

DE-FOA-0002678; CFDA 81.086; RETRIEV SOLUTIONS; Control Number #2678-1670

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium Ion Battery Recycling to Produce Battery Grade Raw Materials

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Project Title: North America Expansion Plan Lancaster, OH Plant Expansion – Lithium Ion Battery Recycling to Produce Battery Grade Raw Materials

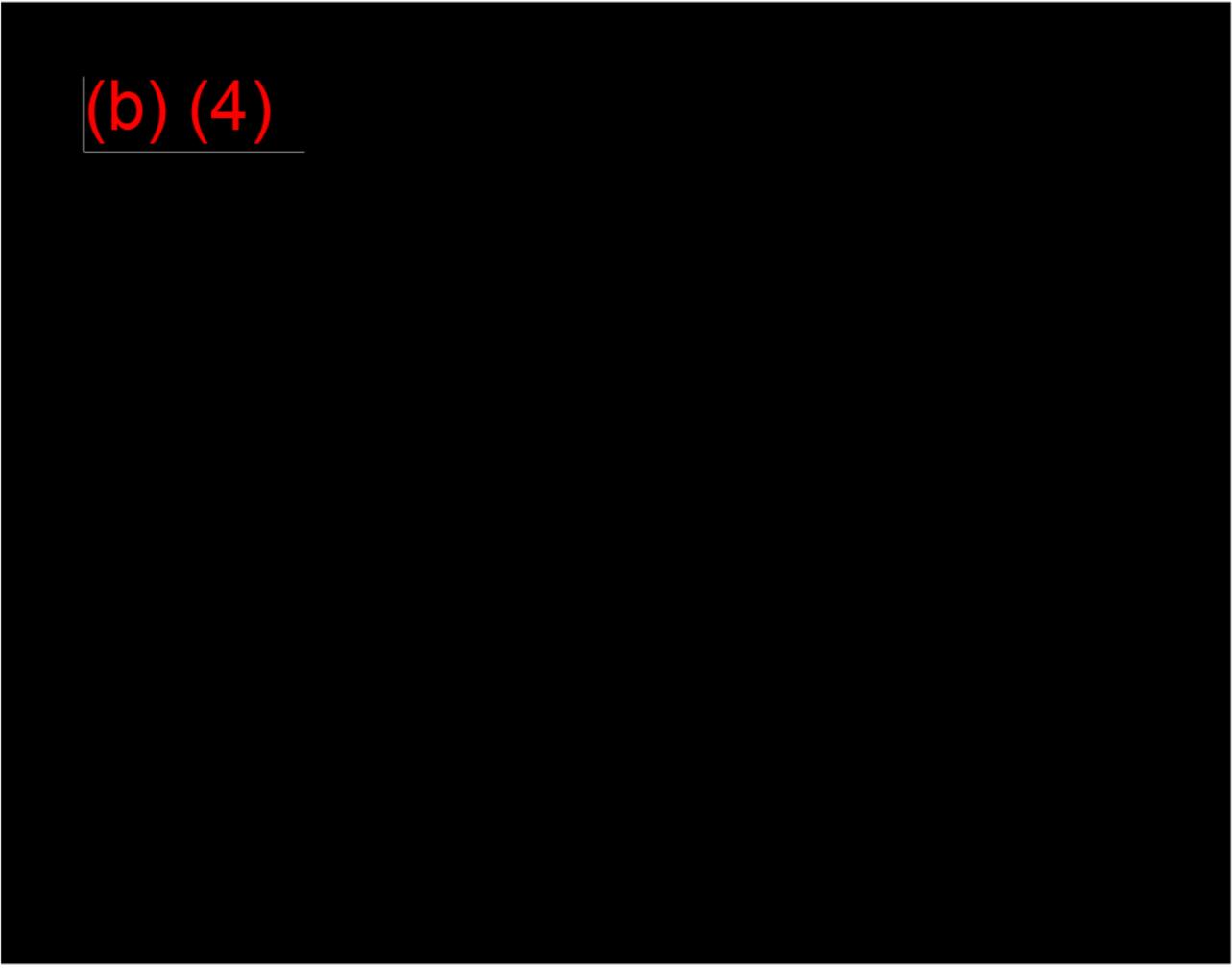
FOA Area of Interest (AOI) 11: Commercial-scale Domestic Battery Recycling and End-of-Life Infrastructure

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002678

FOA Type: Initial

CFDA: 81.086

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Contains Trade Secrets, Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure

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U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retrieval Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

(b) (4)

June 28, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

Re: Letter of Commitment for the Retrieval application to the Bipartisan Infrastructure Law (BIL)
Battery Materials Processing and Battery Manufacturing; FOA Number DE-FOA-0002678

To Whom it May Concern,

(b) (4)

(b) (4)

June 29, 2022

US Department of Energy
Office of Energy Efficiency and Renewable Energy (EERE)
Funding Opportunity Number: DE-FOA-0002678
Applicant Name: Retrieval Solutions, LLC

To Whom it May Concern:

(b) (4)

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(b) (4)

June 23, 2022

U.S. Department of Energy
Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: DOE Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing Funding Opportunity Announcement (FOA) DE-FOA-0002678, AOI-11
Letter of Support/Retriev Solutions, LLC: Full Application Control Number: 2678-1670

To Whom It May Concern:

(b) (4)

(b) (4)

June 28, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern

(b) (4)

(b) (4)

June 10, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

(b) (4)

June 8, 2022

U.S. Department of Energy , Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency
and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

(b) (4)

June 24, 2022

U.S. Department of Energy , Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency
and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-
FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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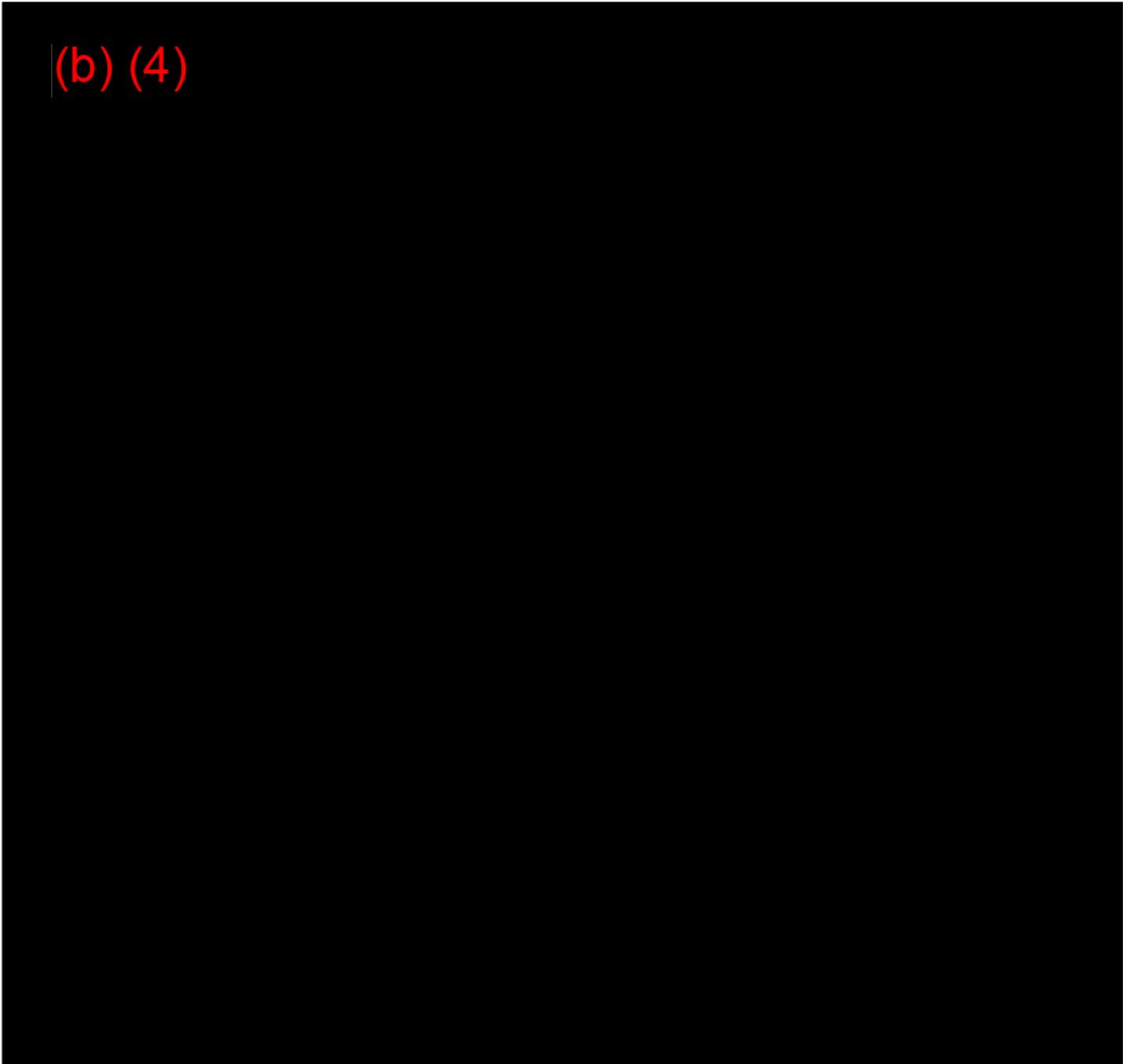
June 14th, 2022

U.S. Department of Energy , Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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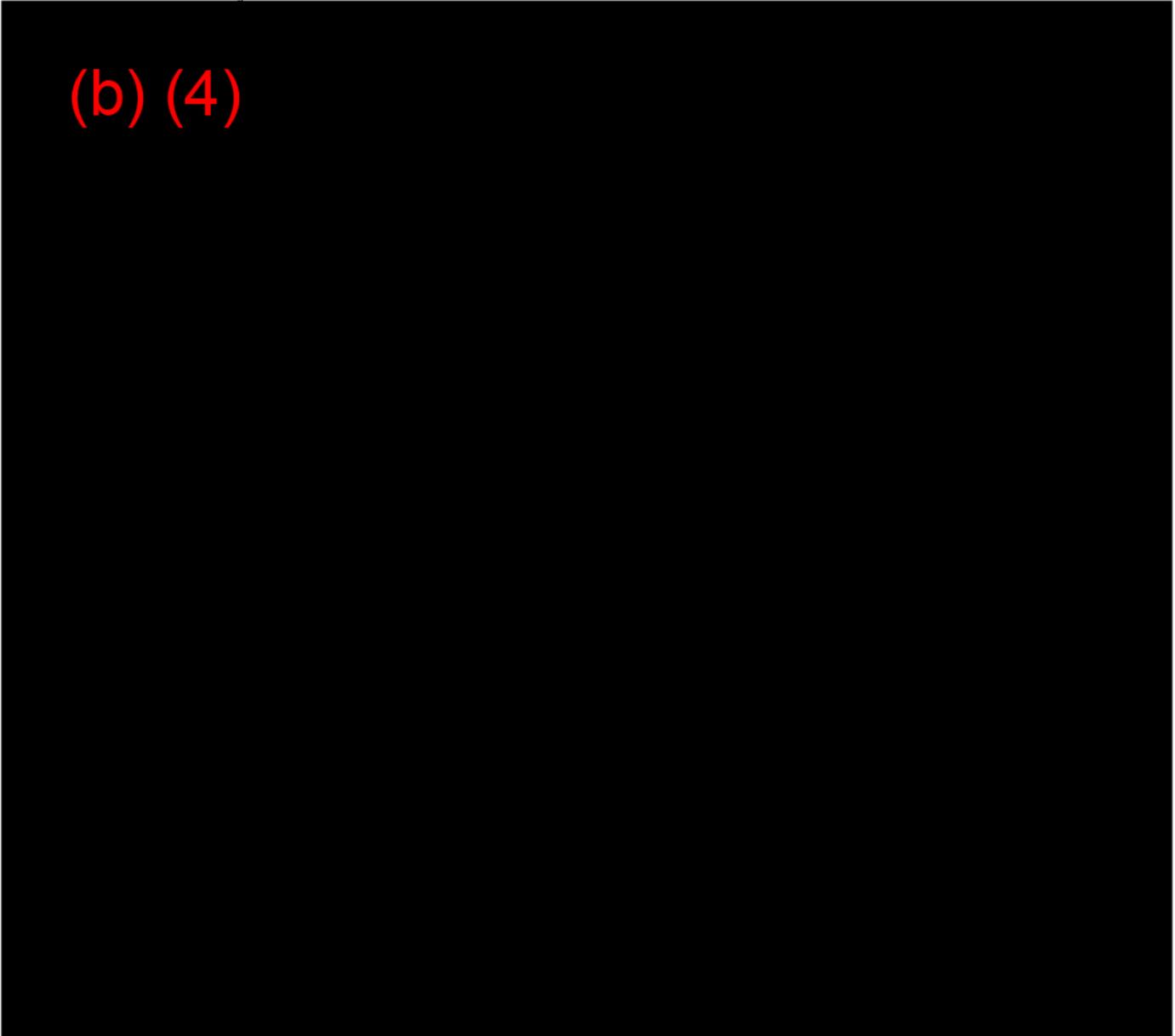
06/30/2022

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

Subject: Letter of Commitment for Retrieval Technologies' Application for DE-FOA-0002678

To Whom It May Concern:

(b) (4)



(b) (4)

June 10, 2022

The Honorable Jennifer Granholm, Secretary
United States Department of Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11; Letter
of Commitment/Retriev Solutions, LLC; Full Application Control Number: 2678-1670

Dear Secretary Granholm,

(b) (4)

(b) (4)

U.S. Department of Energy
Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE:

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678
AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

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June 27, 2022

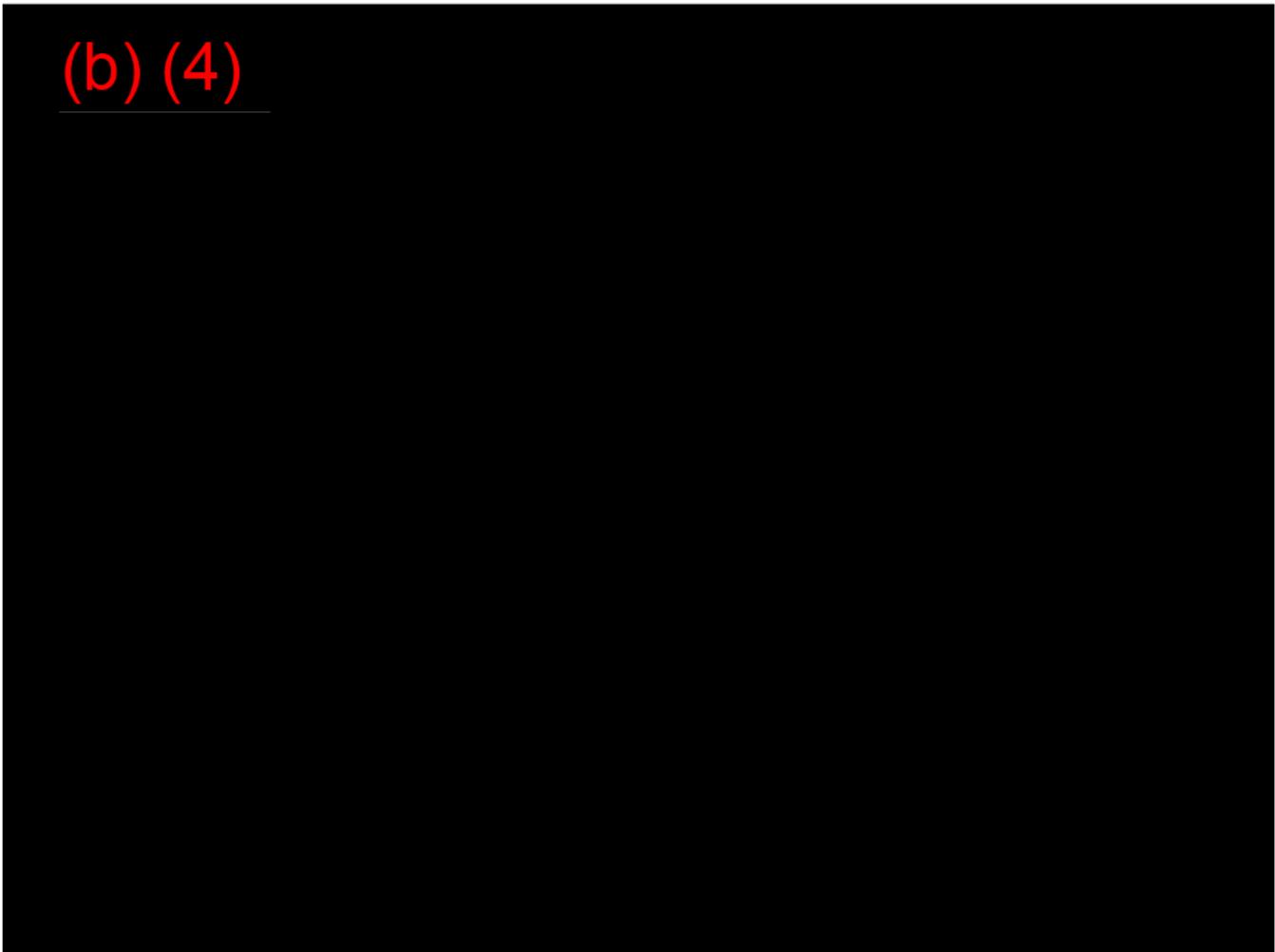
U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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June 30, 2022

U.S. Department of Energy , Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

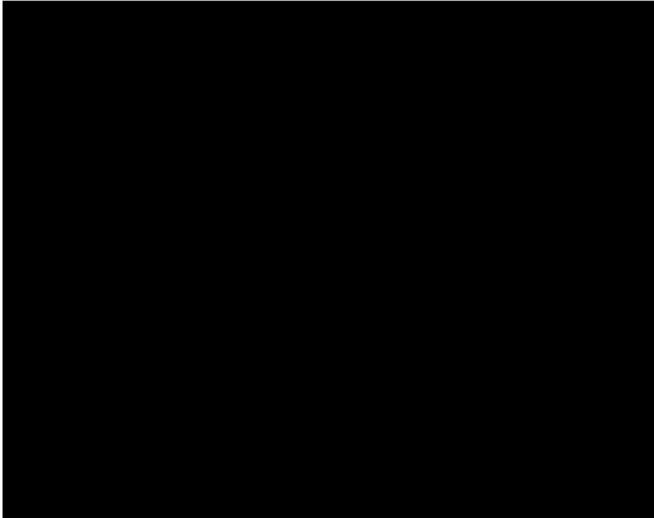
RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
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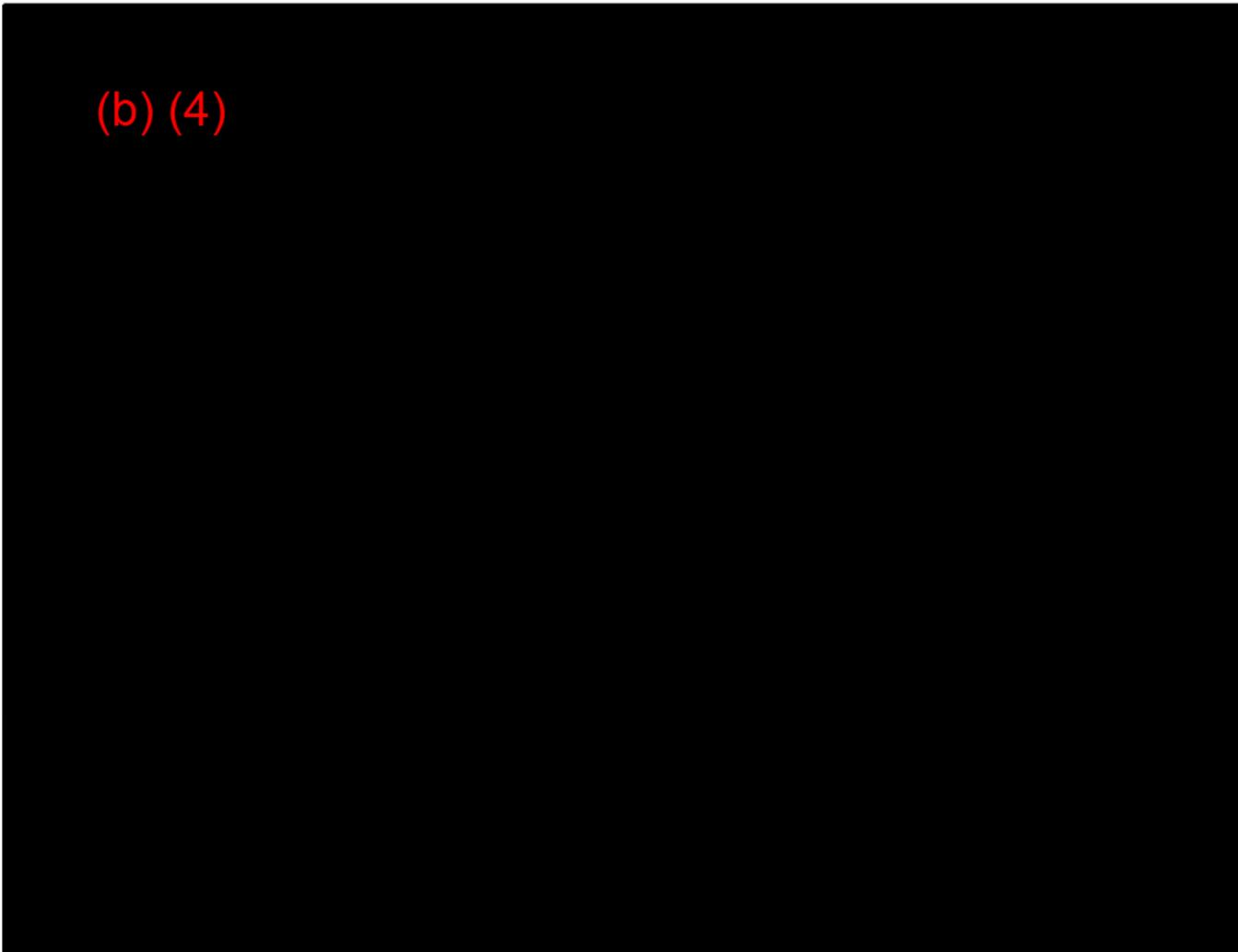
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June 22, 2022



RE: Letter of Support - FOA 0002678, AOI 11- expansion or retrofit of an existing Li Ion recycling facility

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Department of Energy
Washington D.C.

