008
	OFS Processing Charges	257,880	782,784	2,125,025	3,074,108	3,612,883	3,721,270	3,832,908	3,947,895	4,066,332	4,188,322	4,313,972
411201	To be Determined	-	-	-	-	-	-	-	-	-	-	-
	Total Expenses	**257,880**	**782,784**	**4,565,095**	**5,587,380**	**6,201,554**	**6,387,600**	**6,579,228**	**6,776,605**	**6,979,903**	**7,189,300**	**7,404,979**
Estimated Revenue Sharing (Expense Offset)												
	Scenario RNG Price per MMBTU	**40.00**	**50.88**	**41.12**	**48.11**	**63.09**	**65.79**	**68.25**	**69.96**	**75.05**	**109.51**	**124.45**
	Scenario BioChar Price per Ton	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**
	RNG Change in Combined OM Fees		**(201,015)**	**(73,636)**	**(638,260)**	**(1,962,502)**	**(2,192,298)**	**(2,400,962)**	**(2,546,235)**	**(2,979,412)**	**(5,908,638)**	**(7,178,454)**
	($1.70 Fee Change per $1 Change)											
	Biochar Change in Combined OM Fees		-	-	-	-	-	-	-	-	-	-
	($1 Fee Change per $5 Change)											
	Net Increase / (Reduction)		**(201,015)**	**(73,636)**	**(638,260)**	**(1,962,502)**	**(2,192,298)**	**(2,400,962)**	**(2,546,235)**	**(2,979,412)**	**(5,908,638)**	**(7,178,454)**
	Annual Revenue Requirement	**257,880**	**581,769**	**4,491,459**	**4,949,119**	**4,239,051**	**4,195,303**	**4,178,266**	**4,230,370**	**4,000,492**	**1,280,662**	**226,525**
	Required REC Tipping Fee Revenue	257,880	581,769	4,491,459	4,949,119	4,239,051	4,195,303	4,178,266	4,230,370	4,000,492	1,280,662	226,525
divided by:	Tons Budget	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000
equals:	**Required Tipping Fee per REC Ton:**	**0.57**	**1.29**	**9.98**	**11.00**	**9.42**	**9.32**	**9.29**	**9.40**	**8.89**	**2.85**	**0.50**

AD Facility - Comparative REC Tipping Fee Impact Analysis
DC HZI Scenario 3: Scenario 2 but Assuming Starting Charge is $12 Higher (due to $6M grant shortfall)

		Estimated Inflation:	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Calendar Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Estimated Inputs												
	ORM to AD Facility (Tons)			20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	ORM Processing Charge / Ton	127.00	130.81	134.73	138.78	142.94	147.23	151.64	156.19	160.88	165.71	170.68
	OFS to AD Facility (Tons)	3,684	10,872	18,720	26,292	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	OFS Processing Charge / Ton	70.00	72.00	129.43	133.31	137.31	141.43	145.67	150.04	154.55	159.18	163.96
Estimated R&E Expenses												
	ORM Processing Charges	-	-	2,694,686	2,775,527	2,858,792	2,944,556	3,032,893	3,123,880	3,217,596	3,314,124	3,413,548
	OFS Processing Charges	257,880	782,784	2,422,926	3,505,057	4,119,362	4,242,943	4,370,231	4,501,338	4,636,378	4,775,470	4,918,734
	411201 To be Determined	-	-	-	-	-	-	-	-	-	-	-
	Total Expenses	**257,880**	**782,784**	**5,117,612**	**6,280,584**	**6,978,155**	**7,187,499**	**7,403,124**	**7,625,218**	**7,853,975**	**8,089,594**	**8,332,282**
Estimated Revenue Sharing (Expense Offset)												
	Scenario RNG Price per MMBTU	**40.00**	**50.88**	**41.12**	**48.11**	**63.09**	**65.79**	**68.25**	**69.96**	**75.05**	**109.51**	**124.45**
	Scenario BioChar Price per Ton	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**
	RNG Change in Combined OM Fees ($1.70 Fee Change per $1 Change)		**(201,015)**	**(73,636)**	**(638,260)**	**(1,962,502)**	**(2,192,298)**	**(2,400,962)**	**(2,546,235)**	**(2,979,412)**	**(5,908,638)**	**(7,178,454)**
	Biochar Change in Combined OM Fees ($1 Fee Change per $5 Change)		-	-	-	-	-	-	-	-	-	-
	Net Increase / (Reduction)		**(201,015)**	**(73,636)**	**(638,260)**	**(1,962,502)**	**(2,192,298)**	**(2,400,962)**	**(2,546,235)**	**(2,979,412)**	**(5,908,638)**	**(7,178,454)**
	Annual Revenue Requirement	**257,880**	**581,769**	**5,043,976**	**5,642,324**	**5,015,652**	**4,995,202**	**5,002,162**	**5,078,983**	**4,874,563**	**2,180,956**	**1,153,828**
	Required REC Tipping Fee Revenue	257,880	581,769	5,043,976	5,642,324	5,015,652	4,995,202	5,002,162	5,078,983	4,874,563	2,180,956	1,153,828
divided by:	Tons Budget	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000
equals:	**Required Tipping Fee per REC Ton:**	**0.57**	**1.29**	**11.21**	**12.54**	**11.15**	**11.10**	**11.12**	**11.29**	**10.83**	**4.85**	**2.56**

