Volume I

TECHNICAL PROPOSAL FOR

Statewide Recycling Needs Assessment

MARYLAND DEPARTMENT OF THE ENVIRONMENT

RFP NO. U00R4600021

MARCH 19, 2024

TAB A

A. TITLE PAGE & TABLE OF CONTENTS

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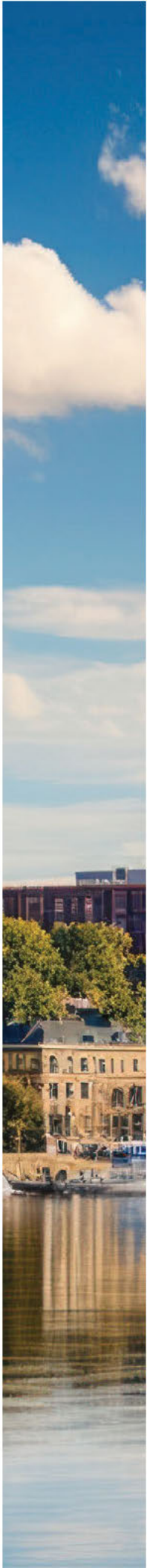


TAB A-1

B. CLAIM OF CONFIDENTIALITY

B. CLAIM OF CONFIDENTIALITY

We consider our Volume II Financial Proposal to be confidential and/or proprietary commercial information or trade secrets, and we request it to be omitted from any requests for public information under the Public Information Act, Md. Code Ann., General Provisions Article, Title 4 received by the State of Maryland Department of the Environment. This information starts in the separately submitted Volume II titled Financial Proposal and has also been requested again, separately per instructions of Section 4.8 Public Information Act Notice.

TAB B

C. OFFEROR INFORMATION SHEET & TRANSMITTAL LETTER

OFFEROR INFORMATION SHEET

Appendix 2. – Bidder/Offeror Information Sheet

Bidder/Offeror	
Company Name	HDR Engineering, Inc.
Street Address	8115 Maple Lawn Blvd, Suite 300
City, State, Zip Code	Fulton, MD 20759-2681
Contractor Federal Employer Identification Number (FEIN)	[redacted]
Contractor eMM ID Number	As of the Bid/Proposal submission date, are you registered to do business with the state of Maryland? YES
SBE / MBE/ VSBE Certification	
SBE	Number: Not Applicable Expiration Date:
VSBE	Number: Not Applicable Expiration Date:
MBE	Number: Not Applicable Expiration Date: Categories to be applied to this solicitation (dual certified firms must choose only one category).
Bidder/Offeror Primary Contact	
Name	Eric Weiss
Title	Solid Waste Planning Project Manager
Office Telephone Number (with area code)	[redacted]
Cell Telephone Number (with area code)	[redacted]
E-mail Address	[redacted]
Authorized Bid/Proposal Signatory	
Name	Andrea L. Ryon, PE, PMP
Title	Senior Vice President/Area Manager
Office Telephone Number (with area code)	[redacted]
Cell Telephone Number (with area code)	[redacted]
E-mail Address	[redacted]

TRANSMITTAL LETTER

March 19, 2024

RE: MARYLAND DEPARTMENT OF THE ENVIRONMENT(MDE) REQUEST FOR PROPOSALS (RFP)
STATEWIDE RECYCLING NEEDS ASSESSMENT
Solicitation No: U00R4600021

Dear Selection Committee,

We are pleased to submit our proposal to support the Maryland Department of Environment (MDE) in developing the State of Maryland Recycling Needs Assessment and Producer Responsibility for Packaging Materials (Project). Maryland Legislature signed State Bill 0222 (SB 0222 - Statewide Recycling Needs Assessment and Producer Responsibility for Packaging Materials) into law in May 2023. The State of Maryland developed an Extended Producer Responsibility (EPR) Advisory Committee to provide advice and make recommendations regarding establishing and implementing a producer responsibility program for packaging materials in the State of Maryland. The next step for MDE in implementing the program is to complete a statewide Recycling Needs Assessment.

The Right Team. To assist MDE through this process, HDR has assembled an experienced Team of circularity experts and solid waste and recycling system operations professionals to work with MDE and its advisors in assessing the next generation of Maryland's waste management system.

The HDR Team brings unparalleled experience and lessons learned to MDE from its experience with EPR in the US, Canada, and Europe. We understand the lessons learned from previous needs assessments as HDR and Eunomia recently completed Colorado's EPR Statewide Needs Assessment. Eunomia also brings unique EPR-focused expertise, having worked to establish programs and policies in Canada and contributed to needs assessments in Europe, Oregon, and Washington as those states' position for implementing EPR programs. Additionally, we know how to gather the right information for making future decisions on EPR programs and legislation. We also understand how to streamline this work activity with a compressed schedule to help meet legislative desires. To amplify our local presence, the HDR Team is partnered with:

- MSW Consultants brings real data and knowledge of the statewide waste system through its previous waste characterization in 2016, allowing more efficient execution.
- Our Team of local subconsultants helps us understand the equity and social setting of the State to help improve those considerations in the recycling systems for the future.

Eric Weiss, who resides in the DC-Maryland-Virginia (DMV) area, will be our project manager, while Jessica Lally will be our EPR lead. Dan Bacehowski, experienced statewide needs assessment and EPR project manager, will be our technical advisor. This group will work alongside additional staff members from our Maryland offices to assist and support these efforts. Our priority is to utilize as many local staff and resources as possible.

Strong History in Maryland. HDR has provided services in Maryland for 23 years and has over 400 employees in our 9 area offices. Our expertise-driven national firm delivers tailored solutions through a robust local presence and can respond quickly to MDE. Our local managers are woven into our work on this project to provide you with responsive service and quality work. The HDR Team will also leverage relationships with long-standing clients in Maryland to support the Recycling Needs Assessment effort, including Maryland Environmental Service (MES), Northeast Maryland Waste Disposal Authority (NMWDA), Montgomery County, Anne Arundel County, and Prince George's County.

Planning and Solid Waste and Recycling System Operations Experts. Our Team brings extensive Material Recovery Facilities (MRF), organics processing (composting and anaerobic digestion), and collections expertise. Our proposed resources have evaluated, sited, planned, and designed composting and MRF facilities throughout the US and Canada. We have been instrumental in leading multiple planning projects that must consider EPR-related activities in Canada. This Team has worked with cities and communities throughout the US to revise collection systems from open markets to organized collection systems. Members of this Team are on the leading edge of innovative technology research for improvement in waste programs and have traveled to Europe and Asia to meet with technology providers to understand where and how these technologies can be implemented fully.

We understand the importance of the Recycling Needs Assessment in establishing a successful EPR program in Maryland. The lessons learned in the Colorado Needs Assessment will be invaluable to MDE; however, they also recommend updated activities that might inflate the budget beyond the expectations of others who have not learned those lessons. For example, when adequate data cannot be collected via surveys, we've created alternative approaches to estimate that data using industry knowledge and unique modeling methods to develop a more robust dataset. These estimations make the study outcome more robust, realistic, and usable but were not anticipated in the original scope of work/budget. Therefore, we have offered multiple "optional" Tasks that you could consider dependent on your desired study level of effort.

Each of our Team members is eager and excited about the opportunity to work with MDE to develop this Recycling Needs Assessment. We look forward to discussing our proposal at your earliest convenience. Thank you for this opportunity, and please reach out to **Eric Weiss at** [redacted] **or** [redacted] if you have any questions concerning this submittal.

We acknowledge Amendment 1 issued on February 28, 2024, Amendment #2 issued on March 6, 2024, and Amendment #3 issued on March 13, 2024.

[redacted]

[redacted]

Eric Weiss
Project Manager

Andrea L. Ryon, PE, PMP
Senior Vice President/Area Manager

TAB C

D. EXECUTIVE SUMMARY

The HDR Team brings unparalleled experience to MDE. Only this Team can say:

- We understand the lessons learned from previous statewide needs assessments to gather the information you need to make decisions on future EPR legislation. HDR and Eunomia recently completed the Colorado Needs Assessment, and Eunomia has prior work in Oregon and internationally.
- We can streamline this type of work activity with a compressed schedule to help meet legislative desires.
- MSW Consultants brings actual data and knowledge of the statewide waste system through its previous waste characterization in 2016, allowing more efficient execution.
- Our Team of local subconsultants helps us understand the State's equity, social, and economic setting to help improve those considerations in the recycling systems for the future.

We probably know too much. Our experience in the Colorado Needs Assessment will be invaluable to MDE; our recommended optional activities might inflate the budget beyond the expectations of others who have not learned those lessons. For example, when adequate data cannot be collected via surveys, to have a robust data set, we created alternative methods to estimate that data through facility site visits, operational assessments, and GIS analysis. That additional data estimating made the study outcome more robust and specific to Colorado's system but was not anticipated in the original scope of work/budget.

We know from our previous experience that to generate a Minimum Recyclables List is critical to establishing EPR programs. This requires significant stakeholder engagement efforts to balance the needs among MDE, municipalities, and recycling processors. As described in our Optional Services, we are prepared to go above and beyond to help MDE conduct a robust Recycling Needs Assessment.

SCHEDULE MILESTONES

In Section F, we have provided a detailed work plan and schedule for implementation. This work plan includes the specific scope items requested in the RFP, plus several optional Tasks that will help facilitate a robust recycling needs assessment based on lessons learned elsewhere. The following schedule summarizes the key Tasks and when they will be completed.

Preliminary Project Schedule

RFP Section	Task	Deliverable	MAY	JUN	JUL	AUG	SEP	OCT
2.3.1	1	Project Management	■	■	■	■	■	■
2.3.3	2	Waste Characterization	■	■	■			
2.3.3.5	3	Stakeholder Surveys and Interviews	■	■	■	■		
2.3.5	4	Recycling Stream Analysis		■	■	■		
2.3.6	5	Infrastructure and Capacity				■	■	
2.3.7	6	Worker Conditions				■	■	
2.3.8	7	Opportunity for WMBE				■	■	
2.3.9	8	Multifamily and Commercial Recycling Services		■	■	■	■	
2.3.10	9	Recycling Economic Opportunities				■	■	
2.3.11	10	Equity Within Recycling Systems		■	■	■		
2.3.12	11	Costs, Benefits, and Environmental Impact of EPR		■	■	■		
2.3.14	12	EPR Recommendations		■	■	■		
2.3.16	13	Writing the Recycling Needs Assessment Report					■	■
Optional	14	Optional Services	■	■	■	■	■	■

OPTIONAL SERVICES

Optional services that we offer and are additional to what is required in the RFP include the following. We have further described and outlined these in Section F (Tab E); however they are not included in our pricing.

- Additional level of Waste Characterization Sampling
- Facility Site Visits
- Minimum Recyclables List
- Multifamily and Commercial Webinar
- To assist with the equity analysis, additional Webinar and Survey Summary with Response

OUR TEAM

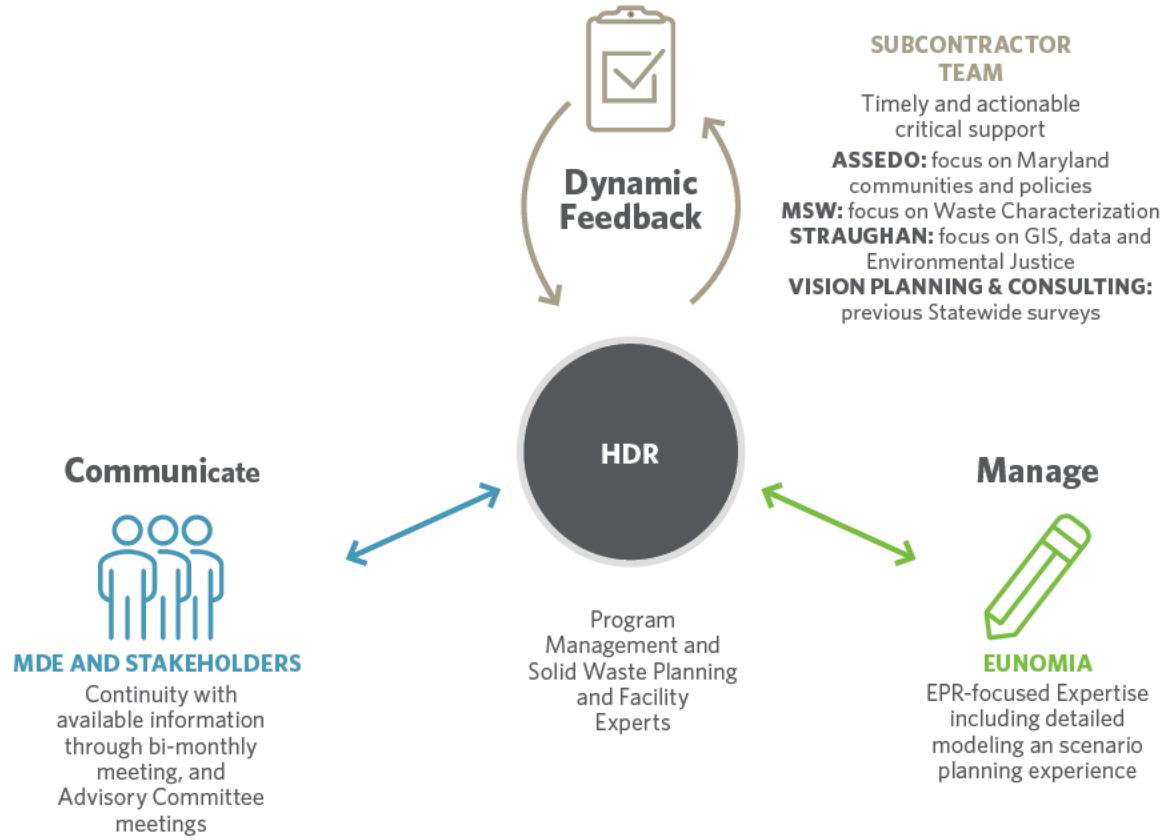
In Sections G and M, we provide details of our Team and subconsultants. We've brought together local management and understanding with staff recently completing an accelerated recycling needs assessment schedule.

OUR EXPERIENCE

In Section H, we provide relevant project experience for recycling needs assessment and the associated components. In Section I are our references related to these projects. Note we've highlighted those that meet the minimum and preferred qualifications as requested in the RFP.

Our experience includes comprehensive waste planning efforts covering items **like recycling needs assessments and local government requirements related to multifamily and commercial recycling services and their implementation. Our projects span multiple Tasks required to move the State and program forward successfully.**

We have developed solutions that divert waste from disposal, including waste prevention, reuse, and recycling activities, collection program design and procurement, food waste composting and organics management, producer responsibility initiatives for products and packaging, and disposal and diversion incentives and fee structures. Our experience implementing policy and strategy will enable us to develop future scenarios that are deliverable and based on realistic timescales and costs.



MBE/VSBE REQUIREMENTS

The HDR Team has thoroughly evaluated the companies from the State MBE listing and encouraged our teaming partners to do the same. We feel confident that we have compiled a Team that maximizes the use of MBE and VSBE resources; however, the combination of planning and engineering expertise related specifically to solid waste and recycling require a Team with specialized and highly technical capabilities. Therefore many of the firms listed in the State directory of firms were screened out as follows:

- 541620 Environmental Consulting Services – there are many types of environmental services, but we could not find any specific ones to provide solid waste/recycling consulting services.
- 562111 Solid Waste Collection – these entities will be stakeholders in the outcome of the study and, therefore, are conflicted from being part of the study.
- 562920 Materials Recovery Facilities – these entities will be stakeholders in the outcome of the study and, therefore, are conflicted from being part of the study.
- 561410 Document Preparation Services – we were able to utilize firms in this category.
- 541910 Market Research & Public Opinion Polling – we were able to utilize firms in this category.
- Additionally, while not explicitly defined in the RFP, we know from experience that GIS will be critical to delivering a complete study; we were able to identify firms with this capability.
- Similarly, field services are often used to support waste characterization field efforts; we were able to identify firms that could provide this service.
- Also, public outreach services often require translation services for additional language documents. While not part of the project base scope, we identified a firm that could provide this service if the optional Task provided is executed.
- In Section P (Tab O), we have defined the goals we can commit to. Note this is based on the basic scope of work and does not include the optional Tasks described in Section F (Tab E).

We have made significant efforts to establish a Team that would meet the recommended MBE goals. HDR feels this diverse Team honors the intent of the statewide program while balancing the technical complexities and streamlined schedule to deliver a robust Recycling Needs Assessment.

TAB D

E. MINIMUM QUALIFICATIONS DOCUMENTATION

We are the partner MDE needs to design a cost-effective system that can operate and improve diversion and equitable accessibility.

Since 1970, our waste management professionals have assisted our clients in seamlessly implementing facilities and programs that fit their unique needs. From waste prevention to reduction to residuals disposal, our waste management solutions are based on award-winning work in environmental education, public outreach and engagement, solid waste master planning, including zero waste planning, and planning and design of facilities and solid waste systems. We've been involved in aspects of evaluating, planning, designing, and procuring both traditional and trend-setting programs and facilities, including outreach, collection, composting and material recovery facilities, anaerobic digestion facilities, landfills, transfer stations, recycling centers, and waste-to-energy facilities.

We are known for our ability to work on projects that involve clients with diverse needs and include multiple stakeholders. Our experience includes comprehensive waste planning efforts covering items **like recycling needs assessments and local government requirements related to multifamily and commercial recycling services and their implementation. Our projects span multiple Tasks required to move the State and program forward successfully.** We have the proven ability to deliver award-winning, long-term solutions to waste management that meet client, stakeholder, and decision-maker goals.

While we may not have been on the early planning and policy development side of the EPR legislation in Maryland, we will bring a fresh new perspective from our experience leading hundreds of Solid Waste Management Planning projects throughout North America, including in Montgomery County, Maryland, Colorado, Ontario, California, Minnesota, New York, Florida, Washington, Oregon, and British Columbia. These communities have implemented different elements of EPR, advanced recycling targets, stakeholder and waste hauler engagement to drive increased recycling, reuse, and organics diversion.

HDR and Eunomia have recently completed the first and only Statewide Needs Assessment for Colorado required for the Extended Producer Responsibility (EPR) legislation.

Our scenario modeling uncovered a new program that will more than double the amount of covered materials collected each year by 2030 (400k tons to 1M tons), will increase the accessibility to recycling services to an additional 500k households statewide (largest increase in multifamily housing) and increase the statewide recycling rate from 16% to >60% by 2035.

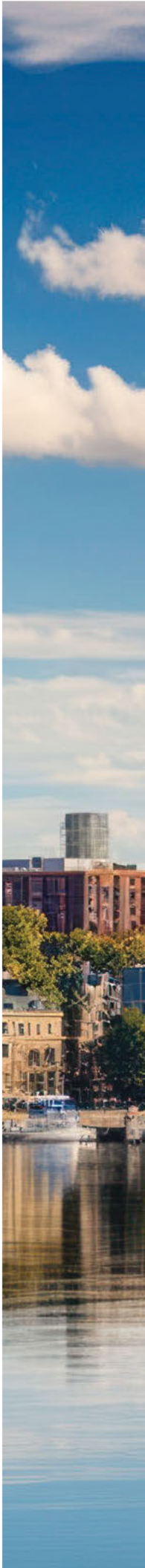
These plans contain the elements of the Recycling Needs Assessment, including recycling needs assessments, conducting system-level research, integrating complex elements into written summaries and recommendations, assembling and managing datasets with summary information, the capacity and availability to conduct the Recycling Needs Assessment in a limited timeframe, and experience in interacting with key stakeholders. As demonstrated here in our experience, our planning leads to implementable actions.

HDR's Maryland offices have extensive experience with many different projects for local Maryland clients, including Maryland Environmental Services, Northeast Maryland Waste Disposal Authority, Anne Arundel and Howard Counties, City of Baltimore and others over the last decade. **Please see Section J (Tab H) for our Current and Prior State Contracts List.**

Specifically, within the last seven (7) years, the Minimum and all Preferred Qualifications have been met by the relevant examples we present in further detail in Section H (Tab G). Please see Section H. (Tab G) for our presented projects and Section I (Tab H) for our presented references documenting our relevant experience.

TAB E

F. OFFEROR TECHNICAL RESPONSE TO RFP REQUIREMENTS AND PROPOSED WORK PLAN



Our Team was designed to deliver results within the timeline outlined by offering qualified resources to provide outstanding comprehensive services. We are a truly integrated Team offering the expertise this contract requires.

Project Understanding

The HDR Team understands that in May 2023, the State of Maryland's (State) General Assembly passed Senate Bill 0222, Statewide Recycling Needs Assessment and Producer Responsibility for Packaging Materials (Recycling Needs Assessment). As a result, the Maryland Department of Environment (MDE) is preparing to conduct a broad Recycling Needs Assessment, including analysis and evaluation of:

- Current solid waste and recycling streams
- Current infrastructure and capacity related to recycling
- The sufficiency of recycling education programs relative to desired equity outcomes
- Economic opportunities in the states recycling system
- Recycling processing facility worker conditions, wages and benefits
- Opportunities in the recycling system for women and minority individuals
- Local government requirements related to multifamily and commercial recycling services and their implementation
- Opportunities to improve equity and equitable outcomes for underserved populations in the State's recycling system
- Costs and benefits of implementing an Extended Producer Responsibility (EPR) program
- Environmental impacts of implementing an EPR program
- Recommendations for Maryland based on successful EPR programs in other states and countries

The HDR Team recognizes both potential benefits and drawbacks of implementing an EPR program and that no EPR programs are exactly the same. EPR programs can vary depending on the materials considered (e.g., hazardous waste, paper/plastic packaging, tires, electronics, etc.), existing infrastructure, generation rates, and local ordinances/regulations.

The Recycling Needs Assessment will support MDE and the stakeholders on the EPR Advisory Committee (Advisory Committee) to evaluate the benefits and challenges of EPR among multiple stakeholders, including:

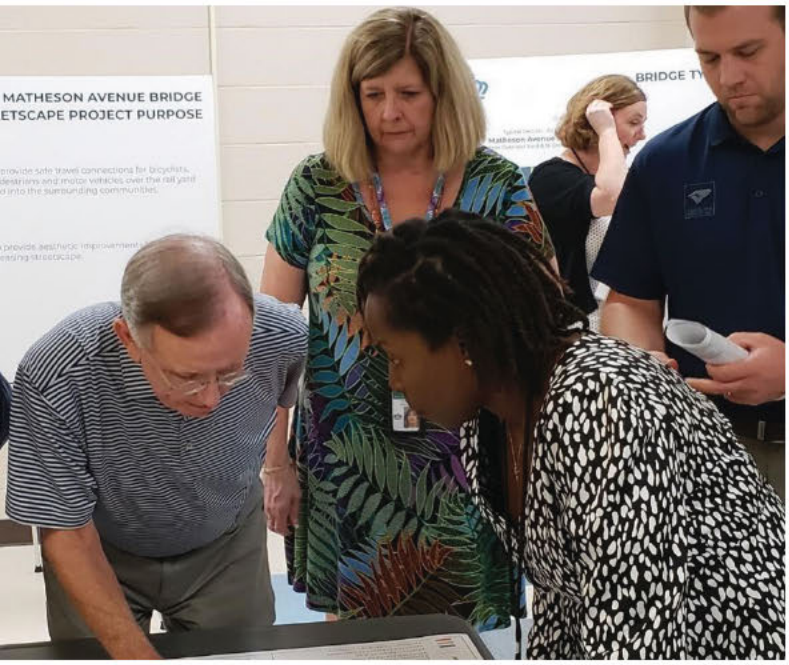
- Financial and operational impacts
- Greenhouse Gas (GHG) reduction goals
- Program implementation

The following page describes The HDR Team's technical approach and work plan to comprehensively analyze the State's solid waste and recycling infrastructure and other topics such as environmental justice, diversity, equity and inclusion, and EPR.

Approach

The HDR Team is uniquely positioned to meet the State's needs based on our recent experience with Colorado's Needs Assessment and EPR program implementation and prior experience providing Maryland's 2016 Statewide Waste Characterization. We will work closely with MDE and the EPR Advisory Committee to consolidate and analyze recycling, reuse, collection, processing, and recycling commodity data specific to the State's infrastructure, programs, population, and unique set of stakeholders as shown in Table 1 below.

Table 1: Stakeholders with Background/Baseline Information
MDE
USEPA
EPR Advisory Committee
US Composting Council
SWANA Mid-Atlantic Chapter
Maryland Municipal/County Websites
Maryland Environmental Services
Maryland MRF Operators
Maryland Organics Processors
Collection Hauling Companies



Consulting on large volumes of decentralized data requires a systematic approach that combines data management techniques, advanced analytics, and domain expertise. The HDR Team has identified the following existing data sources with relevant information to the Needs Assessment as shown in Table 2 below.

Table 2: Data Sources
Maryland Solid Waste and Diversion Report 2022
HB 171 - Climate Crisis and Environmental Justice Act
HB 171 - Yard Waste and Food Residuals Diversion and Infrastructure Act
2016 Maryland Statewide Waste Characterization Study
"Baltimore's Fair Development Plan for Zero Waste" ISLR report
Container Recycling Institute Publications
2021 Economic Impact Study, US-Based Recycling Industry ISRI report
Bureau of Labor Statistics data specific to Maryland
Other statewide EPR needs assessments and/ or feasibility studies, including those for Colorado, Minnesota, Washington, and Oregon
Existing and recently published Solid Waste Management Plans, including drafts currently under review by MDE (e.g., City of Baltimore, Anne Arundel County, etc.)
USEPA Environmental Justice (EJ) Screening Tool
Microplastics in Compost – 2018
Data published from Maryland's public universities, the Department of Labor, and non-profit organizations

The HDR Team will develop a clear understanding of the technical, financial, and environmental impacts of EPR that are differentiated between urban, suburban, and rural areas of the State to assess the current infrastructure gaps and economic opportunities. This analysis and experience from other planned and implemented EPR programs will provide recommendations on how an equitable EPR program that increases statewide recycling and access could be structured for Maryland. In preparation for our approach, we have also developed a preliminary schedule on the following pages demonstrating our ability to move quickly.

Preliminary Project Schedule

RFP Section	Task	Deliverable	MAY	JUN	JUL	AUG	SEP	OCT
2.3.1	**1**	**Project Management**						
	1a	RFI/Kickoff Meeting*						
	1b	Bi-Monthly Meeting/Project Schedule*						
	1c	Attend Advisory Committee Meetings						
	1d	Monthly Recycling Needs Assessment Report						
2.3.3	**2**	**Waste Characterization**						
	2a	Waste Characterization Kickoff**						
	2b	Waste Composition Study Design						
	2c	MSW Manual Sorts						
	2d	Data Analysis						
	2e	Reporting						
2.3.3.5	**3**	**Stakeholder Surveys and Interviews**						
	3a	Survey Design and Distribution						
Optional		Additional Survey Engagement and Support						
	3b	Stakeholder Interviews***						
Optional		Facility Site Visits						
2.3.5	**4**	**Recycling Stream Analysis**						
	4a	Baseline Assessment and Database Development						
	4b	Estimate Recyclables Annually Disposed						
Optional		Minimum Recyclables List						

Legend: - Meeting - Report

NOTE:

*Draft of potential project risks, problems, countermeasures will be provided as part of KO meeting and during bi-weekly status updates

** Waste characterization schedule dependent on MDE securing site access agreements. Includes development and review of Health and Safety Plan

*** Includes delivery of detailed survey results and high level summary. Further analysis of survey data will be completed as part of Task 4a-4d

Preliminary Project Schedule

RFP Section	Task	Deliverable	MAY	JUN	JUL	AUG	SEP	OCT
2.3.6	**5**	**Infrastructure and Capacity**						
	5a	Recycling Access/Availability						
	5b	Recycling Hauling/Drop-Off						
	5c	Recycling Processing						
	5d	Facility Development Opportunities						
	5e	Consumer Education						
	5f	Reuse Infrastructure						
2.3.7	**6**	**Worker Conditions**						
2.3.8	**7**	**Opportunity for WMBE**						
2.3.9	**8**	**Multifamily and Commercial Recycling Services**						
	8a	Determine Covered Entities						
	8b	Evaluate Ordinances, Research, Surveys, and Interviews						
	8c	Estimate Potential Material Capture						
	8d	Benchmarking/Best Practices						
Optional		Additional Multifamily/Commercial Survey and Webinar						
2.3.10	**9**	**Recycling Economic Opportunities**						
	9a	Lost Revenue						
	9b	Current Recycling Jobs and Job Growth Opportunities						
	9c	Barriers to Increasing Use of Recyclable Materials						
2.3.11	**10**	**Equity Within Recycling Systems**						
	10a	Screening Community Characteristics						
	10b	Equity Analysis						
	10c	Recommendations						
Optional		Stakeholder Webinar/Engagement						

Legend: - Meeting - Report

Preliminary Project Schedule

RFP Section	Task	Deliverable	MAY	JUN	JUL	AUG	SEP	OCT
2.3.12	**11**	**Costs, Benefits, and Environmental Impact of EPR**						
	11a	Review of jurisdictions with implemented programs						
	11b	Costs, Benefits, and Environmental Impacts of EPR						
2.3.14	**12**	**EPR Recommendations**						
	12a	Scenario Workshop						
	12b	Recommendations and Results						
2.3.16	**13**	**Writing the Recycling Recycling Needs Assessment Report**						
	13a	Draft Recycling Recycling Needs Assessment Report						
	13b	Final Recycling Recycling Needs Assessment Report						
Optional	**14**	**Optional Services**						
Optional	14a	Additional Waste Characterization						
Optional	14b	Facility Site Visits						
Optional	14c	Minimum Recyclables List						
Optional	14d	Multifamily and Commercial/Equity Webinar(s)						
Optional	14e	Additional Survey Engagement and Support						

Legend: - Meeting - Report

To verify general quality control and risk management and meet the time-constrained project schedule of the Recycling Needs Assessment, the HDR Team will deliver the following:

- Alignment with proposed approaches for each Task will be reviewed with MDE during a project kickoff meeting and bi-weekly (2x/month) progress check-in meetings
- Consult with the Advisory Committee, stakeholders, and internal experts when capturing baseline information from existing and new data sources
- Review questionnaire/survey documents with MDE and Advisory Committee before information gathering site visits or virtual meetings
- Response to MDE requests by email or telephone within 24 hours as described in Section 2.3.4.1 of the RFP
- Drafting and review of work products by the HDR Team to confirm adherence to the Minimum Deliverable Quality guidelines, acceptance criteria, and due dates listed in Sections 2.4.3 and 2.4.4 of the RFP
- Compliance with applicable laws, regulations, policies, standards, and guidelines regarding information technology per Section 2.3.18 of the RFP

By conducting a comprehensive needs assessment, policymakers and stakeholders in Maryland can gain a deeper understanding of their waste management system's specific challenges and opportunities. This information is a basis for designing and implementing effective EPR programs that promote a cost-effective, environmentally conscious, and technically feasible approach to waste management and resource recovery.

The proposed Task-based approach described on the following pages will meet the requirements of the responsibilities and Tasks and includes enhancement and innovations (e.g., additional data sources or methods).

Work Plan

The following work plan is patterned after the responsibilities and Tasks detailed in Section 2.3 of the RFP. The Task number is directly followed by the speicifc RFP section it referrs to, for reference. Each Task is broken into a series of sub-Tasks and is cross-referenced to the specific requirements within the RFP per Section 5.3.2 (F) of the RFP. Various optional sub-Tasks are described throughout this work plan to identify additional data sources or approaches the HDR Team considers beneficial to providing a comprehensive understanding of the impacts of a potential EPR program. These are identified with a light bulb icon. Optional sub-Tasks are introduced as part of the Tasks under which they would be executed, should MDE elect to include them in the scope of work. Optional sub-Tasks are not included in the pricing presented in Volume II - Financial Proposal. Optional sub-Tasks are also compiled and restated as part of Task 14 for clarity. Each Task below summarizes the approach, detailed services, and deliverables to describe how the HDR Team will meet and exceed the requirements of the RFP.

TASK 1 (2.3.1)

Project Management

Summary of Approach

We recognize the importance of developing Maryland's EPR Recycling Needs Assessment and want to verify that we have implemented effective communications, meetings, workshops, and approval processes for success, which will be done at the project kickoff meeting. The HDR Team will schedule and attend bi-monthly (every other week) meetings to discuss key project deliverables, milestones, and anticipated barriers to producing project deliverables. Additionally, we will prepare monthly Recycling Needs Assessment reports to support the reporting requirements of MDE to the Maryland General Assembly.

Services

TASK 1A: RFI/Kickoff Meeting

The HDR Team will schedule and conduct a hybrid kickoff meeting within 10 days of NTP. At a minimum, the project manager will attend in-person, while other key members of the HDR Team attend virtually. At the kickoff meeting, we will review project goals, key milestones, and the overall work plan/project schedule, introduce Team members and review roles, discuss key stakeholders to engage with and identify anticipated barriers further described in Task 1b.

The HDR Team will provide a Request for Information (RFI), kickoff meeting agenda, and draft project schedule a week before kickoff meeting. We will develop an Excel-based RFI tracking spreadsheet to handle data requested, information received, and responsible parties.

TASK 1B: Bi-Monthly (Every Other Week) Meeting/ Project Schedule (2.3.2)

The HDR Team will develop a Problem Escalation Procedure (PEP) that includes, at a minimum, titles of individuals to be contacted by the MDE Contract Monitor should problems arise and explains how problems with work under the Contract will be escalated to resolve issues promptly.

Additionally, the HDR Team will develop a list of anticipated barriers, potential project risks, problems, and countermeasures per Sections 2.3.1 and 2.3.15 of the RFP. Table 3 presents preliminary anticipated barriers the HDR Team is prepared to overcome and further discuss at the first bi-monthly meeting.

Table 3: Preliminary Anticipated Barriers
1. Abbreviated timeline for assessment
2. Uniformity of costing data for collection services across private companies and municipalities
3. The willingness of private operators to share costing and market sales information
4. Accessibility and data available from small private haulers and processing facilities
5. Uniformity of contamination volume and data tracking mechanisms at recycling and composting processing facilities
6. Lack of data from nonresidential sectors

These anticipated barriers could arise; however, they will be best managed through consistent and regular communication and strong project and risk management, as described in the project Approach.

TASK 1C: Attend Advisory Committee Meetings (2.3.2.7)

Two HDR Team Members will plan to attend up to two Advisory Committee meetings on a monthly basis.

TASK 1D: Monthly Recycling Needs Assessment Report (2.3.16.4)

The HDR Team will develop Monthly Recycling Needs Assessment Reports for MDE review. No later than one week before the first of each month, a draft Monthly Recycling Needs Assessment Report will be delivered for review, which includes a summary of the work finished to date, key findings, and preliminary results. The HDR Team will incorporate one set of consolidated comments into each Monthly Recycling Needs Assessment Report based on the work to date.

While no specific topics are identified for each monthly report, we plan to generate the Monthly Recycling Needs Assessment Reports by compiling key content from the draft technical memorandum developed as interim deliverables for critical Tasks described in Tasks 2-12.

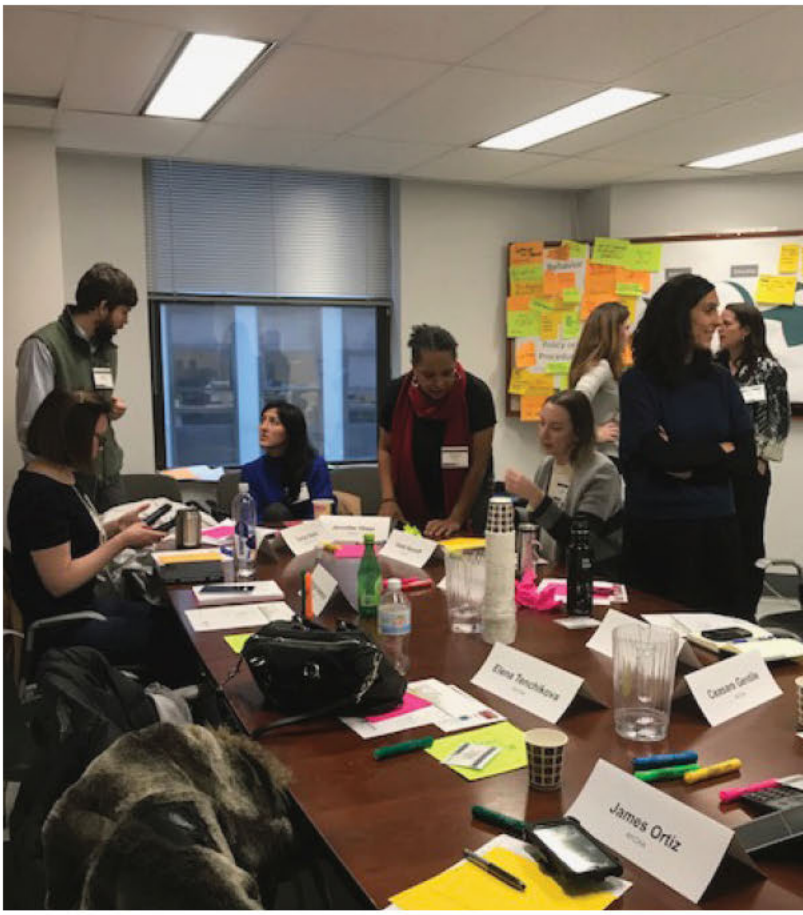
The draft technical memoranda are interim deliverables but will be critical to meeting the compressed timeline of this effort and memorializing the methodology of the work, key findings, and recommendations (as appropriate).

The HDR Team will deliver a draft technical memorandum to MDE for review, but comments will not be incorporated. Instead, key components of the draft technical memorandum will be used to generate the Monthly Recycling Needs Assessment Reports and draft the Recycling Needs Assessment Report, which will be submitted to MDE for review, and comments will be incorporated as described herein.

Deliverables

The HDR Team will provide the following deliverables as part of Task 1 including:

- RFI and ongoing data management
- Kickoff meeting agenda and meeting notes
- Invoice schedule delivered 30 calendar days from Contract Award, updated at the first bi-monthly (every other week) meeting of each month
- Bi-monthly (every other week) meeting attendance and meeting notes, including updated Gantt chart (up to one person per meeting)
- Project Escalation Procedure and a draft of potential project risks, realized problems, and active countermeasure directory
- Advisory Committee Meeting attendance (up to two staff for monthly meetings)
- Monthly Recycling Needs Assessment Reports



TASK 2 (2.3.3)

Waste Characterization

Summary of Approach

The HDR Team will update the 2016 Statewide Waste Composition Study (2016 Study) by developing a sampling plan, conducting sorting events, analyzing data, and preparing the draft and final waste characterization reports. The HDR Team, including MSW Consultants, is experienced in providing waste sorts across Maryland and uniquely positioned to conduct a waste characterization that provides an update to the 2016 Statewide Waste Composition Study using a consistent methodology and one-season sampling plan.