To Whom it May Concern,

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June 15, 2022

U.S. Department of Energy
Offices of Manufacturing and Energy Supply Chains & Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and
Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Support/Retriev Solutions, LLC , Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

(b) (4)

June 29, 2022

The Honorable Jennifer M. Granholm
Secretary
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585

Dear Secretary Granholm,

(b) (4)

(b) (4)

June 22, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains,
and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-
0002678 AOI-11
Letter of Support/Retrieval Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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June 22, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy
Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
Letter of Support/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

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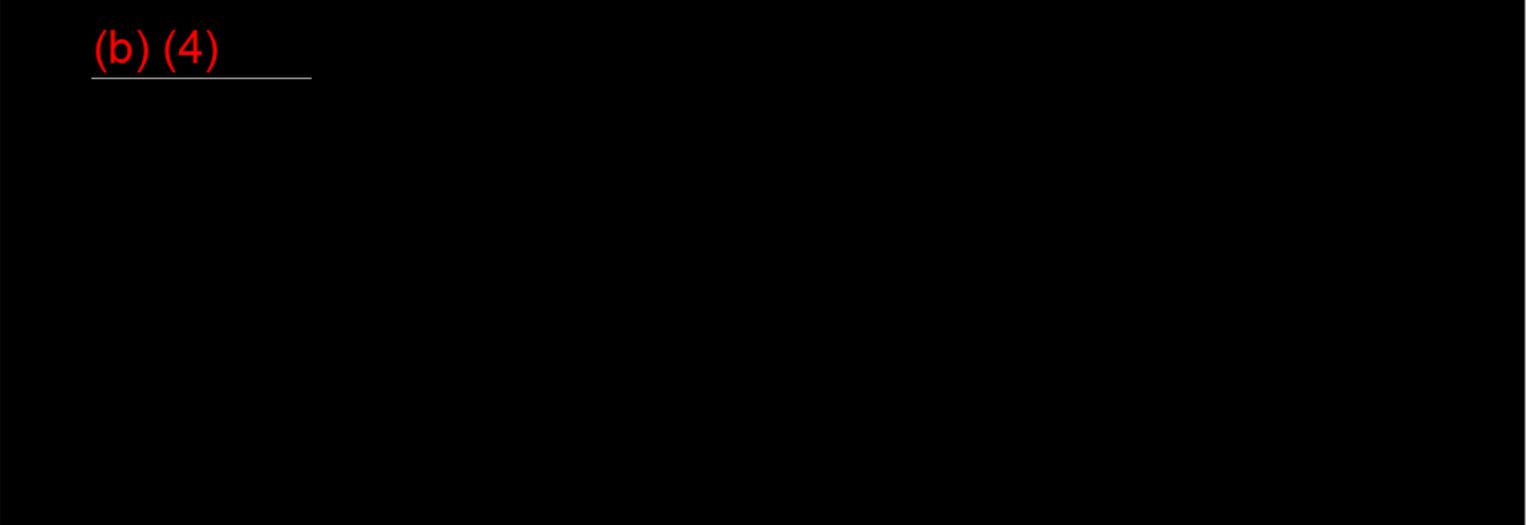
U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency
and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery
Manufacturing DE-FOA-0002678 AOI-11
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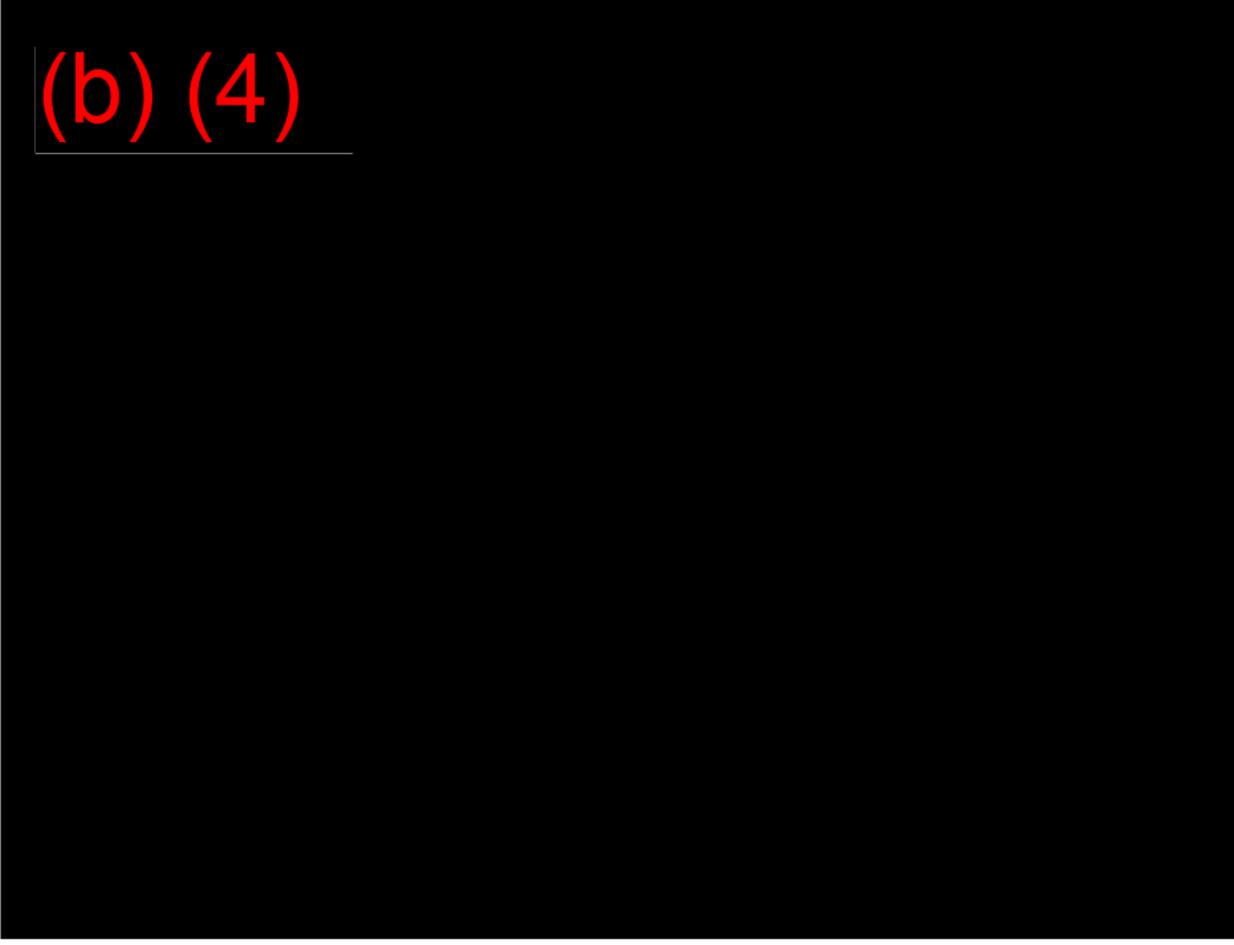
June 21, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains,
and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

Re: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and
Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Support/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To whom it may concern,

(b) (4)



(b) (4)

June 22, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Support/Retrieval Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

(b) (4)

June 24, 2022

U.S. Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

Dear To Whom It May Concern,

(b) (4)

(b) (4)

Secretary Jennifer Granholm
Secretary of Energy
US Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0002

Dear Secretary Granholm:

(b) (4)

(b) (4)

Honorable Jennifer Granholm
Secretary
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Secretary Granholm,

(b) (4)

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June 13, 2022

Ms. Laura Evans
Director, Environmental Social & Governance
Retriev Solutions
265 Quarry Rd SE
Lancaster, OH 43130

Dear Ms. Evans:

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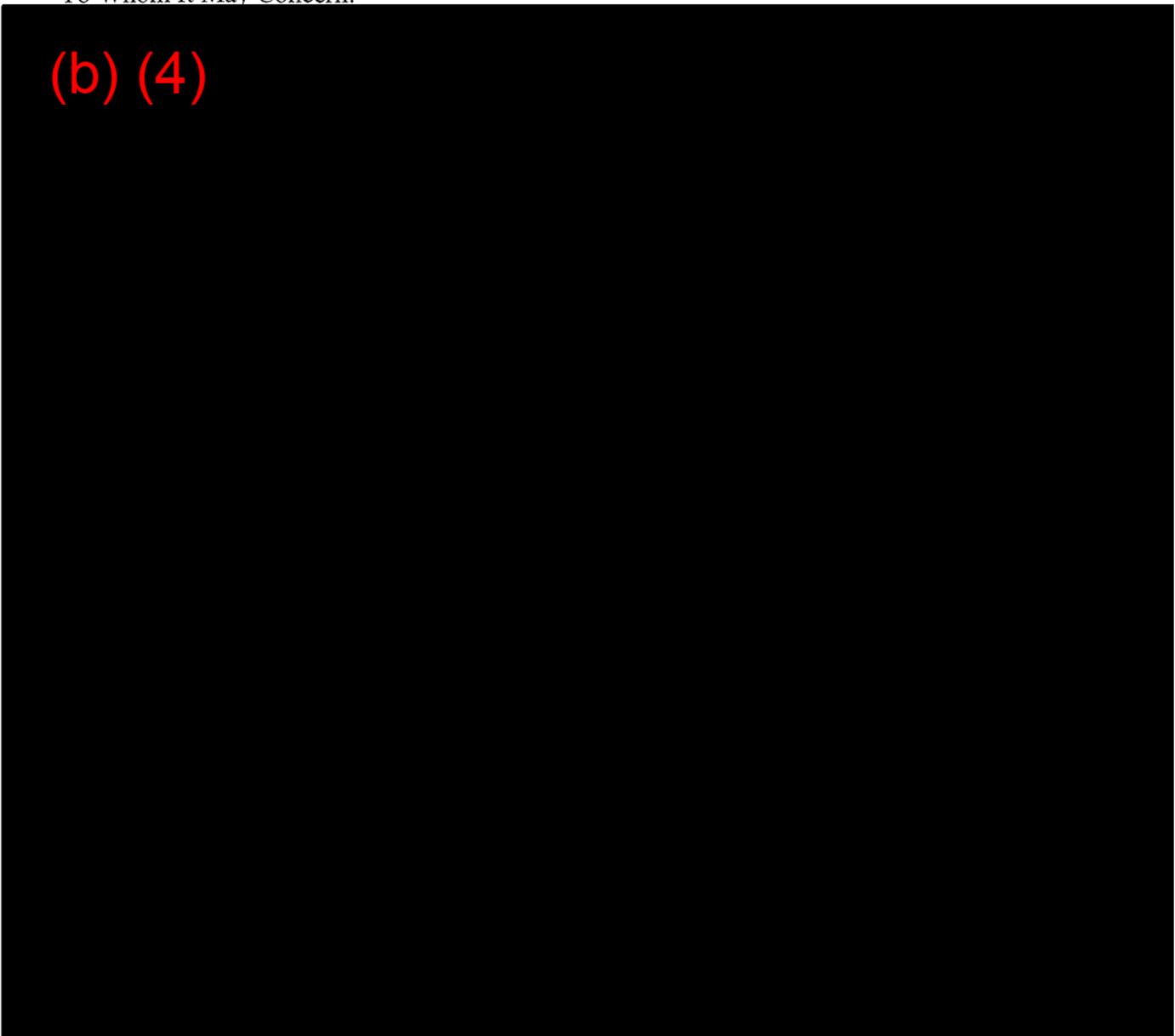
06/30/2022

U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

Subject: Letter of Commitment for Retrieval Technologies' Application for DE-FOA-0002678

To Whom It May Concern:

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(b) (4)

June 21, 2022

U.S. Department of Energy, Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy

1000 Independence Ave SW

Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Support / Retrieval Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

(b) (4)

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June 28, 2022

U.S. Department of Energy , Offices of Manufacturing and Energy Supply Chains, and Energy Efficiency and Renewable Energy
1000 Independence Ave SW
Washington, DC 20585

RE: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing DE-FOA-0002678 AOI-11
Letter of Commitment/Retriev Solutions, LLC
Full Application Control Number: 2678-1670

To Whom It May Concern,

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STATEMENT OF PROJECT OBJECTIVES

Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

A. OBJECTIVES

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B. SCOPE OF WORK

Initial project preparation work is currently underway (Pre-budget Period) and will continue throughout the Project's three budget periods.

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C. TASKS TO BE PERFORMED

The following tasks will be conducted:

All Budget Periods

Overall Project Management and Planning

The recipient will perform project management activities to include project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project. The Recipient will monitor the project Schedule Performance Index (SPI) and Cost Performance Index (CPI) based upon the baseline total project value, scope, and schedule and provide an assessment of variations from baseline and the recommended mitigations.

Task 0.0 – Project Management and Planning:

The Recipient shall develop and maintain the Project Management Plan (PMP). The content, organization, and requirements for revision of the PMP are identified in the Federal Assistance Reporting Checklist and Instructions. The Recipient shall manage and implement the project in accordance with the PMP.

Task 0.1 – Kick-off meeting:

The Recipient will participate in a project kickoff meeting with the DOE within 30 days of project initiation. Objectives, goals, and expectations of the factory & DOE grant will be clearly aligned in this meeting.

Budget Period 1: Manufacturing Plant Buildout

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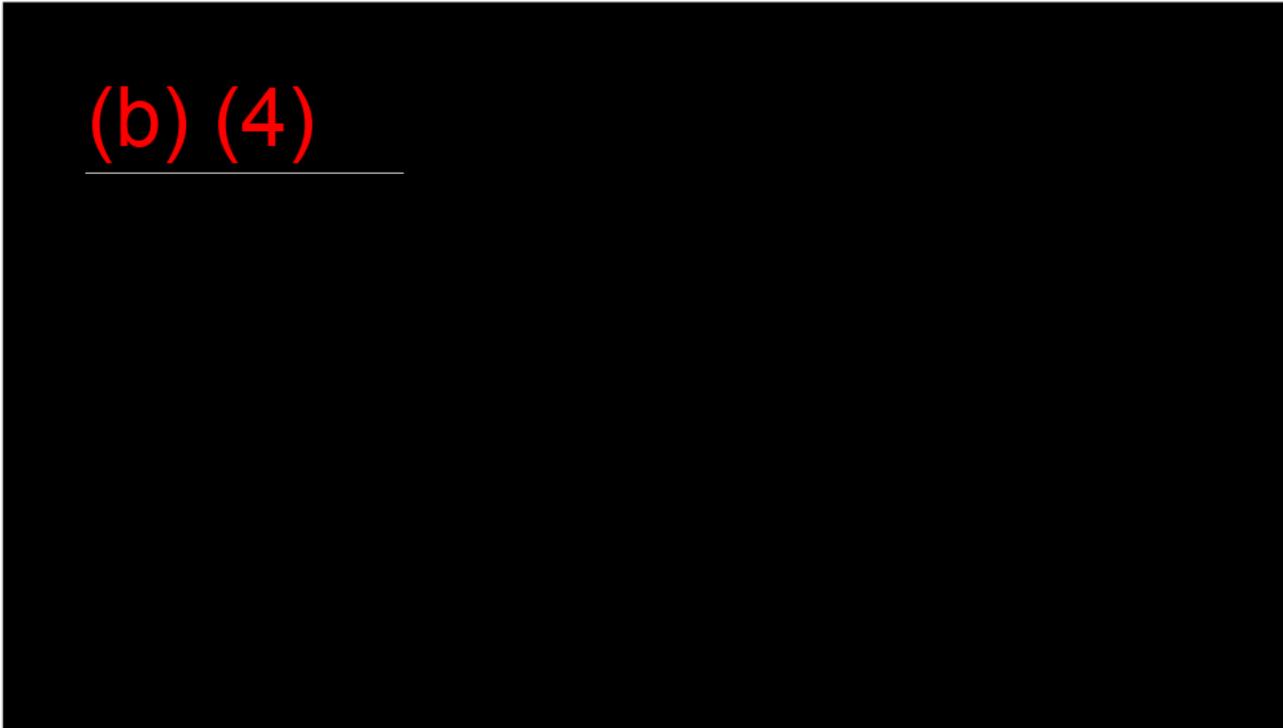
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D. DELIVERABLES

In addition to the reports specified in the "Federal Assistance Reporting Checklist", the Recipient will provide the following to the location identified by the DOE Project Officer (identified in Block 15 of the Assistance Agreement as the Program Manager):

- Annual Progress Report of Project Accomplishments with a publicly releasable abstract provided by October 31 of each year.
- Material specification sheet which lists relevant properties of the material or product to be manufactured within the first six months of the award period.
- Manufactured material or product validation test procedures and report(s) within 30 days of validation test completion.
- Delivery of a representative manufactured product or material sample and associated test procedures to a "to be determined" DOE National Laboratory for independent validation within 30 days of successful completion of Recipient testing.
- Updated letters of commitment for product purchase or offtake agreements within 30 days of finalization.
- Updates to project capacity and utilization achievements and end of project projections as part of quarterly project reporting.
- Updated earned value cost performance index (CPI) and schedule performance index (SPI), rationale for deviations, and plans to address deviations as part of quarterly project reporting.
- Updated product break even analysis provided as part of the budget period continuation application.
- Updated market share projections for near term (5 years), mid-term (5 to 10 years), and long term (greater than 10 years) provided as part of the budget period continuation application.

E. BRIEFINGS AND TECHNICAL PRESENTATIONS

- Detailed project status update briefings at Washington, DC or via communication/conferencing media approximately twice per year. Briefings will explain the plans, progress, and results of the technical effort.
- Technical paper(s) and presentations as appropriate at technical society meetings, or at technical exchange meetings. Presentations will likely also be requested by local leaders to demonstrate project success and promote business in the area.

Statement of Project Objectives

Project Title: Retrieiv Solutions, LLC North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

A. OBJECTIVES

Retrieiv Solutions, LLC (“Retrieiv” or “the Applicant”) is the recognized industry leader in battery lifecycle management and processing and has been at the forefront of safe and responsible recycling technology for decades, processing lithium batteries for over 30 years. Retrieiv will expand on its current capabilities and capacity, which were funded by ARRA, with the following objectives:

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B. SCOPE OF WORK

Initial project preparation work is currently underway (Pre-budget Period) and will continue throughout the Project’s three budget periods.

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C. TASKS TO BE PERFORMED

The following tasks will be conducted:

All Budget Periods

Overall Project Management and Planning

Retriev will perform project management activities including project planning and control, subcontractor control, financial management, data management, management of supplies and/or equipment, risk management, and reporting as required to successfully achieve the overall objectives of the project.

Task 0.0. Project Management and Planning

Retriev will develop and maintain a Project Management Plan (PMP) in accordance with the PMP identified in the Federal Assistance Reporting Checklist and Instructions. Retriev will manage and implement the project in accordance with the PMP.

Task 0.1. Kick-Off Meeting

Retriev will participate in a project kickoff meeting with the DOE within 30 days of project initiation.

Budget Period 1: Manufacturing Plant Buildout

Task 1.1. Expanding Lithium-Ion Mechanical Processing

Task 1.1.1: Begin Hiring/Training of Operators. The needed newly trained skilled operators from the ongoing Retriev training program (developed within **Task 1.8**) for local talent will work under supervision with the equipment installers to learn the new equipment and then the plc controls prior to start up.

Task 1.1.2: Create Operating Procedures for New Processing Line. Standard Operating Procedures will be amended from existing processes and drafted for review.

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Task 1.1.5: Validate Results/Equipment Selection. Use results/performance measurements from the new line to confirm or amend equipment for the second line.

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Project Title: North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

Technical Volume
Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002678
FOA Type: Initial CFDA: 81.086

FOA Area of Interest (AOI) 11: Commercial-scale Domestic Battery Recycling and End-of-Life Infrastructure

Proposer: Retriev Solutions, LLC

Technical Point of Contact:

Anthony Rogers
Email: ARogers@solvedbyretriev.com
Phone: (317) 313-7523
Address: 5400 86th Street
Indianapolis, IN 46268

Business Point of Contact:

Shane Thompson
Email: SThompson@solvedbyretriev.com
Phone: (202) 812-1290
Address: 5400 86th Street
Indianapolis, IN 46268

Names of Team Organizations:

Nth Cycle
Chad Vecitis
Email: vecitis@nthcycle.com
Phone: (617) 708-5200

Performance Period: 36 Months

Confidentiality Statement: *All pages of this document contain trade secrets, confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the government. The government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source. Markings are in [[]].*

Table Of Contents

1. PROJECT OVERVIEW3

 1.2. PROJECT GOAL 6

 1.3. DOE IMPACT 8

 1.4. EQUITY PLAN: QUALITY JOBS AND COMMUNITY BENEFITS..... 9

2. TECHNICAL DESCRIPTION, INNOVATION, AND IMPACT12

 2.1. RELEVANCE AND OUTCOMES 12

 2.2. FEASIBILITY 18

 2.3. INNOVATION AND IMPACTS. 19

3. WORKPLAN AND MARKET TRANSFORMATION PLAN22

 3.3. Work Breakdown Structure and Task Description Summary 23

 3.5. Go/No-Go DECISION POINTS..... 34

 3.6. END OF PROJECT GOAL..... 34

 3.7. PROJECT SCHEDULE 35

 3.8. BUY AMERICAN REQUIREMENTS FOR INFRASTRUCTURE PROJECTS..... 37

 3.9. PROJECT MANAGEMENT (INCLUDING EARNED VALUE MANAGEMENT PLAN OBJECTIVES) 37

 3.9.1. *Organization and Approach to Managing the Work* 38

 3.9.2. *Roles of Project Team Members* 38

 3.9.3. *Critical Handoffs/Interdependencies among Project Team Members*..... 39

 3.9.4. *Technical and Management Aspects of the Management Plan* 39

 3.9.5. *Approach to Handling Project Changes & Risk Management* 39

 3.9.6. *Approach to Quality Assurance/Control* 40

 3.9.7. *Communication Maintenance Among Project Team Members*..... 40

 3.10. MARKET TRANSFORMATION PLAN 40

 3.10.1. *Target Market* 40

 3.10.5. *Legal/Regulatory/IP and Infrastructure Requirements, Data Dissemination, and Product Distribution* 43

4. TECHNICAL QUALIFICATIONS AND RESOURCES43

1. Project Overview

1.1 Background

About Retriev

Retriev Solutions, LLC (“Retriev” or “the Applicant”) is the recognized industry leader in battery lifecycle management and processing and has been at the forefront of safe and responsible recycling technology for decades, recycling lithium batteries for over 30 years with over 7,000 customers to date and 50 long-term customers, which account for over 90 to 95% of the company’s revenue. Since it was founded in 1984, Retriev has been dedicated to pursuing and demonstrating the best recycling practices and closed-loop materials recovery management. Most notably, on June 22, 2022, it was announced that Cirba Solutions is now the combined entity representing Heritage Battery Recycling, Retriev Technologies, and Battery Solutions — which will bring the combined experience, know-how, and experience to ensure the successful expansion of the proposed project.

Retriev is committed to advancing US lithium-ion battery (or “LIB”) recycling capability and capacity while continuing to maintain its leadership position to meet long-term U.S. national security and economic competitive needs. Retriev’s mission is to enable the end-of-life reuse and recycling of critical minerals, such as cobalt and nickel, at scale to create a circular domestic supply chain for lithium-ion batteries (LIB) as the industry prepares for the growing demand for electric vehicles (“EVs”) in North America. Retriev’s mission and the project proposed herein to expand the footprint of its current facility with best-in-class technology aligns perfectly with the Department of Energy’s (“DOE”) goals and the goals of this FOA. Specifically, the proposed project will shred and separate more than 35,000 tons of LIB, which will produce enough battery-grade raw materials to power 100,000 new EVs (the Project).