DC HZI Scenario 4: $115 Starting ORM Charge, $107 Starting OFS Charge, $2 Annual Decreases in RNG Prices

		Estimated Inflation:	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%	3.00%
	Calendar Year	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**
Estimated Inputs												
	ORM to AD Facility (Tons)			20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
	ORM Processing Charge / Ton	115.00	118.45	122.00	125.66	129.43	133.32	137.32	141.44	145.68	150.05	154.55
	OFS to AD Facility (Tons)	3,684	10,872	18,720	26,292	30,000	30,000	30,000	30,000	30,000	30,000	30,000
	OFS Processing Charge / Ton	70.00	72.00	113.52	116.92	120.43	124.04	127.76	131.60	135.54	139.61	143.80
Estimated R&E Expenses												
	ORM Processing Fees	-	-	2,440,070	2,513,272	2,588,670	2,666,330	2,746,320	2,828,710	2,913,571	3,000,978	3,091,008
	OFS Processing Fees	257,880	782,784	2,125,025	3,074,108	3,612,883	3,721,270	3,832,908	3,947,895	4,066,332	4,188,322	4,313,972
	411201 To be Determined	-	-	-	-	-	-	-	-	-	-	-
	Total Expenses	**257,880**	**782,784**	**4,565,095**	**5,587,380**	**6,201,554**	**6,387,600**	**6,579,228**	**6,776,605**	**6,979,903**	**7,189,300**	**7,404,979**
Estimated Revenue Sharing (Expense Offset)												
	Scenario RNG Price per MMBTU	**40.00**	**38.00**	**36.00**	**34.00**	**32.00**	**30.00**	**28.00**	**26.00**	**24.00**	**22.00**	**20.00**
	Scenario BioChar Price per Ton	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**	**130.00**
	RNG Change in Combined OM Fees ($1.70 Fee Change per $1 Change)		**36,965**	**263,296**	**472,178**	**680,000**	**850,000**	**1,020,000**	**1,190,000**	**1,360,000**	**1,530,000**	**1,700,000**
	Biochar Change in Combined OM Fees ($1 Fee Change per $5 Change)		-	-	-	-	-	-	-	-	-	-
	Net Increase / (Reduction)		**36,965**	**263,296**	**472,178**	**680,000**	**850,000**	**1,020,000**	**1,190,000**	**1,360,000**	**1,530,000**	**1,700,000**
	Annual Revenue Requirement	**257,880**	**819,749**	**4,828,391**	**6,059,558**	**6,881,554**	**7,237,600**	**7,599,228**	**7,966,605**	**8,339,903**	**8,719,300**	**9,104,979**
	Required REC Tipping Fee Revenue	257,880	819,749	4,828,391	6,059,558	6,881,554	7,237,600	7,599,228	7,966,605	8,339,903	8,719,300	9,104,979
divided by:	Tons Budget	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000	450,000
equals:	**Required Tipping Fee per REC Ton:**	**0.57**	**1.82**	**10.73**	**13.47**	**15.29**	**16.08**	**16.89**	**17.70**	**18.53**	**19.38**	**20.23**

RAMSEY/WASHINGTON
RECYCLING & ENERGY
CONNECTING VALUE TO WASTE

R&E FACILITY & FINANCE COMMITTEE MEETING DATE:		February 9, 2023		**AGENDA ITEM:**		V
SUBJECT:	Updates and Reports					
TYPE OF ITEM:	☒	INFORMATION	☐	POLICY DISCUSSION	☐	ACTION
SUBMITTED BY:	Joint Leadership Team					

FACILITY & FINANCE COMMITTEE ACTION REQUESTED:

None.

EXECUTIVE SUMMARY:

Staff will provide updates on R&E projects and operations.

a. R&E Center Updates

ATTACHMENTS:

None.

FINANCIAL IMPLICATIONS:

None.

AUTHORIZED SIGNATURES		**DATE**
JOINT LEADERSHIP TEAM	David Brund Michael Reed	2/1/23