The 2016 Study collected field data at nine disposal facilities over two seasons, with a reported capture of 90 samples, as shown in Table 4.

Table 4: 2016 Maryland Statewide Waste Composition Sample Acquisition

Table 4: Host Acceptance Facilities	Samples
Cecil County Central Landfill	11
Somerset County Landfill	10
Charles County Landfill	18
Appeal Landfill	11
City of Baltimore Landfill	10
Northwest Transfer Station (City of Baltimore)	0
Garrett County Landfill	11
Forty West Municipal Landfill	11
Northern Landfill	8
Total	**90**

The 2016 Study also incorporated composition data from two recent Maryland county-level waste composition studies (Montgomery and Prince George's Counties), differentiating between the State's urban, suburban, and rural areas. We plan to leverage recently completed studies for Prince George's County in 2022 and residential-only composition studies in Baltimore County and Howard County.

We have reviewed the RFP and the prior study (which members of the HDR Team prepared).To meet the requirements of the Recycling Needs Assessment, the HDR Team has provided the following approach to provide a one-season sort consistent with the 2016 Study sampling targets but condensing them into a single season (e.g., the same level of accuracy as the 2016 Study).

OPTIONAL: Two-Season Sort
Increase the number of samples collected to be consistent with the total sampling achieved in the 2016 study. This option is further described in Task 14 below.

Services

TASK 2A: Waste Characterization Kickoff

The HDR Team will participate in project planning, submission of a data request, and attendance at a kickoff meeting specific to the waste characterization effort.

TASK 2B: Waste Composition Study Design

The following steps will be performed to finalize the waste composition study design, specifying sampling and sorting methods, field data logistics, health and safety procedures, and statistical methods in a Study Design document.

Review State Data

- We will submit a request for information needed to develop the sampling plan and review/compile responses. We will review available data (e.g., Maryland Solid Waste and Diversion Report 2022) to understand the volumes and delivery schedule of materials generated throughout the State and delivered to the facilities. This research will confirm the sampling targets and distribution of samples across inbound generator types.

Validate/Refine Material Categories

- The HDR Team understands that the material categories will be substantially the same as the 2016 Study, presumably including the divertibility classes defined in the 2016 Study. We will review the categories and divertibility classes with MDE and jointly confirm a final list of both during the study design to determine if they meet the needs of the Recycling Needs Assessment.

MSW Generator Sectors

- Consistent with the 2016 Study, we will classify samples based on their generator sector: Residential and Institutional/Commercial/Industrial (ICI).

Seasonality

- Field data collection will be performed over a single season.

Sample Weights

- Consistent with industry standards (ASTM D 5231-92 (2016)), 200-to-250-pound samples will be the targeted sample weight for the MSW hand sorts.

Logistical Coordination

- It will be critical to make appropriate arrangements for the personnel and equipment needed to execute the field data collection portion of this project. In coordination with MDE, the HDR Team will reach out to each facility to discuss logistics, such as:
  - Confirming procedures requiring coordination between the host facility personnel and the Team.
  - Information about available space for sampling and sorting crews and the availability of operational resources, such as a loader.
  - Information on vehicle traffic (by time of day), including delivery patterns and numbers of vehicles arriving, by vehicle type, and/or by waste subsector.
  - Finalizing locations for setting up the work area, taking samples, queuing samples, discarding sorted samples, and other in-process activities.
  - Answering questions and addressing the concerns of the Facility Managers.
  - We will arrange for the experienced staff and provide sorting equipment (tables, bins, carry cans, scales, small tools, and personal protective equipment) for the project. We will also provide the required equipment and materials as needed per Section 2.3.17 of the RFP.

Health and Safety Plan

- The HDR Team will develop a customized Health and Safety Plan for the waste characterization study. We will review the key elements of the Health and Safety Plan with MDE and provide a copy of this plan to host facilities and to MDE upon request.

TASK 2C: MSW Manual Sorts

Key details of the HDR Team's methodology for conducting MSW characterization data include:

Staffing

- The HDR Team proposes to use a two-person professional staff to lead sampling and sorting activities, supported by a team of professional sorters and local light industrial laborers to conduct actual sorting. Two of the assigned staff for this project led the 2016 field data collection and have excellent knowledge of the host facilities and the project in general.

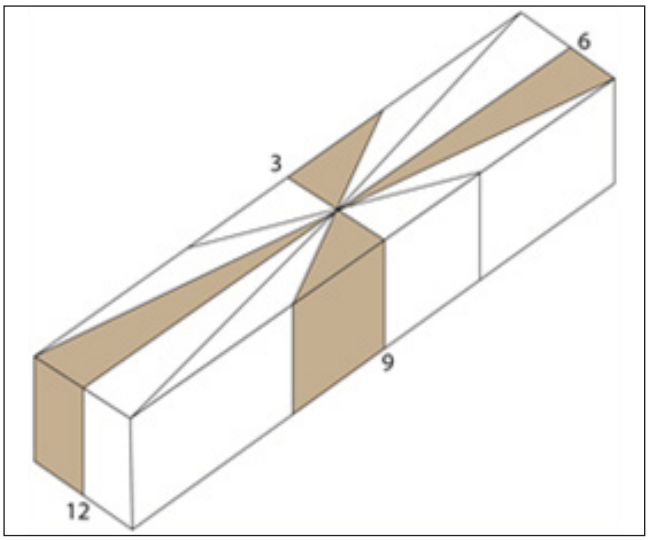
Sampling

- Accurate solid waste characterization is a complex and demanding undertaking requiring precise coordination and planning among Team members and rigorous adherence to quality standards. Our Team's approach to sampling is provided below:
  - Sample Selection: The Field Supervisor will ask incoming drivers for basic information, which is noted to identify the load. Information from the weight ticket for each vehicle will be obtained for each incoming truck either from the driver or through communication with the scale house. Once the interview is done, the Field Supervisor will direct the vehicle to the sampling area.
  - Taking Samples from Selected Loads: Selected loads of waste designated for sorting will be tipped in the designated area at the landfill or transfer station. We expect that the tipping area will be designated near the tipping face or in a designated bay and that it will be possible to erect a tent over the sort area, if necessary. A loader and operator will be assigned at the landfill to assist with the sampling.
  - One waste sample will be selected from each load based on systematic "grabs" from the perimeter of the load. For example, if the tipped pile is viewed from the top as a clock face with 12:00 being the part of the load closest to the front of the truck, the first samples will be taken from 3, 6, 9, and 12 o'clock, and then from 1, 4, 7, and 10 o'clock, and so-on.
  - Both refuse and recycling samples will be loaded into 35-gallon barrels, pre-weighed to achieve the target weight for each sample, and for storage before sorting. Each refuse and recycling sample will be labeled by its unique identifying number and digitally photographed.

Sorting

- We will provide the sorting equipment, which includes a sorting table, 5-gallon buckets, 18-gallon bins, and 35-gallon barrels for the prevalent materials. Sorters are asked to specialize in certain material groups, with someone handling the paper categories, another the plastics, another the glass and metals, and so on. In this way, sorters become highly knowledgeable about the definitions of individual material categories in a short period. The Waste Sort Lead will monitor the bins as each sample is sorted, resorting materials that may be improperly classified. Open bins allow the Waste Sort Lead to see the material constantly.

Systematic Sampling Guide for Tipped Loads



Sort Table and Bins

Data Recording

- The Waste Sort Lead will use a rugged tablet computer synched to the cloud via cellular service or Wi-Fi each day to record composition weights. Each sample will be cross-referenced against the Field Supervisor's sample input to accurately track the samples daily. Real-time data entry offers several significant advantages:
  - The template contains built-in logic and error checking to prevent erroneous entries.
  - The template sums sample weights in real time so the Waste Sort Lead can confirm the achievement of weight targets for each sample.
  - The data files are synced routinely in the field, provided cell service is available. At the least, the data is synced each evening and can be accessed and checked by HDR Team QA/QC staff back at the office.

TASK 2D: Data Analysis

Waste Generation

- The HDR Team will collaborate with MDE to finalize a snapshot of statewide waste generation based on facility reports and other data sources to estimate the total tons generated by sector and waste type (MSW). We will segregate imported tons based on gate survey results. The resulting generation calculations will be used as the basis for applying waste composition results.

Waste Composition

- Residential, ICI, and aggregate MSW composition will be calculated using statistical measures of sample mean, standard deviation, and margin of error at a 95 percent confidence level, consistent with the 2016 study.
- Supplemental Composition Data
  - Recent Maryland county-level waste composition studies will be evaluated, and up to two will be selected for inclusion in the 2024 Study update.

TASK 2E: Reporting

The HDR Team will develop an outline of the entire study report to be approved by MDE prior to proceeding with the Draft Waste Characterization Report.

It is assumed that the 2024 Study will closely follow the 2016 Study outline. We will prepare a draft report that describes the purpose, study methodology, sampling, and surveying details and summarizes the essential composition findings for each waste sector and each survey conducted. Specifically, the report will include:

- An executive summary providing key findings in standard solid waste industry terminology.
- Introduction and background for the study, including objectives.
- A description of the methodology used in the study, including a sampling and sorting plan.
- Data sources for calculations.
- Results of the types and quantities of materials in the waste stream,
- A summary of findings, conclusions, and supporting documentation (charts, tables, forms, questionnaires, etc.)
- Raw data in an Excel format and photographs of samples and field work.
- We will provide a draft report for MDE review and comment. We will meet with MDE staff to discuss the report.

We will integrate one round of official comments into the final report. Electronic copies of the report will be provided in Adobe Acrobat, and source files in Word can be provided to MDE upon request. Results tables, raw data, and sample photos will also be uploaded to MDE.

Deliverables

The HDR Team will provide the following deliverables as part of Task 2 including:

- Draft Waste Characterization Sampling Plan no later than 45 days after the Contract award
- Final Waste Characterization Sampling Plan no later than 14 days after receipt of MDE comments
- Health and Safety Plan
- Conduct waste sort and provide a summary of preliminary data analysis
- Draft and Final Waste Characterization Study Report

TASK 3 (2.3.3.5)

Stakeholder Surveys and Interviews

Summary of Approach

The Recycling Needs Assessment will require stakeholder surveys and interviews to compile a comprehensive understanding of waste management practices, including levels of access, materials collected, and infrastructure capacity. The approach the HDR Team plans to deploy has been successful in other states, including the recent Colorado EPR Needs Assessment process, which required the survey to be developed, issued, and analyzed in less than two months. The survey language will be designed to be accessible, relatable, and inclusive.

The proven survey methodology detailed below has resulted in the following successes in Colorado and Oregon:

- Oregon Collection Needs Assessment: A response rate of 83% for incorporated cities and 97% for counties for the Oregon collection needs assessment. Furthermore, approximately 58% of responses came from cities with populations under 4,000, demonstrating strong engagement with smaller communities.
- Colorado Needs Assessment: In total, 183 municipalities and counties responded, successfully representing 81% of the municipality populations and 60% of the total population. We also conducted over 75 tours and interviews with Colorado service providers, end markets, and key stakeholders.

In addition to sending out surveys, the HDR Team recommends facilitating interviews with key stakeholders to walk through the survey and address additional questions or concerns in real time. We intend to refine our approach to verify even greater engagement in Maryland based on recent experiences with surveys of this size:

- Improve the survey questions with a better understanding of the kind of information municipalities are more likely to have or respond to.
- Condense the survey questions to reduce the proportion of respondents that skipped questions and incomplete surveys. Additionally, verifying that the critical information is requested earlier in the survey rather than later is necessary.
- We've seen less engagement in less populated and rural regions. While Maryland has a much larger population density compared to Colorado, we intend to collaborate with groups such as The High 5 Initiative and Trash Free Maryland in rural communities to increase participation in the survey. This is particularly crucial as Maryland has a significantly high proportion of unincorporated areas. Members of the HDR Team including Assedo and VPC will be able to leverage prior experience and local relationships to facilitate a high participation rate.

- Based on experience from previous projects, we acknowledge that we will likely have to put in place nondisclosure agreements (NDAs) with haulers and processors to access some of their data. HDR Team will aggregate responses from private sector operators to maintain individual confidentiality. We will offer the survey results when they are finished as a 'thank you' for participating in the effort.

The success of these surveys and interviews is essential to gathering primary data, verifying existing information, and filling gaps in desktop research. By engaging directly with municipalities, haulers, other relevant stakeholders, such as recyclers in the State, we can obtain insights into service provisions, costs, infrastructure, and community needs. Our tried and tested experience with survey development and implementation and stakeholder engagement provides enhanced data accuracy, verifies robust modeling efforts and the Recycling Needs Assessment will reflect the diverse perspectives and experiences of Maryland residents and commercial entities. The information gathered from these surveys and interviews will be essential to the subsequent Tasks in this Recycling Needs Assessment.

Services

TASK 3A: Survey Design and Distribution

The surveys will be designed for the respondents, including municipalities, regional entities, haulers, and processors, to be easy to use. Survey content may include, but is not limited, to the following:

- Residential trash and recycling tonnage, costs/ revenues, tipping fees
- Commercial trash and recycling tonnage, costs/ revenues, tipping fees
- Organics diversion tonnage, cost/revenues, tipping fees (focusing on Tier 2 composting facilities related to compostable packaging)
- Local transfer/disposal/processing facilities utilized
- Hauling cost estimates
- Local ordinance requirements
- Education and Outreach programs in place
- Contamination rates
- Challenging material received at MRF facilities (e.g., film plastic, tanglers, food waste, etc.)
- Reuse infrastructure:
- Perspective/attitudes on recycling access and EPR

To prepare and deploy the surveys, the HDR Team will compile contacts among the 157 municipalities (including Baltimore City), 23 counties, and 379 Census Designated Places to develop a spreadsheet with contact names, emails, and positions within the organization. This will be carried out simultaneously with the desktop research related to the recycling stream analysis described in Task 4, streamlining efforts to meet the project schedule. In previous projects, we gathered names and emails for several positions within a municipality or county to verify that the survey was received.

A draft set of surveys will be provided to MDE for review, and the HDR Team will incorporate one set of consolidated comments before survey deployment. The surveys can be published and distributed in multiple languages at MDE's request. To improve the success of this process, the HDR Team will engage with SWANA's Mid-Atlantic Chapter, which has extensive reach within Maryland and can help notify their members of the survey and emphasize the survey's importance.

We recognize that some SWANA members are also involved in the Advisory Committee, so our engagement with them is purely to improve participation and raise awareness. Working with stakeholders on and off the Advisory Committee will be critical to gaining trust and developing a Recycling Needs Assessment that represents the perspectives and needs impacted by EPR.

The HDR Team also has long-standing relationships with municipalities such as Northeast Maryland Waste Disposal Authority (NMWDA) – which consists of 8 counties and the City of Baltimore – and Montgomery County, Anne Arundel County, and Prince George County. Additionally, HDR Team members have recent experience surveying Maryland municipalities statewide, and we plan to leverage this experience and partnerships to help distribute the survey and gather data. To fill data gaps, we will conduct phone calls if response rates look low in the middle of the response period to see how we can help.

The HDR Team will compile the survey results, present data consistently for municipalities, haulers, and facilities, and deliver a database to support the efforts described further in Task 4.

OPTIONAL: Additional Survey Engagement and Support

To improve survey responses, we recommend considering hosting two webinars for each audience (municipalities separate from haulers and facilities). The Team will facilitate and record a webinar to explain the survey and the purpose of this Recycling Needs Assessment, answer questions, and provide details on the minimum level of information needed. We will work with MDE to introduce the webinar, and our Team can facilitate the session.

We propose that a recording, transcript, and the frequently asked questions are posted on MDE's website.

Set up a contact email that our Team will review daily through which municipalities can ask questions, and the responses will be added to the frequently asked question document.

TASK 3B: Stakeholder Interviews

The HDR Team has found it helpful to conduct interviews with stakeholders to collect more detailed information and fill in gaps in the survey results. This may include facilitating the survey (described in Task 3a) in-person or over the phone to verify that key stakeholder information is included. We will aim to have one-on-one interviews with a cross-section of the hauler and recycling processor community.

Facilities

- The facility interviews will focus on collecting information from the last three to five years on incoming feedstocks/materials, tonnage data, processing capacity, processing equipment, transfer logistics with associated incoming materials (if appropriate), load rejections, residue quantities, end markets, and planned expansion or upgrade of facility operations.
    - We will provide broad facility condition assessments and potential upgrade and expansion options. Additionally, gaps identified in services geographically and demographically will be noted and used to inform the evaluation further described in Tasks 4 and 5. Information from these interviews may be used to inform analysis for other Tasks, as applicable.
    - Our Facility Engineer will interview six MRFs (including Eagle Recycling LLC – Salisbury, MD; Prince George's County MRF – Capitol Heights, MD; Montgomery County Recycling Center, Derwood, MD; WM Elkridge MRF – Elkridge, MD; Baltimore County MRF, Cockeysville, MD; Apple Valley Waste – Hagerstown, MD), and 11 Compost operations (including Tier 1 over 10,000 TPY and Tier 2 over 5k permitted facilities accepting more than 5,000 TPY) across the State to evaluate the current equipment and operations, as well as potential to expand.

Haulers

- The hauler interviews will focus on collection methods (curbside/drop-off, single stream/dual stream), contamination, materials accepted, fleet data, and service area. The interviews will capture general contractual terms (cost for services, contract duration, penalties, cost escalators, etc.), service option levels/frequency, and material types collected. The survey process with haulers will be of specific importance to understanding services to multifamily properties and further analysis as described in Task 8. Information from these interviews may be used to inform analysis for other Tasks, as applicable. In previous studies, municipalities surveyed had very limited to no information on recycling or composting at multifamily housing.
- Collection method data will allow the HDR Team to:
  - Assess and inventory the current state of collection methods and services for recyclables and organics and capacity
  - Identify the various parties involved in developing and providing collection services in the State
  - Evaluate the existing efforts and initiatives focusing on increasing collection awareness or efficacy for recyclables and organics in jurisdictions
- The Team will interview three (3) of the national hauling providers (e.g., Waste Management Inc, Republic Services, Waste Connections), and up to fifteen (15) privately owned local haulers servicing residential and commercial customers in urban, suburban, and rural areas of the State (e.g., Apple Valley Waste, All Star Waste & Recycling LLC, Perry's Solid Waste Disposal, Northwest Refuse Service, etc.). Interviews will focus on haulers who can or are interested in providing single-stream recycling and/or organics collection. Haulers selected for interviews will represent an equitable spread of regions across the State.

The HDR Team is committed to this project within the timeline set by the MDE; therefore, we'll conduct a focused campaign to schedule interviews during a condensed timeframe (1-2 week period) to promote project progress and data compilation that will contribute to other elements. The information collected will be summarized in a format that is consistent and will be compiled into the database described in Task 4.

Deliverables

The HDR Team will provide the following deliverables as part of Task 3 including:

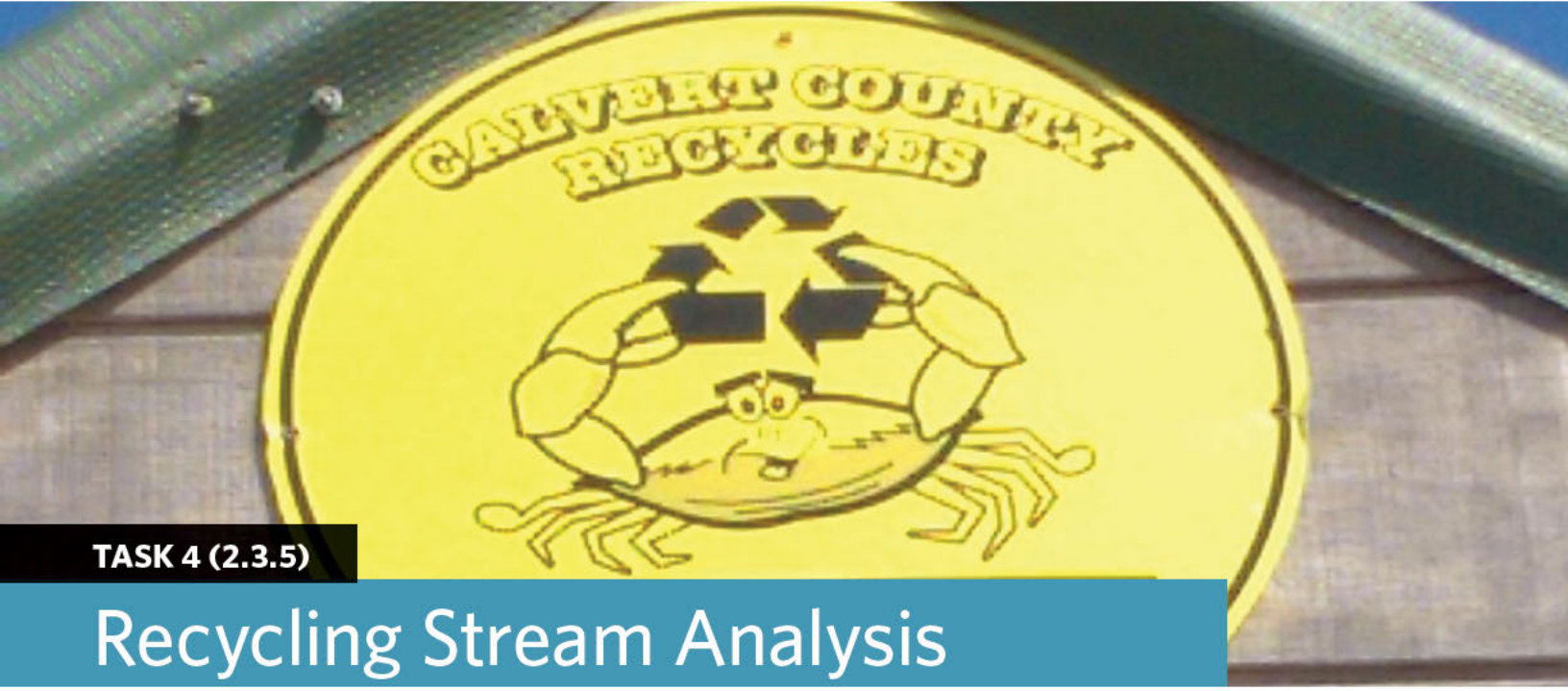
- Draft surveys to municipalities, counties, facilities, and haulers no later than 60 days after the Contract award
- Final surveys to municipalities, counties, facilities, and haulers no later than 14 days after receipt of MDE comments
- Distribution of surveys to municipalities, counties, facilities, and haulers no later than 14 days after receipt of MDE comments
- Survey results and high-level summary 55 days after MDE survey approval.

OPTIONAL: Facility Site Visits

An additional benefit to visiting 6 MRFs and 11 composting facilities across the State will be facilitating the surveys in-person, verifying that crucial information is provided accurately by recycling facility processors.

This assessment will include questions on:

- Operational efficiency
- Planned capital upgrades
- Number of laborers/pickers
- Average throughput rating (e.g., TPH)
- Advanced equipment (optical sorters, QC screens, plastic film processing)
- Service areas and communities serviced (Gap Analysis)
- Materials accepted
- Single-stream vs. dual-stream collection
- Tonnage data from the past five years
- Contamination rate from the past five years
- Recycling revenues of covered materials from the past five years
- Role in customer education



TASK 4 (2.3.5)

Recycling Stream Analysis

Summary of Approach

Our Team intends to conduct internet research to build a baseline understanding of services and service provision within Maryland. This will include reviewing municipality and county websites and municipality ordinances, which will describe the level of service required or provided for both residential and commercial recycling and solid waste disposal. We will also collaborate with MDE and the Advisory Committee to review our list of data sources and reports and to provide support in identifying other sources. The HDR Team will develop a master database of solid waste and recycling operations currently offered to residential and commercial entities within each city and county in Maryland. This database will be critical to subsequent Tasks.

To verify that the recycling and solid waste services provided to unincorporated areas are captured, the review of 157 municipalities will seek to identify how services are provided to the unincorporated areas across the State. This secondary research will form our baseline understanding of what, how, to whom, and where services are provided, and the data will be updated where necessary with more recent primary data from the surveys and interviews.

Given the likelihood of data arriving in varying degrees of granularity, our Team will apply different assumptions based on data from other municipalities. Drawing from our extensive experience in aggregating data from diverse sources, including the Colorado Needs Assessment, we are well-equipped to handle this variation in data quality and smoothing data to verify comparability. For instance, we will consider the cost breakdown between collection and sorting, accounting for factors like volumes, cart sizes, and collection frequencies. We will also consider the impacts of single family versus multifamily versus commercial to verify fair comparisons across different areas.

Services

TASK 4A: Baseline Assessment and Database Development

Our Team will conduct a desktop review and compile feedstock information from available resources on residential and nonresidential incoming streams, including the location-specific waste characterization studies conducted within the last 5 years. This will include reviewing municipality and county websites and municipality ordinances.

This data will be utilized to evaluate the existing infrastructure, capacity, costs, benefits, and environmental impacts of expanding recycling in Maryland. The modeling effort described in the Task 4 approach will be leveraged when data is unavailable or provided.

EXAMPLES OF DATA COLLECTED WILL INCLUDE THE FOLLOWING:

- General information: name of jurisdiction, type, region, number of single family and multifamily households, etc.
- Recycling collection details (for each collection service): single stream or multi-stream, frequency of collection (for curbside), number of drop-off sites and hours of operation (for drop-off), types of vehicles used, cost of service
- Types of services available and service providers
- Performance levels: amount collected, estimated composition breakdown, participation and set out rates, annually collected pounds per unit served
- Transfer and processing: material transferred after collection, name of the operator, location of transfer, MRF operator, MRF location, level of automation, processing costs
- Pricing: cost mechanism to a household (utility, PAYT, subscription), the average cost to the household, and drop-off fees to a user
- Detailed information on whether common packaging types are collected in the jurisdiction

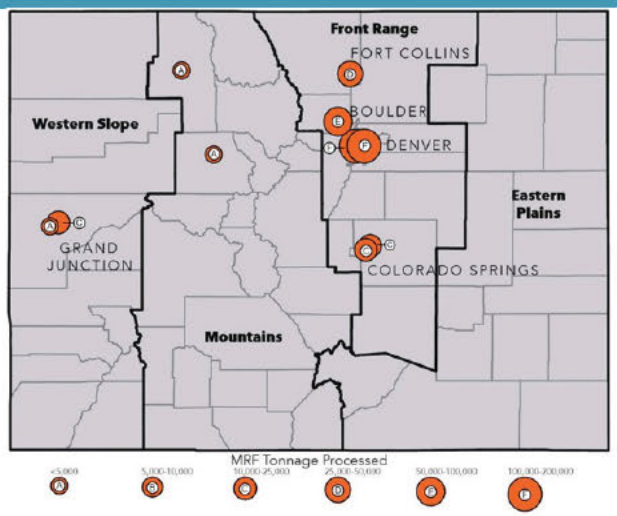
This secondary research will occur at the same time as the survey development. We will develop a master database of readily available reports and data sources that will be useful in understanding current service provisions (reference Table 1 for a preliminary list of key data sources). The final database will summarize data available for each municipality and consolidate the data collected throughout the survey and interview process, including for haulers and facilities.

Our Team understands the challenge of gathering data from secondary sources, and we know gaps will need to be filled with surveys and interviews with municipalities, haulers, and facility operators. The database will be designed to present data consistently for each municipality and can be rolled up to the county or regional level, as appropriate.

Our Team will analyze the database to provide regional and statewide summaries of key metrics, including:

- % of households with curbside and the type and frequency of collection
- Location of transfer and processing facilities by capacity, including the amount of spare capacity, material accepted, and municipalities served
- Haulers servicing each municipality, county, or region
- Tons per household

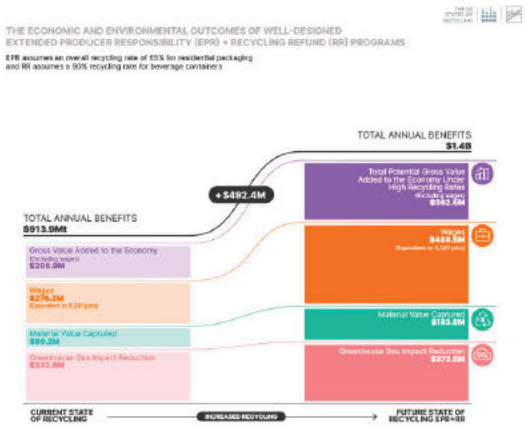
From the data, we will produce static maps (example below) to show access, facility location, and other key items that support the requirements further described in Task 5. This will allow the HDR Team to visually demonstrate recycling access across the State and communities disproportionally impacted by lack of service or placement of recycling-related infrastructure.

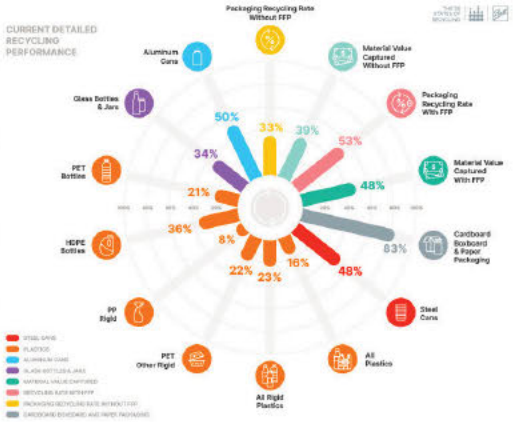


TASK 4B: Estimate Recyclables Annually Disposed

Based on the data and analysis described in Tasks 2, 3, and 4, the HDR Team will estimate the tonnage of recyclables disposed of annually. We will compare Maryland's individual material recycling rates (e.g., cardboard, PET, HDPE, etc.) to the disposal proportions. The results from this analysis will be used to inform Task 9a, which is related to the lost revenue for those recyclables being disposed of.

Our Team has vast experience evaluating key recycling metrics statewide and regionally, including calculating recycling rates and evaluating the capture rate of individual materials. Our Team also benefits from having recently worked on an update of the 50 States of Recycling Report, within which we have reviewed recent Maryland data to calculate a packaging recycling rate for the State using 2021 data sources.





OPTIONAL: Minimum Recyclables List

Based on the HDR Team's experience, it is critical to establish a minimum recyclables list and generate consensus on the criteria to establish high-priority recyclable materials (e.g., value on secondary materials market, ease of processing at MRFs, etc.). How recyclables are prioritized varies based on various factors, including accessibility to end markets, commodity pricing, operational capacity of processing infrastructure, and materials established in existing contracts. Identifying the packaging materials that should be considered part of an EPR program will depend on the results from the survey and desktop research on materials currently accepted Statewide with viable end markets.

A Minimum Recyclable List will influence the access to recycling services throughout the State for different geographies, the recycling and waste diversion rate of the State, and the overall cost of the system. Additionally, establishing consensus on a Minimum Recyclables List will support the subsequent modeling further described in Task 12.

The Team will review the data collected through the surveys, interviews, and desktop research to define a Recyclable Materials List. This will include developing criteria and assessing the covered materials for inclusion and then proposing which material to include in the Minimum Recyclable List and how the material is collected in different geographic areas. For each of the materials, a clear rationale will be provided for why the material is or is not included. The list would then be submitted for review by the Advisory Committee, and the HDR Team would lead a facilitated discussion to establish a consensus on the Minimum Recyclables List as a key result of the Recycling Needs Assessment.

Deliverables

The HDR Team will provide the following deliverables as part of Task 4 including:

- Draft technical memorandum including a statewide analysis on:
  - Recycling materials accepted
  - Processing methods and tonnage diverted, disposed, and reused
  - Costs and revenues of recycling programs
  - Amount of potential recyclables currently disposed
  - A database of current recycling operations and programs provided as an appendix

TASK 5 (2.3.6)

Infrastructure and Capacity

Summary of Approach

The HDR Team will evaluate the current infrastructure, capacity, anticipated need, and associated costs for each component of Maryland's recycling and reuse systems to better understand the ability to support increased diversion resulting from EPR in Maryland. Our Team will leverage the database generated as part of Task 4a to identify the service and infrastructure gaps and improvements required to provide a consistent, accessible service to Maryland recycling generators. As described in the approach, our Team understands that no EPR programs are identical. This Task represents a critical analysis to provide a comprehensive, Maryland-specific assessment of the fundamental requirements of a statewide EPR program.

Services

TASK 5A: Recycling Access/Availability

The HDR Team will leverage the combined results of Tasks 2, 3, and 4 to evaluate the State's residential and commercial recycling access. This analysis will allow us to:

- Determine the proportion of the State with access to recycling on a jurisdictional basis, including types of collection and associated cost of management.
- Analyze where there is mandatory curbside collection, subscription curbside collection, drop-off stations, and/or other collection opportunities (e.g., farmers markets).
- Evaluate the existing efforts and initiatives to increase access to and availability of recycling in communities.
- Model the impact of trash equivalency throughout the State on recycling performance and cost. This would assess the impact of matching recycling access and availability throughout the State to the same access citizens currently have for trash services.

TASK 5B: Recycling Hauling/Drop Off

The HDR Team will leverage the combined results of Tasks 2, 3, and 4 to evaluate the recycling hauling/drop-off infrastructure and capacity available in the State. This will allow us to:

- Build on the collection methods described in Task 5a to model the costs associated with collecting and transferring recyclable and compostable materials. Model data will utilize interview data and industry knowledge to supplement the data gaps from the surveys and desktop research.
- Identify the various parties involved in developing and providing collection services in the State.
- Evaluate the existing efforts and initiatives focusing on increasing collection awareness or efficacy for recyclables and organics in jurisdictions.
- Provide high-level capital cost estimates for expanding the current collection infrastructure.

TASK 5C: Recycling Processing

The HDR Team will evaluate the processing equipment and operations at MRF and composting facilities interviewed and visited during facility site visits (should MDE elect to engage the HDR Team on Optional Task 14). Survey data and desktop research will supplement this effort in understanding the current infrastructure and capacity for processing recyclable and compostable materials. This will allow us to:

- Determine if the State has adequate facility capacity to process the current recycling tonnage.
- Evaluate potential facility improvements needed to handle and process more materials and improve material quality. This will include capital costs for equipment and building upgrades.

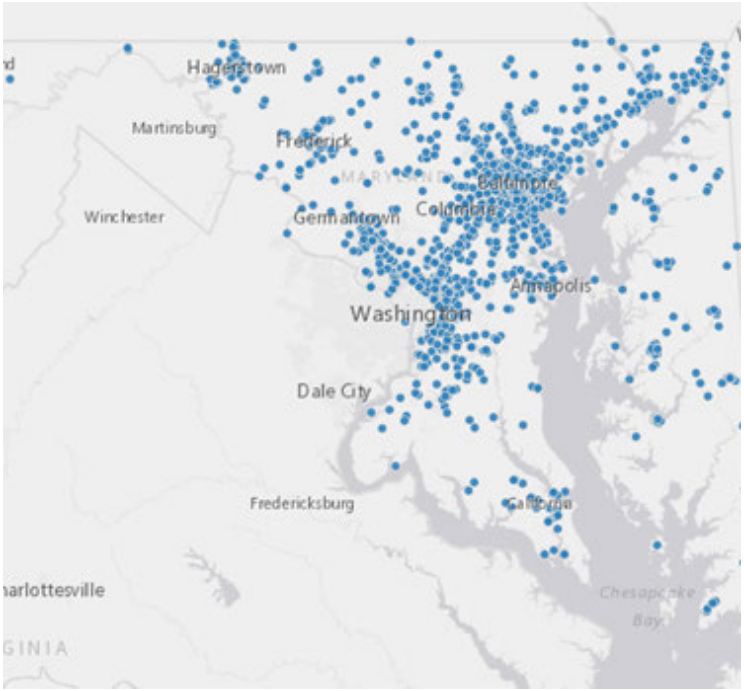
TASK 5D: Facility Development Opportunities

The HDR Team will identify favorable market conditions for increasing recycling or composting facility development that may include, but is not limited to:

- Brownfields redevelopment
- Grant/loan opportunities
- Proximity to existing infrastructure
- Planned private sector facilities
- High population/commercial growth areas

Figure 1 lists the Land Restoration Program Sites across the State as an example of the potential opportunities for brownfields redevelopment.

Figure 1: Maryland Land Restoration Program Sites



HDR assisted nine clients with the Environmental Protection Agency (EPA)'s Solid Waste Infrastructure for Recycling (SWIFR), and Consumer Recycling Education and Outreach (REO) Grant Programs for Political Subdivisions of State and Territories. The HDR Team will leverage our experience developing grant opportunities and supporting project financing as part of this evalution.

TASK 5E: Consumer Education

The HDR Team will analyze data collected through surveys, research, and interviews on education programs regarding waste reduction, recycling, organics, and contamination, including an evaluation of MDE's source reduction credit program. This assessment will allow us to:

- Assess and develop an inventory of the current State of education regarding recycling and waste management.
- Identify the various parties involved in developing and providing recycling education by region.
- Evaluate existing education efforts and initiatives implemented by different actors (including content published in multiple languages), focusing on critical topics including contamination prevention, increasing participation, participant capture behavior, covered materials, recycling service availability, and language accessibility of information.
- Model the costs associated with education and outreach, contamination management, and contract management.
- Understand the relationship between recycling participation levels and education efforts.
- The data will be captured as part of the database and formatted to rank the education programs so that MDE can easily identify those education programs or campaigns that can be duplicated throughout the State.

TASK 5F: Reuse Infrastructure

The HDR Team will analyze data collected through surveys, research, and interviews regarding reuse infrastructure and programs, including:

- Conduct an assessment and inventory of the current state of reuse activity in Maryland.
- Identify the various parties involved in developing and providing reuse services by region.
- Evaluate existing reuse programs and initiatives implemented, assessing uptake, scalability, material streams targeted, and capacities.

Deliverables

The HDR Team will provide the following deliverables as part of Task 5 including:

- Draft a technical memorandum including the current state and opportunities to improve the following components of the State's recycling and reuse programs:
  - Recycling access/availability to both residents and non-residents
  - Recycling hauling/drop-off services
  - Recycling processing facility capacity
  - Facility development opportunities
  - Consumer education
  - Reuse Infrastructure

TASK 6 (2.3.7)

Worker Conditions

Summary of Approach

The HDR Team will leverage its significant industry experience to evaluate worker conditions and identify opportunities to mitigate dangers such as driving collection vehicles long distances, operating in hard-to-collect areas, manually extracting tanglers and film plastic from MRF equipment, and other recurring hazards at solid waste management facilities.

According to the Bureau of Labor Statistics, waste and recycling collection is ranked the 7th deadliest job in the US. Additionally, workers at the State's landfilling, recycling, and composting facilities operate heavy machinery and process significant tonnages daily.