Over the past 30 years, Retriev has developed the technology, logistics, and service network crucial for successful battery recycling, catalyzed in part by a 2009 American Recovery and Reinvestment Act (“ARRA”) grant from DOE¹. The \$25 million grant enabled Retriev to build a 70,000-square-foot LIB recycling line in Lancaster, Ohio with a capacity of 5,000 tons per year. Today, Retriev is the largest and oldest LIB recycling processor and post-consumer battery sorting service in North America,

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Retriev’s expansive footprint includes six processing locations in North America, including two lithium-ion recycling operations. Retriev has expanded its operational capabilities, industry, and process technology expertise over the last eight months:

- In August 2021, Heritage Battery Recycling acquired Retriev, bolstering Retriev’s network of customers and positioning the company for growth to match the expected increase in the national supply of end-of-life lithium-ion batteries (especially EV LIBs).
- In March 2022, Retriev purchased Battery Solutions, the North American leader in sustainable, end-to-end cycle management solutions for end-of-life batteries and consumer electronics, creating the first and only comprehensive battery management solution in North America. The two complementary industry leaders are working to create the first and only sophisticated cross-chemistry collection; an exceptional battery-centric logistics

¹ “Next-Generation Lithium Ion Battery Recycling Facility”

network for large, end-of-life sorting capabilities; and a customer-centric approach to end-of-life battery management.

Retriev has laid the groundwork for a robust end-to-end solution for all types of batteries by advancing and scaling technologies that are safe, clean, and effective. Retriev’s Lancaster, OH facility (“Lancaster Facility”), which opened in 2003, initially recycled only three primary types of batteries: large-format lead-acid, nickel-metal hydride, and nickel-cadmium.

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Current Lithium-Ion Processing Technology to Produce Black Mass

Figure TV-1. Retriev’s Current LIB Recycling Line



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² US Patent No. 11316208

1.2. Project Goal

Retriev is prepared to dramatically scale its capacity for recycling LIBs to enable a circular battery supply chain for the industry. The Project will expand and upgrade Retriev’s existing lithium-ion recycling Lancaster Facility. At full operation (targeted for 2025), the facility will be the largest commercial-scale recycling facility in North America.

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This capacity of lithium-ion battery recycling is imperative for the US to take a permanent technological lead in best-in-class LIB recycling. Given its extensive expertise and experience in completing large-scale recycling projects, Retriev is confident in the overall success and feasibility of the Project.

The Project will expand Retriev’s existing, centrally located Lancaster Facility by approximately 75,000 square feet, creating a modern, commercial-scale materials processing facility. The expanded facility will incorporate a host of fire safety technologies and solutions to prevent and mitigate any fires produced during the LIB recycling process. The new building will provide the floor space for two new LIB recycling processing lines, which will supplement two existing processing lines.

The Project will utilize a newly developed LIB recycling process that improves the safe processing of large EV LIBs to black mass. The technology, which has been proven at the Trail Facility, increases recovery rates of key materials to be reintroduced into the supply chain.

(b) (4)

Demand for Retriev’s supply of critical downstream materials produced from LIB recycling greatly outpaces Retriev’s current capacity to process these materials. Completion of the Project will allow Retriev to validate and commercialize its new technology and expand its capacity to produce battery-grade raw materials that will be reintroduced back into the battery supply chain through partnerships with US cathode manufacturers.

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1.2.1. Proposed Scale, Timeline, and Economic Projections, Including initial Overview of Upstream Feedstock and Downstream Supply (in Compliance with AOI-11)

[Redacted]

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1.2.2. Proposed Scale, Timeline, and Economic Projections, Including initial Overview of Upstream Feedstock and Downstream Supply (in Compliance with AOI-11)

Once Retriev has reached the goal of producing battery-grade raw materials there will be an economic shift in how value is recognized. Currently, battery recyclers, including Retriev, produce a black mass that can be further refined into various products. The black mass is not pure enough to be a viable replacement for virgin material in battery manufacturing. This results in black mass being sold to refiners, which typically don't put the critical materials back into the battery supply chain. Conversely, the production of battery-grade raw materials will ensure the critical materials get back into the battery supply chain creating a closed loop. This will eliminate or reduce the high costs associated with mining and transporting virgin materials, while improving their sustainability. Selling the battery-grade materials to US cathode manufacturers that will be coming online in the next three years will create a secure domestic battery supply chain.

1.3. DOE Impact

DOE funding will be invaluable in scaling Retriev's LIB recycling capacity, capabilities, and technology, expediting the development of a robust and secure domestic industrial base of LIB recycling, establishing a competitive-value, closed-loop supply chain in the US. The Project will significantly increase the US capacity for recycling LIBs, especially EV LIBs. This is necessary to preserve the Co and Ni supply that currently exists in the US while mitigating material scarcity and enhancing environmental sustainability.

DOE support has and will continue to be instrumental to Retriev's success. In 2009, Retriev became the first commercial LIB recycler in the US when it was awarded a \$25 million ARRA grant to build a next-generation lithium-ion battery recycling facility. Building on that success, Retriev has spent the last decade developing and commercially demonstrating technology for the rapid and

safe processing of recycled LIBs into new battery-grade materials. As a result of that work, and as demonstrated throughout this application, the Project will help meet the expected demand for the commercial recycling of EV and consumer LIBs and create a strong domestic circular battery economy. Retriev's experience in LIB recycling, catalyzed by the DOE's ARRA grant, significantly mitigates the risk of the Project compared to competitors who have yet to successfully develop and operate a facility capable of meeting market needs.

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DOE funding of the Project would allow Retriev to overcome many of these headwinds. This grant would expedite Retriev's expansion plan to three years and enable Retriev to keep many of its efforts in the US, setting up the processing capacity necessary for a sustained increase in US EV LIB recycling and building a closed-loop supply chain in North America.

1.4. Equity Plan: Quality Jobs and Community Benefits

Retriev's company culture and future sustainable actions are influenced by dedication to the objectives of quality job growth and the advancement of equity, environmental, and energy justice. These objectives are not just initiatives, they are woven into the framework of Retriev's organization, influencing its every action and decision.

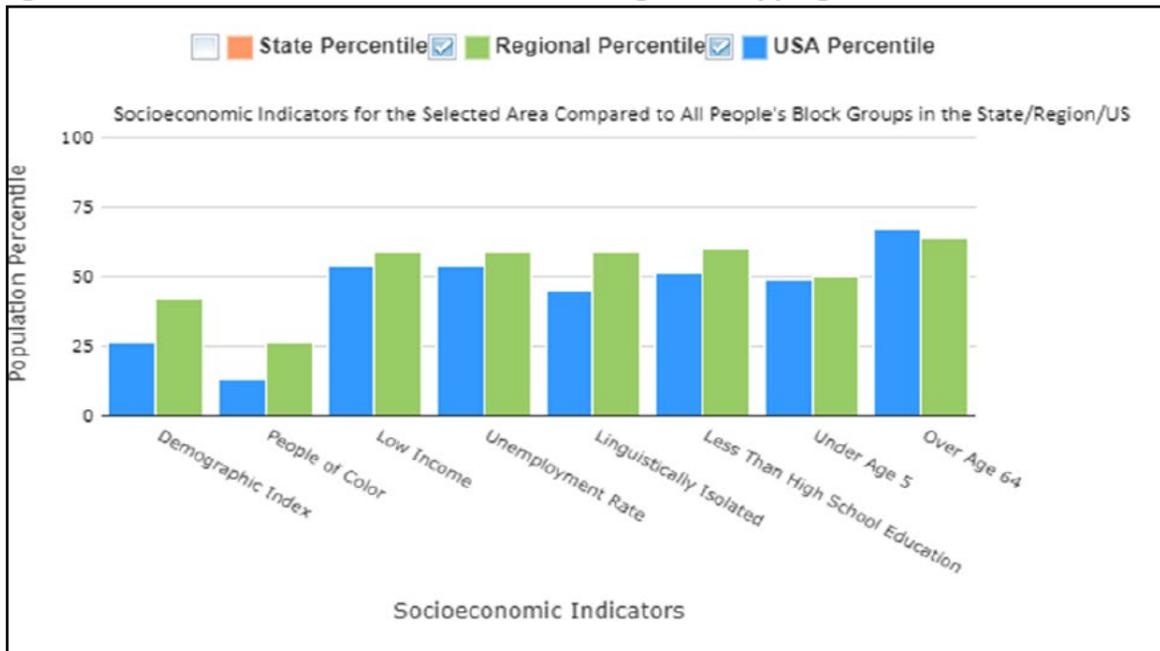
Retriev's mission is to create a diverse and inclusive community that balances personal passions and purposeful work. Retriev is committed to increasing energy-efficient processes, renewable energy options, and increasing the availability of recycling while being fully transparent and enforcing our standards and values.

The Project site is located in Fairfield County, Ohio. As of 2020, the region's population increased by 8.7% since 2010, growing to 158,921³. The population was expected to increase by about 1% by 2022, adding 1,592. Concerning educational attainment, 29% of Fairfield County, Ohio residents possess a bachelor's degree or higher (6.5% above the national average). From 2018 to 2019, employment in Fairfield County grew at a rate of 2.93%, from 72,000 employees to 74,000 employees. In 2019, the top three industries in Fairfield County were Health Care and Social Assistance (11,607 people), Retail Trade (10,209 people), and Manufacturing (7,099 people). **Figure TV-6** below depicts the socioeconomic indicators within a 15-mile radius of the facility⁴.

³ <https://www.census.gov/quickfacts/lancastercityohio>

⁴ <https://www.epa.gov/ejscreen>

Figure TV-6. EPA Environmental Justice Screening and Mapping Tool for Lancaster Facility



Retriev has been operating recycling activities at the Lancaster Facility since 2003. To date, it has not had any pollutant complaints, including for noise or odor. Additionally, the investment in newer, more advanced pollution abatement equipment is anticipated to have a positive impact on air quality, specifically particulate matter, which is in the 34th percentile compared to the rest of the state.

In conjunction with its recruiting, training, and university partners, Retriev will recruit with a preference toward minorities and disadvantaged communities to ensure traditionally excluded talent has access to Retriev’s opportunity for high-paying skilled positions resulting from the Project.

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The Retriev talent management program is designed to reach employees at all levels and is crucial to maximizing engagement and retention. Hiring, selecting, and developing future leaders, as well as evaluating employees, is in alignment with Retriev’s values. Retriev’s onboarding process includes initial and ongoing training designed to allow employees to embrace Retriev’s culture of safety, diversity, and inclusion.

⁵ <https://www.areavibes.com/lancaster-oh/demographics/>

⁶ <https://livingwage.mit.edu/states/39>

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

Retriev has identified the Energy Innovation Center Institution (EICI), a non-profit organization, as a workforce training partner. EICI's predominant activities center around innovative workforce development with a focus on the region's economically distressed minority communities. Their specialty is connecting stranded talent in these communities to the prosperity and good jobs from which they are often excluded.

To maintain a sustainable workforce that is educated, trained, and battery knowledgeable, Retriev will make available a number of intern positions from various disciplines that will represent battery design and manufacturing, including:

- Engineering (Chemical, Mechanical, Industrial, Environmental)
- Chemistry
- Local Trade Programs (Welding, Electrician, Operators, etc.)

Further, Retriev plans to work with local community colleges and universities to implement a work-study program to create a hands-on curriculum that produces experienced students ready to enter the workforce. The curriculum can be designed to be flexible to support degree and certification tracts.

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Retriev goes to great lengths to not only limit environmental exposure and burdens to the communities where it operates but to improve them. These efforts and commitments are demonstrated through Retriev's support of urban farming initiatives, the lack of noise or air quality complaints where Retriev currently operates, and Retriev's work to expand the accessibility of battery recycling. In addition to these efforts, Retriev will make measurable investments to increase the clean energy job pipeline and job training through its work with local community colleges and universities to implement work-study programs and create a hands-on curriculum that will produce experienced students ready to join our team. Finally, this plan makes clear Retriev's commitment to contract with minority-owned and/or diverse business enterprises to the extent possible as Retriev carries out the Project.

(b) (4)

2. Technical Description, Innovation, and Impact

DOE Project funding will be directly invested in scaling Retrieval's recycling facility capacity, alongside the transformative equity plan outlined above, to produce enough battery-grade raw materials to power 100,000 new EVs per year.

2.1. Relevance and Outcomes

Section 2.1.1 summarizes the technology with specific principles and references included below and throughout the application. Additionally, the Project specifically aligns with the overall objectives of the Biden Administration, the DOE, and the FOA.

Furthermore, the proposed project, which is de-risked and significantly leverages government funding through the use of existing equipment and facilities, will meet the battery recycling objectives of the Biden Administration, the DOE, and the FOA. This is mainly due to the closed-loop circular economy approach made possible by the use advanced technology will, in turn, reduce reliance on foreign supply chain and create a sustainable domestic supply chain for batteries for the years and decades to come.

In sum, this project not only enables next generation technologies but does so in a manner that will truly be cost-efficient and affordably create a sustainable, closed loop circular economy for battery materials.

2.1.1. Proposed Processing Improvements

As outlined above in **Section 1.2**, Retriev proposes to make significant processing upgrades at its existing Lancaster Facility through the four primary initiatives shown in **Figure TV-2**. The efforts outlined below will substantially accelerate the deployment of Retriev’s technology for battery material processing and recycling in North America.

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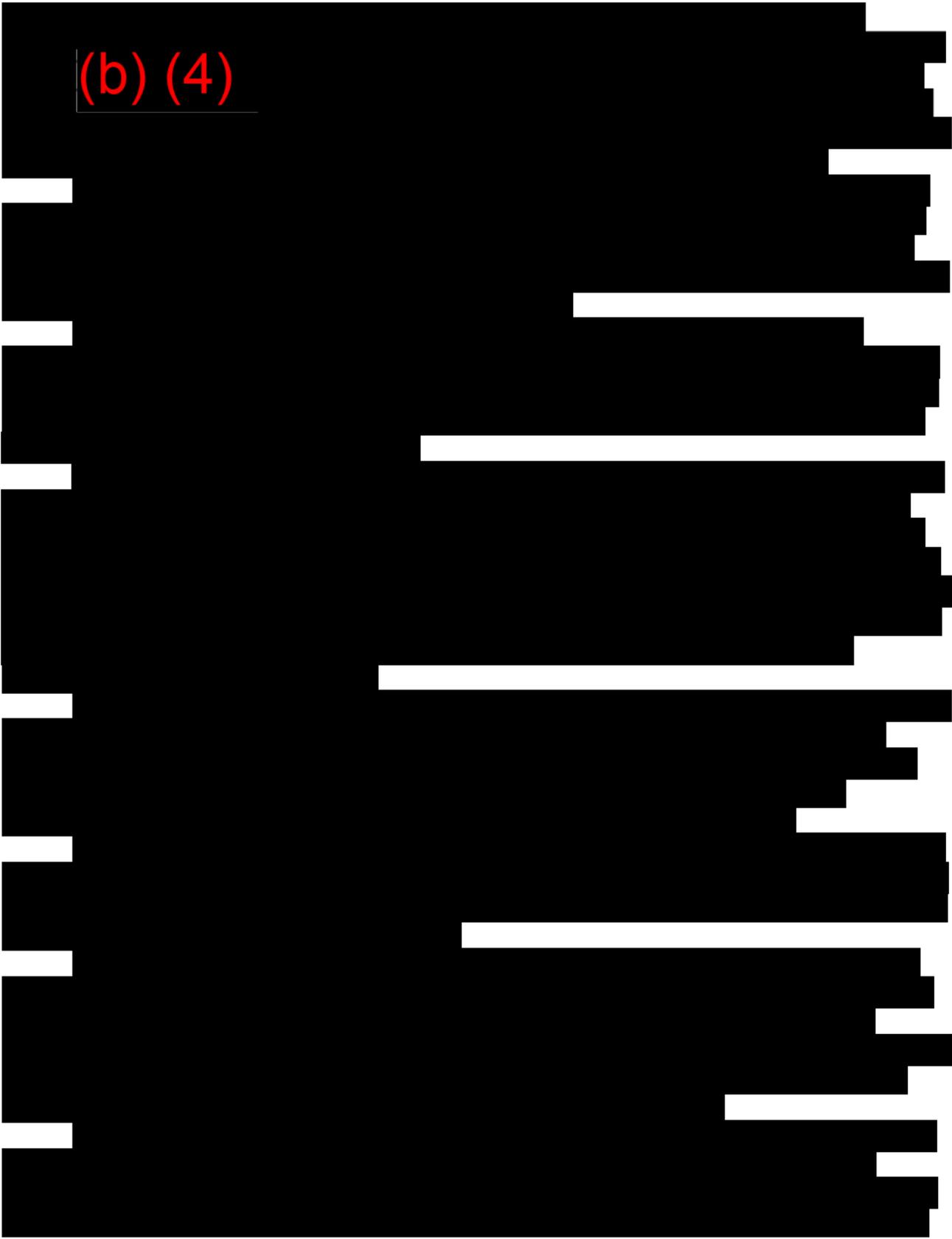
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⁷ “Recycling of Lithium-Ion Batteries—Current State of the Art, Circular Economy, and Next Generation Recycling” <https://onlinelibrary.wiley.com/doi/full/10.1002/aenm.202102917>

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⁸ For additional information on Go/No-Go decisions, see **Section 3.6** and **SOPO**; for additional information on Key Equity Objectives, see **Section 1.4** and **Figure 5**.

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3.3. Work Breakdown Structure and Task Description Summary

The proposed work breakdown structure and task description summary is set forth below and in further detail in the SOPO.

Budget Period 1: Manufacturing Plant Buildout

Task 1.1. Expanding Lithium-Ion Mechanical Processing

Task 1.1.1: Begin Hiring/Training of Operators. The needed newly trained skilled operators from the ongoing Retriev training program (developed within **Task 1.8**) for local talent will work under supervision with the equipment installers to learn the new equipment and then the plc controls prior to start up.

Task 1.1.2: Create Operating Procedures for New Processing Line. Standard Operating Procedures will be amended from existing processes and drafted for review.