Services

- The HDR Team will analyze the results of the survey and facility interviews, conduct desktop research, and engage with regional and national trade associations (e.g., Solid Waste Association of North America (SWANA), National Waste & Recycling Association, etc.) to evaluate worker conditions.
- This analysis will leverage the HDR Team's collective industry experience, including the safety innovations and positive overall impact of implementing leading technologies in collection vehicles and processing facilities (e.g., on-board vehicle technologies, optical sortation, automated QC picking, etc.).
- Additionally, we will use data from Maryland universities, the Department of Labor, non-profits, and other sources to evaluate the current worker conditions and identify challenges.

Deliverables

- Draft a technical memorandum summarizing the current worker conditions and opportunities in the recycling industry in Maryland.

TASK 7 (2.3.8)

Opportunity for WMBE

Summary of Approach

The HDR Team understands the importance of cultivating opportunities for WMBE individuals and organizations in the State. The solid waste and recycling industry represents a significant portion of the economic activity in the State. Our Team will evaluate the opportunity EPR could represent to increase the representation of WMBE individuals and organizations in Maryland's economy.

Services

- The HDR Team will analyze the survey and facility interview results and conduct desktop research on the literature from the last five years by Maryland universities, government agencies, and non-governmental organizations.
- This analysis will be used to compile comprehensive information regarding the current level of participation and representation of WMBE individuals and organizations in the recycling industry.
- This data will be analyzed and compared to the potential opportunities for increased roles at each level of the recycling industry (e.g., from the board room to the break room).

Deliverables

- Draft a technical memorandum evaluating the current opportunities for women and minority individuals in the recycling industry.

TASK 8 (2.3.8)

Multifamily and Commercial Recycling Services

Summary of Approach

Depending on the location, multifamily housing can vary from four to above 100 dwelling units (e.g., ranging from a duplex to a large apartment complex). For this reason, modeling commercial and multifamily recycling and waste management requires distinct approaches and assumptions due to several key differences in waste generation, composition, collection methods, and operational dynamics. The following summarizes the overall approach the HDR Team will take to evaluate multifamily and commercial services in the State:

Material Composition

- Commercial establishments often generate a different mix of waste compared to residential properties, with potentially higher volumes of specific materials such as cardboard, paper, and flexible packaging waste.
- Multifamily properties may have unique waste streams influenced by factors like tenant demographics, building size, and amenities provided

Recycling Practices

- Commercial entities may have varying levels of participation and compliance with recycling programs, influenced by factors such as business type, size, and operational priorities.
- Multifamily complexes may face challenges implementing effective recycling practices due to shared facilities, tenant turnover, and management responsibilities.

Collection Methods

- Commercial waste collection may involve larger containers, compactors, or specialized bins tailored to the volume and type of waste businesses generate. Additionally, the frequency of collection differs from typical residential services.
- Multifamily properties may utilize centralized dumpsters or communal recycling areas, with collection schedules and logistics differing from single family residences. Often, this results in collection services that are more similar to what commercial entities receive.

Considering these differences, the Team will leverage research on local ordinances and information from surveys, interviews, and site visits to estimate the potential material that could be captured from multifamily and commercial entities. The Team will also benchmark local government approaches to increasing capture rates of desired materials.

Services

TASK 8A: Determine Covered Entities

The types of entities covered under the term commercial are not universally agreed upon; therefore, one of the first Tasks for this analysis is to agree upon the definitions of what entities are included under this Task with MDE. The types of entities covered in this analysis will consist of:

- Hospitality locations
- Public places
- State and local government
- Small businesses (gross revenue <$5M)
- Large businesses (gross revenue >$5M)
- Schools

TASK 8B: Evaluate Ordinances, Research, Surveys, and Interviews

The HDR Team will conduct a review of municipal ordinances pertaining to multifamily and commercial recycling regulations to compile existing data from the following sources:

- Local Solid Waste Management Plans
- Survey data
- Interview information collected in the previous Tasks

Based on the information compiled, our Team will identify multifamily recycling requirements and summarize how commercial collection is provided in each municipality, county, and region of the State (e.g., closed market, non-exclusive franchise, open market).

TASK 8C: Estimate Potential Material That Could be Captured from Multifamily and Commercial Entities

The HDR Team will estimate potential material that could be captured from multifamily and commercial entities by evaluating the following:

- Waste Generation Rates: Different waste generation rates are applied based on property type, business sector, or occupancy density.
- Recycling Participation: Varying levels of recycling participation and contamination rates are assumed for commercial and multifamily properties.
- Collection Logistics: Distinct collection frequencies, container sizes, and routes are considered to reflect the operational requirements of commercial and multifamily waste management.

This effort will be conducted in conjunction with Task 9a but will provide a specific analysis of multifamily and commercial recycling opportunities.

TASK 8D: Benchmarking/Best Practices

Our Team will compile benchmarking of local government approaches to increasing the capture rate of desired materials, including multifamily recycling ordinances and universal commercial recycling ordinances nationwide.

OPTIONAL: Additional Multifamily/Commercial Survey and Webniar
Enhance stakeholder engagement with multifamily and commercial sectors by facilitating a webinar and distributing surveys to multifamily and commercial stakeholders leveraging local partnerships and relationships.

Deliverables

The HDR Team will provide the following deliverables as part of Task 8 including:

- Draft technical memorandum summarizing
  - Current state of recycling for multifamily and commercial entities
  - Potential diversion opportunities
  - Case studies
  - Recommended practices

TASK 9 (2.3.10)

Recycling Economic Opportunities

Summary of Approach

Millions of dollars worth of valuable recyclables are hauled for disposal year after year. The HDR Team will evaluate lost State and local revenue due to recyclable materials not being recycled, current jobs and opportunities to increase employment, barriers to using recyclable materials as manufacturing feedstocks, and recommendations to stimulate job growth.

The information gathered through the primary and secondary research will be reviewed, verified, and included in the Recycling Needs Assessment model. From this, we will calculate the economic impacts associated with increasing recycling in Maryland, including:

- Cost of services to single and multifamily households
- Material revenue and value
- Materials captured for recycling
- Sorting costs
- Decreased landfill costs with recycling improvements
- Employment opportunities

Recycling represents a significant opportunity for manufacturing facilities in the State to utilize alternative feedstocks that present both economic and environmental benefits and would support the net-zero GHG reduction goals set forth in HB 171 - Climate Crisis and Environmental Justice Act.

We have already carried out some of this analysis for Maryland as part of Eunomia's 50 States of Recycling Report, including:

- Gross Value Added to the economy
- Avoided GHG emissions
- Wages
- Material revenue

These economic impacts are essential for communicating the benefits and realities of implementing an EPR program. Part of a successful EPR program includes material circularity and verifying that high-quality feedstocks are circulated back into the system. This Task will also identify any relevant barriers to circularity in Maryland, which is highly impacted by awareness, contamination, end markets, and local policies.

Services

TASK 9A: Lost Revenue

The HDR Team will leverage the data from the waste sort, contamination rates, and other valuable information from our primary and secondary research to calculate State and local revenue that may be considered lost because recyclable materials are not being recycled. Our Team will provide a material-by-material financial evaluation, including Task 8a analysis of potential recyclables that could be captured from multifamily and commercial sectors.

TASK 9B: Current Recycling Jobs and Growth Opportunities

Using information from our surveys and (potential) site visits, the HDR Team will be able to identify opportunities to increase employment and services in the industry by material type, considering what processors could potentially handle and process more material generated by EPR.

Our Team will review, analyze, and consolidate information from the Institute of Scrap Recycling Industries' "2021 Economic Impact Study, US-Based Recycling Industry" and the US Bureau of Labor Statistics data specific to Maryland to convert wage data to current jobs associated with solid waste and recycling industries.

Based on this analysis, we will provide recommendations and incentives for stimulating job growth and business opportunities based on improved practices seen across the US and industry knowledge.

TASK 9C: Barriers to Increasing Use of Recyclable Materials as Feedstocks

The HDR Team will identify the barriers to utilizing recyclable materials as feedstocks in manufacturing as listed in the HB171 - Yard Waste and Food Residuals Diversion and Infrastructure Act Final Report and by reviewing recycling feasibility studies conducted in Maryland and across the country.

This analysis will include case study examples of how these barriers have been improved or eliminated in other areas in the US and internationally, as applicable.

We will use various tools and work with MDE to gather and summarize data from surveys, interviews, and/or site visits, as well as readily available reports and studies. Our Team will assess the feedstock level of contamination at the MRFs and compost facilities (e.g., percentage of inbound tons), source of contamination information, current contamination tracking mechanisms, and available facility records such as the composition of residues, commodity contamination, and costs to process residues.

Additionally, a high-level contamination analysis will be conducted that considers the following:

- The operational and financial impact of non-recyclable and/or non-compostable materials contaminate processing feedstock (e.g., negative impacts on worker safety, end product quality, and residue disposal costs)
- Understanding the existing contamination of feedstocks for MRFs and compost facilities and the amount and composition of MRF residues will be important in identifying how EPR can support improving feedstock quality.

Deliverables

The HDR Team will provide the following deliverables as part of Task 9 including:

- Draft a technical memorandum of the potential economic impacts and barriers to increasing recycling in the State, including:
  - Revenue lost due to disposal of recyclables
  - Job opportunities in the recycling industry and growth opportunities
  - Barriers to increasing use of recyclable materials, including a high-level contamination analysis

TASK 10 (2.3.11)

Equity Within Recycling Systems

Summary of Approach

The HDR Team will conduct stakeholder/project-area analyses to understand community needs and identify populations' characteristics in the project area. Geographic Information Systems (GIS) will be used to extract critical variables for custom project areas, such as business summaries and minority, disability, income, and age population statistics. This data is complemented by spatially enabled market potential information, in which we can assess disposable income spending and retail/financial/health/recreation expenditures.

These assessments inform our strategy, providing a qualitative, visual, and statistical understanding of the project community. The information collected will help identify at-risk and traditionally underserved populations and develop targeted outreach strategies.

Services

TASK 10A: Screen Community Characteristics

Using Md. Code Ann., Environment Article §1–701 to define underserved communities, the HDR Team will use the following tools to assess and collect data:

- Community Analytics Tools – developed by our in-house Strategic Communications Team
- EPA's Environmental Justice (EJ) Screening Tool
- Desktop research
- Onsite interviews with MRFs

We will consider numerous socioeconomic and geographic factors related to recycling access and education. This includes an analysis of the population density of different areas, as it can affect the efficiency and cost-effectiveness of recycling services due to economies of scale and proximity to collection points. Sparsely populated areas have limited to no access to services due to those same economies of scale.

TASK 10B: Equity Analysis

Our Team will leverage the experience of Assedo to engage and better understand the services or gaps and VPC in services within the rural Maryland communities. Understanding different communities' demographics can help effectively tailor programs, including educational campaigns and incentives. This work will be a critical and timely pairing with multiple elements of the Recycling Needs Assessment.

The Team acknowledges the likelihood of data gaps despite rigorous research, survey implementation, and interviews. Notably, it is already established that there is a significant lack of data on Census Designated Places, impacting insight into approximately 60% of the State population. To address this, the Team will:

- Evaluate the demographics of citizens who live in areas with limited data, including race/ethnicity, immigration status, and income level, among other factors, to understand who this data gap may impact.
- Overlay these communities with the EPA's EJScreen to analyze community characteristics of areas where data gaps exist.
- Engage directly with these communities to gather qualitative information where quantitative data is unavailable to verify these groups are not marginalized in the research process.
- This process will aid in validating data and verifying that Maryland residents are represented in the data compiled inclusively.

Our Team will use a proprietary Community Analytics Tool to assess the services provided and engage with disproportionately underserved communities to deliver recommendations for improving equity and equitable outcomes.

TASK 10C: Recommendations

- Provide recommendations for improving equity and equitable outcomes for underserved populations in the State's recycling system.

OPTIONAL: Stakeholder Webinar/Engagement

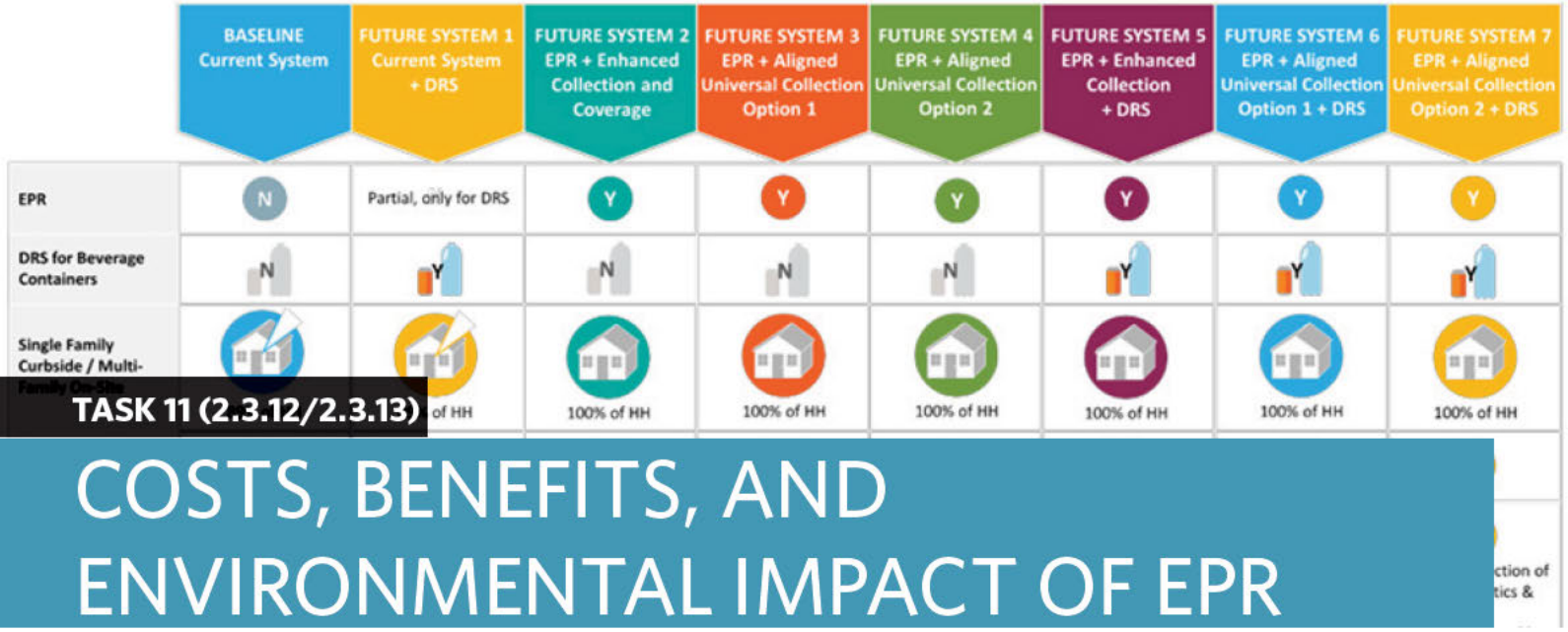
The Team will also assemble and facilitate focus groups comprised of stakeholders within the existing recycling system. The focus groups will cover different aspects of the recycling process, from curbside collection to material recovery facilities and waste management strategies. We aim to understand how underserved populations interact with and within the system. The literature review in Task 7 would help inform areas of exploration for the focus group sessions.

Deliverables

The HDR Team will provide the following deliverables as part of Task 10 including:

- Recycling access maps
- Draft and final findings Memorandum, including an equity analysis and recommendations for best practices and improvement.
  - The HDR Team anticipates one set of consolidated tracked changes.

Figure 5: Overview of Future Systems Modeled Against the Current System



TASK 11 (2.3.12/2.3.13)

COSTS, BENEFITS, AND ENVIRONMENTAL IMPACT OF EPR

Summary of Approach

EPR has been implemented in multiple jurisdictions across the globe, including across Europe and Canada. It is also emerging in the US with bills passed in Oregon, Maine, California, and Colorado. While we recognize that it will be important for MDE to understand the progress in the US, none of these states has enacted packaging-based EPR. As part of this Task, the HDR Team will benchmark the costs, benefits, and environmental impacts of EPR in locations that have enacted EPR programs, as well as anticipated impacts for areas already in the planning or program implementation stages.

No packaging-based EPR programs are the same, and program requirements and implementation strategies may vary widely based on how waste and recycling materials are processed, disposal infrastructure, and recycling commodity markets.

Services

TASK 11A: Review of Jurisdictions with Implemented Programs

The Team will review the policies and programs in the following locations:

- Washington
- Oregon
- Colorado
- British Columbia (BC)
- Ontario
- Quebec
- European EPR (France, Belgium)

This evaluation will include the role of enforceable targets (i.e., on recycling, reuse recycling, and minimum recycled content), governance structures in place, and the role of the public oversight agency and advisory bodies necessary to verify accountability and transparency of programs.

TASK 11B: Costs, Benefits, and Environmental Impacts of EPR

The following data will be collected and analyzed within the program research performed in Task 11a to outline the costs, benefits, and environmental impacts of implementing various EPR programs. The impacts will be evaluated among stakeholders, including local governments, waste generators, and private sector haulers/processors. The following describes the key considerations for evaluating the impacts of EPR for each of the programs researched in Task 11a:

Costs

- The total cost of the system
- Cost per household with variances between single and multifamily, rural and urban
- The cost spent on education and engagement
- Infrastructure investment

Benefits

- Access to curbside and drop-off facilities, including how this has changed since the introduction of EPR
- Jobs created
- Benefits will also be outlined pertaining to specific stakeholder groups

Environmental Impacts

- Improvements in recycling rates, tonnages recycled, and additional material value/revenue
- Improvements in infrastructure, including consideration of reuse
- Source reduction
- Reduced environmental damage, for example environmental justice communities
- Comparison of Greenhouse Gas emissions based on implementing EPR

Deliverables

The HDR Team will provide the following deliverables as part of Task 11 including:

- Draft technical memorandum of EPR policies and programs, including
  - Database of EPR program research (included as an appendix)
  - Summary of costs, benefits, and environmental impacts of EPR programs

TASK 12 (2.3.14)

EPR Recommendations

Summary of Approach

Based on the response in Addendum 2, dated March 6, 2024, the HDR Team will evaluate the specific implementation costs of EPR in Maryland as well as an estimate of the ongoing future costs and benefits of EPR when it is introduced. The EPR research that we will carry out and present will demonstrate that there is no one way in which EPR is delivered around the world or even within the US. As such, to estimate the costs and benefits specific to Maryland, we will host a workshop with key stakeholders that reviews various approaches to EPR including:

1. Set a recycling target that EPR would need to deliver for overall packaging and paper products or individual packaging materials.
2. Determine what benefits EPR needs to deliver. For example, universal access to services would involve a consistent range of materials collected from households and drop-offs for covered entities.

Another consideration for modeling is developing a scenario based on varying factors that influence performance and costs, including but not limited to:

- Access to curbside and drop-off facilities
- Range of materials collected
- Infrastructure investment needs
- Investment in education
- Source reduction, including consideration of the impact of reuse (although it should be noted that it is not easy to estimate this as activities and knowledge of the impacts are emerging in the US and globally).

Services

TASK 12A: Scenario Workshop

This Task includes modeling for one future EPR scenario; therefore, we are proposing to facilitate a single 2-3 hour workshop to scope out the future state of a potential EPR program with MDE and potentially the Advisory Committee. The workshop results will allow us to model the costs, economic benefits, environmental benefits, and performance of a potential EPR program specific to Maryland.

Prior to the workshop, we will issue the draft technical memorandum developed in Task 11, including the findings from the research of EPR in other states/countries, which may include, but is not limited to:

- The role of enforceable targets on reduction, reuse, recycling, composting, and minimum recycling content of packaging
- The extent and types of public oversight by government agencies and advisory bodies are used to verify the accountability and transparency of these programs.
- The suite of different levers that could be put in place under EPR and the relative impact of these levers on cost and benefits.

The HDR Team will leverage the recent modeling and approach developed for the Colorado Needs Assessment to lead the discussion for the workshop. The outcome of the workshop will provide our Team with the information to model:

- The costs of the system, including the operating expenses and capital costs, are presented as a total cost plus cost per ton recycled and cost per household, for example
- The economic benefits are based on data sources such as the Economic Impact Study, the US-based recycling Industry from ISRI, plus other metrics used to calculate Gross Value Added to the economy, jobs, material revenue, reduced waste to landfill, etc
- Environmental benefits, including avoided GHG emissions

TASK 12B: Recommendations and Results

Based on the chosen scenario in Task 12, we will model the scenario and selected levers to evaluate this EPR approach specific to Maryland, including:

- The relative costs, benefits, and environmental impacts to the range of stakeholders, including:
  - The State
  - Haulers
  - Municipalities
  - Households and consumer
  - Commercial businesses
  - Local Recyclers
- Current costs, benefits, and environmental impacts of increased recycling may include, but are not limited to:
  - Current levels of access to services
  - Recycling rates for different materials
  - Planning-level capital and operating cost of the system
  - GHG avoided

The HDR Team will also identify:

- Roles and responsibilities of local governments, the Advisory Committee, and recycling processors
- Targets that could be achievable through the potential EPR program
- Consideration of the role and impact of source reduction, including the use of targets for reuse
- Consideration of the use of minimum recycled content targets under EPR legislation

We will undergo thorough testing to validate our outputs, aligning the results with MDE's volume and cost estimates and data from other jurisdictions.

Deliverables

The HDR Team will provide the following deliverables as part of Task 12 including:

- Facilitating a 2-3 hour virtual/in-person EPR workshop and summary of the scenario selected
- Draft technical memorandum summarizing the results of Tasks 11 and 12, key findings, and recommendations.

TASK 13 (2.3.16)

WRITING THE RECYCLING NEEDS ASSESSMENT REPORT

Summary of Approach

The HDR Team will write the Recycling Needs Assessment Report consistent with Section 2.3.16 of the RFP. Our Team is prepared to help MDE meet its commitment to providing a high-quality report to the General Assembly while meeting the target timeline of October 31, 2024.

We recognize the importance of developing Maryland's EPR Recycling Needs Assessment and want to verify that we have implemented effective communications, meetings, workshops, and approval processes for success

Services

TASK 13A: DRAFT REPORT

Our Team will streamline the Recycling Needs Assessment Report development by leveraging the content developed in the draft technical memos and Monthly Recycling Needs Assessment Reports. The draft report will be delivered to MDE by October 1, 2024, as a .docx file. MDE will provide consolidated comments to the draft report, which the HDR Team will review and incorporate.

TASK 13B: FINAL REPORT

The final Recycling Needs Assessment Report will be transmitted to MDE no later than October 31, 2024, in both .docx and .pdf format and include applicable technical appendices to support the analysis and results presented. The HDR Team will incorporate one round of additional comments on the final report, as necessary.

Deliverables

The HDR Team will provide the following deliverables as part of Task 13 including:

- Draft Recycling Needs Assessment Report
- Final Recycling Needs Assessment Report

TASK 14

OPTIONAL SERVICES

Summary of Approach

The HDR Team has significant experience evaluating EPR programs and conducting Needs Assessments. Based on this experience and consistent with Sections G and H of the RFP, we have provided several optional services that would benefit the Recycling Needs Assessment effort.

The optional services will provide greater depth and higher confidence in the data gathered and site-specific understanding of municipal recycling programs and processing facilities. The following optional services are presented in the order they appear throughout the work plan. The optional services listed here are not included in our pricing in Volume II - Financial Proposal. The HDR Team is open to further discussion about these optional services, and we would be happy to provide pricing and an updated schedule to reflect incorporating these upon request.

Services

TASK 14A: ADDITIONAL WASTE CHARACTERIZATION SAMPLING

Our baseline proposal includes ten days of field data collection, which is reflective of the level of sampling for one season. The downside to this baseline proposal is that the results of the composition analysis will exhibit higher margins of error (MOE), meaning that the mean composition estimates will be less accurate in this update compared to the prior study.

MOEs for material groups will likely be in excess of 10 percent of the mean, whereas in the 2016 Study the MOEs at the group level were generally under 10 percent.

As an optional service, the HDR Team can target the same level of sampling as both seasons of the 2016 Study to achieve a consistent MOE; however, we believe that the expedited schedule for this engagement is more conducive to the lower level of effort.

TASK 14B: FACILITY SITE VISITS

Our Facility Engineer will visit six MRFs (including Eagle Recycling LLC – Salisbury, MD; Prince George's County MRF – Capitol Heights, MD; Montgomery County Recycling Center, Derwood, MD; WM Elkridge MRF – Elkridge, MD; Baltimore County MRF, Cockeysville, MD; Apple Valley Waste – Hagerstown, MD), and 11 Compost operations (including Tier 1 over 10,000 TPY and Tier 2 permitted facilities accepting more than 5,000 TPY) across the State to evaluate the current equipment and operations, as well as potential to expand. An additional benefit to visiting MRFs and composting facilities across the State will be facilitating the surveys in-person, verifying that crucial information is provided accurately by recycling facility processors.

This assessment will include questions on:

- Operational efficiency
- Planned capital upgrades
- Number of laborers/pickers
- Average throughput rating (e.g., TPH)

- Advanced equipment (optical sorters, QC screens, plastic film processing)
- Service areas and communities serviced (Gap Analysis)
- Materials accepted
- Single-stream vs. dual-stream collection
- Tonnage data from the past five years
- Contamination rate from the past five years
- Recycling revenues of covered materials from the past five years
- Role in customer education

TASK 14C: MINIMUM RECYCLABLES LIST

Based on the HDR Team's experience, it is critical to establish a minimum recyclables list and generate consensus on the priority recyclable materials. How recyclables are prioritized varies based on various factors, including accessibility to end markets, commodity pricing, operational capacity of processing infrastructure, and materials established in existing contracts. Identifying the packaging materials that should be considered part of an EPR program will depend on the results from the survey and desktop research on materials currently accepted statewide with viable end markets. A minimum recyclable list will influence the access to recycling services throughout the State for different geographies, the recycling and waste diversion rate of the State, and the overall cost of the system.

The Team will review the data collected through surveys, interviews, and desktop research to define a Recyclable Materials List. This will include developing criteria and assessing the covered materials for inclusion and then proposing which material to include in the minimum recyclable list and how the material is collected in different geographic areas. For each of the materials, a clear rationale will be provided for why the material is or is not included in the list.

The list would then be submitted for review by the Advisory Committee, and the HDR Team would lead a facilitated discussion to establish a consensus on the Minimum Recyclables List as a key result of the Recycling Needs Assessment. Education and outreach collatoral related to solid waste and recycling service is often published in multiple language.

The HDR Team would engage a language translation service to support the evaluation of information in multiple languages, which would have the benefit of increasing the WMBE percentage achieve as part of this effort.

TASK 14D: MULTIFAMILY AND COMMERCIAL/ EQUITY WEBINAR(S)

Enhance stakeholder engagement with multifamily and commercial sectors and/or equity stakeholders by facilitating one or more webinar(s) to stakeholders leveraging local partnerships and relationships.

TASK 14E: ADDITIONAL SURVEY ENGAGEMENT AND SUPPORT

Optional Hosted Webinars: To improve survey responses, we recommend considering hosting two webinars for each audience (municipalities separate from haulers and facilities). The Team will facilitate and record a webinar to explain the survey and the purpose of this Recycling Needs Assessment, answer questions, and provide details on the minimum level of information needed. We will work with MDE to introduce the webinar, and our Team can facilitate the session. We propose that a recording, transcript, and the frequently asked questions are posted on MDE's website.

Optional Contact Email Monitoring Set up a contact email that our Team will review daily through which municipalities can ask questions, and the responses will be added to the frequently asked question document.

Deliverables

The HDR Team will provide the following optional deliverables as part of Task 14 including:

- An additional level of waste characterization sampling as part of Task 2
- Conduct facility site visits for 6 MRFs and 11 compost facilities
- Develop a Minimum Recyclables List and facilitate discussion
- Multifamily and commercial webinar
- Additional Survey Engagement and Support including webinars and email contact monitoring
- **Optional:** PowerPoint presentation summarizing Study results

TAB F

G. EXPERIENCE AND QUALIFICATIONS OF PROPOSED STAFF

Our Team delivers a comprehensive, technically sound, and collaborative solution with the availability and focus needed.

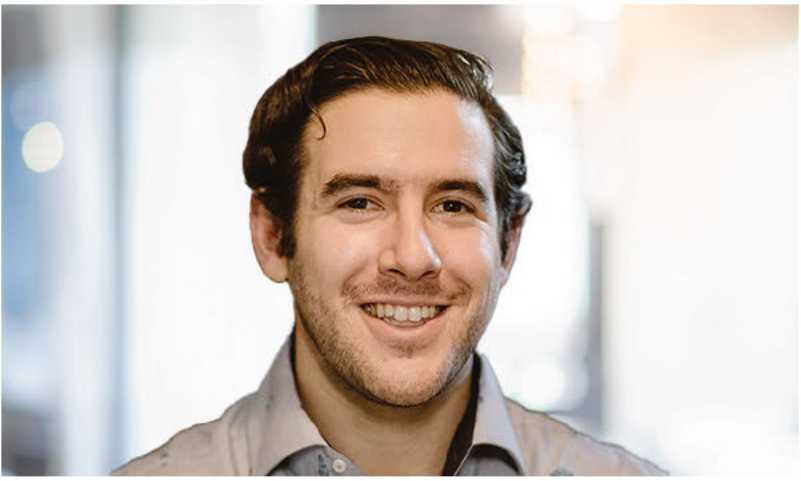
EXPERIENCE AND QUALIFICATIONS OF PROPOSED STAFF

We aim to provide MDE with a highly experienced and qualified Team to deliver the Recycling Needs Assessment (Project) successfully. We have assembled a Team of waste industry experts and local expertise, including **HDR, Eunomia, MSW Consultants, Straughan Environmental, Assedo, and VPC** to achieve this. We have structured our Team to be well-positioned for execution during a short time frame with quality oversight from our Technical Advisors.

Collaboration will be critical to efficiently gather and evaluate data, and our seasoned professionals can be counted on for clear and effective communication. Furthermore, we will utilize our full-service, in-house strategic communications and public engagement Team to facilitate local community involvement during project development. This Team will spearhead public and stakeholder outreach efforts and implement premiere educational campaigns as needed. We understand that the wide range of Tasks involved in this Project requires a diverse Team capable of delivering effective management and technical expertise across multiple professional service disciplines.

Resumes for Key Personnel, including Key Personnel for Team subcontractors, who are assigned and committed to the Recycling Needs Assessment are on the following pages. Each resume includes the specific experience the individual has had relative to the Tasks and Scope described in our detailed Work Plan in Section F, Tab E.

"This is an exciting time for Maryland and the evaluation of Extended Producer Responsibility for packaging - an increasingly challenging and critical component of the solid waste system. Maryland is leading the charge to foster collaboration between public and private stakeholders to prioritize recycling, support economic opportunities for residents and businesses, and proactively mitigate GHG emissions. I'm excited to work with MDE to develop the Recycling Needs Assessment that will set the foundation for better overall waste management system for the future of Maryland. Although it will be a large undertaking to gather and analyze a significant amount of information in such a short timeframe, I'm confident the breadth and diversity of the Team we have assembled can be successful especially due to our long-term relationships with clients in the Maryland, local presence, and collective EPR experience. I'm very excited to be a part of it!"
-Eric Weiss, Project Manager



Eric Weiss

PROJECT MANAGER
TASKS 1, 9, 13, 14

Eric has ten years of experience providing solid waste advisory services across the US. He has a proven track record of leading strategic, operational, and economic planning projects for public and private sector clients, leveraging technical experience to communicate the impacts of sustainable material management on water, air, and transportation sectors to achieve social, environmental, and corporate governance goals. He will use his strong skill set in solid waste planning and management systems, infrastructure design, facility development, and financial/economic evaluation to manage and help deliver the Statewide Recycling Needs Assessment for MDE.

Eric has demonstrated exceptional leadership skills and a commitment to delivering high-quality work for financial cost of service and rate assessments, solid waste management and zero waste planning, strategic procurements, material recovery facility audits, waste characterization studies, and organics management planning. He has a passion for effective solid waste management and resilience planning, a deep understanding of environmental engineering, and an ability to communicate complex technical concepts to decision-makers and the public

Education
BS, Integrated Engineering, Arts and Sciences, Lehigh University
Fundamentals of Project Management, University of Virginia Darden School of Business

As the project manager, Eric Weiss will be the driving force behind the successful execution of the project. He brings 10 years of solid waste and recycling planning, procurement, and evaluation experience and lives with his wife in the DMV area. Eric has a proven track record of delivering high quality data-driven insights related to financial, operational and environmental impacts of solid waste management, including for some of the largest cities and regions in the US. His strong leadership and communication skills will be instrumental to delivering key milestones and adhering to the compressed project schedule.

Relevant Experience

- **Maryland Environmental Service, Eastern Maryland Recycling Feasibility Assessment, MD**
- **Anne Arundel County Department of Public Works, Technology Feasibility and Comparison Study, MD**

Non-HDR Experience

- **North Central Texas Council of Governments Regional Solid Waste Management Plan Update and Waste Characterization Study, and Organics to Fuel Study, TX**
- **City of Austin, Zero Waste Plan, TX**
- **Various Solid Waste Master Planning including Material Recovery Facility Audits, Organics Management, Procurement Assistance for the following municipalities:**
  - » **City of Dallas, TX**
  - » **City of McKinney, TX**
  - » **City of Denton, TX**
  - » **City of Frisco, TX**
  - » **City of Fort Worth, TX**
  - » **Town of Queen Creek, AZ**

Jessica Lally

EPR LEAD
TASKS 1, 11, 12, 13, 14

Jessica Lally is a proven leader, coalition builder, and change agent with 8 years of experience in the sustainable materials management and environmental industry. She is an experienced Solid Waste Planner, joining HDR from the City of Denver's Department of Transportation and Infrastructure. Jessica has led inter-agency efforts to implement major solid waste policies and programs that drive operational efficiencies and waste diversion at the local and state level. Most notably, she managed the development and implementation of Denver's Pay As You Throw program, overseeing almost 100 project staff, a $10M implementation budget, and the operational roll-out for citywide composting. Jessica is also a Recycle Colorado Board Member, and liaison to the Colorado Composting Council, a chapter of the United States Composting Council. As a leader within this mission driven organization, she engages with a diverse body of private and public sector stakeholders to work toward a circular economy in Colorado by advancing infrastructure, end markets, and policy.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **County of Fairfax, County-Wide Zero Waste Plan, VA**
- **Iowa Department of Natural Resources, Statewide Food Waste Prevention and Management Plan IA**

Education
BA, Environmental Sciences, University of Denver

Dan Bacehowski

TECHNICAL ADVISOR
TASK 12

Dan brings 23 years of technical and management experience in environmental engineering consulting, including master planning with a focus on solid waste diversion program planning and development, operations assistance, regulatory reporting, facility permitting and compliance guidance. Dan provides HDR's clients with a visionary approach for materials management solutions. When it comes to programs or technologies that divert materials from the landfill, Dan understands where to start the conversation. Dan is an active member of the Board of Directors for the Colorado Rocky Mountain Chapter of the Solid Waste Association of North America (SWANA). He enjoys working with the organization to push the industry forward.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Cedar Rapids Linn County Solid Waste, Forward 2044 Long-Term Waste Management Planning, IA**
- **City of Bismarck, Solid Waste Set-Out Study, ND**
- **Metro Waste Authority, Multi-Facility Master Plan, NE**

Education
BS, Environmental Sciences, University of Iowa
Post-Baccalaureate Coursework, Hydrogeology, Portland State University

Registrations
Certified Groundwater Professional (CGP), Iowa

Sarah Edwards

TECHNICAL ADVISOR
TASKS 11, 12

Sarah has over 25 years' experience in the waste and resource management sector. Sarah has an operational background, having spent over eight years of her career managing collection contracts and project managing the development of key infrastructure, including material recycling facilities, anaerobic digestion facilities, and transfer stations. Her material processing expertise developed further when she managed projects for the development of organics processing facilities for industrial and agricultural clients. Some of Sarah's most recent work includes projects that aim to quantify the costs of collection and processing services considering fluctuating material markets and mechanisms to maximize quality and revenues on behalf of public sector clients. In addition to this, she recently led work conducting the packaging needs assessment in Colorado as well as system evaluations in Washington and provinces in Canada. Sarah has a broad range of experience focused on waste and recycling collection, treatment, and transfer, North American deposit refund programs, and extended producer responsibility (EPR), as well as circular economy and circular business models.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **City of Hoboken, Zero Waste Plan and Implementation, NJ**
- **British Columbia Ministry of Environment & Climate Change Strategy, Enhancing Consumer Access to Recycling Services Under EPR, CAN**

Education

Certificate in Business Management,
University of Kingston
MS, Waste Management, University of Bedfordshire

John Culbertson

TECHNICAL ADVISOR
TASKS 2, 4, 5

John Culbertson is the Vice President and Co-founder of MSW Consultants, a management consulting firm specializing in the waste and recycling industry. A Yale graduate with a degree in economics, John has an extensive background in solid waste planning and financial analysis and statistics. He has dedicated career to providing waste management and recycling consulting services to public, private, and institutional sector organizations in Florida and across the nation.
John's expertise encompasses all aspects of the waste management industry, including solid waste system planning and strategic analysis; financial analysis and system funding; procurement assistance and contract negotiation; collection efficiency and routing; transfer and long-haul logistics; MRF operations and efficiency; waste stream and waste generation analysis; and a wide range of information management and statistical analysis.
John is the architect of the firm's online market data repository and analytics platform, WasteInsight.net. He manages the firm's Orlando, Florida headquarters.

Relevant Experience

- **2017 Statewide Waste Composition Study, Maryland Department of the Environment**
- **Food Service Waste Audits, Confidential University**
- **2023 Statewide Waste Characterization Study, Vermont Department of Environmental Conservation**
- **ReNew Energy Bag Audits, Dow Chemical**
- **Statewide MRF Residue Study, CalRecycle**

Education

BA, Economics, Yale University

Vanessa Bauman, *GISP*

GIS & COMMUNITY ANALYTICS
TASKS 8, 10

Vanessa is an award-winning Geographer and GIS Manager with HDR. She has 19 years of experience providing GIS management and technical support for planning projects and is a certified GIS professional (GISP). As GIS Lead, her project experience is diverse—from corridor suitability analyses to utility and stormwater plans, erosion studies, airport master plans, social and political risk assessments, environmental justice reports, and large-scale environmental impact statements. Vanessa also specializes in strategic communications with an emphasis in social equity. She is an ArcGIS Online Community/Business Analyst power-user, which leverages public data to explore community insights and opportunities for targeted engagement. Her familiarity with large, complex infrastructure projects and environmental justice drives her passion for transparent, data-driven decision making. The combination of her experience in GIS analysis, database management, interdisciplinary research, and verbal and visual communications adds a holistic set of skills to the planning team.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Anne Arundel County Department of Public Works, Strategic Communications Services in Support of the On-site Sewage Disposal System On-Call, MD**

Education
MA, Geography, University of Colorado Boulder
BA, Geography, University of Nebraska at Lincoln

Registrations
Certified GIS Professional, outside of MD

Julie Spangler, *GISP*

GIS & COMMUNITY ANALYTICS
TASK 10

Julie, has 25 years experience supporting state and local government GIS and asset management projects. She is an experienced and versatile project manager focused on excellent customer service and program management. Her responsibilities include developing and managing project budgets, scopes, and schedules, providing direction and technical leadership to a team of GIS analysts, database administrators, document managers, and CAD technicians. She is well versed at documenting project interrelationships to ensure proper timing and collaboration, engaging stakeholders, identifying shared goals, deploying change management activities, and proposing cooperative solutions. Julie served on the executive committee of the Maryland State Geographic Information Committee (MSGIC) from 2015 to 2020.

Relevant Experience

- **Maryland Transportation Authority (MDTA), Geospatial Program Support for Comprehensive Environmental Compliance and Engineering Services, MD**
- **MDTA, Asset Management Support for Traffic Barriers for Comprehensive Preliminary and Final Design Engineering Services, MD**
- **Maryland Aviation Administration, Asset Management Program Development, MD**

Education
MS, Applied Information Technology, Towson University
BS, Geography and Environmental Planning, Towson University

Registrations
Geographic Information Systems Professional

Tim Elliot

GIS & COMMUNITY ANALYTICS
TASK 12

Tim has been working as a specialist waste management consultant since 2008 following a career as an engineer. Tim has worked on a large range of projects, which has given him an excellent oversight of the waste management industry, with a particular focus on the development of policy and legislation. He has worked on many cutting-edge policy projects leading to new innovative laws being introduced across the EU, particularly around the Circular Economy and marine plastic pollution. Some of Tim's areas of expertise include carrying out national waste management assessments; leading Impact Assessment work, and detailed analysis; reviewing and designing a range of policy instruments, including landfill bans, requirements to sort waste, taxes, deposit return schemes and other economic instruments, as well as review and design of schemes related to Extended Producer Responsibility. Some of Tim's most recent work was the Colorado EPR Needs Assessment. On this project, Tim led the modeling of scenarios, which estimated the operating and capital costs of a new recycling system in Colorado.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **DG European Statistical Office of the European Commission, PPWD and Plastics, EU**
- **DG Environment of the European Commission, Plastics Reuse, Recycling & Marine Litter, EU**

Education
BS, Aeromechanical Systems Engineering, Cranfield University

Natalee Mannion

TASKS 2, 4

Natalee has been in the industry for fourteen years, specializing in recycling and diversion program development and implementation; solid waste and zero waste planning; waste characterization analyses; and stormwater management. Having previously worked on the West Coast for both municipal government and private consulting firms, Natalee now works out of the Philadelphia area on behalf of MSW Consultants. She has worked with MSW Consultants for almost seven years as an accomplished analyst, working on a large variety of projects related to planning, operational, and financial analysis. Natalee works on projects for both private and public sector clients while specializing in leading the firm's waste characterization studies across the U.S. Many of her projects have been commissioned by clients looking to achieve sustainability goals involving zero waste, enhanced recycling and organics programs, responsible purchasing, and resource conservation.

Relevant Experience

- **Prince George's County, Maryland Environmental Service, Waste Composition Study, MD**
- **The Recycling Partnership (TRP) and Prince George's County & MES, Capture Rate Study, MD**
- **New York City, Waste Characterization Study, NY**
- **Covanta & Wheelabrator, Waste Composition Study, MA**
- **Ontario County, Waste Composition Study, NY**
- **PA DEP, Pennsylvania Statewide Waste Characterization, PA**

Education
MS Environmental Studies, San Jose State University
BS, Biology, Mount Saint Mary's University

Joseph Vetrano, *LEED AP*

TASK 2

Joe Vetrano is an environmental professional with a diverse skill set that encompasses project management, strategic planning, recycling, zero waste systems design, environmental permitting, and contingency planning. He has conducted sustainability assessments, environmental compliance audits, property condition surveys, waste stream analyses, and environmental due diligence.

Relevant Experience

- **Baltimore County, Waste Characterization Studies, MD**
- **State of New Hampshire Department of Environmental Services, Statewide Waste Composition Study, NH**
- **City of Philadelphia, Waste Characterization and Recycling Studies, PA**
- **New York City, Waste Characterization Study, NY**
- **State of Vermont, Statewide Waste Composition Study, VT**
- **Delaware Solid Waste Authority, Recycling Contamination Study, DE**
- **Recycling Partnership - Capture Rate Studies, City of Philadelphia, PA, City of Newark, NJ, and select cities in the metropolitan Cleveland area**

Education

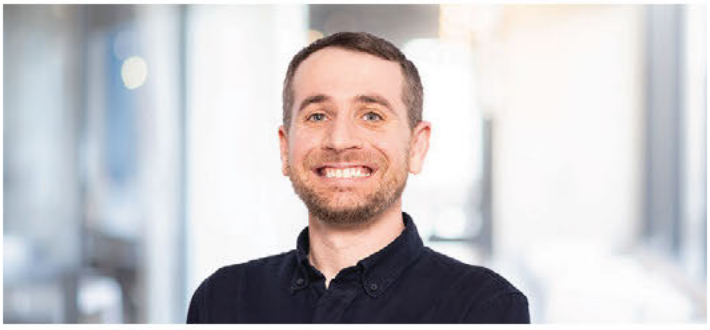
BS Biology/Marine Biology, Fairfield University
Post Graduate work, Endangered Habitats, California State University

Registrations

Leadership in Energy & Environmental Design Accredited Professional (LEED AP)

Michael Wasserman

TASKS 2, 3, 9, 13



Michael has with more than 7 years of experience in consulting, research, and circular economy policy development. Michael is an experienced project manager and has worked with government, NGO, and business clients. Michael has extensive experience working on waste collection and recycling projects including modeling a modernized deposit return system in five northeast states which included a detailed analysis of the return infrastructure in New York City. Michael has lived and worked across four continents and has firsthand experience working with waste infrastructure in diverse jurisdictions. Michael recently worked on the Colorado EPR Needs Assessment for Circular Action Alliance alongside HDR. In this project, faced with an extremely tight timeline, Michael showcased his exceptional project management skills. Here, Michael managed 6 different technical elements, led the research process on all 272 municipalities in Colorado and the evaluation of covered materials to determine the minimum recyclables list. He adeptly navigated the complexities, ensuring tasks were completed efficiently and effectively.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Confidential Client, Optimizing Packaging Design for Deposit Return Systems**
- **Confidential Client, Food Delivery System Optimization**
- **Ball Packaging, 50 States of Recycling Refresh, US**

Education

MA, Globalization, Business, and Development, University of Sussex, Institute of Development Studies
BA, Economics, The George Washington University

Emily Tucker, *PE*

TASK 2

Emily specializes in solid waste facility planning, reporting, and compliance. Her area of expertise is in landfill and solid waste facility design and permitting, solid waste management planning, and environmental compliance. She has worked on site layout and building designs for new transfer station sites and landfill facilities located throughout the country. In addition to design work, Emily is heavily involved in solid waste planning for municipalities and Counties. She has been a key component in generating and/or updating multiple Solid Waste Management Plans, in part, to help entities follow State regulatory requirements. She also has significant experience with permitting, design, construction observation and engineering certification documents necessary to obtain approval from regulatory agencies.

Relevant Experience

- **Northeast Maryland Waste Disposal Authority, Montgomery County Master Plan, MD**
- **Beaufort County, Solid Waste Program Review, SC**
- **City of Greensboro, Waste Management Program Evaluation, NC**
- **City of Tucson, Zero Waste Roadmap, AZ**
- **Larimer County, Regional Wasteshed Planning Study + Comprehensive Solid Waste Engineering Services CO**
- **Mecklenburg County Solid Waste, Recycling Center Design, NC**

Education

MS, Environmental Engineering, University of Florida
BS, Environmental Engineering, University of Florida

Registrations

PE, outside of MD

Jennefer Klennert

TASKS 3, 4, 5, 14

Jennefer leads a diverse team of collections and operations experts evaluating solid waste, recycling, and organics programs focused on increasing program safety and efficiency. Her expertise includes promoting successful public private relationships with positive social, environmental, and economic outcomes for all stakeholders. She also focuses on alternative management of materials including evaluation of technologies as management of waste continues to evolve to management of resources.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Anne Arundel County Department of Public Works, Technology Feasibility and Comparison Study, MD**
- **County of Fairfax, County-Wide Zero Waste Plan, VA**
- **City of Sioux Falls, Solid Waste Sort Study, IA**
- **County of Fairfax, Advanced Recycling Procurement Assistance, VA**
- **County of Kaui Public Works, Waste Diversion Technologies Feasibility Study, HI**
- **City Of Wheat Ridge, Waste Strategy Public Outreach & Engagement Consulting Services, CO**

Education

MBA, Carlson School of Management, University of Minnesota
MA, Technical and Professional Communications, Metropolitan State University
BS, Waste Management, University of Minnesota

Greg Gesell, *PE*

TASK 6

Greg Gesell is a mechanical engineer experienced in design, layout, and acceptance testing material handling systems (all types of MRFs, ash, fuels, and RDF), transfer stations, advanced metals and ash recovery, organics, and other mechanical engineering projects. His experience includes standards development, conceptual and detailed design, preparation of general and site arrangements, flow diagrams, cost estimating, construction and start-up monitoring and performance testing on materials handling and MRF projects around the world. During his career he has served as an industry representative actively involved in review and development of legislation, policies and procedures with municipalities; trade associations such as SWANA, ASME, and USEPA as well as other Federal research documents and committees including specialized testing, materials characterization, operating requirements, training programs, and technology evaluation.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **County of Sacramento, North Area Recovery Station 2050 Master Plan, CA**
- **Islip Resource Recovery Agency, Islip MRRF Feasibility Study, NY**
- **Dominion Energy, RNG Feedstock Assessment Study**

Education

MBA, University of Nebraska Omaha
BS, Mechanical Engineering,
University of Nebraska Lincoln

Registrations

PE, outside of MD

Cindy Liles, *QISP, CAPP*

TASK 14

Cindy has 10 years of experience working with the waste industry. She started off her career implementing organics separation and compost workshops at her university and has since worked on over 175 waste projects. Cindy has worked on over 75 waste-related facilities within California namely MRFs, transfer stations, and organic processing facilities, and she has helped secure the necessary permits to add over 1.5 million tons of annual waste processing capacity in the state. This includes work on the design, permitting, development, and/or environmental compliance of over a dozen organic waste processing facilities and several feasibility studies for both the public and private sectors. She also helped secure several grants amounting to over $5M for compost infrastructure and research, and over $10M for renewable energy projects.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **California Waste Solutions, North Gateway Permitting, CA**
- **City of Folsom, Organics Diversion Services, CA**
- **City of Tucson, SWIFR Grant Application, AZ**

Education

MS, Environmental Engineering,
California State University
BS, Environmental Sciences, University of California

Registrations

Qualified Industrial Stormwater Practitioner (QISP)
Certified Air Permitting Professional (CAPP)

Ashley Samonisky

TASKS 3, 5

Ashley has over ten years of stakeholder engagement, communications, social media, and public outreach experience with federal, state, county, local, private, and non-profit agencies, organizations, and stakeholders. She served as Subject Matter Expert and Project Manager on over 12 projects across the mid-Atlantic Region in the last six years for Federal, state, and local governments as well as non-profit affiliations including three recent projects for NOAA, DOI – BLM, and FEMA. Ashley was appointed to serve on the Maryland Heritage Areas Authority Grants Review Panel for the last three years. She has served as the Outreach Sub-Committee Chair for the Maryland State Geographic Information Committee. She has been instrumental in support for federal, state, and local governments on a variety of planning projects. She has a successful track-record of mitigation, operations, response, and recovery planning, and communication, stakeholder engagement, education, and outreach efforts.

Relevant Experience

- **Maryland State Hazard Mitigation Strategy and Implementation Plan**
- **Maryland State Geographic Information Committee**
- **Virginia Coastal Resiliency Master Plan**
- **Commonwealth of Pennsylvania's Standard Operating Guide**
- **NOAA's Greater Atlantic Regional Fisheries Office (GARFO) Strategic Communications Plan**

Education

BS Geography- Geographic Information Systems, Salisbury University, 2015
BS Emergency Management, University of Maryland-University College, 2011

Emily Altrichter, *TRUE Advisor*

TASKS 4, 13

Emily is an Environmental Scientist and Planning Lead with more than 10 years of consulting experience. She has a diverse skill set in facility compliance, statistical analysis, and reporting, organics management, spill prevention planning, air quality, compost program design and other facets of environmental compliance. Emily develops strong partnerships with clients to achieve compliance with local, state and federal environmental regulations. She regularly communicates with regulatory agencies on behalf of clients throughout permit application processes. She has conducted quarterly and annual stormwater sampling for facilities in Nebraska and Iowa. She specializes in data collection and data management. Emily has planned and led stakeholder engagement efforts associated with zero waste planning. Emily is a certified TRUE Advisor.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **City of Dubuque, Path Toward Zero Waste, IA**
- **City of Folsom, CA, Organics Diversion Services, CA**
- **City of Brookings, Solid Waste Master Plan, NM**

Education

MS, Environmental Sciences, Natural Resource Ecology and Management, Iowa State University
BS/BA, English, Creighton University

Kaitlin Reese

TASKS 4, 8

Kaitlin joined Eunomia in 2022 and since then has been applying her strong quantitative and qualitative research skills and expertise in handling large datasets to a range of different projects. Kaitlin's recent project work with Eunomia included the Colorado EPR Needs Assessment for Circular Action Alliance alongside HDR. For this project, Kaitlin designed and distributed the municipality survey that received responses from over 180 stakeholders. She and the team conducted secondary research of waste management systems in every municipality in the state, and she also supported with the rigorous modeling of future scenarios. In addition to the Colorado EPR Needs Assessment, she has conducted research to help confidential clients understand the global emerging technologies for flexible plastics recycling, the impacts of DRS on glass recycling, and the environmental impacts of reusable packaging in the food service sector. Kaitlin graduated from Haverford College with a B.A. in Environmental Studies and a Concentration in Mathematical Modeling. Since then, Kaitlin has worked on circular economy projects ranging from consumer goods to building materials and has experience working with both public and private sector clients.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **City of Hoboken, Zero Waste Plan and Implementation, NJ**
- **Ball Packaging, 50 States of Recycling Refresh, US**
- **Alberta Government, Plastics Circular Economy Feedstock Study, CAN**

Education

BA, Environmental Studies, Haverford College

Dan Domato, *PE*

TASKS 5, 6

Dan is located in HDR's Fulton, MD office and has over 13 years of experience of technical and project management experience. He received a Bachelor and Master of Science in Chemical Engineering and has his Professional License as a Mechanical Engineer. A majority of the projects that Dan has been involved with are in the Solid Waste Management field (particularly with Energy-from-Waste and other waste conversion technologies). His project experience includes: design, procurement, permitting, construction, commissioning, operations & maintenance oversight, condition assessments, master plan development and feasibility studies.

Relevant Experience

- **Northeast Maryland Waste Disposal Authority, Enhanced Oversight of the Montgomery County Resource Recovery Facility, MD**
- **Northeast Maryland Waste Disposal Authority, Harford County Resource Recovery Facility Re-Use Study, MD**
- **Northeast Maryland Waste Disposal Authority, Baltimore City Composting Facility, MD**
- **County of Fairfax, County-Wide Zero Waste Plan, VA**

Education

MS, Chemical Engineering, Manhattan College
BS, Chemical Engineering, Manhattan College

Registrations

PE, outside of MD

Abby Fleming, *EIT*

TASK 5

Abby is an environmental engineer-in-training and a creative and passionate individual. Her experience working on Tucson's Zero Waste Planning Project included research of five other counties zero waste plans, including their waste diversion rates, legislative rulings, county education, and environmental justice indicators. She also conducted interviews with those counties to obtain updated information, and provided detailed analysis of relevant aspects so the City of Tucson can incorporate best practices learned by the other counties. Before joining HDR, Abigail completed her Bachelor of Science and Environmental Engineering from Clarkson University. She also completed a Life Cycle Remediation Project from the Technical University of Denmark.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Anne Arundel County Department of Public Works, Program Management & Treatment Consolidation for the On-site Sewage Disposal System On-Call, MD**
- **Anne Arundel County Department of Public Works, Technology Feasibility and Comparison Study, MD**
- **City of Alexandria, Solid Waste Assessment, Alexandria, VA**
- **City of Tucson, Zero Waste Roadmap, AZ**
- **Fairfax County, County-Wide Zero Waste Plan, VA**
- **Cedar Rapids/Linn County, Forward 2044 Waste Planning, IA**

Education

BS, Civil & Environmental Engineering, Clarkson University

Meghan Robinson

TASKS 6, 7, 10

Meghan is a senior communications coordinator with 14 years of experience in environmental planning and communications. Meghan leads programs and projects with teams of communication coordinators, graphic designers, web developers, and GIS specialists to create and deliver effective outreach materials and strategies for federal, state, and local clients. She also has extensive knowledge and experience in environmental regulatory analysis and compliance with the National Environmental Policy Act. She is passionate about engaging stakeholders and communities in environmental decision-making and finding innovative solutions to complex challenges.

Relevant Experience

- **Anne Arundel County Department of Public Works, 9 Projects for the On-site Sewage Disposal System On-Call, MD**
- **Washington Suburban Sanitary Commission, Piscataway Wastewater Treatment Plant Bio-Energy Program Management, MD**
- **Fairfax County, County-Wide Zero Waste Plan, VA**
- **Region of Durham, Solid Waste Management Plan, CAN**

Education

MS, Environmental Management,
University of Maryland University College Asia
BS, Environmental Biology, Townsend University

Kristina Bigby

TASKS 6, 7, 14

Kristina Bigby is a highly organized Communications Professional with over twenty years of progressively responsible work experience in private industry. Specializing in project management, web and print content development, and community outreach, Kristina has demonstrated exceptional proficiency and leadership in these areas. She brings valuable experience in the utilities and environmental sectors, displaying her expertise through notable MS4 projects with Baltimore City Department of Public Works and Prince George's County Department of the Environment. Having held roles as both a Senior Project Manager and a strategic Social Media Content Marketer, Kristina has a comprehensive understanding of managing multifaceted projects while leveraging diverse social media platforms to drive engagement.

Relevant Experience

- **Prince George's County, DPW&T Transit Transformation Program, MD**
- **Prince George's County, Master Plan of Transportation 2035, MNCPPC, MD**
- **Baltimore City, Reimagine Middle Branch Framework Plan, MD**
- **Baltimore City DPW, Sanitary Sewer Modified Consent Decree, MD**
- **Prince George's County Department of The Environment, The Clean Water Partnership, MD**

Education

M. Broadcast Journalism, Philip Merrill College of Journalism, University of Maryland
BA Psychology/English, University of Virginia,

Robert Koehnke

TASKS 6, 10

Mr. Koehnke is an urban planner with over five years of professional experience managing community focused development projects across the housing and transportation sectors. His experience focuses on centering diverse communities across the Baltimore/ Washington Region and empowering stakeholders to identify their goals and take concrete steps to achieve them.

Relevant Experience

- **Baltimore Metropolitan Council, Bikeable Baltimore Region, MD**
- **BGE Downtown Pipeline Project Baltimore, MD**
- **CSX Transportation, Howard Street Tunnel, MD**

Education

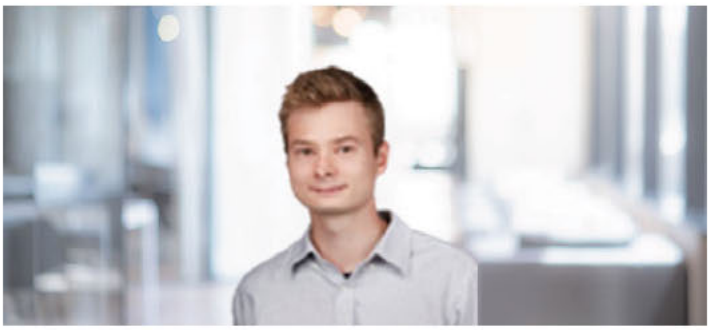
MS, Applied Information Technology, Towson University
BS, Geography and Environmental Planning, Towson University

Registrations

Geographic Information Systems Professional

John Carhart

TASK 8



John graduated from Colby College in the state of Maine with a BA in economics and environmental policy. Since joining Eunomia in 2019, he has been involved in numerous projects requiring quantitative modeling of the economic and environmental benefits of policy initiatives. John has modeled cost-benefit analysis and produced greenhouse gas emissions and grid carbon intensity projections on a country-by-country basis. Much of his modeling work has centered on extended producer responsibility (EPR) and the introduction or modernization of deposit return systems (DRSs). John most recently led the end-markets analysis for the Colorado Needs Assessment for Circular Action Alliance. Additionally, he supported modeling of infrastructure investments under future scenarios. John has completed modeling projects on DRS for Vermont, California, Quebec, and the Northeastern US, as well as for the whole of France. His EPR modeling for Alberta in Canada and the state of Washington demanded continual stakeholder consultation and deft handling of large datasets. Recently, John has conducted an econometrics-based project to determine which local authority waste collection attributes affect collection costs and performance.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Ball Packaging, 50 States of Recycling Refresh, US**
- **Alberta Government Ministry of Energy, Plastics Circular Economy Feedstock Study, Alberta, CAN**

Education

BA, Economics (Hons) and Environmental Policy, Colby College

Raphaella Heath

TASK 8

Raphaella has experience in research and policy analysis, focusing on circular economy projects and integrated urban development strategies. Since joining Eunomia, she has worked on multiple projects analyzing waste policies in the US, Canada, Mexico, and EU countries. She contributed to Washington's Department of Ecology study on identifying hard to recycle packaging and paper products and performed a landscape review of policy measures to improve recycling and source reduction of such packaging through extended producer responsibility, deposit return systems, bans, recycled content targets, reuse systems, and labeling requirements. Raphaella's recent project includes the Colorado EPR Needs Assessment for CAA alongside HDR. For this project, Raphaella conducted research on residential trash and recycling collection across Colorado's 272 municipalities and 64 counties. She drafted the research findings for the needs assessment for residential and non-residential entities.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Washington Department of Ecology, Recycling, Reuse, and Source Reduction Target Study and Community Input Process, WA**
- **Commission for Environmental Cooperation, Milestone Studies for Plastic, Paper, Bioplastic, North America**
- **City of Hoboken, Zero Waste Plan and Implementation, NJ**
- **Confidential Client, PET Bottle to Bottle Collection Initiative Analysis**

Education

BA, Sustainable Development, Columbia University
BA, Political Science, Sciences Po Paris

Melanie Flores

TASK 10

Melanie is a transportation enthusiast and values sustainable, people-centric planning practices and equitable community engagement. She has three years of experience working on bicycle and pedestrian plans, analyzing transit service electrification transition, conducting curbside management research, and assisting with community engagement efforts. Moving forward in her career, she hopes to make a meaningful contribution to the planning field through research and public engagement efforts.

Relevant Experience

- **Prince George's County, Prince George's Community College (PGCC) Facilities Master Plan, MD**
- **The City of Hyattsville, Hyattsville Sustainability Plan, MD**
- **Maryland-National Capital Park and Planning Commission, Master Plan of Transportation 2035, MD**
- **StarMetro, South City Transit Center Travel Demand Modeling, FL**
- **Florida State University, North Star Legacy Communities Project, FL**

Education

MS Urban and Regional Planning (Transportation), Florida State University
BA English Literature, Florida State University
BS International Affairs, Florida State

Elizabeth O'Keefe Markham

TASKS 11, 14

Elizabeth has 6.5 years' experience with the manipulation and analysis of both spatial and non-spatial data. She is responsible for project support, spatial database management, GIS mapping, and spatial analysis. She is an expert with Esri products including ArcGIS, Python, SQL, Spatial Analyst, model-builder, ArcGIS Online, Field Maps for ArcGIS, Survey 123 for ArcGIS, and ArcGIS WebApp Builder, as well as Esri Story Maps, Sites, and Dashboards. She has experience supporting data collection and analysis, map creation, creating internal ArcGIS Enterprise Sites, and technical report writing for projects following the NEPA documentation process at the EIS, EA, and CE levels.

Relevant Experience

- **Maryland Transportation Authority, Asset Management Support for Traffic Barriers for Comprehensive Preliminary and Final Design Engineering Services, MD**
- **Maryland Department of Transportation State Highway Administration, MD 210 Re-Evaluation, MD**
- **Montgomery County Department of Transportation, Preliminary Environmental Assessment Report for the Zero Emission Bus Transition Plan, MD**
- **District Department of Transportation, Category R Stormwater, D.C.**
- **Indian Health Services, Office of Environmental Health and Engineering, Division of Sanitation Facilities Construction, Geographic Information Systems Support**

Education

BS, Environmental Science & Technology, University of Maryland
Minor, Geographic Information Science, University of Maryland

Eileen Zhang

TASK 13

Eileen has delivered projects for a variety of US and international clients and is proficient at both qualitative and quantitative data gathering and analysis. She has delivered projects relating to plastic and packaging waste, circular economy, recycling, and related policy, such as EPR and DRS. Eileen most recently worked on the Colorado Needs Assessment for Circular Action Alliance with HDR. Her role included conducting multivariate regression analysis for the cost modeling, and supporting the development of non-residential waste flows as well as the future scenario modeling. Other recent work includes a study into the current market for plastic recycling in the US for post-consumer film and post-consumer rigid plastics as well as developing an EPR policy cost tool to estimate the impacts of EPR legislation across all 50 States. The analysis included an assessment of market size, market growth, successful business models, material flows, major players, current and future policies, and relevant technologies. Eileen was also involved in conducting a review into consumer packaging material flows and recycling rates across all fifty US states for Ball Packaging.

Relevant Experience

- **Circular Action Alliance, Colorado Statewide Needs Assessment, CO**
- **Canadian Beverage Association, Ontario DRS Modeling**
- **Ball Packaging, 50 States of Recycling Refresh, US**
- **Commission for Environmental Cooperation, Milestone Studies in North America (Paper, Plastics and Bioplastics)**

Education

MA, Economics, Boston University
BS, Chemistry, The University of Auckland
BA, English, The University of Auckland

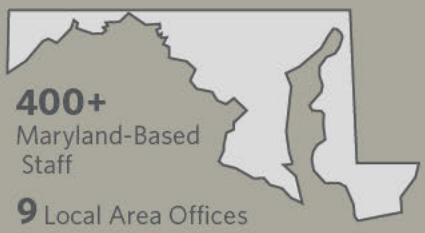
LETTERS OF INTENDED COMMITMENT

By bringing together our experienced Team members, strategic partners, and local expertise, we are confident in our ability to deliver outstanding results for MDE. We look forward to the opportunity to collaborate with your team and the EPR Advisory Committee on this important topic. The organizational chart that details the HDR Team is on the previous page and the Letters of Intended Commitment from our subconsultant teaming partners follow.

FOUNDED in 1917, HDR has

11,900+ Employees Worldwide

225+ Offices Globally



400+ Maryland-Based Staff

9 Local Area Offices

Our Team members are committed to collaboration and will collaborate to provide cost-effective, innovative, and sustainable solutions. With a global presence, HDR and our partners bring multidisciplinary teams of professional engineers, planners, technicians, scientists, program managers, construction administrators, and construction inspectors.

Locally, we are proud to call Maryland home and have an established track record of successful regional projects. Leveraging our local presence and past work history, we are well-positioned to support this Project's specific requirements and its success.

[redacted]

8115 Maple Lawn Blvd,
Suite 300,
Fulton, MD 20759-2681.

Dear Eric Weiss,

I am writing on behalf of Eunomia Research & Consulting, Inc., (Eunomia) to express our sincere commitment to completing the work outlined in RFP U00R4600021 issued by the *Maryland Department of the Environment (MDE)*.

At Eunomia, we take great pride in our ability to deliver exceptional results, and we are excited about the prospect of bringing our expertise to the table to fulfil the objectives outlined in the RFP. We recognize the importance of the work outlined and believe that our company's values, skills and knowledge align closely with those required for the work.

Furthermore, we are excited about the prospect of partnering with HDR once again. Having worked together on a similar project before, we are familiar with one another's work ethics and have found that our teams complement each other seamlessly, bringing together diverse perspectives and skills to tackle complex challenges. This familiarity and synergy will undoubtedly prove invaluable in delivering high-quality results for MDE.

We understand the importance of this project and the impact it will have, and we are fully committed to dedicating the necessary resources, expertise, and attention to detail to ensure its success. Our team is eager to roll up their sleeves and get to work, leveraging our collective strengths and extensive knowledge.

In conclusion, we want to express our sincere gratitude for considering us for this opportunity. We are looking forward to the prospect of collaborating with HDR and are fully committed to delivering outstanding results that showcase the strength of our partnership.

Thank you once again for this opportunity. We eagerly await the possibility of working together.

Warm regards,

[redacted]

[redacted]

March 11, 2024

Eric Weiss
HDR
8115 Maple Lawn Blvd, Suite 300
Fulton, MD 20759-2681

Subject: Maryland Statewide Recycling Needs Assessment, RFP No. U00R4600021

Dear Eric:

MSW Consultants has reviewed the subject proposal, and this letter confirms that MSW Consultants is qualified and available to perform a full update of the state's waste characterization study as a subcontractor to HDR, should the team be selected. This letter further confirms our intention to procure a VSBE contractor to help us staff the local sorting efforts.

We appreciate the opportunity to support this exciting project. Please don't hesitate to contact us should you need any information or support during the proposal and subsequent potential interview.

Good luck in the pursuit!

Sincerely,
MSW CONSULTANTS

[redacted]

John Culbertson
Principal

March 11, 2024

HDR, Inc.
Attn: Eric Weiss
8115 Maple Lawn Boulevard, Suite 300
Fulton, MD 20759-2681

Re: **Request for Proposals**
Statewide Recycling Needs Assessment
RFP No: U00R4600021

Dear Eric:

Straughan Environmental, Inc. (Straughan) is pleased to make this commitment to HDR, Inc. to provide mapping, analysis, data collection and transformation, sustainability, environmental consulting, story mapping, and socioeconomics analysis services for Statewide Recycling Needs Assessment, U00R4600021.

We look forward to working with you and assure you that our qualified personnel will be available as needed to provide high quality services in accordance with applicable standards and regulations for this project.

If you have any questions or need further information, please do not hesitate to contact me at [redacted] or [redacted]

Sincerely,

Straughan Environmental, Inc.

[redacted]

Vice President

ASSEDO CONSULTING
ENGAGE. EDUCATE. EMPOWER.

March 11, 2024

HDR
Attn: Eric Weiss
8115 Maple Lawn Boulvard, Suite 300
Fulton, MD 20759

Subject: Letter of Commitment for Statewide Recycling Needs Assessment (U00R4600021)

Dear Mr. Weiss,

Assedo Consulting, LLC is pleased to confirm our commitment to work with HDR on the above-referenced contract as a subconsultant partner. Assedo Consulting, LLC will provide Public Engagement and Education services, literature review, stakeholder engagement and more, as needed throughout the duration of this contract.

Assedo Consulting, LLC is MBE/DBE certified by the Maryland Department of Transportation, Office of Minority Business Enterprise. Thank you for the opportunity and we look forward to working with you on this exciting project.

Sincerely,

[redacted]

Odessa L. Phillip, PE
President & CEO
Assedo Consulting, LLC

Subconsultant Commitment Letter

Eric Weiss
Solid Waste Planning Project Manager
HDR, Inc.
2650 Park Tower Drive
Suite 400
Vienna, VA 22180

13 March, 2024

Re: Commitment for RFP Number U00R4600021 - Maryland Department of the Environment (MDE) - Request For Proposals (RFP) Statewide Recycling Needs Assessment

Mr. Weiss,

This letter serves as my commitment that Vision Planning and Consulting, LLC. (VPC) will undertake stakeholder engagement services on this project should HDR become successful in obtaining the Statewide Recycling Needs Assessment award - Solicitation Number U00R4600021 - with MDE.

Please do not hesitate to contact me if you have any questions.

[redacted]

Printed Name: Deepa Srinivasan

Date: March 13, 2024

Strata Language Services, LLC

2657G Annapolis Rd. #103
[redacted]

March 12, 2024

Eric Weiss
8115 Maple Lawn Blvd.
Suite 300
Fulton, MD 20759-2681

Dear Eric,

We at Strata Language Services are committed to providing reliable translation, interpretation, and language consulting services to the HDR team as needed for the Maryland Department of the Environment Statewide Recycling Needs Assessment. As a team of qualified language professionals, we are proud of our history of providing services to organizations in Maryland and throughout the United States for over six years.

Thank you for your trust and confidence in our services. We look forward to a continued partnership and collaborating on this and any future requirements.

Sincerely,

[redacted]

Katherine Shivers

Managing Member
Strata Language Services, LLC

GLOBAL
EXECUTIVE STAFFING

March 14, 2024

John Culbertson, Principal

MSW Consultants

11875 High Tech Avenue

Suite 150

Orlando, FL 32817

Subject: STATEWIDE RECYCLING NEEDS ASSESSMENT, RFP NUMBER U00R4600021

Dear John:

This letter confirms that Global Executive Staffing, a certified VSBE (certificate attached), is pleased to support MSW Consultants in staffing the waste characterization work to be performed in response to the subject project. Please do not hesitate to contact me should you require any additional information. We look forward to a positive outcome.

Sincerely,

Global Executive Staffing, LLC

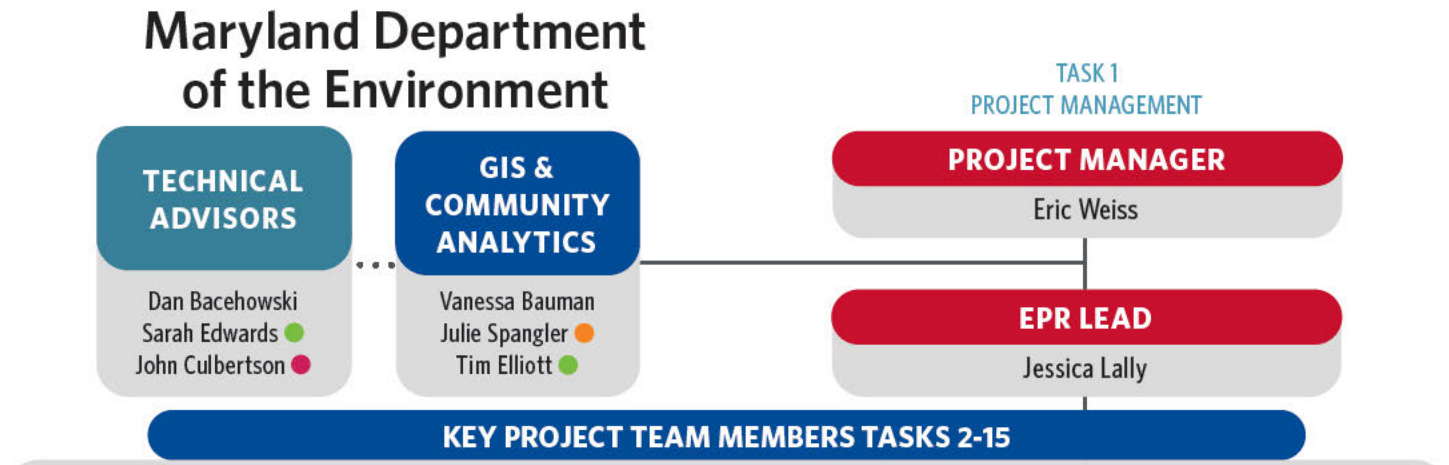
[redacted]

William A. Scott II

President / CEO

ORGANIZATIONAL CHART

Organizational Chart outlining Personnel and their related duties is provided below and a detailed chart with job titles and the percentage of time each individual will spend on his/her assigned Tasks is provided on the following page. We are not proposing any differing personnel work hours than identified in the RFP.



TASK 2
WASTE CHARACTERIZATION
John Culbertson
Global Executive Staffing
Natalee Mannion
Joseph Vetrano
Michael Wasserman
Emily Tucker

TASK 3 STAKEHOLDER SURVEYS AND INTERVIEWS
Michael Wasserman
Jennefer Klennert
Greg Gesell
Cindy Liles
Ashley Samonisky

TASK 4
RECYCLING STREAM ANALYSIS
Emily Altrichter
John Culbertson
Natalee Mannion
Kaitlin Reese
Jennefer Klennert

TASK 5
INFRASTRUCTURE AND CAPACITY
Dan Domato
Greg Gesell
Abby Fleming
John Culbertson
Jennefer Klennert
Ashley Samonisky

TASK 6
WORKER CONDITIONS
Dan Domato
Greg Gessell
Meghan Robinson
Kristina Bigby
Robert Koehnke

TASK 7
OPPORTUNITIES FOR WOMEN & MINORITIES
Meghan Robinson
Kristina Bigby

TASK 8
MULTI-FAMILY AND COMMERCIAL RECYCLING SERVICES
Kaitlin Reese
John Carhart
Raphaella Heath
Vanessa Bauman

TASK 9
RECYCLING ECONOMIC OPPORTUNITIES
Eric Weiss
Michael Wasserman

TASK 10
EQUITY WITHIN RECYCLING SYSTEMS
Meghan Robinson
Vanessa Bauman
Robert Koehnke
Melanie Flores
Julie Spangler

TASK 11
COSTS, BENEFITS, AND ENVIRONMENTAL IMPACTS OF EPR PROGRAMS
Sarah Edwards
Jessica Lally
Elizabeth O'Keefe Markham

TASK 12
EPR RECOMMENDATIONS
Sarah Edwards
Tim Elliot
Dan Bacehowski
Jessica Lally

TASK 13
WRITING THE NEEDS ASSESSMENT
Jessica Lally
Emily Altrichter
Eric Weiss
Michael Wasserman
Eileen Zhang

TASK 14 OPTIONAL SERVICES
Eric Weiss
Jessica Lally
Jennefer Klennert
Greg Gesell
Cindy Liles
Kristina Bigby
Elizabeth O'Keefe Markham

Sub-consultants:

- = Eunomia
- = MSW Consultants
- = Assedo Consulting
- = Straughan Environmental
- = Global Executive Staffing
- = Vision Planning and Planning

PERCENTAGE OF TIME

We built our Team with multiple levels of skills and resources to assist you in any capacity. The capacity to meet project deadlines requires not only strong leadership but a staff with the technical skills and ability to perform work on various Tasks. Having a Team built with local staff and diverse partners allows us to reach out and select the best qualified personnel when needed.

We offer the right resources to tackle and complete any assignment. Our management approach is based on proven standards and has been used successfully on similar projects. We are committed to providing consistent management and key personnel throughout the project. As an employee-owned company, we hold ourselves accountable and take personal responsibility to see things through.