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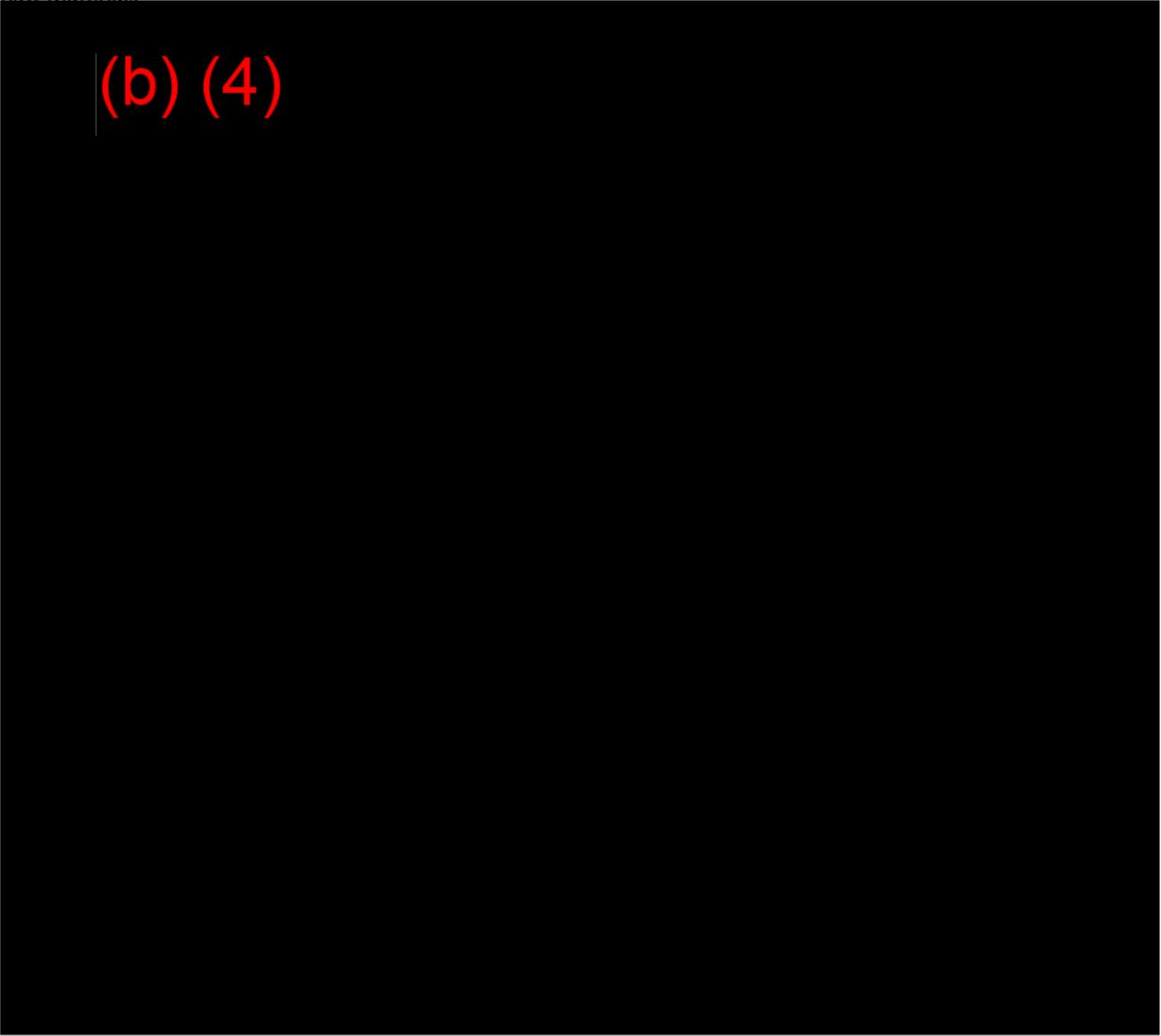
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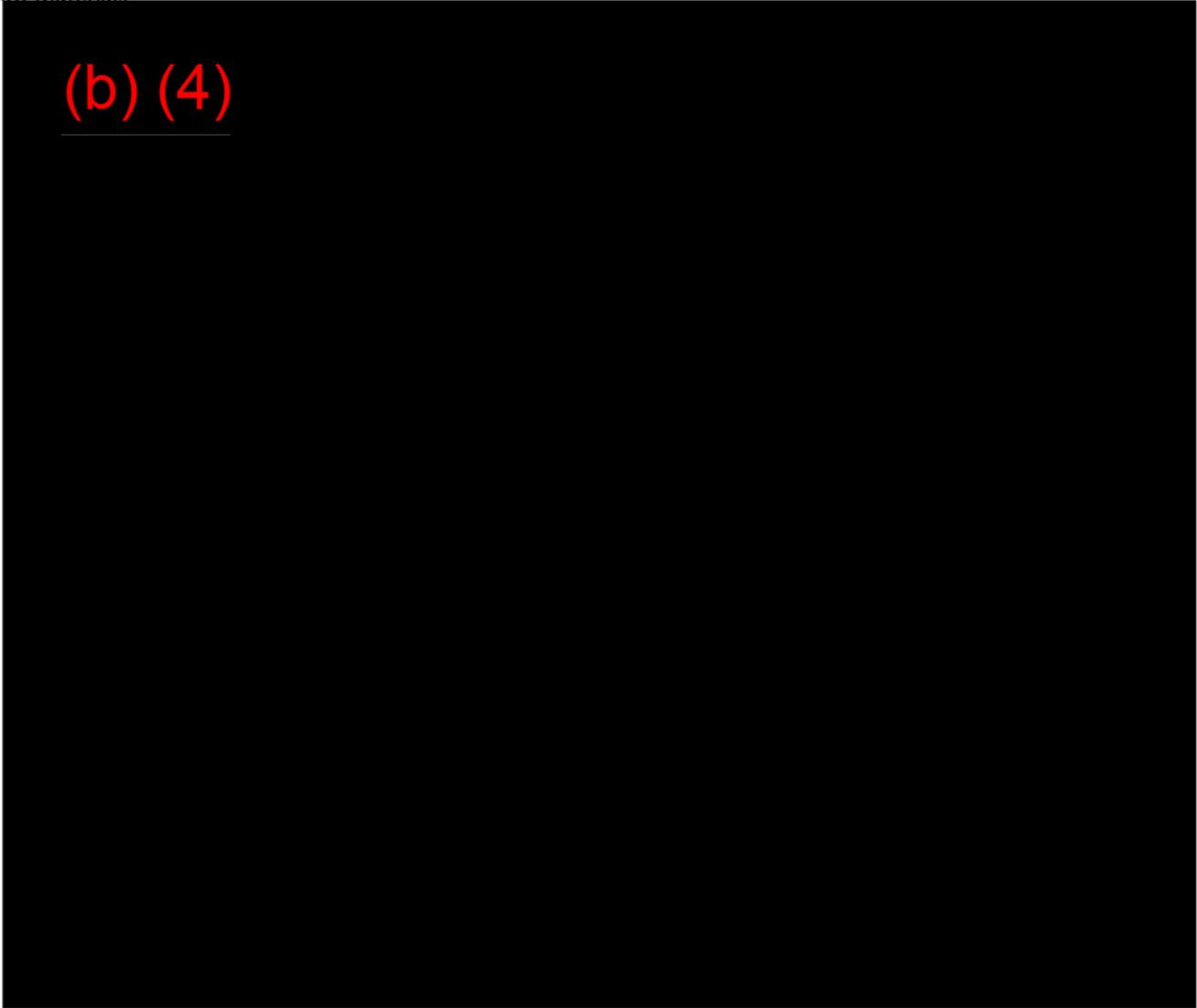
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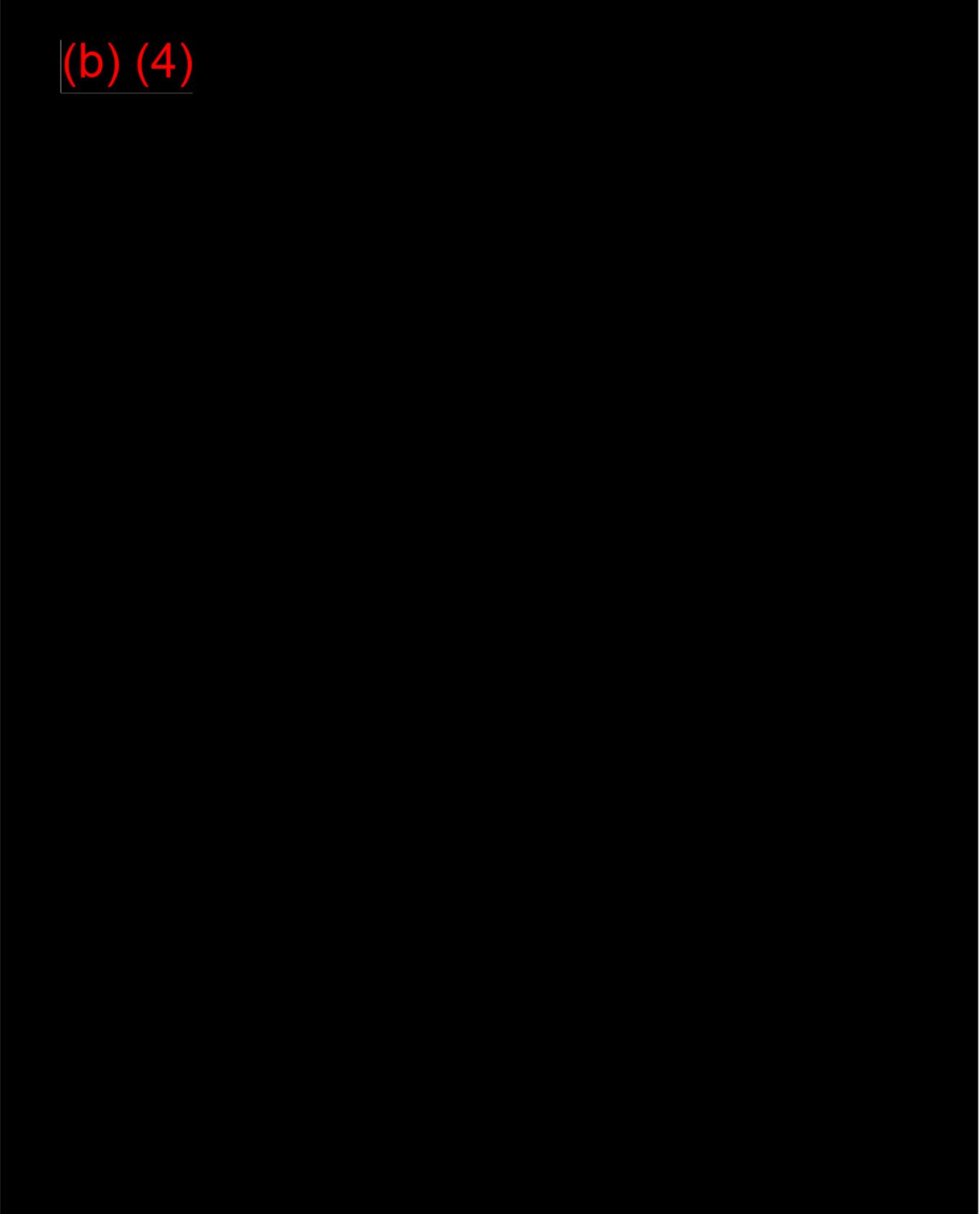


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3.4. Milestone Summary

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Engineering and Construction:

The EC team will be responsible for the tasks associated with the design, procurement, and construction all of the new lines needed to achieve our objectives. The EC team will also be responsible for interfacing and monitoring site construction, improvements, and the required permits for these activities. This will include managing contractors, schedules, budgets, etc. The EC team will be led by our Director of Engineering and Construction, David Fiedeldey. We will be selecting an Engineering, Procurement, and Construction (EPC) firm to carry out the majority of the workflows for the Project.

Project Management:

The Project Management team will be responsible for the overall management and oversight of the entire program. This will include the master schedule and master budget, as well as coordination with the DOE on program updates and other communication

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North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

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Currently, there are only a few LIB recycling companies effectively equipped to recycle EV batteries (i.e., Life-Cycle, Ascend Elements, and Redwood). Most notably, the very large EV LIB recalls for the Chevrolet Bolt (70,000 units) have already placed a strain on the recycling industry because extensive recycling capability for large EV LIB modules is not currently available. Furthermore, a comprehensive and sustainable closed-loop recycling technology that produces cathode-ready raw materials containing the critical Ni and Co, as proposed by the Project, is not currently available.

⁹ <https://www.bloomberg.com/news/articles/2021-11-30/auto-executives-see-evs-at-half-of-sales-in-big-markets-by-2030>

3.10.2. Competition

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4. Technical Qualifications and Resources

Retrieval boasts the most qualified battery recycling team in North America. The combined experience of Retrieval's processing experience and Battery Solutions' customer-oriented logistically driven operations have recycled more than 36 million pounds of LIBs to date, equivalent to over 40,000 EVs.

4.1. Project Team's Unique Qualifications

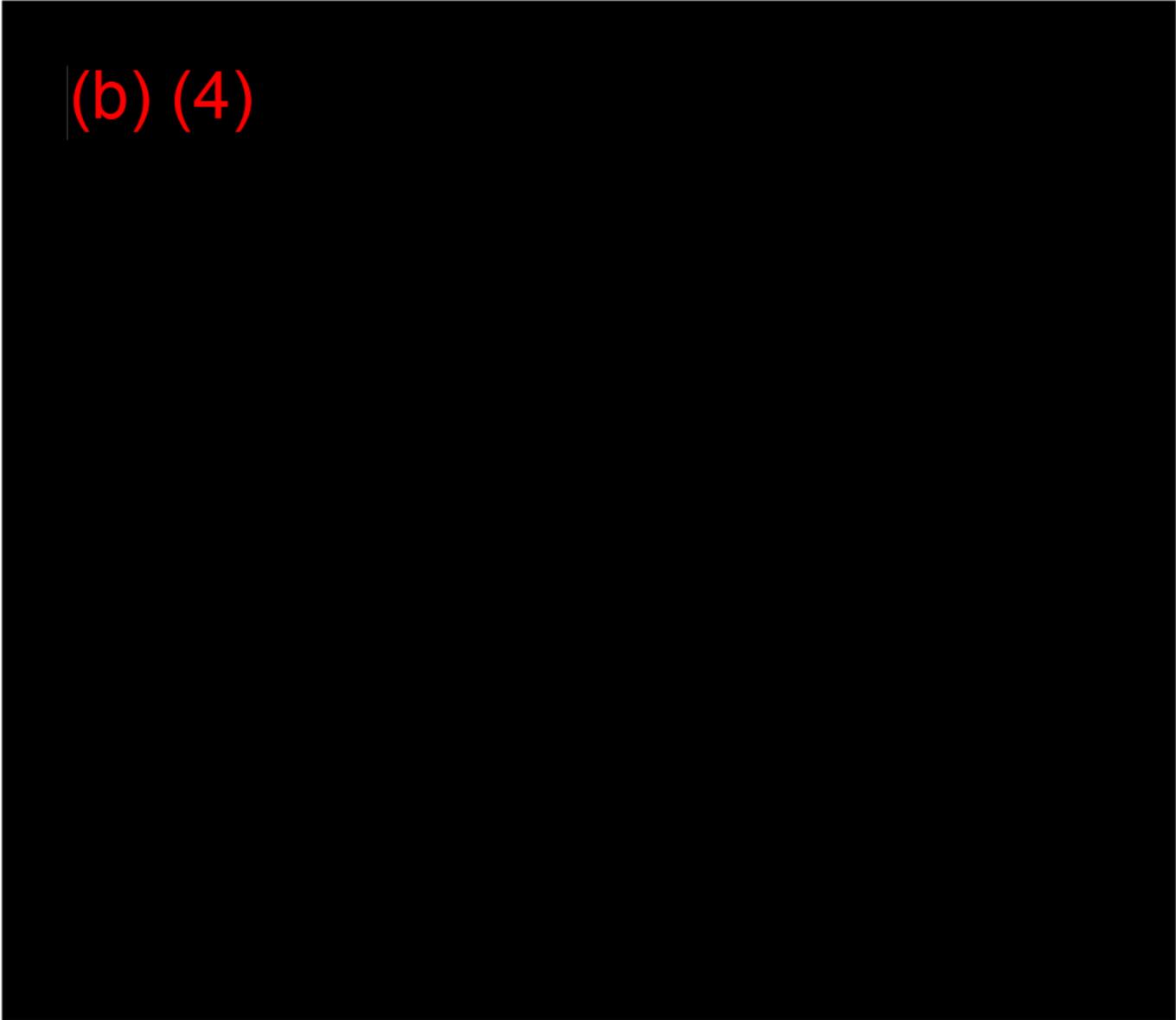
Retrieval currently operates a flagship battery recycling facility in Lancaster, Ohio — part of a comprehensive battery recycling operation that processes multiple battery chemistries. Coupled with Battery Solutions' existing collection network and world-class sorting facilities that employ state-of-the-art practices and technologies for effective sorting and segregating batteries as well as EV pack disassembly, Retrieval's solution far exceeds that of its competitors. Retrieval Solutions' Brea,

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

CA facility further strengthens Retriev’s capabilities by providing solutions to OEMs such as Ford and GM that have helped solve the issues of safely storing, distributing, and testing battery packs. Retriev’s combined recycling and processing experience is without match today. These capabilities, including collection, transportation, testing, and recycling, give Retriev the proven experience to execute the Project successfully and help DOE meet its objectives, fully realizing the once-in-a-generation opportunity provided by the BIL.

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Shane Thompson, President, Retriev Solutions (Business POC)

Mr. Shane Thompson has 20 years of experience in battery life cycle management, some of which includes environmental sales with Inco Ltd. (now Vale), one of the world’s leading nickel mining companies. While at Inco’s Inmetco facility, he led some of the earliest efforts in the world to recycle HEV and EV batteries. He led the commercial operations team at Call2Recycle, managed process development for recycling NiMH batteries at RediMet, and served in commercial leadership roles at both KBI/Retriev and Battery Solutions. He has also helped to drive US policy and regulations related to battery recycling and advised clients through his consulting firm, Verdant Holdings, Ltd., on recycling nickel and other energy metals and materials. Currently, as the president of Retriev, he is leading his team to innovate full-service battery life cycle management solutions. This combined experience and knowledge makes him one of the world’s most qualified experts in a rapidly evolving industry. Mr. Thompson’s knowledge of the industry and its players spans 22 years, roughly the length of time LIBs have existed. His understanding of the industry and market provide insights that differentiate Retriev from other companies in the industry.

Anthony Rogers, Research Engineer, Heritage Research Group (Technical POC)

Mr. Anthony Rogers serves as the Vice President of Technology and Growth at Cirba Solutions. He previously worked as the superintendent of utilities and wastewater for the Lubrizol Corporation

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

and as a project engineer for Heritage Research Group, where he worked with customers and startups to solve challenges in the waste industry. Mr. Rogers holds a B.S. in Chemical Engineering from Purdue University and an Engineering in Training certificate. He is currently pursuing his Professional Engineering License. Mr. Rogers values collaboration, new technology development, and scaling from lab to commercial. He spent years evaluating the best practices for the recycling of spent HEV and EV batteries, a technical knowledge and background that makes him invaluable to the Project's success.

David Klanecky, CEO, Retrieval Solutions.

Mr. David Klanecky is the Chief Executive Officer of Cirba Solutions. His impressive, 25-year career has spanned research and development, operations, commercial, and strategic leadership roles across numerous innovative industries, including the global lithium business, energy storage, and several specialty materials industries. While working at Piedmont Lithium, Albemarle, and Dow Chemical, Mr. Klanecky had expansive assignments in Spain, Switzerland, Australia, and China that brought out his passion for travel and culture. He is a chemical engineer with an Executive MBA in Global Management and focuses on safety, operations, talent development, and innovation. Mr. Klanecky's experience at Dow and Albemarle gives him insights into the battery materials space, and he has applied this knowledge to recycling and creating a sustainable domestic supply of battery materials

Dawn New-Echlin, Vice President of Sales, Cirba Solutions

Ms. Dawn New-Echlin currently serves as vice president of sales for Cirba Solutions. Her expansive 25-year career has made her a prominent figure in the environmental community, with experience locally and internationally across several industries, including industrial and waste services, automotive, manufacturing, and retail recycling. She holds a B.A. in Political Science and Environmental Studies from the University of Michigan. Ms. New-Echlin's passion has always resonated in reuse and recycling. She uses her ability to build customer relationships and her passion for environmental initiatives to work with partners and clients to create solutions to best meet present and future needs. Dawn's environmental service sales experience provides unique insights into end-of-life batteries. As the topic of battery recycling has been and will continue to be an environmental conversation, Dawn has specialized in the EOL management from the auto OEMs. She is based in the Detroit area, home of the US auto industry.

Stephanie Dix, Vice President of Logistics, Cirba Solutions

Ms. Stephanie Dix is an experienced operations and logistics professional who has been responsible for multiple warehouse facilities, day-to-day operations, and a growing fleet. She focuses on increasing internal efficiencies, building cross-functional relationships, and supporting her team. Stephanie holds IMDG, IATA and DOT Hazmat certifications. Very few people have the hands on experience in handling and transport for recycling of EOL batteries that Stephanie has developed.

John Kelly, Vice President of Operations, Cirba Solutions

Mr. John Kelly is an experienced executive leader with in-depth knowledge across industries such as transportation, recycling, waste management, and industrial services. Mr. Kelly currently brings this vast experience to his role as vice president of operations for Cirba Solutions. Prior to joining

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

Cirba Solutions, Mr. Kelly held executive leadership roles where he ultimately rose to chief operating officer. He has also held various senior operating positions in transfer station, waste hauling, and recycling. Mr. Kelly is passionate about safety. Throughout his 30-year career, he has been instrumental in overseeing staff, implementing strategy, driving profitability, strengthening employee morale, maximizing efficiency, managing budget, and being an advocate for corporate mission/vision. Mr. Kelly has managed safe and successful operations for a billion-dollar company. Some of his key strengths that will help ensure the Project's success include a defined skill in ramping up growth through the acquisition and integration of companies and starting new facilities.

Meredith Barius, Chief Human Resources Officer, Cirba Solutions

Ms. Meredith Barius has over 20 years of human resources experience and leads the People and Culture team for Cirba. Previously she worked as director of human resources for TC Transcontinental Packaging, where she oversaw all human resources activities, including cultural change management initiatives and labor relations strategies in the US and United Kingdom. Prior to her time at TC Transcontinental, she was instrumental in growing a privately held distribution business from one location and 300 employees in the US to eight locations in four countries with over 1,000 employees, including developing policy and practice in the international locations.

Phil Enck, VP Material Sales, Cirba Solutions

Mr. Phil Enck has been in the role of vice president of sales for 25 years for three industry-leading textile manufacturers. He is a relationship builder and brings a can-do attitude to everything he does, whether encouraging his team or problem solving with a client. He is driven and accomplished in the areas of sales, management, and marketing. He has spent years building emerging markets to peak revenue growth and dominant market share. He is now focused on experience in growing new sales channels and building teams to the sale of recovered material as a value-add product.

Erin Sharpe, Chief Financial Officer, Cirba Solutions

Ms. Erin Sharpe is an action-oriented executive with experience in large, publicly traded, and middle-market, privately held organizations in diverse industries. She has experience leading strategy development, financial operations, FP&A, treasury management, investment allocation, and M&A activities on a global scale. She is a respected change agent with repeated success leading transformational initiatives, integrating acquisitions, and turning around unprofitable areas. As chief financial officer for Cirba Solutions, Ms. Sharpe is responsible for all company financial functions, including accounting, treasury, corporate finance, information technology, and investor relations.

Danielle Spalding, Vice President of Marketing and Communication, Cirba Solutions

Ms. Danielle Spalding is an experienced professional and currently serves as the vice president of marketing and communications for Cirba Solutions, overseeing communications, government affairs, marketing, and product management. With experience working with both large iconic brands and challenger brands, she leads her team to creatively elevate a brand experience through amplifying communication and connection.

Todd Coy, Vice President, Retriev Solutions

Mr. Todd Coy represents over 30 years of expertise in the battery supply chain and recovery of advanced battery chemistries, such as lithium ion and nickel-metal hydride batteries used in hybrid and electric vehicle applications. Mr. Coy's history in recycling, policy, and regulations related to battery management brings a broad perspective to the team. He was part of the Retriev team that won the ARRA award to build the plant in Lancaster, Ohio. Currently, Mr. Coy is leading efforts at Retriev's Brea, CA facility to provide EV OEMs with battery storage, testing, and recycling options.

Novis Smith, President, American Hyperform, Inc.

Dr. Novis Smith is an established and well-known scientist focused on battery recycling. Dr. Smith holds several patents on the topic of battery recycling and material recovery. Dr. Smith was a lead on Retriev's winning application for a DOE ARRA grant to build the current facility in Lancaster, Ohio. He holds a B.S. from MIT and a Ph.D. from the University of California, Berkeley and is widely recognized as a leader in the space of battery recycling.

Julianne Audiffred, Director of Business Development, Cirba Solutions

Ms. Julianne Audiffred leads business development and market analysis efforts that guide Cirba Solutions strategic engagement. Recently, she led Albemarle's battery recycling endeavors. Her past experience gives her keen insights into the emerging LIB recycling space.

Richard Abramowitz, RMA Consulting

Mr. Rich Abramowitz has a long history in the environment, working for Waste Management as a leader in the government affairs group, focused on recycling policy and implementation with operations, most recently Rich served as a Director of Government Affairs for Duracell, and while in that position he also served on the Board of Directors to Call2Recycle the largest non-profit focused on battery recycling.

David Feideldey, Director of Engineering and Construction, Retriev Solutions

Mr. David Feideldey is director of engineering and construction for Retriev Solutions. Previously, he worked at Amazon, where he helped manage engineering for an entire facility, overseeing capital upgrades and ensuring that reliability and maintenance activities were performed on time. As a building manager for Amazon, he managed technicians who maintained and repaired the best-performing site in the company's Indianapolis node. As a project manager for Diversified Conveyors, he managed a \$600 million FedEx hub upgrade project, coordinating and managing multiple project crews. His experience ensuring upgrading large, complicated facilities, as well as ensuring their reliability and maintenance, will be invaluable to the successful completion of Retriev's Lancaster Facility expansion.

Current and Pending Support

The following list includes the sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual's research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses.

Title of Activity[1]	Sponsor of Activity/Source of Funding	Award or other Identifying Number	The Total Cost or Value of the Award or Activity[2]	The Award Period (Start Date – End Date)	The person-months of effort per year being dedicated to the award or activity
CEO	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	David Klanecky 4 months/year
CEO	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	David Klanecky 1 months/year
CFO	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Erin Sharpe 1 months/year
CFO	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Erin Sharpe 1 months/year
Global Director, HR	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Meredith Barius 4 months/year
Global Director, HR	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Meredith Barius 4 months/year
VP Sales	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Dawn New-Echlin 3 months/year
VP Sales	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Dawn New-Echlin 0 months/year
VP Technology	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Anthony Rogers 7 months/year
VP Technology	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Anthony Rogers 2 months/year
VP Sales & Marketing	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Phil Enck 5 months/year
VP Sales & Marketing	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Phil Enck 1 months/year
VP Operations, Logistics	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Stephanie Dix 2 months/year
VP Operations, Logistics	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Stephanie Dix 1 months/year
VP Marketing	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Danielle Spalding 3 months/year
VP Marketing	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Danielle Spalding 1 months/year
President	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Shane Thompson 4 months/year
President	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Shane Thompson 1 months/year
SVP Operations	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	John Kelly 7 months/year
SVP Operations	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	John Kelly 2 months/year
Engineering Construction Director	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	David Fiedeldej 11 months/year
Engineering Construction Director	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	David Fiedeldej 1 months/year
Director Process Technology	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Kraig Houser 8 months/year
Director Process Technology	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Kraig Houser 3 months/year
Assoc. Project Engineer	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Andrew Stroud 8 months/year

Assoc. Project Engineer	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Andrew Stroud 3 months/year
Assoc. Project Engineer	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Andrew Stroud 8 months/year
Assoc. Project Engineer	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Andrew Stroud 3 months/year
Project Engineer	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Austin Allaby 8 months/year
Project Engineer	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Austin Allaby 3 months/year
Technical Consultant	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Novis Smith 3 months/year
Technical Consultant	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Novis Smith 1 months/year
VP Battery Products	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Richard Holman 2 months/year
GA Consultant	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Richard Abramowitz 0 months/year
Director, ES&G	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Laua Evans 4 months/year
Director, ES&G	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Laura Evans 1 months/year
VP Battery Management	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Todd Coy 1 months/year
VP Battery Management	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Todd Coy 1 months/year
Environmental Manager (regulator permits and compliance & Safety)	Applicant Match/DOE	2678-1670	\$182,514,939	1/1/2023 to 12/31/25	Tom Plute 12 months/year
Environmental Manager (regulator permits and compliance and safety)	Applicant Match/DOE	2680-1617	\$10,000,000	1/1/2023 to 12/31/25	Tom Plute 0 months/year

*As required, a description of the above "other award[s] or activit[ies]" has been appended to this Current and Pending Support.