Our ability to efficiently staff projects, share information, communicate openly, and maintain project controls have been a benchmark of our long term relationships with key local agencies.

COMMITTED LEADERSHIP MAKES FOR A COMMITTED TEAM

Jessica Lally will support Eric in the role of EPR Lead. Jessica brings 8 years of experience managing solid waste programs as Pay As You Throw with the City of Denver, Colorado. Jessica is a passionate recycler and thoughtful leader that with exceptional attention to detail. Eric and Jessica will provide strong leadership and vision for the HDR Team.

PROPOSED STAFF	AVG ESTIMATED AVAILABILITY
Eric Weiss	70%
Jessica Lally	60%
Dan Bacehowski	30%
Sarah Edwards	50%
John Culbertson	40%
Vanessa Bauman	30%
Julie Spangler	70%
Tim Elliot	60%
Natalee Mannion	60%
Joseph Vetrano	50%
Michael Wasserman	60%
Emily Tucker	40%
Jennefer Klennert	30%
Greg Gesell	40%
Cindy Liles	40%
Ashley Samonisky	60%
Emily Altrichter	60%
Kaitlin Reese	60%
Dan Domato	40%
Abby Fleming	70%
Meghan Robinson	30%
Kristina Bigby	70%
Robert Koehnke	60%
John Carhart	60%
Raphaella Heath	50%
Melanie Flores	40%
Elizabeth O'Keefe Markham	50%
Eileen Zhang	60%

Estimated Availability
Current Workload

TAB G

H. OFFEROR QUALIFICATIONS AND CAPABILITIES

We are excited to partner with you on this critical Statewide Recycling Needs Assessment to take a fresh approach to designing reuse, recycling, and organics management solutions to help Maryland meet its goals.

When it comes to solid waste needs assessment and program development, it takes a mix of creativity, flexibility, and experience to answer the complex questions of managing waste appropriately. We are ready to provide our extensive knowledge by utilizing our following experience highlighting the preferred qualifications you request in the RFP.

In the following pages, we describe how our organization and Team can meet the requirements of this RFP, including the following preferred qualifications.

NUMBER OF YEARS PROVIDING SIMILAR SERVICES

With 50+ years of experience providing engineering, planning, and designing innovative waste management solutions for public and private clients in North America, we have the depth of local staff and expertise necessary to serve as your trusted advisor for this project. From waste prevention to reduction to disposal, our waste management solutions are based on award-winning work in environmental education, public outreach, engagement, and solid waste master planning, including zero waste planning and planning and design of facilities and solid waste systems.

Extensive knowledge of and experience in the evaluation of worker conditions, wages and benefits

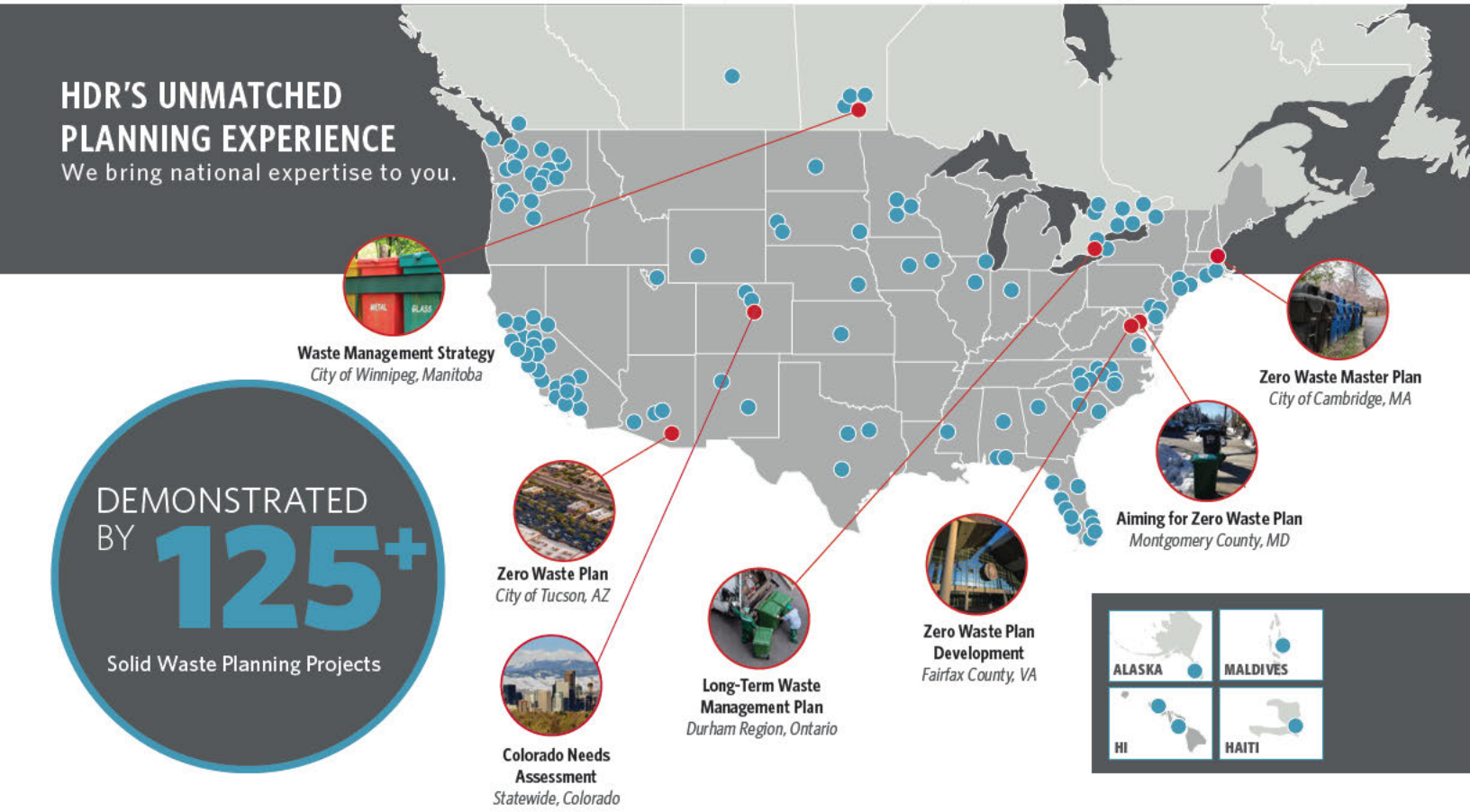
Extensive knowledge of opportunities for women and minority individuals or businesses

Extensive knowledge of and experience with local government requirements related to multifamily and commercial services and their implementation

Extensive knowledge of the sufficiency of recycling education programs relative to equity outcomes desired to achieve the goals of the law

Breadth of knowledge of economic opportunities in the recycling system

Waste Management Maryland Experience



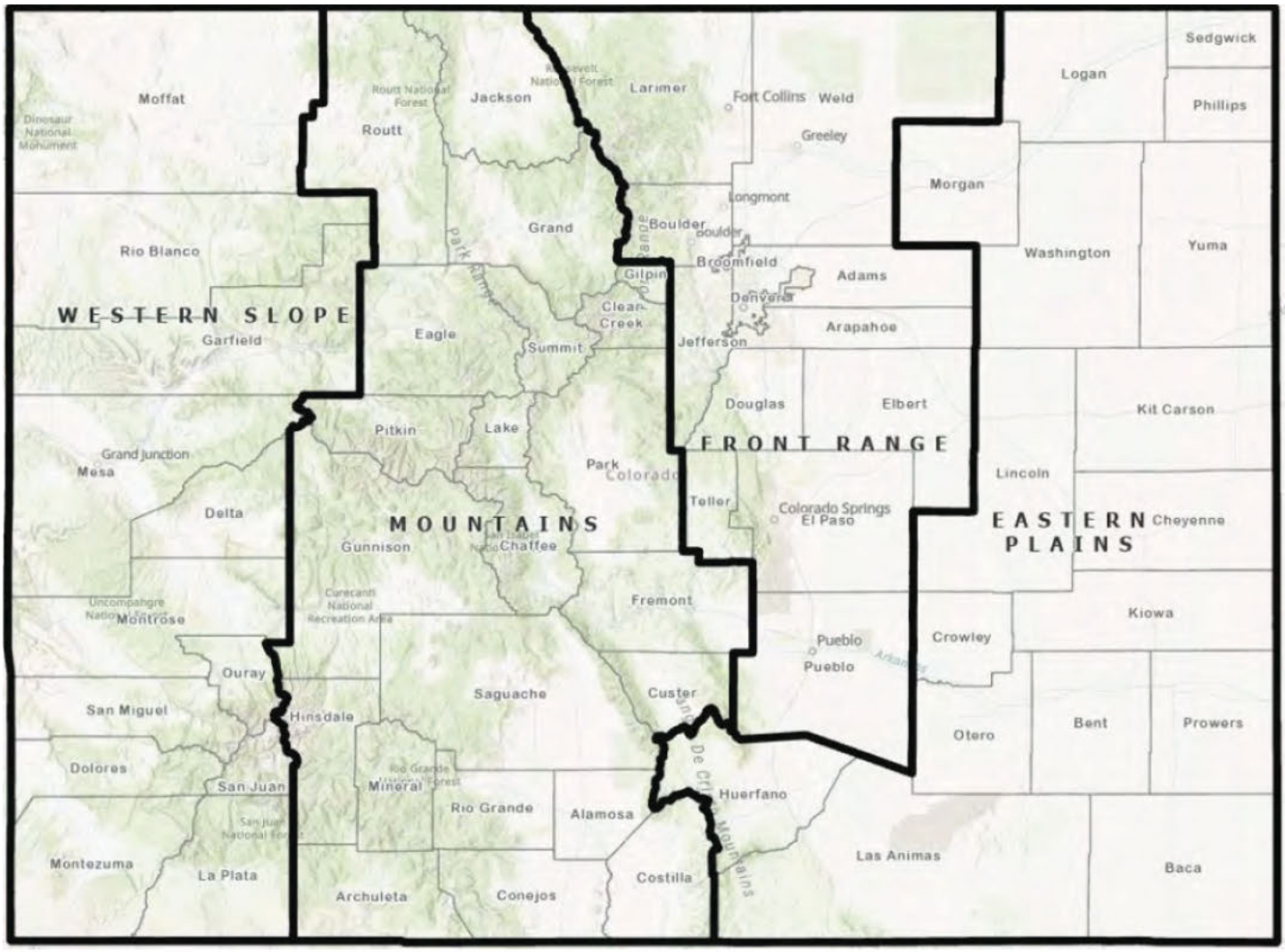
CLIENTS AND GEOGRAPHIES WE CURRENTLY SERVE

Clients look to us to provide in-depth analysis and expertise to find unique solutions and design projects from vision to implementation. Our work goes beyond brainstorming and developing lists of options. It focuses on detailed diversion and cost analysis, technology evaluations, greenhouse gas emissions analysis, Zero Waste policies and programs implementation, and permitting and designing new infrastructure. We work with our clients to implement practical, cost-effective strategies for improved waste diversion and reduced waste generation.

Our solid waste needs assessment experience has included establishing goals and objectives, identifying and evaluating policy, facility, and program options, and adopting and implementing the final plan.

We have developed solutions that divert waste from disposal, including waste prevention, reuse, and recycling activities, collection program design and procurement, food waste composting and organics management, producer responsibility initiatives for products and packaging, and disposal and diversion incentives and fee structures. Our experience implementing policy and strategy will enable us to develop future scenarios that are deliverable and based on realistic timescales and costs.

Our experience spans decades of providing educational and outreach tools with implementation strategies that work. We bring solid waste expertise through a dynamic Team ready to collaborate with you and deliver solutions to this unique opportunity in Maryland. Many of our projects include developing and implementing comprehensive public outreach programs to involve interested and affected stakeholders in planning.



Colorado Needs Assessment

Circular Action Alliance, Colorado

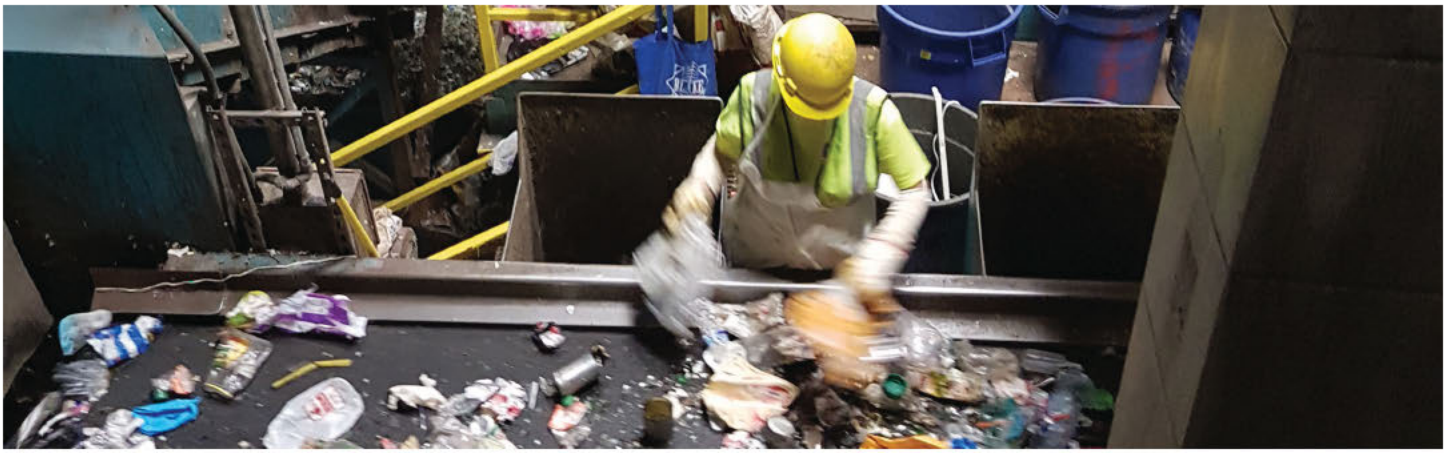
Circular Action Alliance (CAA) selected HDR to assist them in conducting a Colorado Needs Assessment to evaluate Colorado's recycling and composting infrastructure. The program aims to revamp the existing systems and drive toward meeting and exceeding the 45% statewide waste diversion rate by 2036. CAA has contracted the HDR Team and Eunomia to complete an analysis of types and volumes of inbound materials at existing commercial composting facilities in Colorado, the ability of those facilities to process that material, increase future processing capacity and understand the end market.

The overarching goal of this effort is to understand the state of commercial composting operations in Colorado. This will allow us to recommend operational, collection, processing, and/or end-market improvements and estimate the capital costs to prepare Colorado to meet the public's future diversion needs.

PREFERRED QUALIFICATIONS

- ⊘ evaluation of worker conditions, wages & benefits
- ⊘ opportunities for women and minority individuals or businesses
- ⊘ local government requirements related to multifamily and commercial services and their implementation
- ⊘ recycling education programs relative to equity outcomes desired to achieve the goals of the law
- ⊘ economic opportunities in the recycling system

HDR & EUNOMIA



Aiming for Zero Waste Master Plan

Northeast Maryland Waste Disposal Authority, Montgomery County, Maryland

The Montgomery County Department of Environmental Protection (DEP) owns and operates an award-winning integrated solid waste management system, including waste reduction and education programs, refuse and recycling collection, a composting facility, and a waste-to-energy facility. HDR was retained to develop a waste management master plan with the aspirational goal of "aiming for zero waste." This project included:

- A full review of the County's waste management system.
- Benchmarking the County against five jurisdictions in North America on various metrics.
- Identifying a comprehensive list of improvements to the current diversion and recycling system and the County's overall waste management system.
- Undertaking an assessment of the County's infrastructure (Resource Recovery Facility, composting facility, transfer station and MRF) and identifying resources/costs required to maintain/operate into the future.
- Developing options for disposing of what's left, including an assessment of maintaining the Resource Recovery Facility into the future, closing the Resource Recovery Facility and hauling trash to another landfill located out of state or developing a new landfill on County-owned land. It also involved identifying options for future management of recyclables with a new/larger MRF and the development of an organics processing facility.
- Working with County staff, a Stakeholder Group, and the Northeast Maryland Waste Disposal Authority, a plan was developed to move the County towards zero waste. The plan included a description of the recommended options, diversion estimates, costing, and GHG emission reductions.
- Development of a stakeholder engagement plan, presentations to the Stakeholder Group, development of materials for three public open house meeting, and development of a survey to solicit feedback on various options.
- Presentations to senior staff, including the Director of DEP, CAO and County Executive on findings and recommendations.

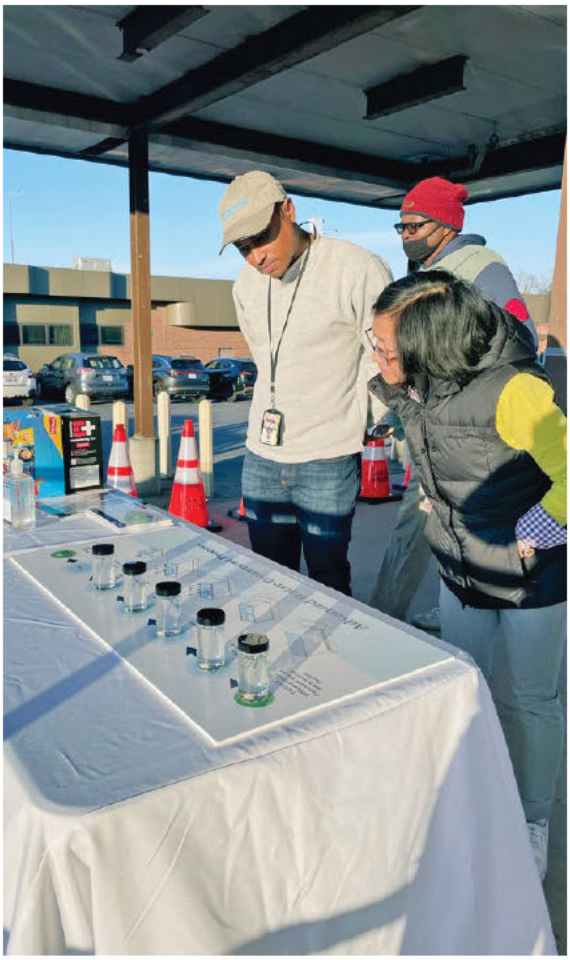
PREFERRED QUALIFICATIONS

- ✓ evaluation of worker conditions, wages & benefits
- ✓ opportunities for women and minority individuals or businesses
- ✓ local government requirements related to multifamily and commercial services and their implementation
- ✓ recycling education programs relative to equity outcomes desired to achieve the goals of the law
- ✓ economic opportunities in the recycling system

GOLD INTEGRATED SOLID WASTE MANAGEMENT SYSTEM EXCELLENCE AWARD (SWANA)

HDR AND MSW CONSULTANTS

HDR STRATEGIC COMMUNICATIONS PROJECT



Advanced Water Treatment Pilot Facility Tour

Anne Arundel County, Maryland

As part of an integrated strategy to engage stakeholders, the HDR creative team designed an immersive tour experience of the advanced water treatment pilot facility in Crofton, Maryland.

HDR initially analyzed the facility space and potential for interactive opportunities throughout the tour area. The analysis provided the creative team the information needed to map out the tour route and create vinyl floor decals that guided participants seamlessly through the tour.

In addition to floor mapping, mounted equipment signage was created to translate technical information into easy-to-understand diagrams that illustrated the complexity of each process stage in the facility. Tour guides and subject matter experts were outfitted with branded attire to be easily recognized if participants had additional questions during the tour.

As a result, HDR created a unique and engaging pilot tour that educated participants on the innovative processes of the advanced water treatment pilot facility in their community.

HDR STRATEGIC COMMUNICATIONS PROJECTS

Managed Aquifer Recharge and Septic System Conversion Initiative

Anne Arundel County, Maryland

HDR is supporting the Anne Arundel County Department of Public Works in the development of the Managed Aquifer Recharge and Septic System Conversion Initiative. This initiative is the County's effort to achieve water quality goals through a multi-pronged approach including:

- Meeting or exceeding regulatory requirements of wastewater and stormwater
- Addressing sources of discharge such as septic systems
- Developing sustainable practices
- Implementing flexible, affordable solutions
- Evaluation solutions through community engagement and a transparent decision-making process
- Accommodating reasonable growth

Communications tasks include public and stakeholder outreach, comment management, website and social media content development, infographic brochure design, media relations and public meeting facilitation. HDR facilitated nearly two dozen online community meetings during the program's first cycle. As DPW develops this initiative, HDR will work alongside the technical team to facilitate meetings with a public advisory group, a key part of the public engagement plan. To keep residents informed and updated, HDR developed ourwaater.org, a central hub for information and resources about the initiative. Community-specific pages on the site allow residents to learn more about how the County's efforts impact individual neighborhoods.

Piscataway Bioenergy Project

Accoceek, Virginia

WSSC Water is working to transform the Piscataway Water Resource Facility (WRRF) in Accoceek, MD into a bioenergy production facility. This critical investment will use efficiency, technology and sustainability to produce green energy and enhance the financial and environmental health of the region. Upon project completion, WSSC Water will produce Class A biosolids for use as a soil amendment to help gardens, forests, farms and lawns.

Our Strategic Communications Team is working with WSSC Water to provide unified communications for the project. This included project branding, a new project webpage, hosting stakeholder meetings, video and graphic production, event planning for the project groundbreaking, and developing public outreach materials for key project milestones.

Condition Assessment And Increased Capacity Feasibility Of The Montgomery County Material Recovery Facility

Maryland Environmental Service, Montgomery County, Maryland

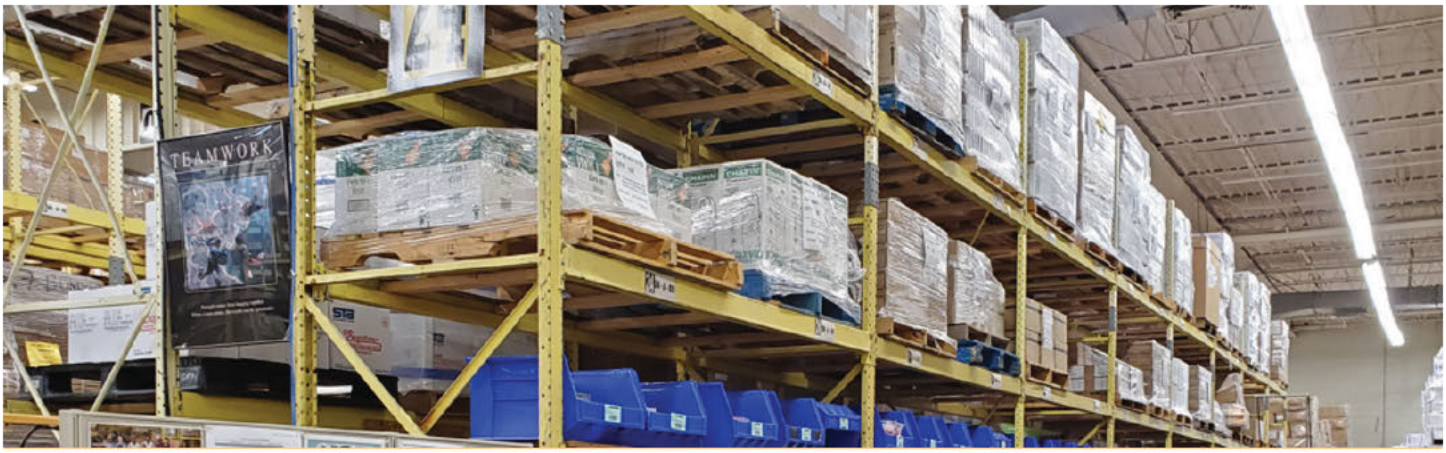
Montgomery County and Maryland Environmental Service (MES) retained HDR to assess the commingled recycling facility at the County's Recycling Center (Facility). The assessment included recommendations for processing line upgrades or new construction to the existing Facility and other future upgrades. The goal of the upgrades/modifications was to help the Facility minimize bypassing commingled material received by increasing throughput capacity while maintaining or improving operational efficiency and commodity quality and reducing missed recyclables. The Facility is owned by the County and operated by MES. It processes the County's dual-stream recyclable materials (commingled containers and fiber).

HDR performed a site visit to assess the condition of existing equipment and then used this assessment to prepare recommendations to MES and the County to achieve the County's goal for the MRF. A summary report with the Team's findings was developed and submitted to the County. The County also asked that HDR present these findings to the County DEP leadership.

PREFERRED QUALIFICATIONS

- ✓ evaluation of worker conditions, wages & benefits
- ✓ opportunities for women and minority individuals or businesses
- ✓ recycling education programs relative to equity outcomes desired to achieve the goals of the law
- ✓ economic opportunities in the recycling system

HDR



Fairfax Zero Waste Plan

County of Fairfax, Virginia

HDR assisted the County Solid Waste Program and Fairfax County Public Schools to develop the Government and Schools Zero Waste Plan. HDR coordinated with the Fairfax County Solid Waste Management Program, the Department of Purchasing and Materials Management, Fairfax County Public Schools, Fairfax County Park Authority, and the Facilities Management Department to develop the plan.

The project included completing a literature search and identifying five counties/jurisdictions of similar socio-demographic and economic status to compare their zero-waste plans focused explicitly on municipal operations. The proposed plan is unique as it specifically addresses government facilities' programs, practices, and procurement. The Zero Waste Plan embraces the County's philosophy, commitment and design principle that seeks to minimize waste disposal completely. The goal of the program was to provide Fairfax County municipal employees a way to proactively and equitably address climate change and environmental sustainability through the Join Environmental Task Force (JET) and meaningfully participate in the drive to zero waste.

The Zero Waste Plan includes 25 strategies and sets aspirational goals of 90% diversion of waste from disposal by 2030 and reducing the overall waste generated by county operations by 25% from 2018 levels. Communications tasks included survey research to determine how important waste reduction was to each municipality and development of strategic content from the results. Additional tasks included the development of a project website, social media campaign, and meeting facilitation. All final content was presented in a designed document and presented to the Board of Supervisors. HDR is now assisting the county in establishing an implementation structure and incorporating the identified short-term strategies.

PREFERRED QUALIFICATIONS

- ✓ opportunities for women and minority individuals or businesses
- ✓ local government requirements related to multifamily and commercial services and their implementation
- ✓ recycling education programs relative to equity outcomes desired to achieve the goals of the law
- ✓ economic opportunities in the recycling system

HDR

SINCE 2015, HDR HAS SUPPORTED THE FAIRFAX COUNTY SOLID WASTE MANAGEMENT PROGRAM (SWMP) AND PROVIDES ONCALL CONSULTING, ASSISTANCE WITH THEIR RECYCLING PROGRAM, FACILITY OPERATIONS AND ENVIRONMENTAL COMPLIANCE.

Recycling Incentive Pilot Study

New York City Department of Sanitation, New York

New York City is committed to achieving carbon neutrality by 2050. To meet this objective, NYC is working on a range of zero waste initiatives, including encouraging residents to participate in existing recycling and composting initiatives. New York City Department of Sanitation brought HDR on board to determine whether incentive programs would encourage residents to recycle. We sought to uncover the answer by studying voluntary recycling incentive pilot programs at the New York City Housing Authority (NYCHA). We researched North American and European incentive programs to identify options that might be feasible.

The list of programs was narrowed down to three, which we brought to stakeholders for input. Multi-platform stakeholder outreach was used to assess the impact incentives would have on the NYCHA community. While the initial research was being conducted, we developed a statistically significant survey to get feedback on the current recycling program from NYCHA residents. Questions were centered on residents' knowledge of the recycling program, use of the program, and barriers to recycling.

Over 2,000 surveys were completed in four languages throughout the five boroughs of New York City. Stakeholder Engagement provided insight into recycling incentive options using a variety of methods:

- Stakeholder advisory group meetings were held at key points during the study with DSNY and NYCHA staff and residents, environmental groups, and tenant groups. These meetings sought input on the current recycling program, potential incentives, and the short-listed options.
- Focus groups were conducted to get input on the current recycling program and the three short-listed options.
- To engage a wider audience, a short video was developed to explain the short-listed options with an online survey to capture feedback about the options. The online survey was promoted through Facebook advertisements using geotags and microtargeting based on keywords associated with behavior and general interests by target demographics.

The short-listed options assessed diversion potential, cost and revenue. Further analysis indicated that the three options would be expensive to implement on a pilot scale. Based on the research and stakeholder input, NYCHA residents indicated they value convenience over incentives.

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HDR

Forward 2044 Waste Planning (2023 Annual Services)

Cedar Rapids/Linn County Solid Waste Agency, Iowa

The Cedar Rapids Linn County Solid Waste Agency (Agency) was created in 1994, and the Agency's operating agreement will end on June 30, 2044. This is the last day garbage can be accepted at 1954 County Home Road, Marion, where the landfill and Resource Recovery building are located. The County is the second most populous in the state, but the urban area represents only 10% of the geography. Therefore, finding solutions for rural and urban areas as well as hauling efficiently was important for the community.

HDR was hired to develop a plan for long-term and sustainable waste management for managing 600 tons per day of MSW. Commercial and industrial producers generate 70% of the MSW. The project intent was to identify appropriate emerging waste diversion and processing technologies to improve waste diversion from landfills, industry trends, economic analyses, and infrastructure commitments and needs; outline goals and objectives, including a vision for the Agency post-2044; provide an opportunity for public participation, outreach, and education; be in tune with the local citizens and business needs; and protect the environment.

HDR designed and evaluated eight waste campus solutions for the public, stakeholders, and Board feedback. Each of the eight scenarios evaluated waste diversion potential, sustainable return on investment, and financial viability. In 2022, the Agency decided not to pursue siting a new landfill and, with HDR, further evaluate transfer stations, mixed waste processing, and organics management solutions.

HDR has hosted multiple public meetings, stakeholder working sessions, and Board alignment sessions to gather feedback and understand concerns. The outcome will be a recommendation on technology(-ies) and a path to manage solid waste, recycling, organics, and household hazardous waste after 2044.

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HDR

Full project details can be found at: https://www.solidwasteagency.org/about-us/forward-2044

Solid Waste Planning Services

Ramsey/Washington Recycling & Energy, Minnesota

HDR provides the General and Strategic Planning Services for Ramsey/Washington Recycling & Energy (R&E), a Joint Powers board of the two Minnesota counties. R&E is focused on connecting value to waste and envisions "Vibrant Healthy Communities Without Waste." R&E owns and operates the R&E Center, a 450,000-ton-per-year refuse-derived fuel facility in Newport, MN. HDR provides policy and planning, data analytics, GIS, and strategic communications support. Ramsey and Washington counties have a State-mandated goal of a 75% recycling rate by 2030. HDR assists with upstream activities, including enhancing and reinvigorating BizRecycling, a business recycling resource; Zero Waste activities; and various upstream activities, such as extended producer responsibility.

HDR is assisting with the rollout of curbside collection of food scraps and compostable products for 300,000 households in both counties. Our solid waste planning team and strategic communications work with the R&E to develop a plan for the rollout and implementation of this unique program using heavy-duty compostable bags co-collected with trash. This program will impact many residents in Ramsey and Washington County and is one of the most innovative programs for food scrap collection in the Country.

HDR provides day-to-day support and engagement to the 110 MSW haulers servicing the two counties. HDR GIS and data visualization team are developing tools and dashboards for the counties to monitor food scrap program participation and diversion.

HDR provides Solid Waste Management Research and Evaluation support and policy evaluation for R&E. This includes economic research and data collection for the region's collection, transfer, and disposal pricing. Utilizing recycling markets.net and other tools, HDR provides market analysis for recyclable materials and organic materials (food scraps, compostable products, and materials with high biomethane potential) for tracking materials managed by the counties.

Our team assists with identifying future technologies that will work with the materials and volumes produced by the R&E Center and align with R&E's system plans and values. This includes coordination of technology analysis, evaluation, and knowledge-building for future technologies to process waste streams managed by R&E, and has included many options such as anaerobic digestion, gasification, pyrolysis, advanced recycling, and others.

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HDR

Solid Waste Sort Study

City of Sioux Falls, South Dakota

HDR conducted a waste characterization study of residential and commercial waste disposed at the City of Sioux Falls (City), SD Landfill, to understand the quantity of recyclables currently sent to the landfill. The study collected statistically significant data on the composition of residential sector waste (which includes both single family and multifamily residences), industrial/commercial/institutional (ICI) sector waste, and mixed loads containing both sectors. In addition to the waste characterization of residential, ICI, and mixed loads, a visual assessment of trucks containing Construction and Demolition (C&D) debris was conducted. The visual assessment of C&D materials was conducted to provide an estimate of certain materials (as percent by volume) contained in the C&D load.

This waste characterization study was intended to provide data to assist the City in its future planning for solid waste management by identifying the types and quantities of potentially recyclable and compostable materials disposed of in the waste stream to gather information on the region's solid waste stream to evaluate and potentially improve the existing and future solid waste programs, and to compare the data collected to the results of a previous 2016 study to identify changes in the composition of disposed waste over the last 6 years.

The waste characterization study was conducted in accordance with the American Society for Testing and Materials (ASTM) Method D5231-92 (2016), Standard Test Method for Determination of the Composition of Unprocessed Municipal Solid Waste. A two-season (fall & spring) sort consisting of five days' worth of sorting per event was conducted to confirm representative sampling of residential and ICI waste samples. Following the completion of the study, HDR presented the study's results to the City's Solid Waste Planning Board and Recycling Task Force.

PREFERRED QUALIFICATIONS

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HDR

Multi-Family Diversion Strategy

City of Winnipeg Water and Waste Department, Manitoba, Canada

HDR initiated the development of a Recycling Strategy for Apartments and Condos (also known as the Multi-family Diversion Strategy) for the City of Winnipeg from 2016 to 2017. The project was put on hold for the City to complete a five-year review of the Comprehensive Integrated Waste Management Strategy (CIWMS) and complete a 10-year financial model. In 2021, the City restarted the project, contracting HDR to identify strategies to increase diversion at multi-unit properties.

Multi-family dwellings (also known as multi-unit properties, or MUPs) have traditionally been difficult to engage with and encourage participation in diversion programs due to considerations such as high resident turnover, language barriers, and building design (e.g. convenient garbage chutes and inconvenient diversion areas).

This project involved a process similar to that of this CIWMS Review RFP, beginning with a background review, followed by identification of goals and objectives. HDR then identified a range of options, and worked with the City to establish preferred options for diversion strategies at MUPs. Next, HDR developed a strategy and order of magnitude costing, culminating in an implementation plan in the short, mid, and long term for the preferred options.

HDR's subconsultant for this proposal, Urban Systems Ltd., collaborated with HDR in the development of multi-unit property design standards for collection of waste from MUPs, with Urban Systems leading the stakeholder engagement of the design standards with local developers and constructors. The results of this study will provide the City with the information required to make an informed decision about collection and funding models to fully implement multifamily waste diversion programs.

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HDR

2024-2025 Food Waste Prevention and Management Plan

Department of Natural Resources, Iowa

HDR is preparing a Statewide Food Waste Prevention and Management Plan for the Iowa Department of Natural Resources (DNR). The Plan will be used to reduce food waste and increase food waste management for higher uses in Iowa. The Plan required a thorough understanding of Iowa's existing infrastructure and potential for expansion. HDR's team analyzed the existing system's performance, identified gaps, and provided recommendations for food waste management in Iowa.

The project scope included reviews of other states' food waste management plans; surveys of facilities that currently accept food waste, including compost sites and wastewater treatment plants (WWTPs); estimation of food waste generated by various sectors; creation of a food waste density map; gap analysis; review of food waste management options, including kitchen waste prevention and on-site management of food waste; review of end markets in Iowa, and development of a framework for data collection.

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HDR

EUNOMIA PROJECT

Extended Producer Responsibility and Container Deposit System Cost and Benefit Analysis

King County, Washington

Eunomia completed a 2019 study for King County, in which Eunomia carried out a baseline assessment of recycling service cost and performance for Washington and modeled seven future states. The system components with the model that could be varied under each future scenario included: recycling access levels by municipality and region by property type (single and multifamily); collection approach including collection frequency, collection methodology (single stream, dual stream with glass collected every four weeks, and inclusion of EPR with or without a deposit return system (DRS).

As part of this analysis, Eunomia worked closely with key stakeholders from six cities. This involved us surveying and interviewing public works and finance personnel. Service costs were often provided for recycling and garbage, and our team had to break out the costs associated only with recycling to assess the actual cost.

The Eunomia team liaised with municipalities and haulers to collect detailed data, which included:

Service information including number of routes, properties collected per route, hours of collection, materials collected, tonnages across the year, cost data related to vehicle (purchase prices, depreciation, maintenance), labor (drivers, supervisors, support staff), education and engagement budgets, and contract management costs.

The cost data gathered from municipalities included costs for a single stream, dual stream with glass collected through for drop-off, and dual stream with fiber and containers collected separately. The team also separated out costs for single family and multifamily collections.

Similar case studies setting out the costs of service and the potential savings of EPR to the city and residents were produced for the City of Seattle, Tacoma and Olympia.

Eunomia used its proprietary recycling system modeling tool to take detailed service system costs (vehicles, labor, maintenance, pass rates, collection times and weights, etc.) for different systems as well as future capital infrastructure costs under future system six, which included secondary MRF in calculating the cost of future systems. The recycling system tool, has the functionality of being able to model over 100 different collections, transfer, and sorting systems along with drop-off variables which are necessary when modeling a state with many different system types. This model was first used to calculate the cost and performance of the current recycling system in Washington. It was then used to model the impact of 8 different future scenarios where both access was increased but also where there was an alignment as to how materials were collected.

Example data inputs and outputs from Eunomia's EPR system modeling for Washington are included within the full report

PREFERRED QUALIFICATIONS

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EUNOMIA

(Project Continued)

As part of a follow-up study for the state of Washington, Eunomia was commissioned to calculate recycling rates for each consumer packaging and paper product material for the state, which involved receiving data on tonnages recycled, tonnages disposed, and recycling access statistics from Washington state. Eunomia meticulously calculated generation, recycling, and disposal tonnages for 25 different materials.

This study was conducted in conjunction with a broader assessment aimed at determining the financial implications of implementing extended producer responsibility (EPR) for packaging and paper products across several municipalities in Washington, including major cities like Seattle, Spokane, and Tacoma. The evaluation entailed close collaboration with municipal authorities to understand their service delivery frameworks and a detailed examination of capital and operational costs associated with waste management.

Eunomia analyzed these costs to identify the portion directly related to packaging and paper products, underlining the potential for cost offsets to mitigate impacts on municipal utility rates. Subsequently, Eunomia presented a comprehensive final report on the broader implications of EPR adoption in Washington, along with insightful case studies focusing on Seattle, Tacoma, and Spokane, offering a detailed understanding of how EPR implementation could affect utility rates in these specific municipalities.

The state also tasked Eunomia with analyzing the trends and differences in recycling tonnages across the state's six waste generation areas (WGAs). Additional details are included in the full report [redacted]

Figure from the final report showing project results for the recycling systems modeled in terms of cost, performance, economic impact, and environmental impact.

	BASELINE Current System	FUTURE SYSTEM 1 Current System + DRS	FUTURE SYSTEM 2 EPR + Enhanced Collection and Coverage	FUTURE SYSTEM 3 EPR + Aligned Universal Collection Option 1	FUTURE SYSTEM 4 EPR + Aligned Universal Collection Option 2	FUTURE SYSTEM 5 EPR + Enhanced Collection + DRS	FUTURE SYSTEM 6 EPR + Aligned Universal Collection Option 1 + DRS	FUTURE SYSTEM 7 EPR + Aligned Universal Collection Option 2 + DRS
EPR	N	Partial, only for DRS	Y	Y	Y	Y	Y	Y
DRS for Beverage Containers	N	Y	N	N	N	Y	Y	Y
Single Family Curbside / Multi-Family On-Site	89% of HH	89% of HH	100% of HH	100% of HH	100% of HH	100% of HH	100% of HH	100% of HH
Common Set of Materials Collected	N	N	Y	Y	Y	Y	Y	Y
Aligned Common Collection System	N	N	N	Y Biweekly collection of paper, plastics & metals Collection of glass every four weeks	Y Biweekly collection of metals, plastics & glass Alternate Biweekly collection of paper	N	Y Biweekly collection of paper, plastics & metals Glass collected only through drop-off	Y Biweekly collection of metals, plastics & glass Alternate Biweekly collection of paper
Post Collection Sorting System	Existing	Existing plus DRS	Existing with Secondary MRF	Existing with Secondary MRF	Dual Stream MRF	Existing with Secondary MRF plus DRS	Existing with Secondary MRF plus DRS	Dual Stream MRF

EUNOMIA PROJECT

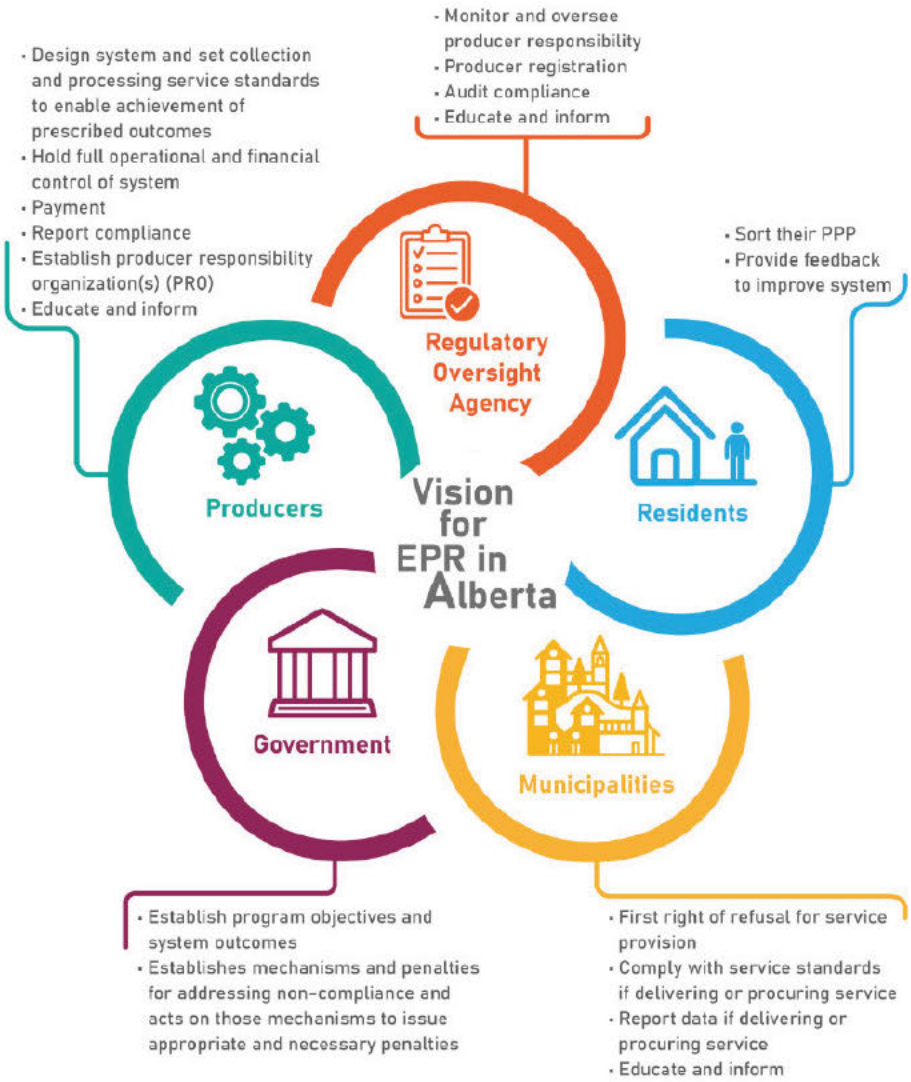
Alberta EPR Study

Alberta Urban Municipalities Association and Recycling Council of Alberta, Alberta, Canada

Eunomia carried out a pre-policy needs assessment in Alberta for the Alberta Urban Municipalities Association (AUMA) and the Recycling Council of Alberta (RCA). This analysis included municipality and hauler stakeholder surveying and interviews to access details of costs and material tonnage. This data was collected in order to a) model the cost and performance of the current recycling system and b) model the cost and performance under EPR.

For the EPR modeling, the team assessed the number of additional properties that would have to be served via curbside or drop services, considered the need for additional transfer and sorting facilities, and analyzed the associated operating and capital costs required to reach the client's desired outcome.

This work led to the passing of EPR in Alberta.



PREFERRED QUALIFICATIONS

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- ✓ economic opportunities in the recycling system

EUNOMIA

(Project Continued)

To provide detailed costs and performance data, our team had to carry out significant outreach with 300 municipalities and received detailed responses from 48. Until this study, the province did not have a database of recycling services, performance, and costs at the municipality level. The survey included questions on a wide range of variables that fall within the waste management program of a municipality, including:

- Service levels of recycling (e.g., curbside recycling, deposit-only recycling)
- Material acceptance for each municipality, by material type and by resin type for plastics
- Cost data for recycling collection programs, both depot and curbside collection
- Tonnages of recyclables collected from each municipality

If services were contracted, Eunomia put in place NDAs with haulers to understand their costs and the municipalities that they serviced.

Eunomia then used the survey data to develop a detailed cost and performance model to calculate a baseline recycling performance and cost assessment. The data was also used to model a future EPR scenario. The EPR scenario included estimating the additional cost and performance of expanded recycling access and upgrading recycling infrastructure. The cost results for both the baseline and future systems were presented separately for different municipality types based on population size. In addition to the cost and performance of the baseline and future EPR scenarios within Alberta, Eunomia also calculated the external benefits of the recycling programs within Alberta. The benefits Eunomia calculated for the province were:

- Number of direct, indirect, and induced jobs created through the collection, sorting, and recycling value chain
- The Gross Value Added (GVA) to the Alberta economy through the recycling programs
- Employment wages created through the recycling programs

To calculate each of the benefits above, Eunomia researched through surveys, interviews, and a secondary review of various data points to feed into the modeling exercise. These data points include:

- Salary information
- Jobs per ton of different processes along the recycling value chain
- Cost information from MRFs and recyclers
- Demographics
- Service levels and types to single and multifamily
- Type of container and size used for collection.
- Tonnage collected
- Equipment used, including vehicle types for curbside and the equipment used for drop-off facilities, including the cost of balers, 40 cubic yard containers, etc.

Thousands of data points had to be collected and reviewed before being placed in the recycling system model.

Graphics that were produced from the research and analysis with additional findings are located in the report [redacted]

Figure from final report showing Percentage of Households Across Municipality Types that have Access to Collection Services Provided or Managed by Municipality

EUNOMIA PROJECT

50 States of Recycling

Ball Packaging, Nationwide

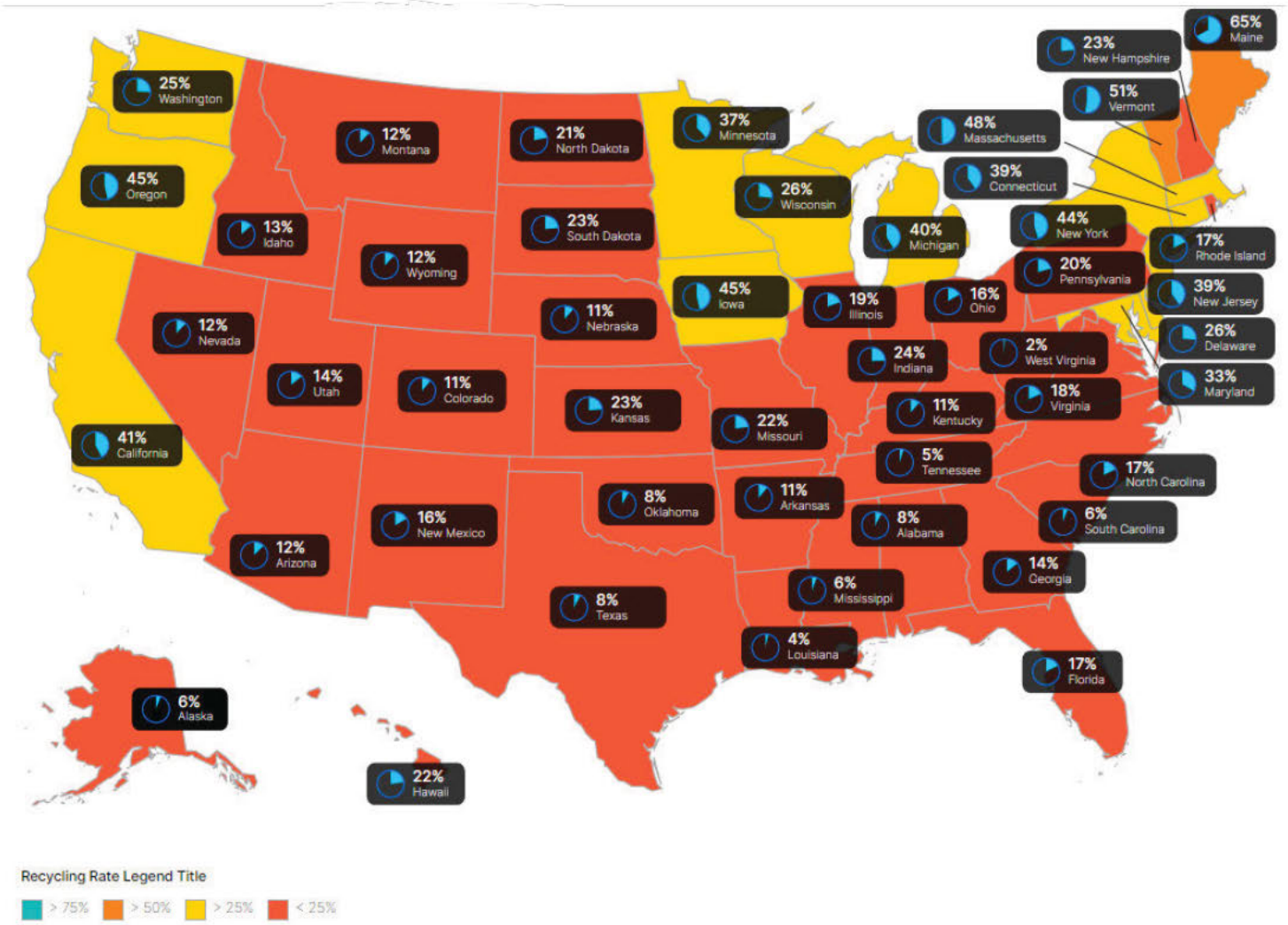
For the first time, Eunomia was commissioned by Ball Packaging to calculate comparable recycling rates across all 50 states on commonly collected packaging materials. Eunomia compiled and worked with all 22 statewide waste characterizations that existed in the US at that time. This project included extensive data gathering, modeling, and analysis, resulting in takeaways on the correlation of various programs and policies on recycling rates in US states.

For the most current update of all 50 States report, in addition to doing deep dives into the impact of policy, EPR and DRS, in Colorado and Washington, we also assessed the impact of these two policies at a high level in all other states including Maryland. The impacts on recycling, Gross Valve Added to the economy, wages, material value and greenhouse gas reduction is detailed below.

PREFERRED QUALIFICATIONS

- evaluation of worker conditions, wages & benefits
- local government requirements related to multifamily and commercial services and their implementation
- economic opportunities in the recycling system

EUNOMIA



(Project Continued)

Figure from Final Report detailing Maryland's Packaging Recycling Rate Without FFP

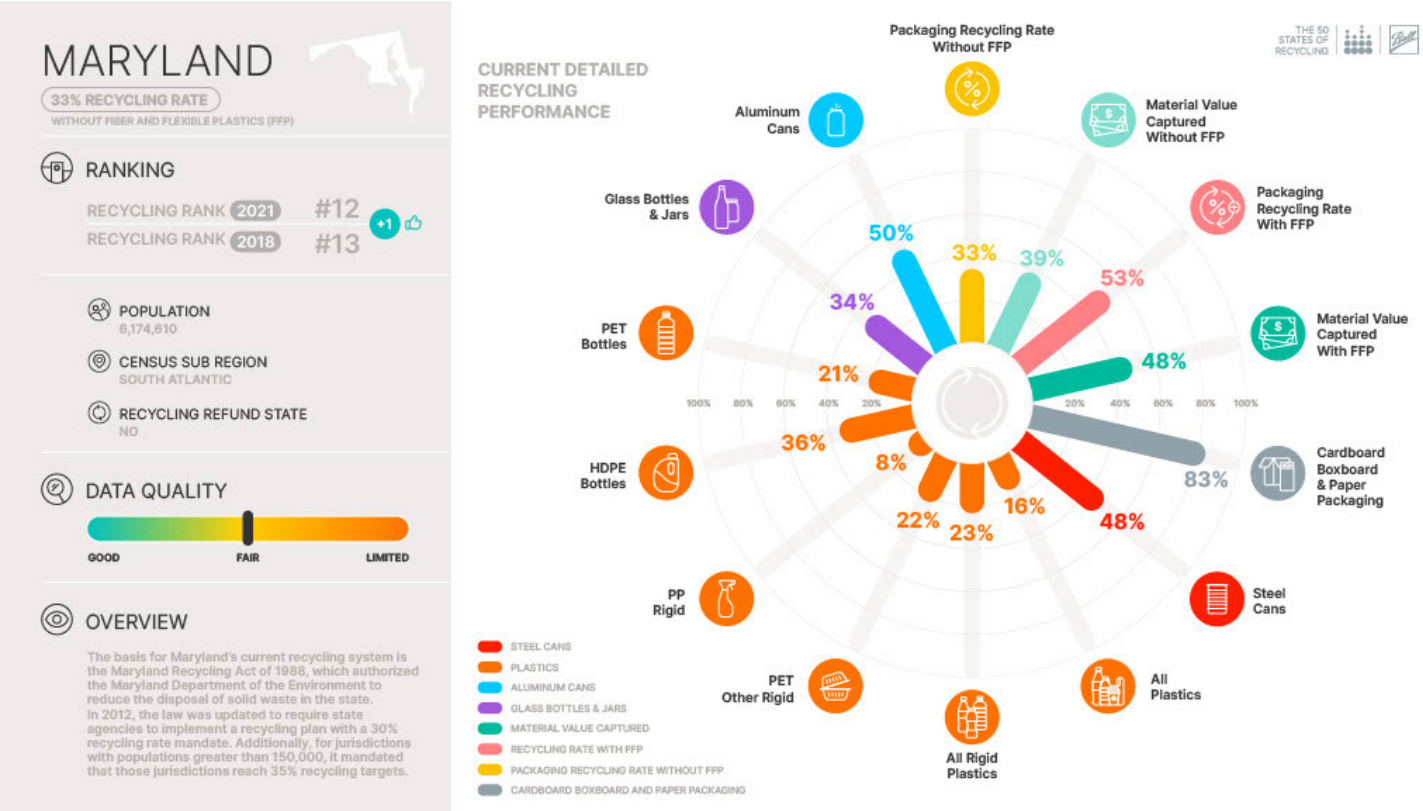
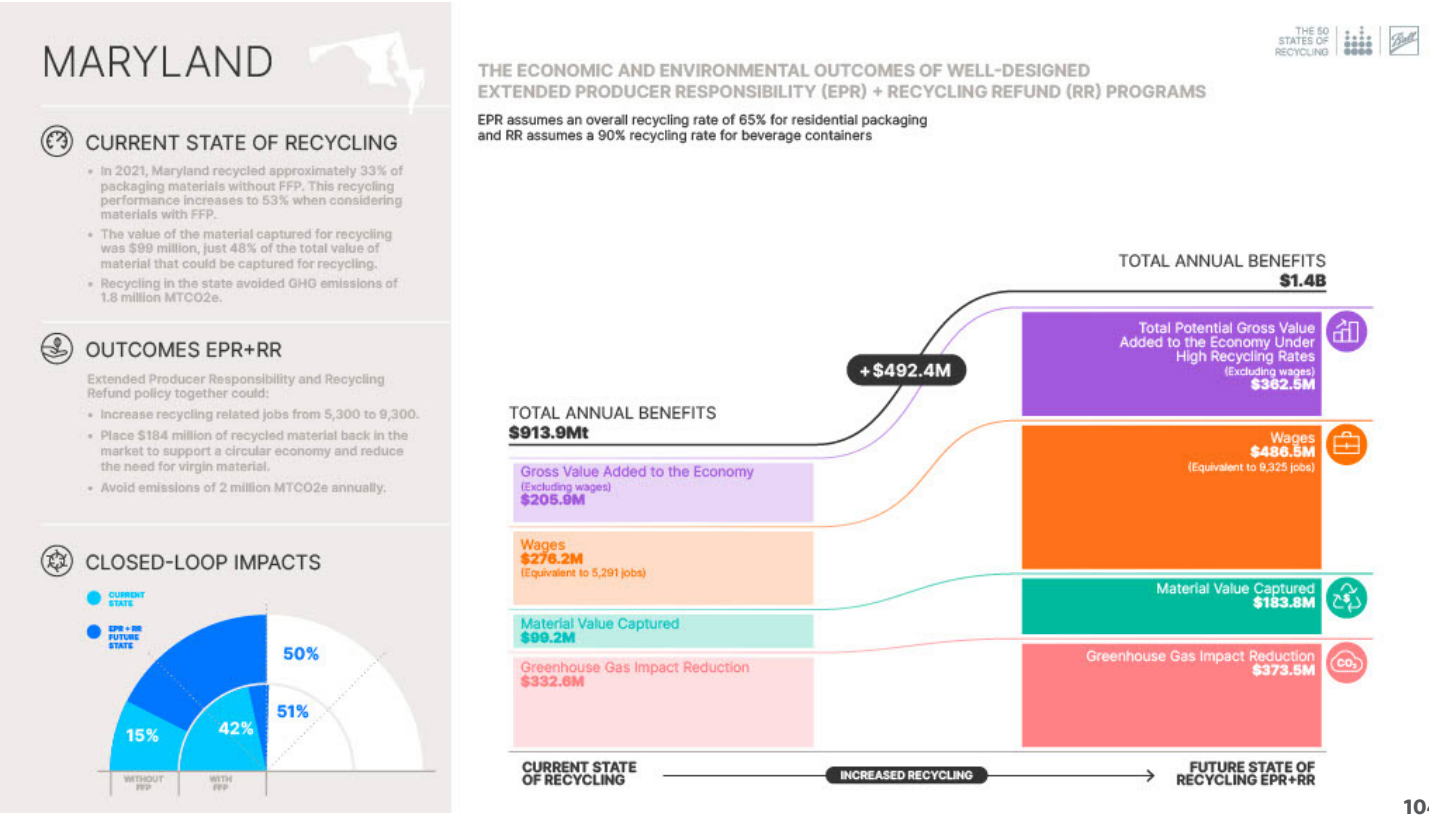


Figure from Final Report showing the economic and environmental outcomes of well-designed EPR and Recycling Refund Programs in Maryland



EUNOMIA PROJECT

Oregon EPR Needs Assessment

Oregon Department of Environmental Quality, Oregon

For the Oregon Department of Environmental Quality, Eunomia has just completed the collections needs assessment surveying local governments statewide to understand current service levels and needed collection, transfer, and sorting infrastructure under the Plastics Reduction and Recycling Modernization Act.

To increase awareness of the needs assessment and encourage participation in the survey, outreach was conducted to inform local governments and service providers via email, mailers, newsletters, talking points for Regional Specialists, and information sessions. One hundred ninety-one people, including local government and service provider representatives, attended one of the two information sessions, and the needs assessment survey achieved a 97% response rate from waste sheds and an 83% response rate from incorporated cities in the state.

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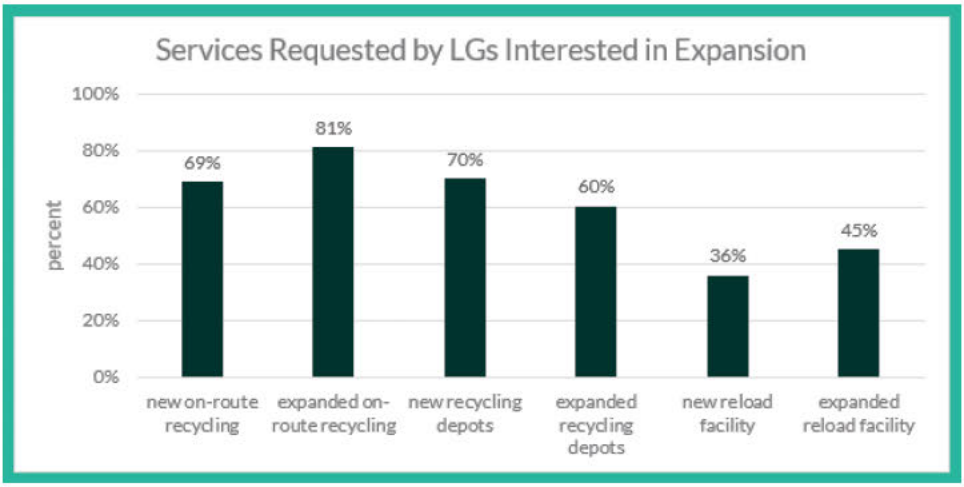
EUNOMIA

Table from Final Report showing Survey Responses by Type of Local Government

Type of Local Government	Number of LG	Response Rate	Number of Survey Responses
Incorporated Cities	200 of 241	83%	200
Counties	35 of 36	97%	44
Wastesheds	34 of 35	97%	1
Total			245

Figure from Final Report showing services requested by local governments that indicated an interest in service expansion



EUNOMIA PROJECTS

Producer Cost Containment Model Redesign

Ontario, Canada

Eunomia was tasked with redesigning RPRA's Cost Containment Model, which serves as a measure to determine the amount of funding that packaging producers are required to put forth to cover municipality recycling services. The team had access to thousands of data points reported by municipalities to RPRA under the EPR program. Eunomia carried out econometric analysis using linear panel models on a rich dataset of municipality recycling costs, characteristics, performance, and initiatives to determine which factors affect the net cost and performance of a municipality's recycling system at a statistically significant level.

Enhancing Consumer Access to Recycling Services Under EPR

Ministry of Environment and Climate Change Strategy, British Columbia

The Ministry of Environment and Climate Change Strategy commissioned Eunomia to develop a framework for evaluating and enhancing consumer access to recycling services for materials managed through the EPR system in British Columbia (B.C.). Established under B.C.'s Recycling Regulation, EPR plans are required to provide reasonable and free consumer access to collection facilities and services. The accessibility framework included a recommended hierarchy of service level requirements to optimize consumer access to collection services, a user-friendly tool to direct EPR agencies in developing required consumer accessibility commitments, and objective criteria for ministry staff to evaluate accessibility commitments in EPR plans. Through the implementation of the framework, the primary intended outcome is better provincewide access to recycling services.

Establishment of EPR and DRS in Serbia 2021

Southeastern Europe / Country of Serbia

Eunomia conducted a study on the development of EPR in Serbia, estimating the current performance and cost of the existing waste management system, projected cost for system upgrade scenarios to meet future targets, projected impact on performance, and cost impact on the proposed EPR system of the introduction of a DRS. The report recommended collection system changes, infrastructure changes, fiscal changes, and engagement changes to design a system for Serbia to meet targets, verify producers meet the costs of packaging recycling, and verify that the costs of the system to producers are efficient.

PREFERRED QUALIFICATIONS

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EUNOMIA

EUNOMIA PROJECT

EMF Systemiq Reuse Report

Ellen MacArthur Foundation's Project Honeycomb

Eunomia supported Systemiq in conducting research and modeling for the Ellen MacArthur Foundation's Project Honeycomb, seeking to provide an evidence base for industry and policy actions that can help rapidly scale up reuse. This study has been developed with more than 60 leading organizations including the European Investment Bank, national governments, reuse experts and major brands and retailers, such as The Coca-Cola Company, Danone, PepsiCo, and Unilever.

This study is underpinned by the advanced modeling carried out by Eunomia which quantifies the performance of return models under certain conditions. The System Change scenario depicts a long-term vision for optimized return models. The modeling answered the following questions:

- What are the economic and environmental impacts of return on the go systems for various applications, and what are the main underlying drivers?
- What are the economic and environmental impacts of comparable single use items for similar consumer utility?
- What is the potential environmental and cost "upside" of designing a fully optimized return on the go system (with high levels of pooled standardized packaging and high sharing of washing infrastructure) versus a non-optimized or semi-optimized scenario?

PREFERRED QUALIFICATIONS

✓ economic opportunities in the recycling system

EUNOMIA

Maryland Statewide Waste Characterization Study

Northeast Maryland Waste Disposal Authority & Maryland Department of the Environment, MD

The Maryland Recycling Act (MRA) requires all Maryland counties and Baltimore City to recycle from 20 to 35 percent (depending on population) of waste generated. Maryland has established a lofty goal of voluntary waste diversion of 60 percent, and a voluntary recycling rate of 55 percent, by the year 2020.

The Maryland Department of the Environment (MDE) works toward Maryland's waste diversion goals by partnering with jurisdictions and the public and private sectors to develop markets for recyclable materials and by working with other State agencies to increase the volume of materials diverted from landfills. Like many state environmental agencies, MDE recognizes the importance of establishing a baseline snapshot of the disposed waste stream for use by stakeholders intent on reducing landfill disposal and increasing diversion. In 2016, MDE partnered with the Northeast Maryland Waste Disposal Authority (NMWDA) to design and perform the state's inaugural statewide waste characterization study.

MDE and the Authority established a budgetary and operational framework for the 2016 Maryland Statewide Waste Characterization Study (2016 Study). MSW Consultants was retained to design and perform a comprehensive research protocol for the 2016 Study within this framework.

MSW Consultants subsequently performed the field data collection, analyzed results, and successfully developed the state's first-ever comprehensive waste characterization study. This analysis integrated field data collection at nine of the state's disposal facilities with two other waste characterization studies performed by Maryland counties.

Single-Season Residential Waste Composition Study

Baltimore County, Maryland

In partnership, Baltimore County's Bureau of Solid Waste Management (BSWM) and Northeast Maryland Waste Disposal Authority, MSW Consultants was retained to perform a residential waste characterization study of materials delivered to the County's Central Acceptance Facility (CAF) in Cockeysville. The primary focus for BSWM was to gain understanding of waste composition - specifically the organic material, to help them support the development of an organics recovery pilot program.

The waste sort was conducted over one-season, which gave appropriate data results to complete a waste composition analysis. In addition, waste sort on site at CAF, MSW Consultants further analyzed tonnage data from strategically selected routes to determine additional insights on potential organic recovery strategies. Lastly, research was conducted for comparative analysis on high-performing residential organics diversion programs in close geographic proximity to BSWM and across the United States.

Countywide MSW & Residential Bulky Waste Composition Study

Price George's County, Maryland

Prince George's County, MD and its landfill operator, Maryland Environmental Service (MES) commissioned a study to better understand its residential waste volumes and materials categorization. MSW Consultants was retained as a subcontract consulting firm to assist in the four-season waste composition, which Prince George's County ultimate focus was to gain a better understanding of their residential bulky waste curbside and drop-off program materials.

The study included sampling residential waste from unincorporated areas throughout the county, as well as incorporated municipalities; commercial and institutional entities; public schools; self-haul generator sectors. One-week sampling and sorting events were held in each of the four seasons to obtain a comprehensive snapshot of waste composition. With the client's lens and focus on residential bulky waste and drop-off programs, the initiative included a customized approach to characterize residential bulky wastes using visual surveying.

MSW Consultants led the sampling and sorting efforts in order to comprehensively develop the full project report. Additionally, MSW Consultants has licensed access to its proprietary WasteInsight™ data management platform to the County and MES as part of this project.

As a result of MSW Consultants expertise in waste audit methodology and analytic tools, the results of the sort were translated into measurable data based on 57 material categories. The data suggested that there were many opportunities for improved capacity to target outreach on under-captured materials and improve recycling program effectiveness. In addition, the findings strongly suggested that waste diversion would greatly increase with the establishment of an organics collection program.

Waste Composition Study

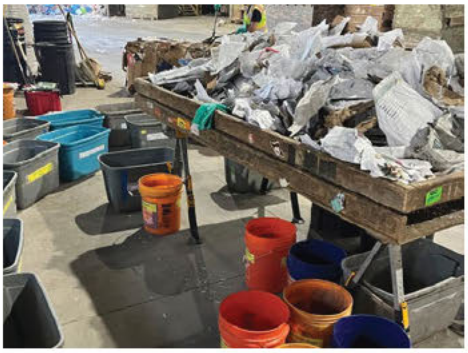
Howard County, Maryland

Howard County, working with the Northeast Maryland Waste Disposal Authority (NMWDA), retained MSW Consultants to perform a one-season residential waste characterization study. Howard County has long been recognized as a recycling and waste reduction leader in Maryland. Weekly trash and single-streamed recyclables collections are provided to approximately 83,000 residents. In efforts to further the County's program outreach and planning, they were in need of acquiring a baseline waste characterization data set. MSW Consultants was able to provide baseline data points, and estimations of types and quantities of program recyclables remaining in the residential stream.

MSW Consultants created a sampling plan that would include a sort and sample analysis from each of the County's respective zones. Randomly selecting one truck from each of the 15 zones, was then brought to the Transfer station for manual sample selection and sorting. Each sample was sorted into 52 material categories (also used in the statewide solid waste composition study). These data sets were analyzed to provide Howard County with the baseline of total volumes, contamination, and recyclable materials that could be diverted with improved program outreach.

The waste characterization and evaluation provided by MSW Consultants resulted in a far more comprehensive understanding to the client, than was previously available. The final report drafted and presented to Howard County allowed their key decision makers to understand the ever-evolving waste streams, consumer behavior, and market shifts. All of which influenced their outreach efforts to capture more recyclables.

MSW CONSULTANTS PROJECTS



2023 Material Recovery Facility Recyclable Material Study

New York City Department of Sanitation, New York

MSW Consultants is a project partner on the ongoing California Department of Resources Recycling and Recovery (CalRecycle) project to conduct material characterization studies at MRFs across the state of California. The study was commissioned by CalRecycle as required by Senate Bill (SB) 343 to evaluate how traditional recyclables are collected and processed. In season one of the study, MSW Consultants conducted 10 site visits at MRFs selected by CalRecycle to develop site specific plans for how to collect and sort samples from each processed material outflow and end-of-line residual ejection point.

MSW Consultants then deployed a traveling crew across northern and southern California to conduct a two-day manual sort at each facility. MSW Consultants worked closely with CalRecycle and each facility's staff to collect, photo document and sort samples from the various outflows at each facility. Twenty samples per facility were sorted into 91 material categories to meet the 200-count sample target for season one.

Residential Waste & Recycling Characterization Study

New York City Department of Sanitation, New York

MSW Consultants has collaborated with the New York Department of Sanitation on multiple large scale residential waste characterization studies since 2012. In 2012, 2017, and again in 2022-23, MSW Consultants performed comprehensive residential waste and recycling characterization study from the five boroughs of New York City in a project that was jointly funded by the New York Department of Sanitation and Sims Municipal Recycling of New York. These projects updated the City's prior comprehensive study, conducted in 2004-05, and were designed for use in updating the City's contract with Sims for processing of residentially generated Paper and Metals, Glass, and Plastic (MGP) from the City's dual-stream recycling program.

The most recent update entailed sampling over 3,000 Refuse, Paper, and MGP routes over two seasons to characterize the waste stream. This project required all plastics to be sorted by use and by resin, making it one of the most comprehensive characterization studies ever performed with a total of over 800 categories.

Results of these efforts are available on the DSNY website, with the 2022-23 results release scheduled for early 2024.

STRAUGHAN PROJECTS

Stormwater Management and Green Infrastructure Design, Stormwater Retrofits, Planning, and Design

District Department of Transportation (DDOT), Washington DC

To improve water quality and reduce stormwater runoff volumes, DDOT embarked in an ambitious program to plan, design, construct, and maintain Green Infrastructure (GI) practices. The GI practices helped DDOT meet their permit requirements and also provided co-benefits to underserved communities such as improved aesthetics and air quality as well as reduced heat island effect by providing vegetation in areas where little to none exists today.

Straughan was selected to lead this important initiative which included developing a geodatabase to include all existing GI assets and provided a mechanism to update it easily in the future with additional assets including maintenance implementation plans, stormwater siting maps, and standardized GI designs.

Through expert and innovative execution of this project, Straughan reduced DDOT's future operating costs, accelerate GI installation, and modernize the operations and maintenance of their GI facilities.

Energy Pricing Study

Maryland Environmental Service, Maryland Statewide

The Maryland Environmental Service (MES) tasked the Straughan Team to provide technical services for the evaluation of the current status of geothermal heating and cooling systems in Maryland, as well as the potential impact of expanding and incentivizing the use of geothermal heating and cooling systems in the State. The project objective was to prepare an achievable potential study to evaluate the incremental cost, feasibility, and market potential of Ground Source Heat Pumps (GSHPs) in Maryland. Straughan researched existing databases of federal, state, county, utility, and renewable/geothermal trade groups to assess type and quality of existing data. Data was compiled in chart and GIS mapping formats to represent statewide geothermal heating and cooling systems. This informed the analysis of the potential to build neighborhood-scale district geothermal systems or convert existing utility infrastructure to be provided to an entire community.

STRAUGHAN PROJECT

Statewide Construction Monitoring Related to Grant and/or Loan Funded Capital Projects

Maryland Department of the Environment, Maryland

Prompted by commitments in the 2000 Chesapeake Bay Agreement, the Bay Restoration Fund was signed into law in 2004 to address declining water quality in the Chesapeake Bay from over enrichment of nutrients. Statewide, publicly owned wastewater treatment plants discharge into the Chesapeake Bay and its tributaries and have been identified as a major contributor to nutrient loads and degraded water quality. Maryland Department of the Environment (MDE) through the Bay Restoration Fund Enhanced Nutrient Removal (ENR) program, established a grant funding program to cover the cost of eligible upgrades partially or completely to wastewater treatment plants, including costs associated with planning, design, and construction.

To support the MDE documenting appropriate use of Bay Restoration Funds, Straughan provided construction monitoring services for wastewater treatment plants and associated water discharge facilities throughout Maryland. Construction monitoring services include procurement and review of project billing and schedule of values, pre-visit preparation and coordination with MDE. Monitoring visits provided MDE with verification of completed construction tasks.

To efficiently coordinate documentation and data transfer since construction projects are located throughout the state, Straughan created a central database to store, organize, and share sensitive digital data for project reporting and management purposes Statewide.

ASSEDO PROJECTS

Baltimore City Sanitary Sewer Modified Consent Decree (MCD) Program

New York City Department of Sanitation, New York

The Baltimore City Sanitary Sewer MCD Program is a settlement between the U.S. EPA, the U.S. DOJ, MDE, and the City of Baltimore. The MCD prescribes various programs and construction projects to address sanitary sewer overflows and allows the City to close its structured overflows safely.

The City is repairing or replacing broken or leaking pipes and other sanitary sewer structures; increasing the capacity of sewer lines by upsizing pipes and building storage facilities; and implementing proactive inspection, cleaning, and enforcement measures throughout the sewer system.

Assedo performed the following activities:

- Assessed brand recognition and developed strategy to enhance City brand
- Successfully planned and executed the Headworks Project launch event at the Back River WWTP
- Conducted social and digital media (website) audit
- Continued preparation of collateral materials for public education
- Created an educational behavior change campaign including the Sewer Heroes coloring book which features DPW characters who teach children how to prevent clogged drains and sewers in the City
- Ongoing planning and facilitation of MCD mandated annual public information meetings
- Created a virtual MCD virtual meeting room that is accessible to the public 24/7, 365
- Developed promotional materials (social) for the Small Business Development Program (SBDP)

Clean Water Partnership Stormwater Management Project

Prince George's County Department of the Environment, Maryland

To comply with mandatory Municipal Separate Storm Sewer System (MS4) clean water regulatory requirements set by the Environmental Protection Agency (EPA), Prince George's County entered into a first-of-its-kind $100 million, community-based public-private partnership (P3) known as the Clean Water Partnership (CWP) to manage polluted stormwater.

The CWP will treat 15,000 acres of polluted stormwater runoff by the year 2025 by designing and installing an estimated 46,000 stormwater filtration devices throughout the County. Assedo Consulting supported this effort by leading engagement on over 50 SWM sites including pond redevelopment, stream restoration, and other best management practice devices. Prepared site specific outreach and engagement plans.

- Engaged community leaders and adjacent residents
- Coordinated with project engineers on outreach needs
- Created GIS maps of project sites
- Developed detailed presentation materials and collateral
- Collected and managed site photos
- Documented project progress
- Coordinated property owner approvals

Reimagine Middle Branch

City of Baltimore, Maryland

Reimagine Middle Branch is a community-driven initiative to reconnect South Baltimore neighborhoods to the 11+ miles of shoreline along the Patapsco River. The project is a collection of ongoing and future projects, actions and engagements tied to local events.

The City of Baltimore, in collaboration with South Baltimore Gateway Partnership and the Parks and People Foundation, hired a team of consultants to develop a Framework Plan to re-envision the waterfront in collaboration with the local community. The project includes local firms with strong ties to the communities near the Middle Branch, commitment to inclusive community engagement, and experience with Baltimore City.