Signature: 

Date: 6/30/2022

I, [Shane Thompson, President], certify to the best of my knowledge and belief that the information contained in this Current and Pending Support Disclosure Statement is true, complete and accurate. I understand that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or omissions of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (18 U.S.C. §§ 1001 and 287, and 31 U.S.C. 3729-3730 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.

Current and Pending Support

The following list includes the sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual's research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses.

Title of Activity	Sponsor of Activity/Source of Funding	Award or other Identifying Number	The Total Cost or Value of the Award or Activity	The Award Period (Start Date – End Date)	The person-months of effort per year being dedicated to the award or activity
Li-ion battery recycling pilot demonstration	MassCEC Innovate Mass	9b	\$250,000	09/21-09/22	12
Electrochemical Separation Device for Co-Ni Recovery from Li-ion Batteries	NSF SBIR Phase II	2112301	\$976,200	02/01/2022-01/31/2024	20

*As required, a description of the above "other award[s] or activit[ies]" has been appended to this Current and Pending Support.

Signature: 

Date: 06/30/22

I, Chad D. Vecitis, CTO, certify to the best of my knowledge and belief that the information contained in this Current and Pending Support Disclosure Statement is true, complete and accurate. I understand that any false, fictitious, or fraudulent information, misrepresentations, half-truths, or omissions of any material fact, may subject me to criminal, civil or administrative penalties for fraud, false statements, false claims or otherwise. (18 U.S.C. §§ 1001 and 287, and

31 U.S.C. 3729-3730 and 3801-3812). I further understand and agree that (1) the statements and representations made herein are material to DOE's funding decision, and (2) I have a responsibility to update the disclosures during the period of performance of the award should circumstances change which impact the responses provided above.

I. GENERAL

This volume shall be submitted with the original proposal and must be found acceptable prior to contract negotiations and award. The Environmental Volume shall provide, in detail, all information as outlined in the following sections.

II. CONTENT

A. ENVIRONMENTAL INFORMATION DESCRIBING THE PROJECT AND THE PROJECT SITE(S).

1. Summary

Retrieval Solutions (Retrieval) proposes to expand its flagship lithium-ion battery recycling facility, [REDACTED] [REDACTED] to transform recycled batteries into new battery-grade raw materials through a U.S.-based circular supply chain (the Project). [REDACTED]

(b) (4)

[REDACTED] Design activities are currently being commissioned; location will be established with award. Construction activities, equipment delivery, installation, and startup would occur at Retrieval's processing facility in Lancaster, Ohio. [REDACTED]

[REDACTED]

[REDACTED] Construction activities will rely on known construction methods and technologies and do not pose major risks. Commissioning and operation of the new production tools represent a commercial risk, as the battery-grade raw material production process would utilize emerging technologies and innovative processes to recover and reintroduce spent battery material into the new battery supply chain. [REDACTED]

[REDACTED]

Considered an integral part of the Project, establishing an environmentally sound, and safe and beneficial relationship with the Lancaster community will be a priority focus. Additional outreach and partnerships will extend the economic benefits throughout the region. At the local level, various

community engagements will begin and will continue throughout the project duration and into the operational phase. Retrieval will hold quarterly community forums and a community working group. The goal of these activities is to incorporate community input into the evaluation and design of the Project. [REDACTED]

[REDACTED] (b) (4) [REDACTED] Feedback from the community will be incorporated into the Project goal of meeting the Department of Energy's (DOE) goals with this solicitation.

It is worth noting that DOE/National Energy Technology Laboratory completed an environmental assessment (DOE/EA-1722) for Retrieval (Toxco Inc.) in April 2010 in conjunction with awarding Retrieval a grant to build the Li-Ion Battery Recycling Facility. This grant was given under the Vehicle Technology Program for the Office of Energy Efficiency and Renewable Energy. The project, Next-Generation Lithium Ion (Li Ion) Battery Recycling Facility, was one of 30 DOE selected for funding. DOE provided \$9,552,653.00 in financial assistance in a cost sharing arrangement with Retrieval. The total cost of the project was estimated at \$19,107,705.

2. Proposed Project and Its Alternatives

a. Proposed Project

To ensure a domestic supply of lithium batteries for the United States, we must develop a robust and secure domestic industrial base of battery recycling. This investment will enable the end-of-life reuse and recycling of critical minerals at scale to create a domestic supply chain for lithium-ion batteries. Retrieval proposes to expand our current battery recycling operations in Lancaster, Ohio [REDACTED]

[REDACTED] (b) (4) [REDACTED]

As shown below in **Figure 1**, the Project site is located in an agricultural and industrial land use area. Elevation ranges from approximately 826 feet above mean sea level along the southern

boundary to 831 feet above mean sea level near the site's northeastern corner. The Project site is relatively flat, with a gentle downward slope to the south. The site is in a valley that is oriented west-east. Regional topography slopes gently downward to the southwest. There are no major topological features on the site.

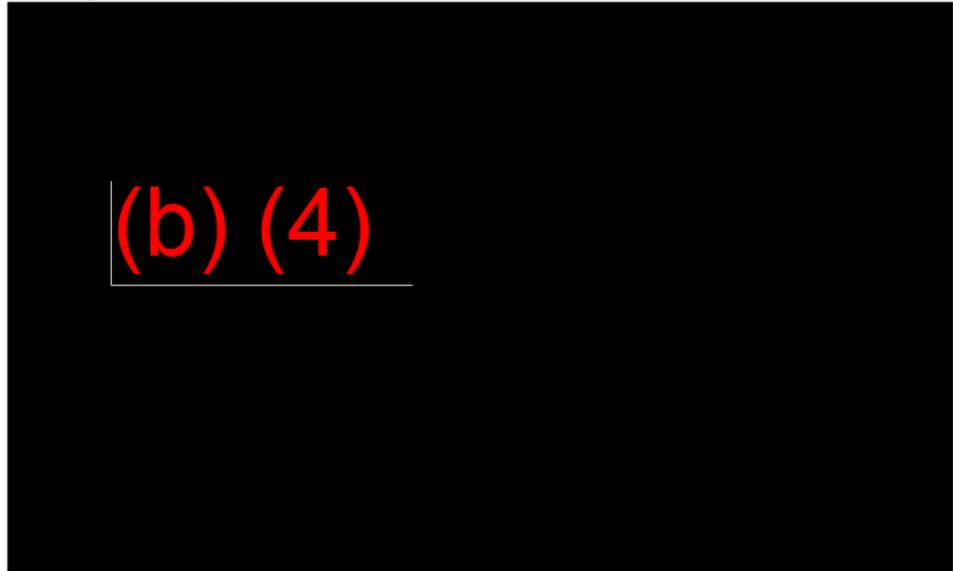
Figure 1: Topographic Map of the Project Site and Surrounding Region



(b) (4)

Activities will include design and fabrication of the expansion to Retrieval's existing Li-Ion recycling facility.

Figure 2: Project Site Overview



b. Alternatives to Proposed Project

A complete description of likely alternatives to the project, including a “no action” alternative, will be provided. The description will address technology-specific aspects of the action, such as process design configurations, and site-specific considerations, such as alternative waste disposal sites.

Retrieval assessed various alternative processing technologies and determined that [REDACTED]

[REDACTED] Other alternatives to the proposed Project are continually assessed. Retrieval also assessed a no-action alternative and determined that would result in non-domestic supply of battery

grade materials entering the marketplace and that was unacceptable to the company.

3. Existing Environment

a. Land Use

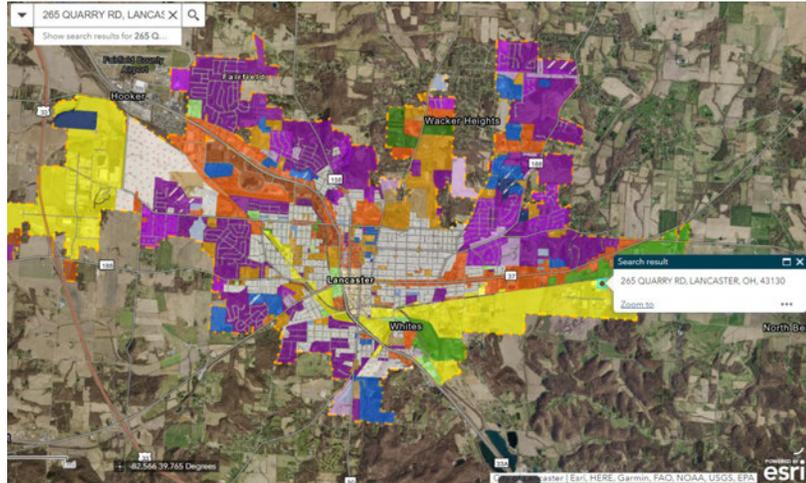
General Environmental Setting

General Land Use

The Project site is located in the southeast part of the City of Lancaster in Fairfield County. The Project site is zoned for heavy industrial uses (IH) with surrounding land uses being agricultural and industrial. See zoning map. A railroad runs along the project site's North, beyond which is agricultural cropland and vacant grass fields. To the East, the project site is bordered by Quarry Road SE (a 2-lane road), along which are several additional businesses: Lancaster Bingo (a gaming supplies distributor), Drew Shoe Corp. (a shoe warehouse), Fabricated Packaging Materials, Inc. (a foam packing material manufacturer), Memac Industries (a machine shop), an electrical substation, and Hubbard Enterprises (a rigs and derricks manufacturer). Immediately behind them is more agricultural lands and wooded areas.

Commerce Street runs along the South edge of the Project site (a 2-lane road), beyond which is General Machine and Mould (a machining company), Commerce Storage (self-storage units), Cintas- Lancaster Uniform Services (a uniform rental and laundering company), and Glasfloss Industries (an air purification systems manufacturer). Immediately behind them is more agricultural lands. To the West sits Ohio Oxide Corporation, a lead oxide manufacturing company.

The nearest residence sits approximately 1,000 feet northwest of the Project site.



Zoning map – City of Lancaster

b. Atmospheric Conditions/Air Quality

Local Climate

Existing Environment

Ambient air quality and air pollution emissions are regulated under federal and state laws and regulations. In Ohio, the Ohio EPA has primary responsibility for managing air quality through state regulations. Ohio EPA has also been delegated authority by the EPA to implement federal programs of the Clean Air Act (CAA).

The CAA requires EPA to set National Ambient Air Quality Standards (NAAQS) for air pollutants considered harmful to public health and the environment. The EPA has set NAAQS for six criteria pollutants, including carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), lead (Pb), sulfur dioxide (SO₂), and particulate matter (PM). Primary standards are established to protect public health, and secondary standards are established to protect public welfare. These standards define the maximum level of air pollution allowed in the ambient air. The CAA and subsequent amendments allow states to promulgate additional air quality standards that are the same or more stringent than the NAAQS. Two additional

pollutants of concern, nitrogen oxides (NOx) and volatile organic compounds (VOCs), contribute to the formation of ozone in the atmosphere, which is a regulated criteria pollutant.

[REDACTED]

(b) (4)

[REDACTED]

[REDACTED]

[REDACTED]

The facility operates under a RCRA C Hazardous Waste Permit (OHD071654958) issued by the Ohio EPA. The facility held a Title V permit [REDACTED]

(b) (4)

The facility maintains a Permit to Install and Operate (PTIO) for the Li-ion battery line (PTIO# P01221976), which was issued by OH EPA in March 2017 [REDACTED]

Criteria air pollutants from the existing facility are well below major source emissions rates. The Lancaster facility currently and historically has been in full compliance with its air quality operating permits and has had no reported violations.

c. Hydrologic Conditions/Water Quality

General Site Description -- Hydrologic

The Project site is located within a 500-year flood zone, but outside of a 100-year flood zone. Stormwater runoff percolates into the ground surface at unpaved areas or enters catch basins, which discharge into an on-site storm water retention pond. The nearest surface water body to the site is Pleasant Run, located approximately 950 feet to the northwest of the project site. The creek ultimately discharges into the Hocking River to the south. There are no on-site federally designated wetlands.

Based on the site's proximity to Pleasant Run, shallow groundwater likely flows to the west-northwest. No federally registered wells are present within one mile of the site. Approximately 80 private or

municipal wells that may be used for water supply are located between one-quarter mile and one mile surrounding the site. In addition, 13 oil/gas wells are located between one-quarter mile and one mile surrounding the site. Retrieval does not expect these hydrologic features to be impacted by this Project.

d. **Geologic/Soil Conditions**

Elevation ranges from approximately 826 feet above mean sea level along the southern boundary to 831 feet above mean sea level near the site's northeastern corner. The Project site is relatively flat, with a gentle downward slope to the south. The site is in a valley that is oriented west-east. Regional topography slopes gently downward to the southwest. Regional soils are very poorly drained silty-clay loams moderate infiltration rates.

e. **Vegetation and Wildlife Resources**

Vegetative Resources

Field observations and Google Earth (2022) imagery, show this landscape has not been significantly altered in the Project area due to past uses. Google Earth Satellite imagery indicate the Project site is mostly grass covered and the area around the Project site consists primarily of agricultural lands, with low to medium intensity industrial/commercial development.

Aquatic Resources and Species

There are no aquatic resources in the Project site, or immediate surrounding area, other than a stormwater retention pond located on the site. The nearest surface water body to the site is Pleasant Run, located approximately 950 feet to the northwest of the project site. The creek ultimately discharges into the Hocking River to the south. At this time, it is undermined what species are located at the site. There is a potential to disrupt any species

during construction phases of the Project. A complete study of what is at the project site will be completed prior to construction.

Federally Listed and Endangered Species

There are 12 species on the endangered list in Ohio. These include the Rusty patched bumble bee, Kirtland's warbler, piping plover, snuffbox mussel, and the Indiana bat to name a few. According to the 2010 NETL Final Environmental Assessment of the previous project, the only species found on the Federally Listed and Endangered Species is the Indiana bat. Construction activities would not impact this species as trees would not be disturbed. [REDACTED]

(b) (4)

State Listed and Endangered Species

In addition to the 12 species listed on the federally listed endangered species, the State of Ohio lists 113 additional species including the green salamander, Ohio cave beetle, snowy egret, and lake sturgeon to name a few. According to the 2010 NETL Final Environmental Assessment of the previous project, the only species listed under Endangered Species Act is the Indiana bat. It is also listed on the Ohio endangered list. Construction activities would not impact this species as trees would not be disturbed. [REDACTED]

f. Socioeconomic Conditions

The Project site is located within Fairfield County, Ohio. As of 2020, the county's population increased by 8.7% since 2010, growing to 158,921. Population was expected to increase by about 1% by 2022, adding 1,592. Concerning educational attainment, 29.0% of Fairfield County's residents possess a bachelor's degree or higher (6.5% above the national average). From 2018 to 2019, employment in Fairfield County grew at a rate of 2.93%, from 72,000 employees to 74,000 employees. In 2019, the top three industries in Fairfield County were Health Care and Social Assistance (11,607 people), Retail Trade (10,209 people), and Manufacturing (7,099 people).

Retrieval will work with local social service agencies to conduct socio-economic baseline data collection efforts in 2023 and will use this data to complete both a screening level and full socio-economic impact assessment as part of the prefeasibility and feasibility studies underway for the Project.

g. Historic/Cultural Resources

No known historic, cultural, or archeological places/sites have been identified at the project site or adjacent to the project site.

h. Visual Resources

The site is in a valley that is oriented West to East. It is relatively flat, with a gentle downward slope to the South. Regional topography slopes gently downward to the Southwest.

The nearest federal land, Wayne National Forest, sits 10 miles to the Southeast of the facility, in Perry County. There are no scenic vistas or existing aesthetic landscaping in the Project area.

i. Health and Safety Factors

[REDACTED]

(b) (4)

The facility maintains a Permit to Install and Operate (PTIO) for the Li-ion battery line (PTIO# P01221976), which was issued in March 2017 [REDACTED]

(b) (4)

Process wastewater generated at the facility consists of scrubber liquid from the venturi and packed-bed scrubbers. Remaining process wastewater is treated in on-site wastewater treatment plants (WWTP). The facility maintains a permit for the WWTP issued by the City of Lancaster. The facility permit (#P-109-LWPCD) was issued on July 1, 2021 [REDACTED]. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc.

Nonhazardous waste generated at the facility consists of general trash, scrap metal and wood, pallets, drums, and recyclable material (cardboard, plastics, and used oil). The quantity of used oil is extremely limited, and it is collected in a drum located in the maintenance area. Cardboard is managed via a baler and dumpsters located in the southern portion of the facility. Scrap drums are crushed via a drum crusher in the facility and disposed of in general trash. Scrap metal, scrap wood, and general trash are collected in covered and open top dumpsters located within and adjacent to the buildings, and periodically transported off-site for disposal or recycling.

While most Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste operating TSD facility. The facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018 and is valid until November 2027. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds.

Because the facility generates greater than 1,000 kilograms per calendar month of non-acute hazardous waste, Retrieval is classified as a large quantity generator (LQG) of hazardous waste under the Resource Conservation and Recovery Act (RCRA), as amended. Specifically, Retrieval maintains greater than 10,000 pounds of hazardous chemicals (namely, several types of batteries, sulfuric acid, cadmium plates, lead plates, lead metallic scrap, lead oxide, potassium hydroxide, and sodium hydroxide).

Although the detection of noise and odors is dependent on the weather conditions and ongoing operations, no complaints have ever been received from neighboring facilities or residents regarding noise or odors emanating from the facility. Nor has the facility received correspondence from regulatory agencies regarding noise or odors.

Retrieval is currently in compliance with all permits and applicable federal, state, and local environmental, health, and safety statutes and regulations. It complies with all recordkeeping, reporting, emissions controls, and disposal requirements.

B. ENVIRONMENTAL IMPACTS OF THE WORK TO BE PERFORMED.

1. Land Use

To accommodate additional room for processing lines, storage, and additional utility capacity, [REDACTED]

[REDACTED] (b) (4) [REDACTED]
[REDACTED]
[REDACTED]

Under the Proposed Project, this would be compatible with current land use at the existing facility, as the site is already industrial and is surrounded by other similar activities. Thus, the proposed project would

not interfere with surrounding land uses in the industrial setting. As the land is owned by Retrieval, any land issues, such as changes in aesthetics, would likely be able to be easily avoided or mitigated against as part of the design and implementation of Retrieval's Proposed Project. Additionally, the project does not require any zoning changes. Furthermore, the nearest park is approximately 1.5 miles to the east. Thus, the proposed project is unlikely to impact parks and recreation.

Possible facility locations within the Project Site will be assessed to ensure the least amount of disruptive impacts. Additionally, process plant technologies to mitigate environmental impacts (dust mitigation, water recycling, water treatment, avoidance of diesel/gas backup power systems, etc.), storage facility locations and designs, and best practice engineering controls will be considered to evaluate potential environmental impacts and how to best control such impacts.

2. Atmospheric Conditions/Air Quality

Construction activities at the site will produce greenhouse gas emissions and pollutants from vehicle movement and heavy construction equipment; emissions estimates are not yet available. Beginning with the commissioning of the facility in year three, air emissions from the Li-ion recycling process would begin and would consist primarily of particulate matter (PM) and volatile organic compounds (VOCs) from the [REDACTED]

[REDACTED] (b) (4) [REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

The facility maintains a Permit to Install and Operate (PTIO) for the Li-ion battery line (PTIO# P01221976), which was issued in March 2017 [REDACTED]
[REDACTED]

(b) (4)

Potential impacts to air quality will be evaluated in detail as the assessments progress prior to and throughout construction. These assessments will include the evaluation of potential mitigation strategies aimed at minimizing the impacts to air quality.

Quantities of the emissions are not yet known and will not be fully quantifiable until stack tests can be ran providing qualitative analysis. However, total site emissions or VOCs are expected to reduce due to the installation of new emission control equipment.

Like most other processing operations, the Lancaster Project will be required to control potential nuisances and emissions, through "Best Practices", as applied in the industry. It is important to identify early on the potential sources for those nuisances and to design mitigating methods to limit their impact on the community, workplace hygiene, and the environment.

Ultimately, the feasibility level assessments will refine the potential air emissions, and associated impacts. However, air emissions from this Project are expected to be limited and can be mitigated using best practice and best available technology. Some preventative measures and treatments of effluent are recommended to avoid emissions

3. Hydrologic Conditions/Water Quality

Since the water supply would be from a public source and construction is limited to near-surface activity, groundwater sources would not be affected. Therefore, it is not expected at this time that significant impacts to hydrologic or water quality conditions would occur as part of this Project.

(b) (4)

Construction workers and plant workers would produce human waste/sewage, which would be discharged via the existing connection to the city sewer system, which leads to a local water treatment plant. Treated wastewater from the venturi and packed-bed scrubber process, as

described in Section 2e, would be discharged to city wastewater lines. Process wastewater is treated in on-site wastewater treatment plants. The facility maintains a permit (#P-109-LWPCD) for its wastewater treatment plant issued by the City of Lancaster on July 1, 2021. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc. Discharges to water resources are not anticipated and none of the proposed construction would impact drainage in the local watershed.

4. Geologic/Soil Conditions

The building site for this project contains soil designated as Patton silty clay loam. This soil is a very poorly drained soil derived from old glaciolacustrine deposits (USDA, 2009).

(b) (4)

The proposed construction is limited to surface and near-surface activity that would have no potential to affect minerals and deeper geological strata. However, potential impacts to geologic and soil resources will be evaluated in detail prior to construction. As soil loss and erosion are the major geological factors these can be managed through best practices and assessments will include the evaluation of potential mitigation strategies aimed at minimizing the impacts to soil resources.

Existing on-site stormwater retention features capture rainwater from impervious surfaces and may need to be enlarged depending on additions of impervious surfaces.

5. Vegetation and Wildlife Resources

(b) (4)

According to the 2010 NETL Final Environmental Assessment of the previous project, the only species listed under Endangered Species Act in the Indiana bat. It is also listed on the Ohio endangered list. Construction activities would not impact this species as trees would not be disturbed. [REDACTED]

6. Socioeconomic Conditions

[REDACTED]

Potential economic impacts within City of Lancaster and Fairfield County will be beneficial and should be accommodated by the community and local job market easily.

7. Historic/Cultural Resources

No known historic, cultural, or archeological places/sites have been identified at the project site or adjacent to the project site. At this time, it is not anticipated that any significant cultural resources will be found in the area of the Project due to the fact that it has been significantly disturbed by previous activities. However, if cultural resources are found, every effort will be made to avoid disturbance. If avoidance is not possible, a cultural resource mitigation strategy will be developed per the requirements of state and federal regulatory requirements.

8. Visual Resources

There are no scenic vistas or existing aesthetic landscaping in the project area.