The Reimagine Middle Branch Plan was approved by Baltimore City's Planning Commission on February 9, 2023. Assedo Consulting led the engagement, marketing, and communications efforts for the project including:

- Led stakeholder advisory committees
- Managed large scale event planning efforts
- Coordinated with local community leaders
- Developed educational collateral materials
- Facilitated community and stakeholder meetings

VPC PROJECT

2021 Maryland Hazard Mitigation Plan Update

Maryland Emergency Management Agency, Maryland

VPC developed a comprehensive stakeholder engagement strategy to garner participation from three different stakeholder groups – State departments/ agencies; County/Local jurisdictions; and NGO and academic organizations. VPC developed an online survey for each stakeholder group to capture each organization/ department's current, and future, mitigation, planning, and preparedness resources, programs, and data into one, useful, "at-a-glance" reference table.

VPC also assisted with designing an online mapping exercise where County/Local jurisdictions had the opportunity to identify where in their region they feel are particular "trouble spots," and make recommendations for state sponsored mitigation actions. These outreach instruments were distributed to state agencies, counties and cities, NGOs, environmental advocacy groups, and universities to ensure a well-coordinated and comprehensive engagement effort.

Additionally, a new "Virtual Room" was developed to support the project by providing a public-facing online "home" for all outreach materials, presentations, maps, surveys, and project documentation. The Room served in place of in-person meetings and workshops that would normally have been conducted in the regions around the State.

The Virtual Room was designed to look and "feel" like a traditional public meeting room including signs and banners, maps, activity stations, and (pre-recorded) presentations. This allowed the Virtual Room to be available to users 24-hours a day, seven days a week, to accommodate planners' and emergency managers unique needs and schedules.

VPC updated the Mitigation Strategy so it is action-oriented, straightforward, and clearly connects mitigation actions with the identified risks. VPC coordinated with the Steering Committee to review and update the goals from the 2016 HMP as well as to develop new Goals for inclusion in the 2021 HMP. Over 40 Mitigation Actions were developed based on the hazards identified in the HIRA, feedback on trouble spots from stakeholders, and best practices. VPC developed an Implementation Strategy as well to include a timetable for action, potential lead and supporting agencies, estimated cost, and potential funding sources for each mitigation action.

REGIONAL MANAGEMENT INVOLVED

We built our Team to offer you efficient and cost-effective resources and our key personnel qualifications are summarized on the previous pages. Our approach to staff and scheduling of resources will remain flexible and responsive as project needs arise. We realize working conditions and situations can sometimes change however, regardless of what happens, we're here. Our key personnel are fully committed to the project for its duration and our regional management personnel who may be involved with supervising the services to be performed under this contract are available to support and guide our project management and subconsultant teaming partners as needed.

Andrea Ryon, PE, PMP

Sr. Vice President/Area Manager

Andrea is a Senior Vice President and serves as Area Manager for HDR's engineering operations in Virginia, Maryland and the District of Columbia. She is responsible for the day-to-day management of all staff and operations in this area including staff planning, financial reviews and providing resources to maintain schedule and budget compliance for the project. Andrea has worked with federal, state, and local agencies throughout the Mid-Atlantic.

Christie Hoffmeyer

Regional Business Manager

Christie is an Associate Vice President serving as the operations leader for the waste, power, and industrial sectors for Maryland, Virginia, and District of Columbia at HDR. She is responsible for the Team strategy, end-to-end operations, and supporting the Team to drive production forward.

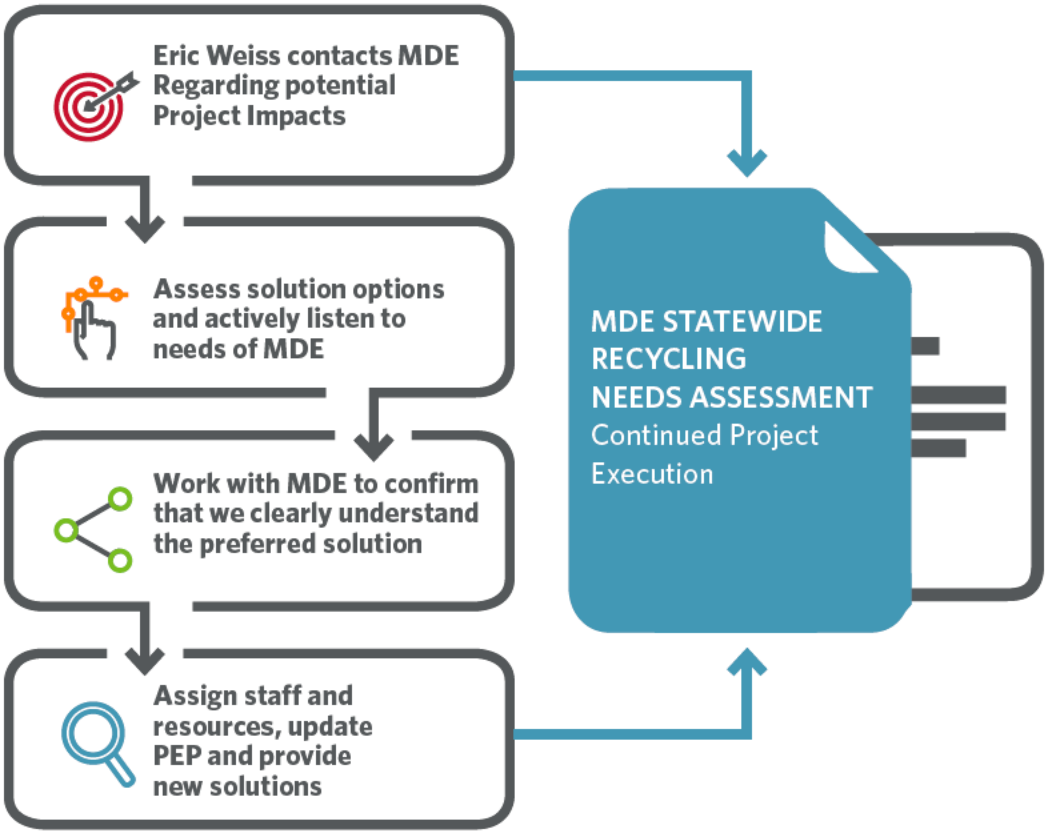
PROCESS FOR RESOLVING BUSINESS ERRORS

The HDR Team's unique and integrated approach to developing preferred solutions. Our proposed approach to the different Tasks and involvement by MDE establishes a clear, collaborative process for evaluating and reaching consensus related to data gathering and analytics. MDE will contact our Project Manager, Eric Weiss, initially when reaching out to the HDR Team for information, discussion points, collaboration, and overall communications. He and appropriate Team members will meet with MDE to discuss topics and review documents for the project. Communication is critical to project success; it starts at the inception of the Tasks and continues throughout. We will discuss the project with you, actively listen to your needs, and confirm that we clearly understand the Task before moving forward.

At the start, to provide clear expectations we will develop a comprehensive Problem Escalation Procedure (PEP) for the Recycling Needs Assessment. The PEP defines the vision; implementation strategy; schedule and budget criteria; and the project's policies, procedures, and standards.

The PEP will be the master reference document for the Team and guides engagement throughout the project's life, from kickoff meetings through planning, implementation, and documentation. The PEP provides continuity and standardization to facilitate time and cost-effective communications and decision-making. The PEP is a formal process to monitor risks, increase efficiencies, control costs, reduce scope creep, and identify potential schedule impacts. The PEP includes:

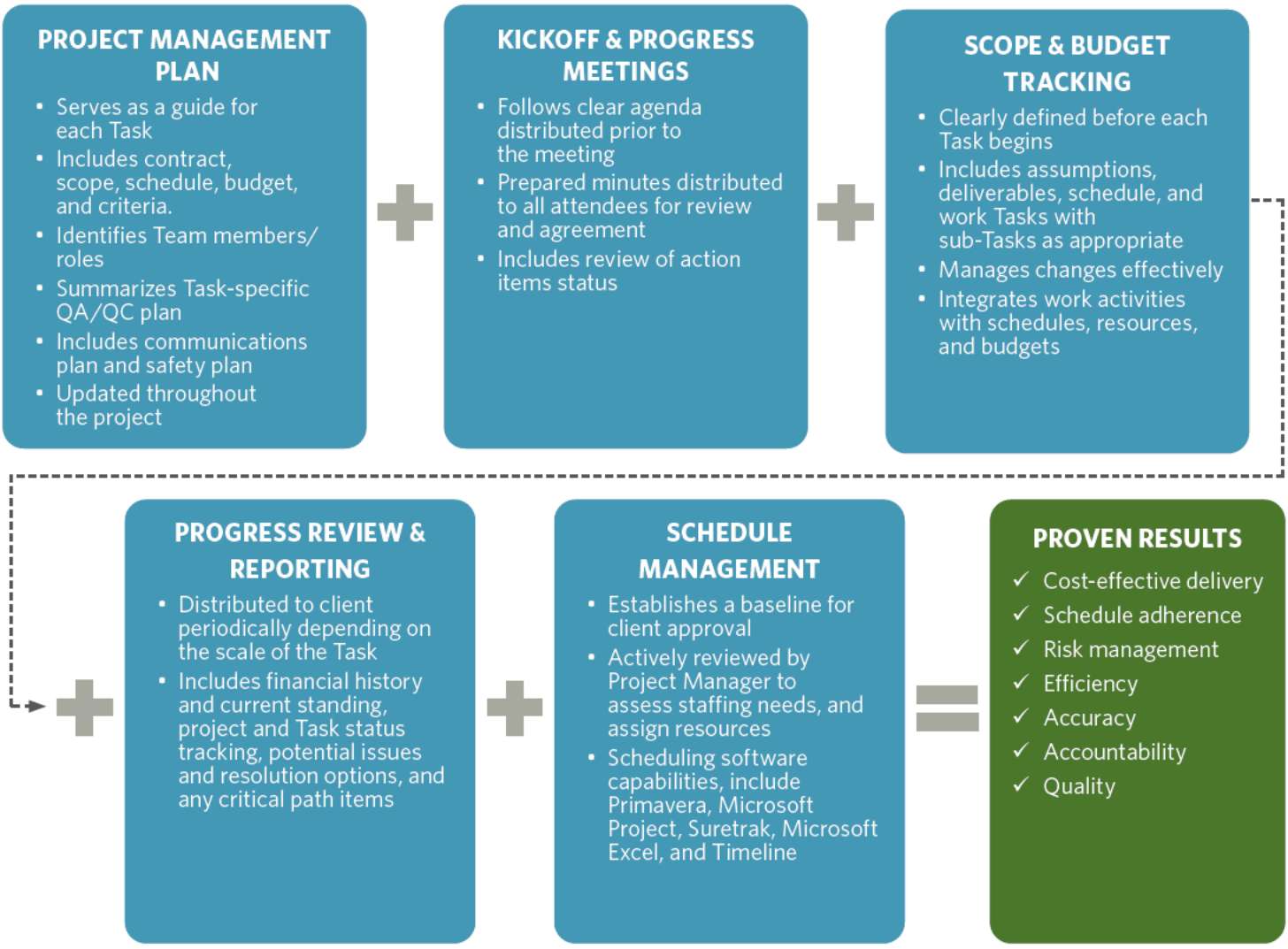
- Program Organization Chart
- Scope Management
- Communication Plan
- Document Control
- Project Controls Plan
- Quality Assurance & Quality Control (QA/QC)
- Environment, Health & Safety Measures
- Dashboard & Reporting
- Closeout Procedures



We believe there should be "no surprises" on a project. This philosophy extends to our approach to solving issues or errors. We work collaboratively with the client, subconsultants, and stakeholders to uncover potential issues during the planning phase, when it is more cost effective to make changes. We examine every detail of the plan for execution, cost, and schedule feasibility. We also make suggestions, evaluate alternatives and balance the proposed issues with the budget. Past experience has demonstrated that by performing this work on the front end, issues or errors are minimized, allowing for on-time completion.

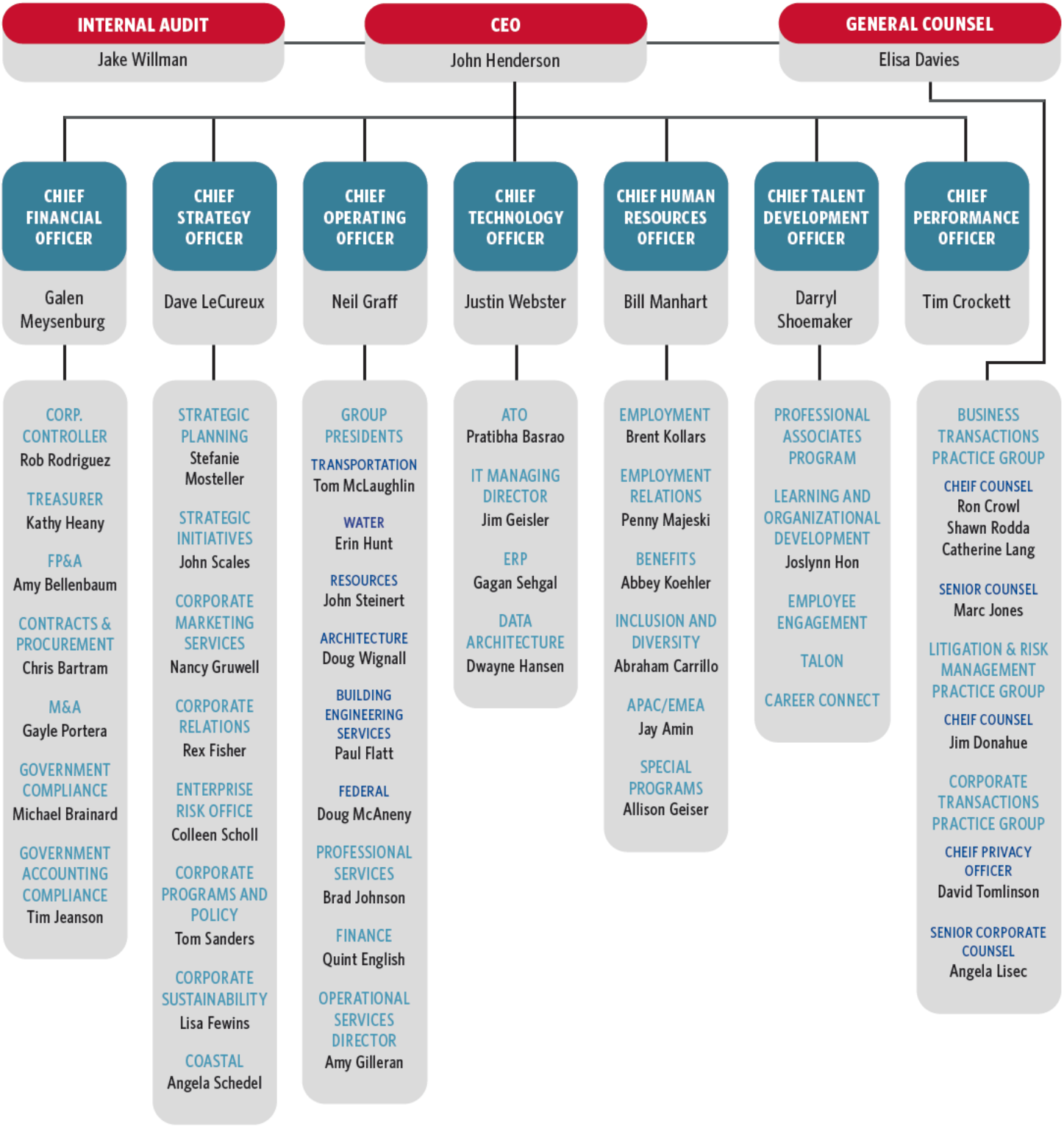
We rely on a structured process to prevent unnecessary costs and schedule delays. Every issue we encounter is thoroughly reviewed and documented. We require subconsultants to provide detailed, itemized plans which we review for accuracy. Key components of our evaluation and execution process include:

- Verifying that scope is aligned with contract budget and schedule
- Preparing an independent Quality Assurance/Quality Control review
- Outlining circumstances associated with any potential issues or errors
- Reconciling the issue or error with the appropriate staff
- Processing and carrying out the resolution in the outlined time frame
- Potential, current, and ongoing issues or errors are reviewed and discussed during regularly scheduled project update meetings



CORPORATE ORGANIZATIONAL CHART

HDR is a global employee-owned firm that provides architecture, engineering, consulting, construction, and related services through our various operating companies. The organization chart below depicts the management structure of HDR, Inc., the financial holding corporation for HDR Engineering, Inc. and its subsidiaries.



TAB H

I. REFERENCES

I. REFERENCES

DON'T JUST TAKE OUR WORD FOR IT

We encourage you to contact these references, ask them about HDR and our client commitments, the Team members offered to MDE, our planning and strategic communications capabilities, the solutions we have provided them and how we work with our clients.

Please refer to Section H for a description and type of services provided.

MONTGOMERY COUNTY

Willie Wainer

Chief, Division of Solid Waste Services

[redacted]

Value: $425,894

Duration: May 2018 - May 2020

CIRCULAR ACTION ALLIANCE

Peter Hargreave

President, Policy Integrity Inc.

[redacted]

Value: $888,875

Duration: August 2023 - March 2024

RAMSEY/WASHINGTON RECYCLING & ENERGY

Michael Reed

Division Manager, Recycling & Energy | Recycling & Energy Joint Leadership

[redacted]

Value: $1,331,230

Duration: 2022 - Ongoing

NORTHEAST MARYLAND WASTE DISPOSAL AUTHORITY

Kitty McIlroy

Project Manager

[redacted]

Value: $145,000

Duration: April 2016 - May 2017

Reference provided for:

MSW CONSULTANTS

TAB I

J. LIST OF CURRENT OR PRIOR STATE CONTRACTS

J. LIST OF CURRENT OR PRIOR STATE CONTRACTS

The following list presents all HDR's contracts with any entity of the State of Maryland where we are currently performing services or services were completed within the last five (5) years. We do not have any contracts terminated before the end of the term or any where available renewal options were not excercised.

Employee Contact	Description of Services Provided	Value of Contract	Contract Term
Maryland Environmental Service **Timothy Ford** Managing Director, Environmental Operations [redacted]	Eastern Correctional Institution Cogeneration Plant Boiler Conversion	$45,900.00	Jan 2019-Dec 2019
	Natural Gas Pipeline	$68,000.00	Jun 2018-Dec 2019
	Eastern Correctional Institution Cogeneration Facility Fuel Conversion	$485,000.00	Jul 2020-Oct 2022
	Conversion Design Services Annex and MCE facilities within the Eastern Correctional Institution, from propane to natural gas.	$484,649.00	Oct 2020-Dec 2023
	Eastern Correctional Institution Construction Administration	$406,989.00	Sep 2021-Aug 2024
	Conversion Assessment at MCI-H Steam Plant	$49,402.00	Jul 2021-Jun 2022
	Hagerstown Plant Boiler Pipe Connections Design Support	$41,961.00	Jan 2021-Jul 2021
	Materials Recycling Facility Assessment for MCRC Expansion	$60,000.00	Oct 2020-Mar 2021
	Dans Mountain and Savage Mountain New Wells	$178,580.00	Dec 2015-Dec 2020
Northeast Maryland Waste Disposal Authority **Willie Wainer** Chief, Division of Solid Waste Services [redacted]	Northeast Maryland Waste Disposal Authority - Contract 18-17 | 5 projects	$ 1,000,000.00	Jun 2017-July 2023
	Montgomery County Resource Recovery Facility FY19 Operations & Management Monitoring	$228,612.00	Jun 2018-Jun 2019
	Montgomery County Resource Recovery Facility FY20 Operations & Management Monitoring	$347,500.00	Jul 2019-Aug 2020
	Montgomery County Resource Recovery Facility FY24 Operations & Management Monitoring	$363,000.00	Jul 2023-Jun 2024
	Montgomery County Resource Recovery Facility Contract Negotiations	$50,500.00	Jan 2019-Dec 2021
	Montgomery County Materials Recovery Facility Feasibility Study	$44,975.00	Dec 2018-Jun 2019
	Montgomery County Master Plan	$425,894.25	May 2018-May 2020
Anne Arundel County, Maryland Department of Public Works **Chris Murphy, PE** Engineer Administrator [redacted]	Contract for Onsite Sewage Disposal System Stategic Plan | 36 projects	$1,500,000.00	Sep 2018-Aug 2024
	Open End Contract for Water/Wastewater Design Services | 18 projects	$1,200,000.00	Sep 2019-Feb 2024
	Contract for On-Call Professional Design and Engineering Services associated with Capital Improvement Project S791800 | 8 projects	$6,000,000.00	Feb 2022-Feb 2027
	Arundel Mills Elevated Water Storage Towers Rehab	$248,234.71	Jul 2016-Dec 2023
	Crofton Sphere Elevated Water Storage Towers Rehab	$147,769.51	Jul 2016-Jan 2024
	RAS Corrosion Task	$24,997.18	Mar 2019-Dec 2019
	East/West Transmission Water Main Engineering Design Services	$429,727.65	Feb 2017-May 2021
	Reece Road Sewer Petition Preliminary Engineering	$14,988.66	Jul 2019-Dec 2019
	Preliminary Engineering/Cost Estimating on Reece Road Sewer Extension	$14,988.66	Jul 2019-Dec 2019
	Maryland City Zone Transmission Main and Booster Pump Station Design	$1,699,987.71	Apr 2014-Jan 2024
	Aquifer Storage Recovery Pilot Well Design and Permit	D$175,515.41	Aug 2023-May 2024
	East/West Transmission Water Main System Design Review	$1,843,420.63	May 2021-Dec 2023

Employee Contact	Description of Services Provided	Value of Contract	Contract Term
Howard County Department of Public Works **Zack Knight, PE** Project Manager, Utility Design Division [redacted]	Water and Wastewater Facilities Design | 13 projects	$8,289,000.00	Oct 2017-Apr 2024
	Water and Wastewater Design Services | 1 project	$10,202,870.00	Jul 2023-Jun 2029
	Little Patuxent Water Reclamation Plant PCS Tablet Design	$82,801.00	Sep 2018-Mar 2019
	Little Patuxent Water Reclamation Plant Control Room Upgrades	$305,443.00	Sep 2018-May 2021
City of Baltimore **Timothy Wolfe** Chief, Office of Engineering and Construction [redacted]	Alternatives Comparison Biosolids Management Plan	$1,090,320.91	Dec 2015-Apr 2022

TAB J

K. FINANCIAL CAPABILITY

J. FINANCIAL CAPABILITY

As an employee-owned firm, our assets are managed and invested with exceptional care. We have established strong risk controls and are committed to managing our company with an eye toward long-term financial health and stability. This commitment has enabled us to thrive for more than 100 years in every economic environment and allows us to be a reliable partner for our clients.

Our financial statements are prepared and audited annually by Ernst & Young LLC. We are financially sound with gross revenues of $3.2 billion, a current working capital ratio of 1.9, and stockholders' equity of $0.66 billion (2022).

HDR Engineering:

[redacted]

TAB K

L. CERTIFICATE OF INSURANCE

L. CERTIFICATE OF INSURANCE

HDR has maintained professional liability insurance in force continually since 1958 for the protection of clients and us. Insurance information is available below.

TAB L

M. SUBCONTRACTORS

M. SUBCONTRACTORS

We recognize the significant effort required to achieve the goals and objectives of the Needs Assessment to establish the foundation and basis for crucial decision points in establishing a waste management system that increases recycling and waste diversion in the State of Maryland. It will be a challenge, given the allotted time frame outlined in the legislation. However, to combat the challenges of magnitude and time frame, we have strategically partnered with several firms and individuals with relevant industry experience to properly gather, manage, and analyze the data necessary for a successful outcome that leads to the implementation and execution of enhanced infrastructure systems.

The HDR Team and partnerships include Eunomia, MSW Consultants, Straughan Environmental, Assedo Consultants, and Vision Planning & Consultants. Our experience and proven techniques in communications and collaboration will result in a seamless process.

HDR, Eunomia, MSW Consultants, Straughan Environmental, Assedo Consultants, and Vision Planning & Consultants will collectively execute each of the Tasks, taking advantage of shared experiences, skill sets, and knowledge of local systems and the waste industry. The Team provides consulting and guidance to maintain focus and alignment with the goals and objectives of the Recycling Needs Assessment. Below, you will find a brief company description for each of our partners in the HDR Team.

Please find more information on the proposed resources and project experience for these firms in Section G (Tab F) Experience and Qualifications of Proposed Staff.

Proven Industry Expertise to Deliver Fast-Track Needs Assessment

Eunomia Research & Consulting is an independent, international environmental consultancy with over 21 years of experience, specializing in zero waste and circular economy programs, policy, systems, and technologies. With a team of over 140 consultants, including economists, policy experts, zero waste planners, life cycle assessors, data analysts, and experts in various circular economy sectors, Eunomia operates from locations in North America, Europe, and New Zealand. The company is headquartered in the UK and has continued to expand its presence to various cities in the UK, North America, and New Zealand.

Eunomia possesses extensive expertise in modeling complex recycling systems as part of EPR in Europe and North America. As a result of the constantly evolving policy environment and the imperative need to understand and improve enhanced waste and recycling systems, Eunomia developed an in-house system modeling tool. In that regard, Eunomia is uniquely positioned and exceptionally equipped to bring this modeling tool, and wealth of experience in modeling complex systems, to Maryland. Notably, the tool was also used in the system modeling carried out in 2021 for Washington as well.

Eunomia's extensive experience includes supporting local and regional governments for more than two decades in designing, implementing, and evaluating effective waste and recycling services. The team ensures alignment with the waste hierarchy and principles of a circular economy while considering climate impact, equity, and environmental justice. Eunomia has demonstrated its ability to collect, manage, and analyze large data sets through collaborations with the European Commission on policy initiatives and US states on zero waste and waste management plans. The company analyzes and benchmarks services and system performance and cost for individual municipalities, states, and countries to inform service delivery and policy design using cost-benefit modeling.

The New York City office, operational since 2017, has enabled Eunomia to work closely with cities, municipalities, and states across North America. Their projects involve developing plans, reviewing and calculating service costs, and formulating policies related to zero waste and the circular economy, including extended producer responsibility (EPR) and recycled content mandates. Eunomia collaborates with local, national, and supranational governments, non-governmental organizations, consumer goods brands, and technology developers. This broad spectrum of clients allows the consultancy to understand various stakeholder perspectives and develop solutions that promote circularity across different sectors and materials.

MSW Consultants is a specialized management consulting company with waste and recycling expertise. Their key staff have over 100 years combined experience providing solid waste management and planning services, recycling assessments, collection system assessments, productivity/route analysis, cost-of-service/rates development, waste composition and diversion studies, procurement services, and program implementation for public and private clients across the Nation.

MSW Consultants is a leading national provider of large-scale, multi-season, multi-stream waste characterization services for state agencies, counties, cities, and large institutional and commercial waste generators. MSW Consultants has participated in the majority of the statewide waste characterization studies performed in the U.S. over the past ten years and has assisted major U.S. cities and counties to characterize their waste and recycling streams in the pursuit of increased diversion and an assessment of current recycling program effectiveness. The team is increasingly assisting recycling processors, facility developers, and specialty equipment manufacturers to design sampling and sorting methodologies needed to answer increasingly complex questions about materials streams in the pursuit of zero waste.

Assedo Consulting is an African American, woman-owned business, established in 2012 to provide public engagement and planning services for projects in the planning, design, and construction phases of development. The company is headquartered in Prince George's County, Maryland, and is working on projects in the Washington DC, Baltimore MD, Wilmington DE, and Pittsburgh PA regions. Assedo's work includes planning, public engagement, grassroots and construction outreach, marketing, and branding on a variety of projects including Amtrak's Frederick Douglass Tunnel Program, CSXT's Howard Street Tunnel Replacement Program, and Baltimore City's Climate Action Plan, to name a few.

Assedo has expanded its services to support the development of community-driven plans for urban and neighborhood spaces, as well as vision planning for Parks and Open spaces. Planning projects the team has worked on include Reimagine Middle Branch Master Planning and the Druid Hill Lake Vision Plan, both in Baltimore City, as well as the Master Plan of Transportation for Prince George's County Maryland. Each of these projects also factors in the development of an approach that considers the justice, equity, diversity, and inclusion (JEDI) principles and seeks mechanisms for the realization of a more inclusive process for local stakeholders to be involved.

Assedo is recognized as a leading firm for identifying key stakeholders, educating them about projects, and engaging diverse audiences in the decision-making process. It has always been a core value of its team to establish processes that consider the demographic makeup of the communities being served in developing inclusive and welcoming strategies to seek input from those typically missing from planning and public processes. Assedo helps clients broaden their customer reach by providing graphic design, branding, and marketing services to reinvigorate their public presence.

Assedo works to engage the community using various forms of written and visual aids - newsletters, web pages, flyers, infographics, surveys, and reports. The company's facilitators and outreach specialists organize and lead in-person and virtual informational charrettes, pop-up meetings, and other public forums to help communities learn more about projects and their processes. Assedo also provides clients with website copy and social media strategies.

Straughan has served the government in the State of Maryland for almost 30 years. They understand the needs of the local communities and have expertise in GIS, data visualization, sustainability, legislation, and more. Their mission is to be a leading engineering and environmental firm advancing sustainable and resilient communities. Straughan has a total of 91 staff with 78 located in the mid-Atlantic who work hard every day, making local communities better places to work, live, and play. Their skillsets to be utilized for the Statewide Recycling Needs Assessment include GIS mapping, analysis, data collection and migration, asset database design, asset management, sustainability, environmental consulting, water resources engineering (TMDL), story mapping, socioeconomics, environmental impact assessment, construction monitoring. Similar recent projects include DDOT Category R - Stormwater Management and Green Infrastructure Design, Stormwater Retrofits, Planning, and Design, MES/MEA Geothermal Study Technical Services, and MDE Statewide Construction Monitoring Related to Grant and/or Loan Funded Capital Projects, which have been described in further detail in Section H.

Vision Planning and Consulting (VPC) is a 100-percent small, minority, and woman-owned (WOSB) firm based in Fulton, Maryland. VPC was founded in 2006 and specializes in strategic planning, community engagement, data collection and analysis, hazard and risk analysis, and hazard mitigation. Their team is comprised of planners, stakeholder engagement specialists, analysts, and outreach and facilitation specialists for federal agencies, states, counties, and local governments. For this contract, VPC will provide subject matter expertise in the following: stakeholder engagement, survey development, interviews, data collection and analysis, administrative/organizational, and technical support.

Strata Language Services, LLC

Strata Language Services was established in 2018 and continuously provides reliable translation, interpretation, and voiceover/dubbing services into and from Spanish, Haitian Creole, French, and Brazilian Portuguese. Its founder, Katherine Shivers, holds an M.A. in Spanish Translation and Interpreting and is a Certified Medical Interpreter (Spanish). Strata has provided translation services in various fields, including education, legal, and medical. The company has also provided in-person and remote (virtual) interpretation for various fields in consecutive and simultaneous modes via telephone and video conferencing platforms. Strata has provided dubbing and voiceover for educational, nonprofit, legal, and medical information organizations.

eunomia

Global Executive Staffing, LLC, founded in 2012, is a Department of Veteran Affairs, Center for Veterans Enterprise, Certified Service-Disabled Veteran-Owned Small Business located in the Washington, DC Metropolitan Area. GES directly supports Federal agencies, local governments and private industry businesses as an impactful collaborating partner. The GES professional practice staff holds expertise in several areas including but not limited to Healthcare Management, Project Management, Training, Procurement, Acquisitions, Accounting, Information Technology, Financial Management, Records Management, and Management Consulting. Their team improves organizational performance by bolstering the strategic planning, professional training and enterprise effectiveness efforts of projects they serve. They help the success of a project by contributing keen understanding of system-level requirements specifications, reviews and performance measurement budgeting.

TAB M

N. LEGAL ACTION SUMMARY

N. LEGAL ACTION SUMMARY

In today's legal environment, claims and litigation are a reality for a large company in the industry, regardless of performance or merit. When claims do occur, we are proactive and cooperative in reaching a resolution that is fair and reasonable to all. We value the confidences of our clients as well as our contractual commitments to confidentiality, and do not discuss with third parties the circumstances involving ongoing projects. We would take the same position with information regarding our work on this project.

If necessary, we would be willing to meet in-person with you to discuss the merits or background of past claims. There are no claims or litigation that could impede our ability to perform this project, and we have maintained professional liability insurance in force continually since 1958 for the protection of us and our clients.

TAB N

O. ECONOMIC BENEFIT FACTORS

O. ECONOMIC BENEFIT FACTORS

HDR has selected multiple subconsultants that are Maryland-based and the revenue generated from these work activities is estimated to be $226,000.

One of the key outcomes of this project is to determine the economic benefits of EPR implementation. While it is likely that there will be economic benefits, its not possible to quantify at this stage. Benefits may include the recommendations of significant capital upgrades to existing recycling facilities or development of greenfield facilities. While it is not possible to quantify the benefits at this time, the development or expansion of recycling facilities would provide a notable primary and secondary economic benefit to the Maryland economy.

TAB O

P. TECHNICAL PROPOSAL REQUIRED FORMS AND CERTIFICATIONS

P. TECHNICAL PROPOSAL - REQUIRED FORMS AND CERTIFICATIONS

Please find the following required forms for the Technical Proposal as identified in the RFP Table 1 of Section 7.

Attachment C. Bid/Proposal Affidavit

A. AUTHORITY

I hereby affirm that I, Andrea L. Ryon (name of affiant) am the Senior Vice President/Area Manager (title) and duly authorized representative of HDR Engineering, Inc (name of business entity) and that I possess the legal authority to make this affidavit on behalf of the business for which I am acting.

B. CERTIFICATION REGARDING COMMERCIAL NONDISCRIMINATION

The undersigned Bidder/Offeror hereby certifies and agrees that the following information is correct: In preparing its Bid/proposal on this project, the Bidder/Offeror has considered all Bid/proposals submitted from qualified, potential subcontractors and suppliers, and has not engaged in "discrimination" as defined in § 19-103 of the State Finance and Procurement Article of the Annotated Code of Maryland. "Discrimination" means any disadvantage, difference, distinction, or preference in the solicitation, selection, hiring, or commercial treatment of a vendor, subcontractor, or commercial customer on the basis of race, color, religion, ancestry, or national origin, sex, age, marital status, sexual orientation, sexual identity, genetic information or an individual's refusal to submit to a genetic test or make available the results of a genetic test, disability, or any otherwise unlawful use of characteristics regarding the vendor's, supplier's, or commercial customer's employees or owners. "Discrimination" also includes retaliating against any person or other entity for reporting any incident of "discrimination". Without limiting any other provision of the solicitation on this project, it is understood that, if the certification is false, such false certification constitutes grounds for the State to reject the Bid/proposal submitted by the Bidder/Offeror on this project, and terminate any contract awarded based on the Bid/proposal. As part of its Bid/proposal, the Bidder/Offeror herewith submits a list of all instances within the past four (4) years where there has been a final adjudicated determination in a legal or administrative proceeding in the State of Maryland that the Bidder/Offeror discriminated against subcontractors, vendors, suppliers, or commercial customers, and a description of the status or resolution of that determination, including any remedial action taken. Bidder/Offeror agrees to comply in all respects with the State's Commercial Nondiscrimination Policy as described under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland.

B-1. CERTIFICATION REGARDING MINORITY BUSINESS ENTERPRISES.

The undersigned Bidder/Offeror hereby certifies and agrees that it has fully complied with the State Minority Business Enterprise Law, State Finance and Procurement Article, § 14-308(a)(2), Annotated Code of Maryland, which provides that, except as otherwise provided by law, a contractor may not identify a certified minority business enterprise in a Bid/proposal and:

(1) Fail to request, receive, or otherwise obtain authorization from the certified minority business enterprise to identify the certified minority bid/proposal;

(2) Fail to notify the certified minority business enterprise before execution of the contract of its inclusion in the Bid/proposal;

(3) Fail to use the certified minority business enterprise in the performance of the contract; or

(4) Pay the certified minority business enterprise solely for the use of its name in the Bid/proposal.

Without limiting any other provision of the solicitation on this project, it is understood that if the certification is false, such false certification constitutes grounds for the State to reject the

Bid/proposal submitted by the Bidder/Offeror on this project, and terminate any contract awarded based on the Bid/proposal.

B-2. CERTIFICATION REGARDING VETERAN-OWNED SMALL BUSINESS ENTERPRISES.

The undersigned Bidder/Offeror hereby certifies and agrees that it has fully complied with the State veteran-owned small business enterprise law, State Finance and Procurement Article, § 14-605, Annotated Code of Maryland, which provides that a person may not:

(1) Knowingly and with intent to defraud, fraudulently obtain, attempt to obtain, or aid another person in fraudulently obtaining or attempting to obtain public money, procurement contracts, or funds expended under a procurement contract to which the person is not entitled under this title;

(2) Knowingly and with intent to defraud, fraudulently represent participation of a veteran-owned small business enterprise in order to obtain or retain a Bid/proposal preference or a procurement contract;

(3) Willfully and knowingly make or subscribe to any statement, declaration, or other document that is fraudulent or false as to any material matter, whether or not that falsity or fraud is committed with the knowledge or consent of the person authorized or required to present the declaration, statement, or document;

(4) Willfully and knowingly aid, assist in, procure, counsel, or advise the preparation or presentation of a declaration, statement, or other document that is fraudulent or false as to any material matter, regardless of whether that falsity or fraud is committed with the knowledge or consent of the person authorized or required to present the declaration, statement, or document;

(5) Willfully and knowingly fail to file any declaration or notice with the unit that is required by COMAR 21.11.13; or

(6) Establish, knowingly aid in the establishment of, or exercise control over a business found to have violated a provision of § B-2(1) -(5) of this regulation.