9. Health and Safety Factors

The project includes the construction of an advanced and innovative recycling facility designed for recycling of hybrid and electric vehicle batteries. All personnel would be trained on the manufacturing processes and recycling equipment. Training would be conducted in accordance with existing environmental and worker health and safety programs. Plans and procedures would be updated accordingly to account for the new processes and/or information. The equipment and operations used in the project would present minimal risks to human health and safety when operated under normal conditions and maintained. Since all construction would take place on the Project site there is reduced risk to pedestrians and auto traffic. The current roads near and around the site should be able to handle slight increase in either construction or operations traffic.

Large-scale, battery-grade raw material recycling at Retrieval's Lancaster facility will involve the storage and use of greater than 10,000 pounds of hazardous chemicals (namely, several types of batteries, sulfuric acid,

cadmium plates, lead plates, lead metallic scrap, lead oxide, potassium hydroxide, and sodium hydroxide). Because Retrieval's Lancaster recycling facility generates more than 1,000 kilograms per calendar month of non-acute hazardous waste, Retrieval is classified as a LQG of hazardous waste under RCRA. While the majority of Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste operating TSD facility. The facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018 and is valid until November 2027. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds. The site would effectively control chemicals and exposure through hazardous materials control programs that are managed in accordance with federal, state, and local environmental regulations. The site is currently in compliance with all state and local regulations for hazardous materials reporting, management, and disposal (including air and water permits. No complaints have ever been received from neighboring facilities or residents regarding noise emanating from the facility, nor has the facility received correspondence from regulatory agencies regarding noise.

10. Solid and Hazardous Wastes

In general, operation of the new recycling facility is not expected to generate solid or hazardous waste of a different type than what is currently generated at the facility. Certain permits would need to be updated to account for the new recycling processes.

Process wastewater generated at the facility consists of scrubber liquid from the venturi and packed-bed scrubbers. Remaining process wastewater is treated in on-site wastewater treatment plants (WWTP). The facility maintains a permit for the WWTP issued by the City of Lancaster. The facility permit (#P-109-LWPCD) was issued on July 1, 2021 and expires on July 30, 2024. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc.

Nonhazardous waste generated at the facility consists of general trash and recyclables (scrap metal and wood, pallets, drums, cardboard, plastics, and used oil). The quantity of used oil is extremely limited, and it is collected in a drum located in the maintenance area. Cardboard is managed via a baler and dumpsters located in the southern portion of the facility. Scrap drums are crushed via a drum crusher in the facility and disposed of in general trash. Scrap metal, scrap wood, and general trash are collected in covered and open top dumpsters located within and adjacent to the buildings, and periodically transported off-site for disposal or recycling. Additional opportunities to reduce waste and recycle scrap materials are always looked at and considered.

Because the facility generates greater than 1,000 kilograms per calendar month of non-acute hazardous waste, Retrieval is classified as LQG of hazardous waste under RCRA. Specifically, Retrieval maintains greater than 10,000 pounds of hazardous chemicals (namely, several types of batteries, sulfuric acid, cadmium plates, lead plates, lead metallic scrap, lead oxide, potassium hydroxide, and sodium hydroxide).

While most Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste operating TSD facility. The facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018 and is valid until November 2027. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds.

11. Impacts on Regional or Local Plans

The hydrometallurgical process is expected to generate additional wastewater, which will be processed through an on-site wastewater treatment plant and then discharged to the local sanitary sewer. The facility maintains a permit for the WWTP issued by the City of Lancaster.

The facility permit (#P-109-LWPCD) was issued on July 1, 2021 and expires on July 30, 2024. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc.

The project will employ construction workers in the region, as well as an estimated 40 skilled, full-time workers, drawn from the local Lancaster community and surrounding regions when the recycling facility enters full-scale operation.

C. POTENTIAL LIABILITY TO DOE OF EXISTING CONDITIONS AT THE SITE(S).

There are no outstanding liability concerns related to this Project. The Project site was previously disturbed by various activities – see below. There are no significant or outstanding actions with the federal, state, or local regulatory agencies with regard to historical environmental contamination or pending reclamation requirements. The existing processing facility is in compliance with all federal, state, and county permit requirements.

A detailed due diligence process was completed prior to Retrieval's purchase of the site and existing structures in Lancaster, Ohio. The site was used for automotive glass manufacturing and testing from 1970 to 1998. Retrieval (formerly Toxco) purchased the site in 2000, a Phase I assessment was completed at the time of purchase.

(b) (4)

(b) (4)

Prior reports indicated that a 10,000-gallon no. 2 fuel oil underground storage tank (UST) was removed from the site in 1986. A 1991 Phase II ESA noted that "... the tank and lines were in excellent condition and no visible signs of contamination were noted within the excavation." No sampling was conducted at the time of the removal, although the report included two soil borings collected from the former UST excavation, and the soil samples were analyzed for total petroleum hydrocarbons (TPH). TPH was detected at 55 and 67 mg/kg. The Phase II ESA concluded that no remediation of the former UST location was warranted. Currently, the most conservative Ohio BUSTR closure action level for TPH in the soil is 1,000 mg/kg. The site is not listed on the Leaking Underground Storage Tank (LUST) database.

A previous Phase II Environmental Study was completed in 1991. After reviewing these reports, along with a recent Phase I Environmental Study (performed and written in 2021 by Grace Rodriguez of Ramboll US Consulting, Inc.), Retrieval's understanding is that there are no conditions that could expose the DOE to previous liability.

D. ABILITY TO MEET COMPLIANCE REQUIREMENTS AT THE SITE(S).

Compliance Strategy

The permitting matrix provided below forms the fundamental list of regulations that will apply to the Project. These requirements will be evaluated throughout the design assessment phase to ensure the alternatives of the plant and waste storage facilities are such that they meet or exceed regulatory requirements.

The best available control technologies that will be considered during these design alternative assessments have been discussed throughout this document. Generally, the best available control technologies that will be considered during engineering evaluations will include, but are not limited to:

Air Quality

Water Quality

(b) (4)

The facility maintains a Permit to Install and Operate (PTIO) for the Li-ion battery line (PTIO# P01221976), which was issued in March 2017

Process wastewater generated by the facility in Building 265 includes sulfuric acid and plastic and floor wash water from lead-acid battery recycling area; potassium hydroxide from wet-Ni battery recycling process; and condenser and scrubber liquid from Ni-Cd battery recycling. Process wastewater generated in Building 295 consists of scrubber liquid from venturi and packed-bed scrubbers. According to facility personnel, the Li-ion line is a closed loop system, and no wastewater is generated.

Wastewater generated in the dehusker unit is sent off-site for deep-well injection. Remaining process wastewater is treated in on-site wastewater treatment plants (WWTP). There are two WWTPs on site, one in each building. In the Building 265 WWTP, the sulfuric acid and wash water generated are treated with potassium hydroxide and magnesium hydroxide. The solids are separated out through a filter press and the wastewater is sent to the city's publicly owned treatment works (POTW). The wastewater treatment in Building 295 consists of treating the

wastewater with various types of chemicals based on the type of the battery being processed followed by press filters to remove the solids.

(b) (4)

The facility maintains individual permits for both the WWTPs issued by the City of Lancaster. The building 265 permit (#P-101-LWPCD) was issued on September 15, 2021, [REDACTED]. The building 295 permit (#P-109-LWPCD) was issued on July 1, 2021, [REDACTED]. Both the permits require monitoring of the following parameters: cBOD, suspended solids, pH, oil & grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc. The building 265 permit requires bi-monthly sampling, whereas Building 295 permit requires monthly sampling and requires monthly mercury monitoring and reporting. Both the permits also require annual calibration of sewer meters and submission of calibration certificate by December 31st to the Water Pollution Control Department (WPCD).

Because Retrie's Lancaster recycling facility generates more than 1,000 kilograms per calendar month of non-acute hazardous waste, Retrie is classified as a large quantity generator (LQG) of hazardous waste under the Resource Conservation and Recovery Act (RCRA), as amended. As an LQG, Retrie must comply with the following requirements of RCRA: (1) obtain a USEPA generator identification number (OHD071654958); (2) determine if a waste is a declared, characteristic or listed hazardous waste or mixture; (3) accumulate hazardous waste on site for no more than 90 days; (4) prepare and use the Uniform Hazardous Waste Manifest for all hazardous waste shipments, maintaining copies for at least three years; (5) properly package, label, placard and store wastes; (6) establish formal written programs on emergency preparedness and prevention, contingency plans, waste minimization, and personnel training; (7) manage hazardous waste only at RCRA-permitted facilities; (8) prepare and submit a biennial hazardous waste report; and 9) conduct weekly inspections of hazardous waste storage areas.

While the majority of Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste operating TSDF facility. Facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; [REDACTED]

(b) (4)

[REDACTED]. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds. The permit specifies conditions with regard to tracking, storing, processing of waste,

installation, maintenance, operation and closure of the facility, recordkeeping, notification, training and inspection requirements and financial liability and assurance related requirements. Per the permit, the facility cannot accept more than 49,000 tons of hazardous waste in any calendar year from off-site sources. Some of the records and plans required by the permit include a waste minimization plan, contingency plan (updated in 2018), operating records, inspection records, manifests, biennial reports, and contingency plan records. Additionally, the Part B permit requires a closure cost estimate, [REDACTED] and does not include costs for remedial activities such as soil excavation and off-site disposal of contaminated soils.

(b) (4)

The facility also maintains a federal RCRA permit that was issued on Feb 15, 2018 (effective date March 28, 2018) [REDACTED]. This permit includes air emission related requirements specific to container management. For certain types of containers, the permit requires that in addition of other requirements, they meet the DOT regulations, be equipped with cover and closure devices with acceptable tightness and constructions materials or be an open top container with organic vapor suppressing barrier to prevent hazardous waste from being exposed to the atmosphere. Below is a summary of the permits held by the plant for operating:

PERMIT	NUMBER	PURPOSE	EXPIRES
RCRA Part B	OHD071654958	Hazardous Waste	[REDACTED]
(b) (4) 95 Air Battery Line	PTIO# P01221976	Air Permit	[REDACTED]
65 Air Retort	PTIO# P0127978	Air Permit	[REDACTED]
Stormwater	4GRN01096*AG	Stormwater	[REDACTED]
295 WW	P-109-LWPCD	WW Discharge	[REDACTED]
265 WW	P-101-LWPCD	WW Discharge	[REDACTED]
RCRA Federal	OHD071654958	LQG Haz Waste	[REDACTED]

E. EXPERIENCE AND APPROACH TO THE IDENTIFICATION AND RESOLUTION OF ENVIRONMENTAL ISSUES.

Environmental Leader

Retriev has full time staff dedicated to ensure there are no negative environmental impacts. The Environmental Manager is responsible to interface with regulatory agencies and ensuring compliance with all permits.

(b) (4)

Retriev's Experience

Retriev is the leading recycler of lithium-ion batteries and large format batteries. It has operations located in Trail, BC and Lancaster, OH. Retriev owns and operates some of the largest battery recycling facilities in North America and have a number of world-class resources in our portfolio.

Retriev has significant experience in identifying, developing, and operating world class battery recycling assets in a responsible and sustainable manner. Retriev has been recycling lithium-ion batteries for over 25 years.



2678-1670_Retrieve_Solutions_EQ

DOE F 540 OMB Number 1910-5175 (04-2017) Exp. 11/30/2020

OFFICE OF ENERGY EFFICIENCY AND RENEWABLE ENERGY
ENVIRONMENTAL QUESTIONNAIRE

SECTION I. PROJECT SUMMARY	
Control Number:	2678-1670
Project Title:	Retrieve Lancaster Lithium-ion Battery Plant Expansion to Produce Battery Grade Raw Materials
Applicant:	Retrieve Solutions, LLC
Other Participants (Subrecipients, Contractors, etc.):	Nth Cycle
FOA Number:	DE-FOA-0002678
FOA Title: Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing	

SECTION II. BACKGROUND AND INSTRUCTIONS

Pursuant to the U.S. Department of Energy's National Environmental Policy Act (NEPA) implementing regulations (10 C.F.R. Part 1021), the Office of Energy Efficiency and Renewable Energy (EERE) is required to evaluate the potential environmental impact of projects that it is considering for funding. EERE must determine at the earliest possible time whether any proposed project qualifies for a categorical exclusion under 10 C.F.R. § 1021.410 or will require further environmental review within an environmental assessment or an environmental impact statement.

You are required to answer the questions below for the project as a whole, including all work to be performed by the Recipient, its subrecipients and contractors, including any work outside of the United States. You may not limit your responses to work performed by the Recipient only unless instructed to do so by EERE. In completing this questionnaire, you must provide specific information regarding the nature of your proposed project, including information on its size, operations, and the types and quantities of air emissions, wastewater discharges, solid wastes, land disturbances, etc. You should identify the location(s) of the proposed project and describe the activities that would occur at each location. The form should be completed and signed by the Principal Investigator for the project or another member of your organization who has sufficient knowledge of the project to answer the questions truthfully and accurately.

Failure to fully and adequately complete this form will delay EERE's environmental review of your proposed project. Please note that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001.

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 60 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2-GTN, Paperwork Reduction Project (1910-1800), U.S. Department of Energy, 1000 Independence Avenue S.W., Washington, D.C. 20585; and to the Office of Management and Budget (OMB), Paperwork Reduction Project (1910-1800), Washington, D.C. 20503.

SECTION III. PROJECT EVALUATION

- 1a. In the box below, please provide a brief summary of the proposed project activities. Describe physical activities, not goals and objectives. Specify if this project is part of a larger project or connected to another project.**

Example: The proposed project activities include the design, development, fabrication, and field testing of advanced biomass harvesting equipment. Design, development, and

fabrication activities would occur at our research and development facility adjacent to our manufacturing plant in Dearborn, Michigan. Equipment testing would occur in various agricultural fields in the surrounding area over a two-year period.

Explanation:

The proposed project activities include the expansion of an existing lithium-ion battery recycling facility, [REDACTED]

(b) (4)

through a U.S.-based circular supply chain. Design activities are currently being commissioned; location will be established with award. Construction activities and equipment delivery, installation, and startup would occur at Retrieiv's flagship processing facility in Lancaster, Ohio. Construction at the site would span approximately two years, and full operation of the plant would commence in year three.

1b. Is there other Federal government involvement outside of EERE in any aspect of this project (e.g., funding, permitting, technical assistance, project located on Federally administered land)?

Yes | No

If you checked "Yes," please list the agency, describe the nature of its involvement, and provide a point of contact at the agency, if known.

Explanation:

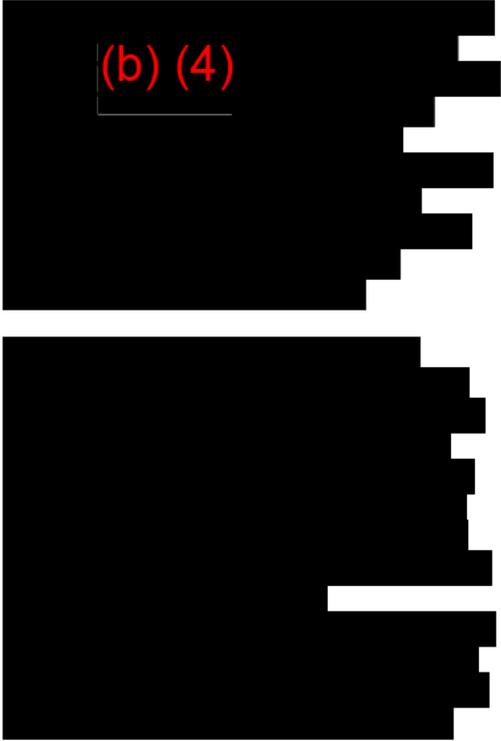
Retrieiv's Lancaster facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit, issued on December 28, 2018 [REDACTED]. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds. The facility may be subject to additional federal and state environmental and occupational health and safety laws and regulations with which Retrieiv will comply fully.

1c. Is the proposed project limited exclusively to intellectual, academic, or analytical activities? Intellectual, academic, and analytical activities include, but are not limited to:

- Literature searches and information gathering
- Data analysis
- Computer modeling
- Analytical reviews
- Conceptual design
- Feasibility studies
- Document preparation
- Data dissemination
- Paper studies

You must answer "No" to this question if the proposed project involves any laboratory research and/or development, physical experiments, pilot-scale projects, demonstration projects, field tests, land-disturbance, construction, or similar activities.

Yes | No

<p align="center">(1) <i>List all Locations Where Project Activities Would Occur (Facility Name and Address or Coordinates) and Indicate Recipient, Subrecipient, or Contractor</i></p>	<p align="center">(2) <i>Nature of Location and Current Condition/Use</i></p>	<p align="center">(3) <i>Activities to be Performed at Each Location</i></p>	<p align="center">(4) <i>Land Administration</i></p>
<p><i>Retriev Solutions (recipient) 265 Quarry Rd SE, Lancaster, OH 43130</i></p>	<p><i>Retriev Battery Recycling Facility (a manufacturing facility in a rural/industrial environment)</i></p>	<p align="center">(b) (4)</p> 	<p><i>Private</i></p>
<p><i>Nth Cycle 100 Cummings Ctr #15b Beverly, MA 01915</i></p>	 <p><i>Work to be performed in a Suburban Area</i></p>		<p><i>Private</i></p>

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked "NO" you must complete the entire questionnaire.

Explanation:

If you checked "Yes," proceed directly to Section IV (Certification) and complete the information and signatures as requested. If you checked "No," you must complete the entire questionnaire.

2a. Is the project fully defined at this point (i.e., all sites and activities are known)?

Yes | No

If you checked "No," please describe those sites and/or activities/tasks that are yet to be defined and complete the remainder of the questionnaire to the best of your knowledge.

Explanation:

The project site and scope are fully defined.

2b. In the chart below, please describe the following four types of identifying information concerning project activities to be performed:

- (1) each location where work would be performed, including address or coordinates, names of facilities, and whether this is a Recipient, Subrecipient, or Contractor location;**
- (2) the nature of the location (e.g., urban, industrial, suburban, agricultural, university campus, manufacturing facility) and the current condition and/or use of the site;**
- (3) the types of activities to be conducted at that location;**
- (4) land administration (e.g., BLM, USFWS, DOD, state, private).**

2c. In the box below, please identify and describe: (1) any known or potential health and safety hazards to the public or project workers that may result from or are associated with your proposed project; and (2) any efforts that would be taken to mitigate these hazards. Describe individually for each site discussed in Question 2b.

Explanation:

Retriev Lancaster, OH location

Hazards: Large-scale, battery-grade cathode recycling at Retriev's Lancaster facility will involve the storage and use of greater than 10,000 pounds of hazardous chemicals (namely, several types of batteries, sulfuric acid, cadmium plates, lead plates, lead metallic scrap, lead oxide, potassium hydroxide, and sodium hydroxide). Because Retriev's Lancaster recycling facility generates more than 1,000 kilograms per calendar month of non-acute hazardous waste, Retriev is classified as a large quantity generator (LQG) of hazardous waste under the Resource Conservation and Recovery Act (RCRA), as amended. The facility will comply with all LQG storage, recordkeeping, disposal, and reporting requirements, as applicable.

While the majority of Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste operating TSD facility. The facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018 [REDACTED]. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds. All hazardous materials will be managed in accordance with federal, state, and local environmental regulations the site is currently in compliance with all state and local regulations for hazardous materials reporting, management, and disposal (including air and water permits).

Mitigations: The facility will comply with all LQG storage, recordkeeping, disposal, and reporting requirements, as applicable. Retriev has a robust health and safety program to identify issues before they become hazards and are corrected

before they create safety issues for employees. Our training begins when an employee is first hired. Among other things, they are trained to manage the materials in a manner protective of worker health and safety, public health, and the environment. With regard to waste, there are approximately 27 solid waste management units on-site; all are located inside the facility. The lead-acid battery handling area and the lead plate storage areas are coated with a special coating material, and all areas are inspected daily for any deterioration.

Nth Cycle

Hazards: Nth Cycle location is a material processor focused on a new extraction technology called electro-extraction.

Mitigations: The company follows established health and safety policies and procedures including employee training, proper protective equipment, process controls, monitoring, and internal assessments.

2d. In the box below, please identify and describe any of the following that would be associated with the proposed project. Describe individually for each site discussed in Question 2b.

- (1) any physical modification of existing facilities or construction of new facilities (this does NOT include modification to equipment, only facilities);**
- (2) ground-disturbing activities;**
- (3) any change in the use, mission, or operation of existing facilities;**
- (4) installation or deployment of equipment outdoors including the area of disturbance, what currently exists at the site, the dimensions of the installation, any associated infrastructure, etc.**

Explanation:

Retriev, Lancaster, OH: Physical modification of existing facilities and ground-disturbing activities on approximately 26 acres. In order to accommodate additional room for processing lines, storage, and additional utility capacity, [REDACTED]

(b) (4)

Nth Cycle: No modifications will be made to their existing location.

2e. In the box below, please identify and describe any existing, modifications to, or new permits, licenses, or authorizations that would be required to perform project activities (such as environmental permits, operating permits, or drilling permits). Describe individually for each site discussed in Question 2b.

Explanation:

Retriev, Lancaster, OH: The facility maintains a Permit to Install and Operate (PTIO) for the Li-ion battery line (PTIO# P01221976), which was issued by OH EPA in March 2017 [REDACTED]

(b) (4)

Process wastewater generated at the facility consists of scrubber liquid from the venturi and packed-bed scrubbers. Remaining process wastewater is treated in on-site wastewater treatment plants (WWTP). The facility maintains a permit for the WWTP issued by the City of Lancaster. The facility permit (#P-109-LWPCD) was issued on July 1, 2021 [REDACTED]. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc.

While the majority of Li-ion batteries are categorized as universal waste, the facility is registered as a hazardous waste

(b) (4) operating TSD facility. Facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018 [REDACTED]. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds.

Nth Cycle:

Nth Cycle is listed as a Small Quantity Generator (SQG) of hazardous waste with the State of Massachusetts. However, most of the waste generated by Nth Cycle's processes are not hazardous and the actual amount of hazardous waste generated may be below the SQG amounts, so this generator status may be changing.

2f. In the box below, please list the estimated quantities of materials to be used (e.g., feedstock, chemicals, water) and produced by the project (e.g., biofuel). Describe individually for each site discussed in Question 2b.

Explanation:

(b) (4)

Nth Cycle: [REDACTED]

2g. In the box below, please quantify, to the extent possible, all emissions into the ambient air resulting from project activities. Indicate if the project site is within an attainment or non-attainment area. Describe air emissions individually for each site discussed in Question 2b.

Note: Potential emissions include, but are not limited to, greenhouse gas emissions, particulate matter, and airborne pollutants. Sources of emissions can include stationary sources, such as boilers, process heaters, generators, and/or solvent usage, or mobile sources such as vehicles. It is presumed that every project would result in some emissions being released into the ambient air, so applicants answering "none" must explain why no emissions would be released. Non-attainment areas are designated parts of the country where air pollution levels persistently exceed the national ambient air quality standards. See 42 U.S.C. 7501(2).

Explanation:

Retriev, Lancaster, OH: The Project site is located in Fairfield County, which according to USEPA is considered an attainment area for all criteria pollutants. Construction activities at the site will produce greenhouse gas emissions and pollutants from vehicle movement and heavy construction equipment; emissions estimates are not yet available. [REDACTED]

(b) (4)

Nth Cycle:

The Nth Cycle facility is located in Essex County, MA, which according to the USEPA is considered an attainment area for all criteria pollutants. No significant increase in emissions at the Nth Cycle facility are anticipated as a result of this project. The Nth Cycle facility is a leased space in a larger office/R&D facility. The space has greenhouse gases associated with heating and cooling, which will not be increased by this project. Nth Cycle does not have specific information on these emissions. The laboratory has de minimus emissions associated with their work that are below MassDEP's Source Registration reporting thresholds (310 CMR 7.12) and while there may be minor increases, it will not be over the threshold amounts. The primary de minimus emissions are hydrogen and oxygen.

2h. In the box below, please describe: (1) all non-hazardous wastes that would be generated by the proposed project including recycled materials, and (2) the method of their disposal. Describe individually for each site discussed in Question 2b.

Note: It is presumed that every project would generate solid wastes, so applicants answering "none" must explain why no waste would be generated. Non-hazardous waste is any garbage, refuse or trash, sludge from a wastewater treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities. See 40 C.F.R. § 261.2.

Explanation:

Retriev, Lancaster, OH: Nonhazardous waste generated at the facility consists of general trash, scrap metal and wood, pallets, drums, cardboard, and used oil. The quantity of used oil is extremely limited, and it is collected in a drum located in the maintenance area. Cardboard is managed via bailer and dumpsters located in the southern portion of the facility. Scrap drums are crushed via a drum crusher in the facility and disposed of in general trash. Scrap metal, scrap wood, and general trash are collected in covered and open-top dumpsters located within and adjacent to the buildings, and periodically transported off-site for disposal or recycling. All nonhazardous materials are properly stored at the site, and then are removed by a licensed third-party disposal company on a routine basis.

Nth Cycle:

Non-hazardous waste at the Nth Cycle facility consists of non-hazardous general trash, non-hazardous laboratory waste, and non-hazardous liquid waste. Cardboard, glass, plastic and metal is separated for recycling, which is managed by the facility. Nth Cycle is in the process of contracting with a vendor for the pick-up of compostable material primarily from staff lunches, etc. Any remaining general trash is disposed of in a dumpster, which is managed by the facility. Non-hazardous laboratory waste consisting of used gloves and metal oxide samples are [not sure of the ultimate disposal, is this picked up by Veolia?]. Non-hazardous liquid waste is disposed of in sinks under an agreement with the facility. This consists of slightly acidic waste from processes and the washing of labware. Neutralizing units are installed at every sink to ensure that the pH levels are not outside the wastewater treatment plant limits.

3. Is the proposed project near, or does it involve, any of the following resources? Please indicate below any and all resources that could be affected by any project activities. (See Attachment 1 to the Environmental

Questionnaire for resource definitions.)

a. Historical, archeological, or cultural resources

(includes listed and eligible resources over 50

- years old or of cultural significance)
- b. Threatened or endangered species (whether proposed or listed by state or Federal governments), including their habitat
- c. Marine mammals or essential fish habitat
- d. Floodplains or wetlands
- e. Tribal lands or resources of Tribal interest/sensitivity
- f. Ocean resources (e.g., coral reefs)
- g. Land resources (e.g., tundra,

- rainforests)
- h. Coastal zones
- i. Migratory birds, or Golden or Bald Eagles
- j. Areas having a special designation (e.g., Federal and state designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, and marine sanctuaries)
- k. Prime farmland, unique farmland, or other farmland of statewide or local importance
- l. Special sources of water (e.g., sole source aquifers)

If you checked any boxes above, provide a detailed description of: (1) the resources that could be affected, and (2) how project activities may affect those resources.

Explanation:

Retriev, Lancaster, OH:

The site is located within a 500-year flood zone but outside of a 100-year flood zone. There are no known reported occurrences of flooding at the site. The nearest surface water body to the site is Pleasant Run, located approximately 950 feet to the northwest of the project site. The creek ultimately discharges into the Hocking River to the south. There are no on-site federally designated wetlands.

The property was historically used for agricultural purposes from at least 1938 to 1970, and a portion of the site is still leased for agricultural purposes. Retriev's activities will not impact this use.

4. Does the proposed project involve any of the following activities or areas of concern? Please indicate below any and all activities or areas of concern that exist in the vicinity of your project, are required for your project, or could affect your project. (See Attachment 1 for definitions of each activity or area of concern.)

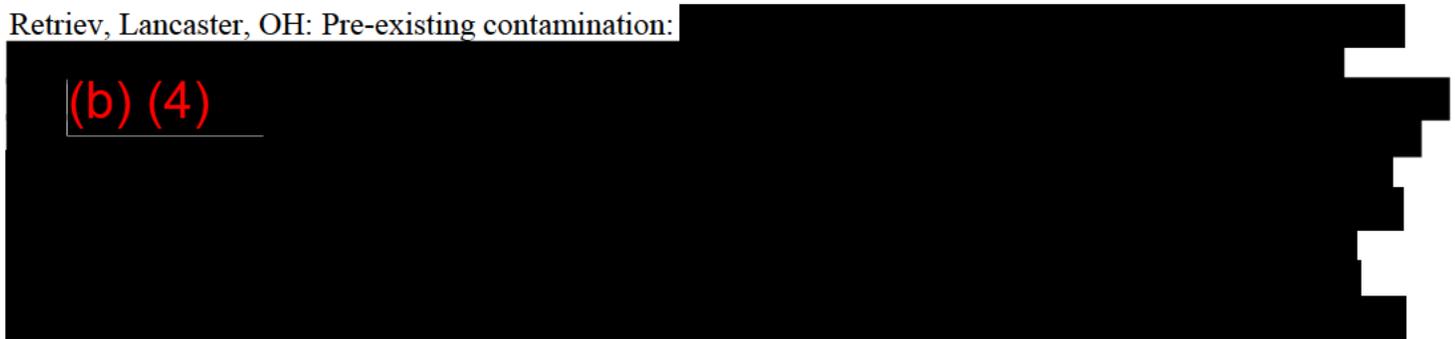
- a. Clearing or excavation
- b. Dredge and/or fill
- c. Pre-existing contamination
- d. Pesticide use
- e. Asbestos or lead-based paint
- f. Polychlorinated biphenyls (PCBs)
- g. Navigable air space
- h. Underground storage tanks
- i. Underground extraction/injection
- j. Use of a non-renewable resource

If you checked any boxes above, provide a detailed description of: (1) each activity or area of concern, and (2) the effects of each activity or area of concern on your project and/or the surrounding area.

Explanation:

Retriev, Lancaster, OH: Pre-existing contamination:

(b) (4)



(3) their role in the project; and (4) storage, transport, and disposal procedures for each material.

Explanation:

Retriev, Lancaster, OH: As discussed in Section 2f, several inputs to the Li-ion recycling process are considered hazardous materials. Specifically, Retriev maintains greater than 10,000 pounds of hazardous chemicals (namely, several types of batteries, sulfuric acid, cadmium plates, lead plates, lead metallic scrap, lead oxide, potassium hydroxide, and sodium hydroxide). Because the facility generates greater than 1,000 kilograms per calendar month of non-acute hazardous waste, Retriev is classified as a LQG of hazardous waste under RCRA.

(b) (4) Additionally, the facility is registered as a hazardous waste operating TSD facility. The facility maintains a Part B Ohio Hazardous Waste Facility Installation and Operation Permit; it was issued on December 28, 2018. This permit was modified in January 2019 to increase the facility's container storage capacity to 200,000 pounds from 100,000 pounds.

7. Would the proposed project involve the use or development of recombinant DNA or genetically engineered microorganisms, plants, animals, or similar technologies?

Yes | No

If you checked "Yes," please provide a detailed description of: (1) the genetic modifications, (2) the safety procedures in place for their handling and use over the course of the project, and (3) how they would be disposed of at the project's conclusion.

Explanation:

8. Does the project involve the use of any nanoscale materials or nanotechnology?

Note: Nanotechnology is defined as research and technology development at the atomic, molecular, or macromolecular levels using a length scale of approximately one to one hundred nanometers in any dimension; the creation and use of structures, devices and systems that have novel properties and functions because of their small size; or the ability to control or manipulate matter on an atomic scale.

Yes | No

If you checked "Yes," please describe: (1) the nanoscale materials used, (2) potential risks those materials may pose, and (3) how they would be disposed of.

Explanation:

9. Is there any public opposition concerning any of the project activities?

Yes | No

If you checked "Yes," please describe the nature of the opposition and any actions you may have taken or plan to take to address it.

Explanation:

10. Would the project involve activities or deployments into marine/freshwater aquatic environments?

Yes | No

If you checked “Yes,” please provide a detailed description of: (1) the proposed activities or deployment, (2) where and when these activities would occur, and (3) what permit/authorizations have been or would be acquired for this activity.

Explanation:

11. Would the proposed project result in a discharge of any type of wastewater, pollutant, or contaminant, including thermal discharges, to a sewer system, stormwater system, soils, retention ponds, or any water resources (e.g., surface water, including lakes, rivers, creeks, and wetlands; and ground water)?

Note: Under Federal law, the term “pollutant” means dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. See 33 U.S.C. § 1362(6). The term “contaminant” means any physical, chemical, biological, or radiological substance or matter in water. See 42 U.S.C. § 300f(6).

Yes | No

If you checked “Yes”, please quantify and characterize the wastewater or pollutants and provide a detailed description of the: (1) wastewater, pollutants, or contaminants to be released; and (2) the water resources that may be affected.

Explanation:

Retriev, Lancaster, OH: Construction workers and plant workers would produce human waste/sewage, which would be discharged via the existing connection to the city sewer system, which leads to a local water treatment plant. Treated wastewater from the venturi and packed-bed scrubber process, as described in Section 2e, would be discharged to city wastewater lines. Process wastewater is treated in on-site wastewater treatment plants. The facility maintains a permit (#P-109-LWPCD) for its wastewater treatment plant issued by the City of Lancaster on July 1, 2021. The permit requires monitoring of the following parameters: cBOD, suspended solids, pH, oil and grease, arsenic, cadmium, total chromium, copper, cyanide, lead, mercury, nickel, and zinc. Existing on-site stormwater retention features capture rainwater from impervious surfaces and may need to be enlarged depending on additions of impervious surfaces. Discharges to water resources are not anticipated.

12. Would the proposed project have the potential to generate noise impacts to adjacent communities, employees working at the project site, wildlife, and/or sensitive receptors including hospitals, schools, daycare facilities, and elderly housing?

Yes | No

If you checked “Yes”, please provide a description of: (1) the receptors that may be impacted and their estimated distance from the project activities, (2) the level of noise generated (in A-weighted decibels (dba)) to each receptor, and (3) anticipated duration.

Explanation:

13. Please provide a detailed description of how the project would be decommissioned, including the disposition of equipment and materials.

Explanation:

Retriev, Lancaster, OH: A full decommissioning of the facility is not anticipated after cessation of the proposed project/funding. The site is part of an existing manufacturing facility. Retriev may continue to use the facility and equipment after the Project funding stops. If the decommissioning of the building or equipment should occur, the activities would comply with all applicable regulations.

(b) (4)

The Part B permit requires a closure cost estimate, [REDACTED] While it does not include costs for remedial activities such as soil excavation and off-site disposal of contaminated soils if needed, it does include a detailed estimate for closure costs including waste removal/recycling, surface decontamination, integrity evaluation and buildings 265 and 295 Storage Unit Soil Sampling.

SECTION IV. CERTIFICATION

<p>I hereby certify that I am authorized to submit, and I do so hereby submit, the information in this questionnaire on behalf of the Recipient named below. I certify that the information provided herein is accurate and complete as of the date shown below. I understand that false statements or misrepresentations may result in civil and/or criminal penalties under 18 U.S.C. § 1001. If I receive any information that would indicate that any of the above-referenced answers are no longer correct or complete, I agree to notify EERE immediately. If it is necessary for EERE to modify the information I provide, EERE will request that I recertify the revised form.</p>	
Name	Shane Thompson
Title	President
Applicant	Retriev Solutions, LLC
Signature	
Date	6/20/2022

EERE ENVIRONMENTAL QUESTIONNAIRE

ATTACHMENT 1

Definitions for Question 3 –Resources*

Historical, Archeological, or Cultural Resources. The National Historic Preservation Act; the Historic Sites, Buildings and Antiquities Act; the American Indian Religious Freedom Act; and the Archeological Recovery Act provide for the preservation of sites, buildings, structures, or objects of historic, archeological, or architectural significance designated by Indian, Federal, state, or local governments or listed or eligible for listing on the National Register of Historic Places. The Archeological Resources Protection Act, Antiquities Act, and Native American Graves Protection and Repatriation Act also apply if the proposed project is on Federal and tribal land. This item should be checked "yes" if a proposed project is in an area that meets any of the above, or if an archeological survey has not been performed. Provide documentation of any consultation or State Historic Preservation Officer determination letters if available. If this information is not available or a survey has not been conducted recently, DOE may require such a survey to be conducted prior to any proposed project implementation.

Threatened/Endangered (T/E) Species and/or Critical Habitat. The Endangered Species Act provides for protection of animals, birds, fish, plants, and other living organisms that are in danger of extinction. A list of T/E species is provided in 50 C.F.R. Part 17. Consultations with the U.S. Department of Interior Fish and Wildlife Service (FWS), National Marine Fisheries Services (NMFS), and the corresponding state agency should be documented. This item should be checked "yes" if any state- or Federally-listed or proposed threatened or endangered species or critical habitat is located in the proposed project area, or could be indirectly affected by the proposed project. If the status of T/E species at the proposed project location is unknown, please contact the local or state office of the FWS or NMFS to obtain a listing of potential species and habitats found in the area.

Floodplains. Floodplains are lowlands adjoining inland and coastal waters with a 1 percent or greater chance of inundation in any given year. Indicate "yes" if the proposed project location is in or adjacent to a floodplain area. If documentation is available noting the floodplain boundaries, please provide a copy. Appropriate documentation of the 100 year floodplain [or 500 year floodplain for critical actions**] boundaries include: Flood Insurance Rate Maps or Flood Hazard Boundary Maps prepared by the Federal Emergency Management Agency (FEMA) of the U.S. Department of Homeland Security. Executive Order 11988 Floodplain Management requires Federal agencies to avoid incompatible development in floodplains, and consider the conformance of the proposed project to floodplain standards, potential effects of the proposed projects on floodplains, and potential effects of floodplain modifications on other local properties and improvements.

** Critical actions as defined in the Implementing Guidelines to Executive Order 11988 are activities for which chance of flooding is too great.

Wetlands. Wetlands are areas inundated by surface or groundwater with a frequency sufficient to support a prevalence of vegetative or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction, [10 C.F.R. 1022.4]. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflow, mudflats, and natural ponds. Man-made ponds can qualify as wetlands if invasion of appropriate flora or fauna has occurred. Appropriate documentation of presence or absence of wetlands within the area of project effect includes: FWS National Wetlands Inventory; U.S. Department of Agriculture Soil Conservation Service Local Identification Maps; U.S. Geological Service (USGS) Local Identification Maps; USGS Topographic Maps; state wetland inventories; and regional or local government sponsored wetland and land use inventories. Executive Order 11990 Protection of Wetlands requires Federal agencies to consider the effects of proposed projects on wetlands, and to avoid, to the extent possible, destruction and modification of wetlands. If the status of land in or

around the proposed project location is unknown, please contact the state or local U.S. Army Corps of Engineer's office.

Coastal Zones. Coastal zones are the coastal waters and adjacent shore lands of the Great Lakes, and the Atlantic, Pacific, and Arctic Oceans, Gulf of Mexico, and Long Island Sound. The term "coastal state" includes the states bordering on those bodies, plus Puerto Rico, the Virgin Islands, Guam, the Commonwealth of Northern Mariana Islands, and the Trust Territories of the Pacific Islands and American Samoa. Coastal states have authority regarding actions, which directly affect coastal zones, in accordance with the Department of Commerce regulations promulgated under the Coastal Zone Management Act. Federal activities and Federal development projects must be consistent with state coastal zone management (CZM) programs to the maximum extent possible. Federal activities are those performed by or on behalf of a Federal agency in the exercise of its statutory responsibilities. Indicate "yes" if the proposed project is located in a coastal zone State or is in the vicinity of a coastal zone State. If a consistency determination has been obtained, or a written "negative determination" (indicating that a consistency determination is not required) please provide a copy. See 15 C.F.R. 930.

Migratory Birds, Golden or Bald Eagles. Other Federal and state laws that protect wildlife species include the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. Examples of protected migratory birds include Canadian geese and great blue herons. This item should be checked "yes" if the proposed project may directly or indirectly impact any of these species or their habitats. If the status of other protected species is unknown in the proposed project location, please contact the local or state office of the FWS to obtain a listing of potential species and habitats found in the area.

Areas Having a Special Designation. Various Federal laws restrict the ability of Federal agencies to aid developments affecting national wilderness areas, national memorial parks, national parks, national monuments, national primitive areas, national preserves, national recreational areas, national wild and scenic rivers, national grasslands, national wildlife refuges, national forests, national lakeshore or seashore, and national trails. Indicate "yes" if any of these areas of special environmental or natural significance is located in close proximity to the proposed project location and describe the specific special designation.

Prime Farmland, Unique Farmland, or Other Farmland of Statewide or Local Importance. The Farmland Protection Policy Act requires Federal agencies to consider ways to lessen the effects of proposed projects that convert or adversely affect prime farmland which is not currently classified or designated for future urban development or water storage. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion. Prime farmland also includes land that possesses the above characteristics, but is being used currently to produce livestock and timber. Prime farmland does not include lands designated for future urban development, such as land that has been identified for commercial, industrial, or residential development by zoning code, ordinance, or a comprehensive land use plan [7 U.S.C. 4201(c)(1)]. The U.S. Department of Agriculture Natural Resource Conservation Service (NRCS) field office serving the area can provide assistance in determining whether a proposed location or site meets the definition of prime farmland. Form AD 1006, the Farmland Conversion Impact Rating Form, available at NRCS offices, should be used for this purpose.

Special Sources of Water. Through the Safe Drinking Water Act, EPA and states designate Critical Aquifer Protection Areas and Sole or Principal Source Aquifers, and State-Designated Wellhead Protection Areas in accordance with 42 U.S.C. 300h-6(b), 42 U.S.C. 300h-3(e), and 42 U.S.C. 300h-7(e), respectively. Such areas are accorded special protection to assure the quality and availability of public water supplies. Indicate "yes" if the proposed project is located in an area designated for protection (e.g., is included in an area wide groundwater quality protection plan), or would constitute a potential source of contamination within an existing or expected wellhead protection area serving a public water supply. If aquifer designations are not known for the proposed project area, contact the environmental protection office for the State.

* Definitions and requirements are subject to regulatory changes.

Definitions for Question 4 – Activities or Areas of Concern*

Clearing or Excavation. Clearing or excavation refers to the removal of vegetation, soil, sediments, or disturbance of land surfaces and subsurface including cutting, burning, digging, grading, filling, or blasting. Provide the estimated area to be affected, the quantity of material to be added or removed, and the planned disposition of spoils. Describe the potential for runoff or erosion, any control techniques to be employed, and the distance to nearby surface water bodies, including wetlands.

Dredge and/or Fill. Dredge and/or fill are the excavation of material from waters of the United States. Filling is the discharge of material into waters of the United States to change the bottom elevation. Waters of the United States are all interstate waters, and intrastate lakes, rivers, streams, mudflats, wetlands, sloughs, plays, or natural ponds. These activities include "ocean dumping" as regulated under Sections 102 and 103 of the Clean Water Act, construction of dams, dikes, piers, or others that could alter the course of waters of the United States. Also included is any shore activity with the potential for runoff to waters of the United States. If available, include documentation of appropriate consultation(s), e.g., with the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act or Sections 9 and 10 of the Rivers and Harbors Act; and with EPA [40 C.F.R. Parts 220-233].

Pre-Existing Contamination. Indicate if the proposed project will disturb hazardous substances, pollutants, contaminants, or Comprehensive Environmental Response and Liability Act (CERCLA)-excluded petroleum and natural gas products that pre-exist in the environment. Quantify and characterize such pre-existing substances, including whether they are present above background or regulatory levels. Also quantify the volume of contaminated materials (e.g. soil, sediment, groundwater, debris, etc.) which would require transport to a properly permitted treatment, storage, or disposal facility as the result of the proposed project.

Pesticide Use. A pesticide is a substance intended for preventing, destroying, repelling, or mitigating any type of pest including insects, rodent, nematode, fungus, or weed, and any substance intended for use as a plant regulator, defoliant, or desiccant. While the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) imposes no requirements on private applicators, commercial pesticide applicators must be certified by the state or U.S. EPA. Additionally, FIFRA requires that certain pesticides known as "restricted use pesticides" (listed in 40 C.F.R. 152.175) to only be applied by certified applicators. If either commercial or private pesticide application or the utilization of restricted use pesticides is anticipated, indicate "yes". If a private application is anticipated, document measures to be undertaken to assure safe storage, use, and disposal.

Asbestos. If the proposed project includes demolition or renovation of an existing building, you must determine if asbestos is present. Common asbestos-containing building materials may include but are not limited to floor tile, mastics, wall board, joint compound, acoustic ceiling tiles, thermal insulation, spray-on fire proofing, glazing, caulking, roof flashing, and felts. Demolition and renovation activities that may impact asbestos containing building materials are regulated by the U.S. Occupational Health and Safety Administration (OSHA) through the Asbestos in Construction Standard and asbestos air emissions from asbestos abatements are regulated by the EPA as a hazardous air pollutant under the Clean Air Act (CAA). Include a description of measures to be undertaken to comply with asbestos removal requirements of 29 C.F.R. 1926.1100 and 40 C.F.R. 61 (Subpart M).

Polychlorinated Biphenyls (PCBs). PCBs are a family of man-made organic chemicals that were domestically manufactured from 1929 until banned in 1979 due to their toxicity and persistence in the environment. Given their non-flammability, chemical stability, high boiling point, and electrical insulating properties, PCBs were largely used as dielectric and coolant fluids in transformers, capacitors, electric motors, etc. Manufacture, processing, transport, use, marking, storage, and disposal of PCBs are regulated by EPA [40 C.F.R. Part 761] in accordance with the Toxic

Substances Control Act. Some states also regulate PCBs as hazardous waste. If the proposed project involves replacement or removal of capacitors, transformers, voltage regulators, circuit breakers, switches, cables, electromagnets, or other electrical equipment, presence or absence of PCBs should be ascertained. A "yes" indication should be supported with information on the anticipated concentration and quantity of PCB oil, and the intended method/location of disposal.

Navigable Air Space. The U.S. Department of Transportation Federal Aviation Administration (FAA) regulates objects which invade navigable air space or otherwise constitute an obstruction to air navigation, and determines whether such activities constitute a navigation hazard. Indicate "yes" if the proposed project involves construction or alteration more than 200 feet above ground level, any construction or alteration in instrument approach areas, and other construction or alteration identified in 14 C.F.R. 77.13. Document notification of the appropriate Manager, Air Traffic Division, of the FAA Regional Office for the area within which the construction or alteration will be located. Copies of FAA Form 7460-1 Notice of Proposed Construction or Alteration may be obtained from the regional FAA office or electronically through FAA's website.