C. AFFIRMATION REGARDING BRIBERY CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business (as is defined in Section 16-101(b) of the State Finance and Procurement Article of the Annotated Code of Maryland), or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies has been convicted of, or has had probation before judgment imposed pursuant to Criminal Procedure Article, § 6-220, Annotated Code of Maryland, or has pleaded nolo contendere to a charge of, bribery, attempted bribery, or conspiracy to bribe in violation of Maryland law, or of the law of any other state or federal law, except as follows (indicate the reasons why the affirmation cannot be given and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of person(s) involved, and their current positions and responsibilities with the business):

Not Applicable

_____

_____

D. AFFIRMATION REGARDING OTHER CONVICTIONS

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities including obtaining or performing contracts with public bodies, has:

(1) Been convicted under state or federal statute of:

(a) A criminal offense incident to obtaining, attempting to obtain, or performing a public or private contract; or

(b) Fraud, embezzlement, theft, forgery, falsification or destruction of records or receiving stolen property;

(2) Been convicted of any criminal violation of a state or federal antitrust statute;

(3) Been convicted under the provisions of Title 18 of the United States Code for violation of the Racketeer Influenced and Corrupt Organization Act, 18 U.S.C. § 1961 et seq., or the Mail Fraud Act, 18 U.S.C. § 1341 et seq., for acts in connection with the submission of Bids/Proposals for a public or private contract;

(4) Been convicted of a violation of the State Minority Business Enterprise Law, § 14-308 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(5) Been convicted of a violation of § 11-205.1 of the State Finance and Procurement Article of the Annotated Code of Maryland;

(6) Been convicted of conspiracy to commit any act or omission that would constitute grounds for conviction or liability under any law or statute described in subsections (1)— (5) above;

(7) Been found civilly liable under a state or federal antitrust statute for acts or omissions in connection with the submission of Bids/Proposals for a public or private contract;

(8) Been found in a final adjudicated decision to have violated the Commercial Nondiscrimination Policy under Title 19 of the State Finance and Procurement Article of the Annotated Code of Maryland with regard to a public or private contract;

(9) Been convicted of a violation of one or more of the following provisions of the Internal Revenue Code:

(a) §7201, Attempt to Evade or Defeat Tax;

(b) §7203, Willful Failure to File Return, Supply Information, or Pay Tax,

(c) §7205, Fraudulent Withholding Exemption Certificate or Failure to Supply Information;

(d) §7206, Fraud and False Statements, or

(e) §7207 Fraudulent Returns, Statements, or Other Documents;

(10) Been convicted of a violation of 18 U.S.C. §286 Conspiracy to Defraud the Government with Respect to Claims, 18 U.S.C. §287, False, Fictitious, or Fraudulent Claims, or 18 U.S.C. §371, Conspiracy to Defraud the United States;

(11) Been convicted of a violation of the Tax-General Article, Title 13, Subtitle 7 or Subtitle 10, Annotated Code of Maryland;

(12) Been found to have willfully or knowingly violated State Prevailing Wage Laws as provided in the State Finance and Procurement Article, Title 17, Subtitle 2, Annotated Code of Maryland, if:

(a) A court:

(i) Made the finding; and

(ii) Decision became final; or

(b) The finding was:

(i) Made in a contested case under the Maryland Administrative Procedure act; and

(ii) Not overturned on judicial review;

(13) Been found to have willfully or knowingly violated State Living Wage Laws as provided in the State Finance and Procurement Article, Title 18, Annotated Code of Maryland, if:

(a) A court:

(i) Made the finding; and

(ii) Decision became final; or

(b) The finding was:

(i) Made in a contested case under the Maryland Administrative Procedure act; and

(ii) Not overturned on judicial review;

(14) Been found to have willfully or knowingly violated the Labor and Employment Article, Title 3, Subtitles 3, 4, or 5, or Title 5, Annotated Code of Maryland, if:

(a) A court:

(i) Made the finding; and

(ii) Decision became final; or

(b) The finding was:

(i) Made in a contested case under the Maryland Administrative Procedure act; and

(ii) Not overturned on judicial review; or

(15) Admitted in writing or under oath, during the course of an official investigation or other proceedings, acts or omissions that would constitute grounds for conviction or liability under any law or statute described in §§ B and C and subsections D(1)—(14) above, except as follows (indicate reasons why the affirmations cannot be given, and list any conviction, plea, or imposition of probation before judgment with the date, court, official or administrative body, the sentence or disposition, the name(s) of the person(s) involved and their current positions and responsibilities with the business, and the status of any debarment):

Not Applicable

_____

_____

E. AFFIRMATION REGARDING DEBARMENT

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, or any of its officers, directors, partners, controlling stockholders, or any of its employees directly involved in the business's contracting activities, including obtaining or performing contracts with public bodies, has ever been suspended or debarred (including being issued a limited denial of participation) by any public entity, except as follows (list each debarment or suspension providing the dates of the suspension or debarment, the name of the public entity and the status of the proceedings, the

name(s) of the person(s) involved and their current positions and responsibilities with the business, the grounds of the debarment or suspension, and the details of each person's involvement in any activity that formed the grounds of the debarment or suspension).

Not Applicable

F. AFFIRMATION REGARDING DEBARMENT OF RELATED ENTITIES

I FURTHER AFFIRM THAT:

(1) The business was not established and does not operate in a manner designed to evade the application of or defeat the purpose of debarment pursuant to Sections 16-101, et seq., of the State Finance and Procurement Article of the Annotated Code of Maryland; and

(2) The business is not a successor, assignee, subsidiary, or affiliate of a suspended or debarred business, except as follows (you must indicate the reasons why the affirmations cannot be given without qualification):

Not Applicable

G. SUBCONTRACT AFFIRMATION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business, has knowingly entered into a contract with a public body under which a person debarred or suspended under Title 16 of the State Finance and Procurement Article of the Annotated Code of Maryland will provide, directly or indirectly, supplies, services, architectural services, construction related services, leases of real property, or construction.

H. AFFIRMATION REGARDING COLLUSION

I FURTHER AFFIRM THAT:

Neither I, nor to the best of my knowledge, information, and belief, the above business has:

(1) Agreed, conspired, connived, or colluded to produce a deceptive show of competition in the compilation of the accompanying Bid/proposal that is being submitted; or

(2) In any manner, directly or indirectly, entered into any agreement of any kind to fix the Bid/proposal price of the Bidder/Offeror or of any competitor, or otherwise taken any action in restraint of free competitive bidding in connection with the contract for which the accompanying Bid/proposal is submitted.

I. CERTIFICATION OF TAX PAYMENT

I FURTHER AFFIRM THAT:

Except as validly contested, the business has paid, or has arranged for payment of, all taxes due the State of Maryland and has filed all required returns and reports with the Comptroller of the Treasury, State Department of Assessments and Taxation, and Department of Labor, Licensing, and Regulation, as applicable, and will have paid all withholding taxes due the State of Maryland prior to final settlement.

J. CONTINGENT FEES

I FURTHER AFFIRM THAT:

The business has not employed or retained any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency working for the business, to solicit or secure the Contract, and that the business has not paid or agreed to pay any person, partnership, corporation, or other entity, other than a bona fide employee, bona fide agent, bona fide salesperson, or commercial selling agency, any fee or any other consideration contingent on the making of the Contract.

K. CERTIFICATION REGARDING INVESTMENTS IN IRAN

(1) The undersigned certifies that, in accordance with State Finance and Procurement Article, §17-705, Annotated Code of Maryland:

(a) It is not identified on the list created by the Board of Public Works as a person engaging in investment activities in Iran as described in State Finance and Procurement Article, §17-702, Annotated Code of Maryland; and

(b) It is not engaging in investment activities in Iran as described in State Finance and Procurement Article, §17-702, Annotated Code of Maryland.

(2) The undersigned is unable to make the above certification regarding its investment activities in Iran due to the following activities:

Not Applicable

L. CONFLICT MINERALS ORIGINATED IN THE DEMOCRATIC REPUBLIC OF CONGO (FOR SUPPLIES AND SERVICES CONTRACTS)

I FURTHER AFFIRM THAT:

The business has complied with the provisions of State Finance and Procurement Article, §14-413, Annotated Code of Maryland governing proper disclosure of certain information regarding conflict minerals originating in the Democratic Republic of Congo or its neighboring countries as required by federal law.

M. PROHIBITING DISCRIMINATORY BOYCOTTS OF ISRAEL

I FURTHER AFFIRM THAT:

In preparing its bid/proposal on this project, the Bidder/Offeror has considered all bid/proposals submitted from qualified, potential subcontractors and suppliers, and has not, in the solicitation, selection, or commercial treatment of any subcontractor, vendor, or supplier, refused to transact or terminated business activities, or taken other actions intended to limit commercial relations, with a person or entity on the basis of Israeli national origin, or residence or incorporation in Israel and its territories. The Bidder/Offeror also has not retaliated against any person or other entity for reporting such refusal, termination, or commercially limiting actions. Without limiting any other provision of the solicitation for bid/proposals for this project, it is understood and agreed that, if this certification is false, such false certification will constitute grounds for the State to reject the bid/proposal submitted by the Bidder/Offeror on this project, and terminate any contract awarded based on the bid/proposal.

N. I FURTHER AFFIRM THAT:

Any claims of environmental attributes made relating to a product or service included in the bid or bid/proposal are consistent with the Federal Trade Commission's Guides for the Use of Environmental Marketing Claims as provided in 16 C.F.R. §260, that apply to claims about the environmental attributes of a product, package or service in connection with the marketing, offering for sale, or sale of such item or service.

O. ACKNOWLEDGEMENT

I ACKNOWLEDGE THAT this Affidavit is to be furnished to the Procurement Officer and may be distributed to units of: (1) the State of Maryland; (2) counties or other subdivisions of the State of Maryland; (3) other states; and (4) the federal government. I further acknowledge that this Affidavit is subject to applicable laws of the United States and the State of Maryland, both criminal and civil, and that nothing in this Affidavit or any contract resulting from the submission of this Bid/proposal shall be construed to supersede, amend, modify or waive, on behalf of the State of Maryland, or any unit of the State of Maryland having jurisdiction, the exercise of any statutory right or remedy conferred by the Constitution and the laws of Maryland with respect to any misrepresentation made or any violation of the obligations, terms and covenants undertaken by the above business with respect to (1) this Affidavit, (2) the contract, and (3) other Affidavits comprising part of the contract.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

[redacted]

Signature of Authorized Representative and Affiant

Printed Name: Andrea L. Ryon, PE, PMP

Printed Name of Authorized Representative and Affiant

Title: Senior Vice President/Area Manager

Title

Date: March 13, 2024

Date

Attachment D. Minority Business Enterprise (MBE) Forms

D-1A
MBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT
& MBE PARTICIPATION SCHEDULE

PART 1 - INSTRUCTIONS

PLEASE READ BEFORE COMPLETING THIS DOCUMENT

This form includes Instructions and the MBE Utilization and Fair Solicitation Affidavit & MBE Participation Schedule which must be submitted with the bid/proposal. If the bidder/offeror fails to accurately complete and submit this Affidavit and Schedule with the bid or proposal, the Procurement Officer shall deem the bid non-responsive or shall determine that the proposal is not reasonably susceptible of being selected for award unless the inaccuracy is determined to be the result of a minor irregularity that is waived or cured in accordance with COMAR 21.06.02.04.

1. Contractor shall structure its procedures for the performance of the work required in this Contract to attempt to achieve the minority business enterprise (MBE) subcontractor participation goal stated in the Invitation for Bids or Request for Proposals. Contractor agrees to exercise good faith efforts to carry out the requirements set forth in these Instructions, as authorized by the Code of Maryland Regulations (COMAR) 21.11.03.

2. MBE Goals and Subgoals: Please review the solicitation for information regarding the Contract's MBE overall participation goals and subgoals. After satisfying the requirements for any established subgoals, the Contractor is encouraged to use a diverse group of subcontractors and suppliers from the various MBE classifications to meet the remainder of the overall MBE participation goal.

3. MBE means a minority business enterprise that is certified by the Maryland Department of Transportation ("MDOT"). Only MBEs certified by MDOT may be counted for purposes of achieving the MBE participation goals. In order to be counted for purposes of achieving the MBE participation goals, the MBE firm, including a MBE prime, must be MDOT-certified for the services, materials or supplies that it is committed to perform on the MBE Participation Schedule. A firm whose MBE certification application is pending may not be counted.

4. Please refer to the MDOT MBE Directory at https://mbe.mdot.maryland.gov/directory/ to determine if a firm is certified with the appropriate North American Industry Classification System ("NAICS") Code **and** the product/services description (specific product that a firm is certified to provide or specific areas of work that a firm is certified to perform). For more general information about NAICS codes, please visit https://www.census.gov/eos/www/naics/. Only those specific products and/or services for which a firm is certified in the MDOT Directory can be used for purposes of achieving the MBE participation goals. **CAUTION:** If the firm's NAICS Code is in graduated status, such services/products may not be counted for purposes of achieving the MBE participation goals. A NAICS Code is in the graduated status if the term "Graduated" follows the Code in the MDOT MBE Directory.

5. **Guidelines Regarding MBE Prime Self-Performance.** Please note that when a certified MBE firm participates as a prime contractor on a Contract, a procurement agency may count the distinct, clearly defined portion of the work of the Contract that the certified MBE firm performs with its own workforce toward fulfilling up to, but no more than, fifty-percent (50%) of the overall

MBE participation goal, including up to one hundred percent (100%) of not more than one of the MBE participation subgoals, if any, established for the Contract.

- ✓ In order to receive credit for self-performance, an MBE prime must be certified in the appropriate NAICS code to do the work and must list its firm in the MBE Participation Schedule, including the certification category under which the MBE prime is self-performing and include information regarding the work it will self-perform.
- ✓ For the remaining portion of the overall goal and the remaining subgoals, the MBE prime must also identify on the MBE Participation Schedule the other certified MBE subcontractors used to meet those goals or request a waiver.
- ✓ These guidelines apply to the work performed by the MBE Prime that can be counted for purposes of meeting the MBE participation goals. These requirements do not affect the MBE Prime's ability to self-perform a greater portion of the work in excess of what is counted for purposes of meeting the MBE participation goals.
- ✓ Please note that the requirements to meet the MBE participation overall goal and subgoals are distinct and separate. If the contract has subgoals, regardless of MBE Prime's ability to self-perform up to 50% of the overall goal (including up to 100% of any subgoal), the MBE Prime must either commit to use other MBEs for each of any remaining subgoals or request a waiver. As set forth in Attachment 1-B Waiver Guidance, the MBE Prime's ability to self-perform certain portions of the work of the Contract will not be deemed a substitute for the good faith efforts to meet any remaining subgoal or the balance of the overall goal.
- ✓ In certain instances where the percentages allocated to MBE participation subgoals add up to more than 50% of the overall goal, the portion of self-performed work that an MBE Prime may count toward the overall goal may be limited to less than 50%. Please refer to the Governor's Office of Small Minority & Women Business Affairs' website for the MBE Prime Regulations Q&A for illustrative examples. http://www.goMDsmallbiz.maryland.gov/Documents/MBE_Toolkit/MBEPrimeRegulation_QA.pdf

6. Subject to items 1 through 5 above, when a certified MBE performs as a participant in a joint venture, a procurement agency may count a portion of the total dollar value of the Contract equal to the distinct, clearly-defined portion of the work of the Contract that the certified MBE performs with its own forces toward fulfilling the Contract goal, and not more than one of the Contract subgoals, if any.

7. The work performed by a certified MBE firm, including an MBE prime, can only be counted towards the MBE participation goal(s) if the MBE firm is performing a commercially useful function on the Contract. Please refer to COMAR 21.11.03.12-1 for more information regarding these requirements.

8. **Materials and Supplies: New Guidelines Regarding MBE Participation.**

- ✓ Regular Dealer (generally identified as a wholesaler or supplier in the MDOT Directory): Up to 60% of the costs of materials and supplies provided by a certified MBE may be counted towards the MBE participation goal(s) if such MBE is a Regular Dealer of such materials and supplies. Regular Dealer is defined as a firm that owns, operates, or maintains a store, a warehouse, or any other establishment in which the materials, supplies, articles, or equipment are of the general character described by the specifications required under the contract and are bought, kept in stock, or regularly sold or leased to the

public in the usual course of business; and does not include a packager, a broker, a manufacturer's representative, or any other person that arranges or expedites transactions.

Example for illustrative purposes of applying the 60% rule:

Overall contract value: $2,000,000
Total value of supplies: $100,000

Calculate Percentage of Supplies to overall contract value: $100,000 divided by $2,000,000 = 5%

Apply 60% Rule - Total percentage of Supplies/Products 5% x 60% = 3%

***3%** would be counted towards achieving the MBE Participation Goal and Subgoal, if any, for the MBE supplier in this example.*

- ✓ Manufacturer: A certified MBE firm's participation may be counted in full if the MBE is certified in the appropriate NAICS code(s) to provide products and services as a manufacturer.

- ✓ Broker: With respect to materials or supplies purchased from a certified MBE that is neither a manufacturer nor a regular dealer, a unit may apply the entire amount of fees or commissions charged for assistance in the procurement of the materials and supplies, fees, or transportation charges for the delivery of materials and supplies required on a procurement toward the MBE contract goals, provided a unit determines the fees to be reasonable and not excessive as compared with fees customarily allowed for similar services. A unit may not apply any portion of the costs of the materials and supplies toward MBE goals.

- ✓ Furnish and Install and other Services: The participation of a certified MBE supplier, wholesaler, and/or regular dealer certified in the proper NAICS code(s) to furnish and install materials necessary for successful contract completion may be counted in full. Includes the participation of other MBE service providers in the proper NAICS code(s) may be counted in full.

9. **Dually certified firms**. An MBE that is certified in more than one subgroup category may only be counted toward goal fulfillment of ONE of those categories with regard to a particular contract.

   Example: A woman-owned Hispanic American (dually certified) firm may be used to fulfill the women-owned OR Hispanic American subgoal, but not both on the same contract.

10. CAUTION: The percentage of MBE participation, computed using the percentage amounts determined for all of the MBE firms listed in PART 3, MUST meet or exceed the MBE participation goal and subgoals (if applicable) as set forth in PART 2- for this solicitation. If a bidder/offeror is unable to meet the MBE participation goal or any subgoals (if applicable), then the bidder/offeror must request a waiver in PART 2 or the bid will be deemed not responsive, or the proposal not reasonably susceptible of being selected for award. You may wish to use the attached Goal/Subgoal Worksheet to assist in calculating the percentages and confirming that your commitment meets or exceeds the applicable MBE participation goal and subgoals (if any).

11. If you have any questions as to whether a firm is certified to perform the specific services or provide specific products, please contact MDOT's Office of Minority Business Enterprise at 1-

[redacted] or via email to [redacted] sufficiently prior to the submission due date.

Subgoals (if applicable)

Total African American MBE Participation:	_____%
Total Asian American MBE Participation:	_____%
Total Hispanic American MBE Participation:	_____%
Total Women-Owned MBE Participation:	_____%

Overall Goal

Total MBE Participation (include all categories):	_____%

PART 2 - MBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT & MBE PARTICIPATION SCHEDULE

This MBE Utilization and Fair Solicitation Affidavit and MBE Participation Schedule must be completed in its entirety and included with the bid/proposal. If the bidder/offeror fails to accurately complete and submit this Affidavit and Schedule with the bid or proposal as required, the Procurement Officer shall deem the bid non-responsive or shall determine that the proposal is not reasonably susceptible of being selected for award.

In connection with the bid/proposal submitted in response to Solicitation No. U00R4600021, I affirm the following:

1. **MBE Participation (PLEASE CHECK ONLY ONE)**

☐ I acknowledge and intend to meet IN FULL both the overall certified Minority Business Enterprise (MBE) participation goal of _____ percent and all of the following subgoals:

_____ percent for African American-owned MBE firms
_____ percent for Hispanic American-owned MBE firms
_____ percent for Asian American-owned MBE firms
_____ percent for Women-owned MBE firms

Therefore, I am not seeking a waiver pursuant to COMAR 21.11.03.11. I acknowledge that by checking the above box and agreeing to meet the stated goal and subgoal(s), if any, I **must** complete PART 3 - MBE Participation Schedule and Part 4 Signature Page in order to be considered for award.

OR

☑ After making good faith outreach efforts prior to making this submission, I conclude that I am unable to achieve the MBE participation goal and/or subgoals. I hereby request a waiver, in whole or in part, of the overall goal and/or subgoals I acknowledge that by checking this box and requesting a partial waiver of the stated goal and/or one or more of the stated subgoal(s) if any, I must complete Part 3, the MBE Participation Schedule and Part 4 Signature Page for the portion of the goal and/or subgoal(s) if any, for which I am not seeking a waiver, in order to be considered for award. I acknowledge that by checking this box and requesting a full waiver of the stated goal and the stated subgoal(s) if any, I must complete Part 4 Signature Page in order to be considered for award.

Additional MBE Documentation

I understand that if I am notified that I am the apparent awardee or as requested by the Procurement Officer, I must submit the following documentation within 10 working days of receiving notice of the potential award or from the date of conditional award (per COMAR 21.11.03.10), whichever is earlier:

(a) Good Faith Efforts Documentation to Support Waiver Request (Attachment D-1C)

(b) Outreach Efforts Compliance Statement (Attachment D-2);

(c) MBE Subcontractor/MBE Prime Project Participation Statement (Attachments D-3A and 3B);

(d) Any other documentation, including additional waiver documentation if applicable, required by the Procurement Officer to ascertain bidder or offeror responsibility in connection with the certified MBE participation goal and subgoals, if any.

I understand that if I fail to return each completed document within the required time, the Procurement Officer may determine that I am not responsible and therefore not eligible for contract award. If the contract has already been awarded, the award is voidable.

Information Provided to MBE firms

In the solicitation of subcontract quotations or offers, MBE firms were provided not less than the same information and amount of time to respond as were non-MBE firms.

PART 3 - MBE PARTICIPATION SCHEDULE

SET FORTH BELOW ARE THE (I) CERTIFIED MBES I INTEND TO USE, (II) THE PERCENTAGE OF THE TOTAL CONTRACT VALUE ALLOCATED TO EACH MBE FOR THIS PROJECT AND, (III) THE ITEMS OF WORK EACH MBE WILL PROVIDE UNDER THE CONTRACT. I HAVE CONFIRMED WITH THE MDOT DATABASE THAT THE MBE FIRMS IDENTIFIED BELOW (INCLUDING ANY SELF-PERFORMING MBE PRIME FIRMS) ARE PERFORMING WORK ACTIVITIES FOR WHICH THEY ARE MDOT-CERTIFIED.

Prime Contractor	Project Description	Project/Contract Number
HDR Engineering, Inc.	Statewide Recycling Needs Assessment	U00R4600021

LIST INFORMATION FOR EACH CERTIFIED MBE FIRM YOU AGREE TO USE TO ACHIEVE THE MBE PARTICIPATION GOAL AND SUBGOALS, IF ANY. MBE PRIMES: PLEASE COMPLETE BOTH SECTIONS A AND B BELOW.

SECTION A: For MBE Prime Contractors ONLY (including MBE Primes in a Joint Venture) Not Applicable

MBE Prime Firm Name:_____

MBE Certification Number: _____

(If dually certified, check only one box.)

☐ African American-Owned
☐ Hispanic American- Owned
☐ Asian American-Owned
☐ Women-Owned
☐ Other MBE Classification

NAICS code: _____

Percentage of total Contract Value to be performed with own forces and counted towards the MBE **overall participation goal** (up to 50% of the overall goal): _____% **Please refer to Item #8 in Part 1- Instructions of this document for new MBE participation guidelines regarding materials and supplies.**

Percentage of total Contract Value to be performed with own forces and counted towards the **subgoal**, if any, for my MBE classification (up to 100% of not more than one subgoal): _____%

☐ Supplier, wholesaler and/or regular dealer (count 60%)
☐ Manufacturer (count 100%)
☐ Broker (count reasonable fee/commission only)
☐ Furnish and Install and other Services (count 100%)

Complete the applicable prompt (select only one) from prompts A-C below that applies to the type of work your firm is self-performing to calculate amount to be counted towards achieving the MBE Participation Goal and Subgoal, if any.

A. Percentage amount of subcontract where the MBE Prime firm is being used for manufacturer, furnish and install, and/or services (excluding products / services from suppliers, wholesalers, regular dealers and brokers) ___**%**

B. Percentage amount for items of work where the MBE Prime firm is being used as supplier, wholesaler, and/or regular dealer (60% Rule).
Total percentage of Supplies/Products ___% x 60% = ___**%**

C. Percentage amount of fee where the MBE Prime firm is being used as broker (count reasonable fee/commission only) ___ **%**

Description of the work to be performed with MBE prime's own forces:
_____
_____

SECTION B: For all Contractors (including MBE Primes and MBE Primes in a Joint Venture)

MBE Firm Name: Straughan Environmental, Inc. MBE Certification Number: 97-190 (If dually certified, check only one box.) ☐ African American-Owned ☐ Hispanic American- Owned ☐ Asian American-Owned ☑ Women-Owned ☐ Other MBE Classification NAICS code: 237110, 541330, 541370, 541613, 541618, 541620, 541690, 561210, 611430	**Please refer to Item #8 in Part 1- Instructions of this document for new MBE participation guidelines regarding materials and supplies.** ☐ Supplier, wholesaler and/or regular dealer (count 60%) ☐ Manufacturer (count 100%) ☐ Broker (count reasonable fee/commission only) ☑ Furnish and Install and other Services (count 100%) **Complete the applicable prompt (select only one) from prompts A-C below that applies to the type of work that the MBE firm named to the left will be performing to calculate the amount to be counted towards achieving the MBE Participation Goal and Subgoal, if any.** **A. Percentage of total contract amount where the MBE firm is being used for manufacturer, furnish and install, and/or services** (excluding products/services from suppliers, wholesalers, regular dealers and brokers) ___**%** **B. Percentage of total contract amount for items of work where the MBE firm is being used as supplier, wholesaler, and/or regular dealer** (60% Rule)**).** Total percentage of Supplies/Products ___% X 60% = ___**%** **C. Percentage amount of fee where the MBE firm is being used as broker** (count reasonable fee/commission only) 13%**%** Description of the work to be performed: mapping, analysis, data collection and transformation, sustainability, environmental consulting, story mapping, and socioeconomics analysis
MBE Firm Name: Assedo Consulting, LLC MBE Certification Number: 13-406 (If dually certified, check only one box.) ☑ African American-Owned ☐ Hispanic American- Owned ☐ Asian American-Owned ☑ Women-Owned ☐ Other MBE Classification NAICS code: 541330, 541430, 541613, 541820, 541910, 561920, 611430, 711510	**Please refer to Item #8 in Part 1- Instructions of this document for new MBE participation guidelines regarding materials and supplies.** ☐ Supplier, wholesaler and/or regular dealer (count 60%) ☐ Manufacturer (count 100%) ☐ Broker (count reasonable fee/commission only) ☑ Furnish and Install and other Services (count 100%) **Complete the applicable prompt (select only one) from prompts A-C below that applies to the type of work that the MBE Firm named to the left will be performing to calculate the amount to be counted towards achieving the MBE Participation Goal and Subgoal, if any.** **A. Percentage of total contract amount where the MBE firm is being used for manufacturer, furnish and install, and/or services** (excluding products/services from suppliers, wholesalers, regular dealers and brokers) ___**%** **B. Percentage of total contract amount for items of work where the MBE firm is being used as supplier, wholesaler, and/or regular dealer** (60% Rule)**).** Total percentage of Supplies/Products ___% X 60% = ___**%** **C. Percentage amount of fee where the MBE firm is being used as broker** (count reasonable fee/commission only) 10 **%** Description of the work to be performed: public relations, marketing research, public survey, speaking and presenting, technical documents, and graphic design

MBE Firm Name: Vision Planning & Consulting, LLC MBE Certification Number: 06-408 (If dually certified, check only one box.) ☐ African American-Owned ☐ Hispanic American- Owned ☑ Asian American-Owned ☐ Women-Owned ☐ Other MBE Classification NAICS code: 541611	**Please refer to Item #8 in Part 1- Instructions of this document for new MBE participation guidelines regarding materials and supplies.** ☐ Supplier, wholesaler and/or regular dealer (count 60%) ☐ Manufacturer (count 100%) ☐ Broker (count reasonable fee/commission only) ☑ Furnish and Install and other Services (count 100%) **Complete the applicable prompt (select only one) from prompts A-C below that applies to the type of work that for the MBE firm named to the left will be performing to calculate the amount to be counted towards achieving the MBE Participation Goal and Subgoal, if any.** **A. Percentage of total contract amount where the MBE firm is being used for manufacturer, furnish and install, and/or services** (excluding products/services from suppliers, wholesalers, regular dealers and brokers) ___**%** **B. Percentage of the total contract amount for items of work where the MBE firm is being used as supplier, wholesaler, and/or regular dealer** (60% Rule). Total percentage of Supplies/Products ___% X 60% = ___**%** **C. Percentage amount of fee where the MBE firm is being used as broker** (count reasonable fee/commission only) 4 **%** Description of the work to be performed: project management, survey, outreach services
MBE Firm Name: _____ MBE Certification Number: _____ (If dually certified, check only one box.) ☐ African American-Owned ☐ Hispanic American- Owned ☐ Asian American-Owned ☐ Women-Owned ☐ Other MBE Classification NAICS code: _____	**Please refer to Item #8 in Part 1- Instructions of this document for new MBE participation guidelines regarding materials and supplies.** ☐ Supplier, wholesaler and/or regular dealer (count 60%) ☐ Manufacturer (count 100%) ☐ Broker (count reasonable fee/commission only) ☐ Furnish and Install and other Services (count 100%) **Complete the applicable prompt (select only one) from prompts A-C below that applies to the type of work that the MBE firm named to the left will be performing to calculate the amount to be counted towards achieving the MBE Participation Goal and Subgoal, if any.** **A. Percentage of total contract amount where the MBE firm is being used for manufacturer, furnish and install, and/or services** (excluding products/services from suppliers, wholesalers, regular dealers and brokers) ___**%** **B. Percentage of total contract amount for items of work where the MBE firm is being used as supplier, wholesaler, and/or regular dealer** (60% Rule)**).** Total percentage of Supplies/Products ___% X 60% = ___**%** **C. Percentage amount of fee where the MBE firm is being used as broker___ %** Description of the work to be performed: _____ _____

CONTINUE ON SEPARATE PAGE IF NEEDED

PART 4 – SIGNATURE PAGE

To complete Affidavit committing to MBE(s) or requesting waiver, Bidder/Offeror must sign below:

I solemnly affirm under the penalties of perjury that: (i) I have reviewed the instructions for the MBE Utilization & Fair Solicitation Affidavit and MBE Schedule, and (ii) the information contained in the MBE Utilization & Fair Solicitation Affidavit and MBE Schedule is true to the best of my knowledge, information and belief.

HDR Engineering, Inc.
Bidder/Offeror Name
(PLEASE PRINT OR TYPE)

8115 Maple Lawn Blvd, Suite 300
Address

Fulton, MD 20759-2681
City, State and Zip Code

[redacted]-04'00'
Signature of Authorized Representative

Andrea L. Ryon, PE, PMP
Senior Vice President/Area Manager
Printed Name and Title

March 18, 2024
Date

SUBMIT THIS AFFIDAVIT WITH BID/PROPOSAL

Attachment E. Veteran-Owned Small Business Enterprise (VSBE) Forms

E-1
VSBE UTILIZATION AFFIDAVIT AND PRIME/SUBCONTRACTOR PARTICIPATION SCHEDULE

(Submit with Bid/Proposal)

This document **MUST BE** included with the Bid/Proposal. If the Bidder/Offeror fails to complete and submit this form with the Bid/Proposal, the procurement officer may determine that the Bid/Proposal is not responsive/not reasonably susceptible of being selected for award.

In conjunction with the Bid/Proposal submitted in response to Solicitation No. U00R4600021, I affirm the following:

1. **VSBE Participation (PLEASE CHECK ONLY ONE)**

☐ I acknowledge and intend to meet IN FULL the overall verified VSBE participation goal of ___%. Therefore, I will not be seeking a waiver.

OR

☑ After making good faith outreach efforts prior to making this submission, I conclude that I am unable to achieve the VSBE participation goal. I hereby request a waiver, in whole or in part, of the overall goal. Within 10 Business Days of receiving notice that our firm is the apparent awardee, I will submit all required waiver documentation in accordance with COMAR 21.11.14.09. If this request is for a partial waiver, I acknowledge that I must complete Attachment E-1A (VSBE Subcontractor Participation Schedule) and Attachment E-1B (Signature Page) for the portion of the VSBE goal that I intend to meet. I acknowledge that by checking this box and requesting a full waiver of the stated goal, I must complete Attachment E-1B (Signature Page) in order to be considered for award.

Additional VSBE Documentation

I understand that if I am notified that I am the apparent awardee, I must submit the following additional documentation within 10 days of receiving notice of the apparent award or from the date of conditional award (in accordance with COMAR 21.11.14.08), whichever is earlier.

(a) VSBE Waiver Request Affirmation and Good Faith Efforts Documentation to Support Waiver Request (Attachment E-1E)

(b) VSBE Outreach Efforts Compliance Statement (Attachment E-2); and

(c) Any other documentation, including waiver documentation, if applicable, required by the Procurement Officer to ascertain Bidder/Offeror responsibility in connection with the VSBE participation goal.

I understand that if I fail to return each completed document within the required time, the Procurement Officer may determine that I am not responsible and therefore not eligible for contract award. If the contract has already been awarded, the award is voidable.

Information Provided to VSBE firms

In the solicitation of subcontract quotations or offers, VSBE subcontractors were provided not less than the same information and amount of time to respond as were non-VSBE subcontractors.

E-1A
VSBE SUBCONTRACTOR PARTICIPATION SCHEDULE

Set forth below are the (i) verified VSBEs I intend to use, (ii) the percentage of the total contract amount allocated to each VSBE Firm for this project; and (iii) a description of the work each VSBE will provide under the contract.

Prime Contractor:	**Project Description:**	**Project/Contract Number:**
HDR Engineering, Inc.	Statewide Recycling Needs Assessment	U00R4600021

List information for each certified VSBE Prime Contractor or Subcontractor on this project.

Name of VSBE **Prime Contractor**: Global Executive Staffing LLC Percentage of Total Contract: 4%	VSBE Certification #: VB23-040827 Description of work to be performed: staffing support for waste characterization studies
Name of VSBE **Subcontractor**: Percentage of Total Contract:	VSBE Certification #: Description of work to be performed:
Name of VSBE **Subcontractor**: Percentage of Total Contract:	VSBE Certification #: Description of work to be performed:
Name of VSBE **Subcontractor**: Percentage of Total Contract:	VSBE Certification #: Description of work to be performed:

☐ **Please check if additional sheets are attached.**

SUMMARY

Total VSBE Participation: 4 %

E-1B
SIGNATURE PAGE

To complete Affidavit committing to VSBE(s) or requesting waiver,

Bidder/Offeror must sign below:

I solemnly affirm under the penalties of perjury that: (i) I have reviewed the instructions for the VSBE Utilization Affidavit and VSBE Subcontractor Participation Schedule; and (ii) the information contained in the VSBE Utilization Affidavit and VSBE Subcontractor Participation Schedule are true to the best of my knowledge, information, and belief.

PLEASE PRINT OR TYPE

Company Name: HDR Engineering, Inc.

Company Address: 8115 Maple Lawn Blvd, Suite 300
Fulton, MD 20759-2681

Name of Authorized Representative: Andrea L. Ryon, PE, PMP

Title: Senior Vice President/Area Manager

Signature of Authorized Representative: [redacted]

Date: March 18, 2024

Attachment F. Maryland Living Wage Affidavit of Agreement for Service Contracts

Contract No. U00R4600021

Name of Contractor: HDR Engineering, Inc.

Address: 8115 Maple Lawn Blvd Suite 300
Fulton, MD 20759-2681

If the Contract Is Exempt from the Living Wage Law

The Undersigned, being an authorized representative of the above named Contractor, hereby affirms that the Contract is exempt from Maryland's Living Wage Law for the following reasons (check all that apply):

☐ Offeror is a nonprofit organization

☐ Offeror is a public service company

☐ Offeror employs 10 or fewer employees and the proposed contract value is less than $500,000

☐ Offeror employs more than 10 employees and the proposed contract value is less than $100,000

If the Contract Is a Living Wage Contract

A. The Undersigned, being an authorized representative of the above-named Contractor, hereby affirms its commitment to comply with Title 18, State Finance and Procurement Article, Annotated Code of Maryland and, if required, submit all payroll reports to the Commissioner of Labor and Industry with regard to the above stated contract. The Offeror agrees to pay covered employees who are subject to living wage at least the living wage rate in effect at the time service is provided for hours spent on State contract activities, and ensure that its subcontractors who are not exempt also pay the required living wage rate to their covered employees who are subject to the living wage for hours spent on a State contract for services. The Contractor agrees to comply with, and ensure its subcontractors comply with, the rate requirements during the initial term of the contract and all subsequent renewal periods, including any increases in the wage rate established by the Commissioner of Labor and Industry, automatically upon the effective date of the revised wage rate.

B. _____(initial here if applicable) The Offeror affirms it has no covered employees for the following reasons: (check all that apply):

☐ The employee(s) proposed to work on the contract will spend less than one-half of the employee's time during any work week on the contract

☐ The employee(s) proposed to work on the contract is 17 years of age or younger during the duration of the contract; or

☐ The employee(s) proposed to work on the contract will work less than 13 consecutive weeks on the State contract.

The Commissioner of Labor and Industry reserves the right to request payroll records and other data that the Commissioner deems sufficient to confirm these affirmations at any time.

Name of Authorized Representative: Andrea L. Ryon, PE, PMP

Signature of Authorized Representative: [redacted] Date: March 15, 2024

Title: Senior Vice President/Area Manager

Witness Name (Typed or Printed): Allen Consolacion

Witness Signature: [redacted] Date: March 15, 2024

SUBMIT THIS AFFIDAVIT WITH BID/PROPOSAL

Attachment H. Conflict of Interest Affidavit and Disclosure

Reference COMAR 21.05.08.08

A. "Conflict of interest" means that because of other activities or relationships with other persons, a person is unable or potentially unable to render impartial assistance or advice to the State, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

B. "Person" has the meaning stated in COMAR 21.01.02.01B (64) and includes a Offeror, Contractor, consultant, or subcontractor or sub-consultant at any tier, and also includes an employee or agent of any of them if the employee or agent has or will have the authority to control or supervise all or a portion of the work for which a Proposal is made.

C. The Offeror warrants that, except as disclosed in §D, below, there are no relevant facts or circumstances now giving rise or which could, in the future, give rise to a conflict of interest.

D. The following facts or circumstances give rise or could in the future give rise to a conflict of interest (explain in detail — attach additional sheets if necessary):

E. The Offeror agrees that if an actual or potential conflict of interest arises after the date of this affidavit, the Offeror shall immediately make a full disclosure in writing to the procurement officer of all relevant facts and circumstances. This disclosure shall include a description of actions which the Offeror has taken and proposes to take to avoid, mitigate, or neutralize the actual or potential conflict of interest. If the contract has been awarded and performance of the contract has begun, the Contractor shall continue performance until notified by the procurement officer of any contrary action to be taken.

I DO SOLEMNLY DECLARE AND AFFIRM UNDER THE PENALTIES OF PERJURY THAT THE CONTENTS OF THIS AFFIDAVIT ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE, INFORMATION, AND BELIEF.

Date: March 13, 2024 By: [redacted] -04'00'

(Authorized Representative and Affiant)

Andrea L. Ryon, PE, PMP

SUBMIT THIS AFFIDAVIT WITH BID/PROPOSAL

[redacted] Maple Lawn Blvd, Suite 300
Fulton, MD 20759-2681

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We practice increased use of sustainable materials and reduction of material use.