Underground Storage Tanks. Indicate "yes" if 10 percent or more of tank volume (including the volume of underground pipes) will be beneath surface of the ground. Indicate if installation, use, or removal of underground storage tanks is anticipated, and whether tank use is/was for storage/collection of hazardous waste, heating oil, other petroleum or petroleum-based substances, stormwater, or wastewater. Describe any leak detection/monitoring methods to be used for storage of hazardous waste or regulated petroleum products like gasoline or diesel.

Underground Extraction/Injection. Underground extraction/injection is the subsurface emplacement of fluids through a bored, drilled, or driven well, or through a dug well where the depth of the well is greater than the largest surface dimension. If the proposed project involves construction or use of an injection well, indicate "yes," and describe the class of the well as defined in 40 C.F.R. 146.5, the type and quantity of contaminants (e.g., waste disposal, hydrocarbon or mineral extraction) and whether the injection involves an exempt aquifer as defined in 40 C.F.R. 146.4.

Use of a Non-Renewable Resource. Non-renewable resources are naturally occurring substances (e.g., metals, minerals, fossil fuels) that are in limited supply and cannot be replaced or regenerated. The exhaustion or threatened exhaustion of such resources could have significant ramifications. Indicate "yes" if the proposed project would involve a resource that is in limited supply.

* Definitions and requirements are subject to regulatory changes.

Retriev Solutions, LLC¹
North America Expansion Plan Lancaster, Ohio Expansion – Lithium-Ion Battery Recycling to
Produce Battery-Grade Raw Materials
FOA Area of Interest (AOI) 11

Bipartisan Infrastructure Law (BIL) Battery Materials Processing and Battery Manufacturing
Funding Opportunity Announcement (FOA) Number: DE-FOA-0002678
FOA Type: Initial CFDA: 81.086

Resumes

David Klanecky	2
Shane Thompson	4
Anthony J. Rogers	6
Dawn New-Echlin	8
Stephanie Dix	9
John G. Kelly	10
Meredith M. Barius	12
Phil Enck	14
Erin Sharpe	15
Danielle Spalding	17
Laura Kay Evans	18
Todd Coy	19
Andrew (Drew) Stroud	21
Austin Allaby	22
Thomas (Tom) Plute	23
Richard Abramowitz	24
David Fiedeldey	26
Kraig Houser	28
Novis Smith	29
Chad Vecitis	31
Richard Holman	33

¹ On June 22, 2022, it was announced that Cirba Solutions is now the combined entity representing Heritage Battery Recycling, Retriev Technologies, and Battery Solutions — which will bring the combined experience, know-how, and experience to ensure the successful expansion of the proposed project.

David Klanecky

dklandecky@solvedbyretriev.com |(651) 492-8755

Education and Training

Arizona State University, Master of Business Administration (MBA), Global Management, 2013
University of Nebraska-Lincoln, Chemical Engineering, Bachelor of Science (BS), 1993

Relevant Research and Professional Experience

Mr. David Klanecky is the Chief Executive Officer of Cirba Solutions. His 25-year career has spanned research and development, operations, commercial, and strategic leadership roles across numerous innovative industries, including the global lithium business, energy storage, and several specialty materials industries. While working at Piedmont Lithium, Albemarle, and Dow Chemical, Mr. Klanecky had expansive assignments in Spain, Switzerland, Australia, and China that brought out his passion for travel and culture. He is a chemical engineer with an Executive MBA in Global Management and focuses on safety, operations, talent development, and innovation. Mr. Klanecky's experience at Dow and Albemarle gives him insights into the battery materials space, and he has applied this knowledge to recycling and creating a sustainable domestic supply of battery materials.

2022 - Present	Chief Executive Officer (CEO), Cirba Solutions, Lancaster, OH <ul style="list-style-type: none">Leading the first and only comprehensive battery management solution in North America.
2021 - 2022	Chief Operating Officer, Piedmont Lithium, Belmont, NC <ul style="list-style-type: none">Helped build North America's largest lithium company.
2013 - 2021 2016 - 2021	Albemarle Corporation, Charlotte, NC Vice President, Lithium Operations - APAC/EU <ul style="list-style-type: none">Responsible for manufacturing and operations, process technology, and product management within Albemarle's global lithium business.
2013 - 2016	Vice President, Strategy and Corporate Development <ul style="list-style-type: none">Managed strategic planning, M&A, and corporate and business development programs for the Albemarle Corporation, a leading global developer, manufacturer, and marketer of highly engineered chemicals for a wide range of industries.
1993 - 2013 2010 - 2013	The Dow Chemical Company, Midland, MI Global Business Director – Dow Energy Storage Material Business <ul style="list-style-type: none">Launched the Dow Energy Materials Business, which focused on Lithium-Ion battery materials offerings for cell manufacturers and auto OEMs.
2007 - 2010	Global R&D Director – Dow Water & Process Solutions

- Led Asia Pacific R&D by Markets. Developed the R&D strategy including top customer analysis, development project pipeline and resource alignment.

2006 - 2007	R&D Associate Director – Designed Polymers Business Group
2004 - 2006	Sr. TS&D Group Leader – Films & Fibers Market Segments
2002 - 2004	TS&D Group Leader – Extrusion Profiles Market Segments
2000 - 2002	Six Sigma Black Belt Project Leader – Polyolefins R&D
1997 - 2000	Project Leader in Polyolefins Research & Development
1994 - 1997	Development Engineer in GAS/SPEC Technology Group
1993 - 1994	Research Engineer in Polyolefins TS&D and Liquid Separations

Awards and Honors

- Member of Albemarle’s “Executive High Potential,” which is slotted for the top 5 roles in the company.
- Member of Dow’s “Future Leader List” which denotes the top 2% of managers at Dow (1997 – 2013).
- Nominated for “Genesis Award for People Development” – award recognizes leadership in developing Dow people - less than 1% of Dow employees are nominated.

Synergistic Activities

- Executive Leadership – Darden University, HH Dow Academy
- MIT Sloan Executive Development
- Six Sigma Black Belt, Green Belt and Local Champion Certification
- Intern/COOP Placement Coordinator
- Research Assignments Program Coordinator Europe
- JMP Statistical Training & Design of Experiments
- Process Equipment Training

Shane Thompson

sthompson@solvedbyretriev.com | (202) 812-1290

Relevant Research and Professional Experience

Shane Thompson has 20 years of experience in battery life cycle management, some of which includes environmental sales with Inco Ltd. (now Vale), one of the world's leading nickel mining companies. While at Inco's Inmetco facility, he led some of the earliest efforts in the world to recycle HEV and EV batteries. He led the commercial operations team at Call2Recycle, managed process development for recycling NiMH batteries at RediMet, and served in commercial leadership roles at both KBI/Retriev and Battery Solutions. He has also helped to drive US policy and regulations related to battery recycling and advised clients through his consulting firm, Verdant Holdings, Ltd., on recycling nickel and other energy metals and materials. Currently, as the president of Cirba Solutions, he is leading his team to innovate full-service battery life cycle management solutions. This combined experience and knowledge makes him one of the world's most qualified experts in a rapidly evolving industry. Mr. Thompson's knowledge of the industry and its players spans 22 years, roughly the length of time LIBs have existed. His understanding of the industry and market provide insights that differentiate Cirba Solutions from other companies in the industry.

2021 - Present	President, Cirba Solutions, Lancaster, OH <ul style="list-style-type: none">● Leading a world-class team to innovate full-service battery life cycle management solutions.
2021	President, Heritage Battery Recycling, Indianapolis, IN
2020 - 2021	Managing Director, Call2Recycle, Atlanta, GA <ul style="list-style-type: none">● Led a commercial operations team.
2013 - 2020	President, Verdant Holdings Ltd., Washington, DC <ul style="list-style-type: none">● Helped drive US policy and regulations related to battery recycling and advised clients on recycling nickel and other energy metals and materials as president of an environmental, circular economy consultancy.
2015 - 2019	Vice President, Corporate Development, Battery Solutions, LLC, Wixom, MI <ul style="list-style-type: none">● North American leader in sustainable, end-to-end management solutions for end-of-life batteries and consumer electronics battery recycling before it was sold to Retriev Technologies, Inc. in 2022.
2014 - 2017	Partner, RediMet, Aurora, OH
2000 - 2005	International Sales Representative, Vale, Rio de Janeiro, Brazil

- Assisted in the placement of Ni containing materials produced by Inco (now Vale), one of the world's leading nickel mining companies.

Anthony J. Rogers

Arogers@solvedbyretriev.com | (317) 313-7523

Education and Training

Purdue University, Chemical Engineering, BS, 2012

Relevant Research and Professional Experience

Mr. Anthony Rogers serves as the Vice President of Technology and Growth at Cirba Solutions. He previously worked as the superintendent of utilities and wastewater for the Lubrizol Corporation and as a project engineer for Heritage Research Group, where he worked with customers and startups to solve challenges in the waste industry. Mr. Rogers holds a BS in Chemical Engineering from Purdue University and an Engineering in Training certificate. He is currently pursuing his Professional Engineering License. Mr. Rogers values collaboration, new technology development, and scaling from lab to commercial. He spent years evaluating the best practices for the recycling of spent HEV and EV batteries, a technical knowledge and background that makes him invaluable to the Project's success.

2017 - Present	Project/Research Engineer, Heritage Research Group, Indianapolis, IN <ul style="list-style-type: none">● Developed a novel on-site solution for the major waste stream of a Fortune 50 company as lead project engineer on a \$20 million waste treatment project.● Worked with research chemists to develop and prove a recycling process through bench and pilot testing as engineering lead on a commercial-scale e-waste recycling project.
2012 - 2017 2016 - 2017	The Lubrizol Corporation, Deer Park, TX Superintendent: Utilities and Wastewater Treatment <ul style="list-style-type: none">● Managed 18 employees and controlled a \$27 million operating budget for the plant's utility production and wastewater treatment facility.● Served as operations lead for a \$100 million utility/infrastructure upgrade project, managed a \$1 million cooling tower rebuild project, and was responsible for the Management of Change System for Lubrizol's utilities unit.
2012 - 2016	Process Improvement Engineer: Utilities/Loading Rack/Production <ul style="list-style-type: none">● Developed innovation solution for a 50-year-old waste treatment process as operations lead on a \$25 million waste crystallizer project.● Discovered key relationships between product viscosity and raw material and identified and resolved high sodium levels in product attributed to condenser resign of a new reactor.● As operations lead on a \$32 million loading rack project, worked with the engineering contractor to complete front-end

2008 - 2012

engineering and detailed design and worked with the general contractor to successfully complete phase one of construction.

Cooperative Education Program

- Worked as pilot plant engineer on a project proving the feasibility of a new filtration process to justify a \$25 million capital project.
- Identified and implemented a solution for an ongoing inventory variance of ~650,000 lbs/yr of final material and a processing specialist.
- Completed preliminary engineering work on a capital project to update a hazardous material recovery system.
- Investigated source of corrosion in knockout and drafted a \$135,000 project to replace the tank with a compatible corrosion-resistant alternative.
- Drafted a more than \$400,000 project to reinstate a decommissioned storage tank into a filter/finish tank.

Synergistic Activities

- Passed Engineering in Training test in 2012; currently pursuing Professional Engineering certification
- Completed "Stepping into Leadership," a six-month leadership program with Lubrizol
- Served as TXGOALL Programs Chair from 2013 to 2014
- Additional training includes: Lean Manufacturing, Boiler Operations, Compressed Air Challenge, and Activated Sludge Treatment

Dawn New-Echlin

DnewEchlin@batterysolutions.com | (313) 510-1998

Education and Training

Wayne State University, Communications, Master of Arts (MA), 2002

University of Michigan, Political Science and Environmental Studies, Bachelor of Arts (BA), 1997

Relevant Research and Professional Experience

Ms. Dawn New-Echlin currently serves as Vice President of Sales for Cirba Solutions. Her expansive 25-year career has made her a prominent figure in the environmental community, with experience locally and internationally across several industries, including industrial and waste services, automotive, manufacturing, and retail recycling. She holds a B.A. in Political Science and Environmental Studies from the University of Michigan. Ms. New-Echlin's passion has always resonated in reuse and recycling. She uses her ability to build customer relationships and her passion for environmental initiatives to work with partners and clients to create solutions to best meet present and future needs. Dawn's environmental service sales experience provides unique insights into end-of-life batteries. As the topic of battery recycling has been and will continue to be an environmental conversation, Dawn has specialized in the EOL management from the auto OEMs. She is based in the Detroit area, home of the US auto industry.

2019 - Present	Vice President, Sales, Cirba Solutions, Lancaster, OH <ul style="list-style-type: none">Manages a team of knowledgeable professionals on battery end-of-life management and recycling, circular economy strategies, and project management.
2017 - 2019	Vice President, Marketing and Business Development, Great Lakes Recycling, Roseville, MI <ul style="list-style-type: none">Responsible for the oversight of business development strategy, print and social media marketing, and building relationships with brokerage partners.Developed a team of professional recycling commodity traders who worked with international and domestic producers to provide solutions for handling both large-volume products and obscure material.
2013 - 2019	Managing Director, New Dawn Solutions, Detroit, MI <ul style="list-style-type: none">Helped businesses reach their sustainability goals through waste management at a private consulting and project management firm.

Synergistic Activities

- Board member of the Michigan Recycling Coalition from 2019 to 2020
- Co-chaired the 37th Annual Michigan Recycling Conference

Stephanie Dix

sdix@batterysolutions.com | (517) 294-7497

Education and Training

Cleary University, Bachelors of Business Administration (BBA) in Marketing, 2006

University of Michigan, Lean Transactional Processes, Certification, 2021

Certifications:

- International Maritime Dangerous Goods Code (IMDG Code) Certification
- IATA Certification
- U.S. Department of Transportation (DOT) Hazardous Materials (Hazmat) Certification

Relevant Research and Professional Experience

Ms. Stephanie Dix serve as Vice President of Logistics for Cirba Solutions. Ms. Dix is an experienced operations and logistics professional who has been responsible for multiple warehouse facilities, day-to-day operations, and a growing fleet. She focuses on increasing internal efficiencies, building cross-functional relationships, and supporting her team. Stephanie holds IMDG, IATA and DOT Hazmat certifications. Very few people have the hands on experience in handling and transport for recycling of EOL batteries that Ms. Dix possesses.

2016 - Present	Vice President of Logistics, Cirba Solutions, Wixom, MI
2020 - Present	VP, Operations and Global Logistics
2018 - 2020	Director, Global Logistics and Fulfillment
2016 - 2018	Manager, Logistics and Order Fulfillment
2006 - 2016	Operations Manager of Strategic Development, EZ Expediting, Howell, MI

John G. Kelly

Jhkelly@solvedbyretriev.com | (630) 878-9046

Education and Training

Harvard Business School, Advanced Management Program, Business Management, 2019
Marist College, History, BA, 1992

Relevant Research and Professional Experience

Mr. John Kelly is an experienced executive leader with in-depth knowledge across industries such as transportation, recycling, waste management, and industrial services. Mr. Kelly currently brings this vast experience to his role as vice president of operations for Cirba Solutions. Prior to joining Cirba Solutions, Mr. Kelly held executive leadership roles where he ultimately rose to chief operating officer. He has also held various senior operating positions in transfer station, waste hauling, and recycling. Mr. Kelly is passionate about safety. Throughout his 30-year career, he has been instrumental in overseeing staff, implementing strategy, driving profitability, strengthening employee morale, maximizing efficiency, managing budget, and being an advocate for corporate mission/vision. Mr. Kelly has managed safe and successful operations for a billion-dollar company. Some of his key strengths that will help ensure the Project's success include a defined skill in ramping up growth through the acquisition and integration of companies and starting new facilities.

2021 – Present	Vice President of Operations, Cirba Solutions, Lancaster, OH
2011 - 2021 2015 - 2021	Badger Daylighting Corp, Calgary, Canada Chief Operating Officer (COO) <ul style="list-style-type: none">● Promoted into a newly created executive leadership position to collaborate with all departments to develop and implement strategies, drive sales and profitability throughout the US and Canada, maximize operational efficiency, strengthen employee morale, and communicate the corporate mission to a team of more than 900 employees.● Orchestrated the successful buildout of internal infrastructure, including operations, fleet, sales, and safety and assisted in creating HR, IT, and other departments to support the company's aggressive growth.● Led the effort that merged US and Canada operations and optimized operational consistency.● Spearheaded strategy execution that doubled business between 2014 and 2019, increasing revenue from \$98 million to more than \$600 million and growing the company to 1,400 trucks and more than 2,000 employees.
2011 - 2015	Vice President, US Operations <ul style="list-style-type: none">● Directed the company through a challenging operational cycle due to a downturn in the oil and gas market that reduced Badger's

core business by 17%, leading a rapid shift to the urban utility markets that resulted in an EBITDA increase of \$14 million to \$108 million by 2015.

- Achieved 20% annual growth targets by leading efforts that opened a new location every month (48 in total) for four consecutive years, developing new districts, and recruiting and training area managers for each US market.
- Expanded operations from 790 trucks and 900 employees to more than 1,000 trucks and 1,200 employees between 2013 and 2015.
- Successfully doubled annual revenue to more than \$300 million.

1995 - 2011

Waste Management, Houston, TX

2008 - 2011

Vice President, Group Recycling Director, Midwest & Canada

- Promoted to lead the company's aggressive growth strategy, improve safety, optimize operations, and increase profits for 32 recycling facilities with more than 800 employees and more than \$150 million in annual revenue.
- Increased profit growth by 12% through cost controls and strategic utilization of resources and staffing.
- Drove initiative reducing year-over-year operating costs by \$1 million while maintaining the highest commodity quality.
- Opened a new \$25 million facility in 2009, achieving profitability in less than 24 months.

2005 - 2008

Director of Operations

- Managed and optimized efficiency of hauling operations for New Jersey and Delaware markets by overseeing sixteen hauling companies with approximately 700 employees and annual revenue of over \$600 million.

2004 - 2005

Director of Operational Excellence

2002 - 2004

District Manager, Hauling

1997 - 2002

District Manager, Blue Bag Program

1996 - 1997

Plant Manager

1995 - 1996

MSW/Recycling Supervisor

Meredith M. Barius

mbarius@solvedbyretriev.com | (856) 816-6695

Education and Training

University of North Carolina at Greensboro, Business Management, Marketing, BS, 1998

Relevant Research and Professional Experience

Ms. Meredith Barius has over 20 years of human resources experience and leads the People and Culture team for Cirba Solutions. Previously she worked as director of human resources for TC Transcontinental Packaging, where she oversaw all human resources activities, including cultural change management initiatives and labor relations strategies in the US and United Kingdom. Prior to her time at TC Transcontinental, she was instrumental in growing a privately held distribution business from one location and 300 employees in the US to eight locations in four countries with over 1,000 employees, including developing policy and practice in the international locations.

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- | | |
|----------------|--|
| 2019 - Present | Global Director, Human Resources, TC Transcontinental, Charlotte, NC <ul style="list-style-type: none">Responsible for all Human Resources activities for 4 locations in the United States, United Kingdom and China, operate as a strategic and solutions-oriented business partner, Human Resources lead on due diligence and integrations for mergers and acquisitions America |
| 2017 - 2018 | Regional Human Resources Manager, Oldcastle, a CRH Company, Chicago, IL <ul style="list-style-type: none">Oversaw 15 locations in 9 states in Midwest, developed and implemented new Talent Review processes, successfully negotiated Union contracts and maintained Labor Relations, oversaw over 500 employees, and worked on employee relations. |
| 2010 - 2017 | Human Resources Manager, US and Canada, Radwell International, Willingboro, NJ <ul style="list-style-type: none">Led efforts of global organizational development and managed all human resource disciplines while linking human capital to strategic business needs. Managed and resolved Employee Relations issues for all North America locations. Driver of continuous personal improvement and professional development of both leadership and non-leadership employees resulting in reduced turnover. |
| 2003 - 2010 | Supervisor, Employment and Recruitment, Cooper University Hospital, Camden, NJ <ul style="list-style-type: none">Developed and represented the hospital on a National Recruitment Campaign, traveling to conferences and Universities |

to source applicants, including building and maintaining relationship with Collegiate Programs. Managed Recruitment Support Staff, consistently supervised recruitment policies and implemented new strategies for recruiting qualified talent, consistently applied performance improvement measures.

Phil Enck

Penck@solvedbyretriev.com | (317) 513-1697

Education and Training

Michigan State University, Business, Communications, and Marketing, B.A., 1985

Relevant Research and Professional Experience

Mr. Phil Enck has been in the role of vice president of sales for 25 years for three industry-leading textile manufacturers. He is a relationship builder and brings a can-do attitude to everything he does, whether encouraging his team or problem solving with a client. He is driven and accomplished in the areas of sales, management, and marketing. He has spent years building emerging markets to peek revenue growth and dominant market share. He is now focused on experience in growing new sales channels and building teams to the sale of recovered material as a value-add product.

2022 - Present	Vice President, Sales and Marketing, Cirba Solutions, Lancaster, OH <ul style="list-style-type: none">● Oversees materials outputs and manages critical partnerships to support the growth of the battery management lifecycle
2010 - 2021	Vice President, Sales, Milliken, Spartanburg, SC <ul style="list-style-type: none">● Developed and managed a high-performance team of 22 sales representatives for the largest privately held textile manufacturer in North America and a world-renowned innovator of patented fabrics, chemicals, polymers, and commercial carpets.● Supported team in identifying and closing national counts and expanding annuity customer base, growing North American sales by \$250 million.
2007 - 2010	Director of Sales, Constantine Carpet, Calhoun, GA <ul style="list-style-type: none">● Managed a team of 46 sales representatives and guided day-to-day sales endeavors for a high-end, boutique commercial flooring company.● Grew the business by over 200% to \$80 million at the time it was sold to Milliken in 2009.

Erin Sharpe

ESharpe@solvedbyretriev.com | (513) 833-1937

Education and Training

State University of New York at Plattsburgh, Accounting, BS, 1995

Relevant Research and Professional Experience

Ms. Erin Sharpe is an action-oriented executive with experience in large, publicly traded, and middle-market, privately held organizations in diverse industries. She has experience leading strategy development, financial operations, FP&A, treasury management, investment allocation, and M&A activities on a global scale. She is a respected change agent with repeated success leading transformational initiatives, integrating acquisitions, and turning around unprofitable areas. As chief financial officer for Cirba Solutions, Ms. Sharpe is responsible for all company financial functions, including accounting, treasury, corporate finance, information technology, and investor relations.

2020 - 2022	Chief Financial Officer (CFO), Cirba Solutions, Charlotte, NC
2020 -2022	Chief Financial Officer (CFO), Superior Industrial Maintenance Company, Concord, NC <ul style="list-style-type: none">• Areas of responsibility include all aspects of Accounting, Financial Planning and Analysis, Tax, Treasury Management, Strategic Planning, Compliance, Risk, Human Resources, and Information Technology.
2019 - 2020	Vice President Financial Planning & Analysis, Albemarle Corporation, Charlotte, NC <ul style="list-style-type: none">• Global financial planning and analysis executive for a \$3 billion publicly-traded company. Primary liaison between business segments and Corporate Finance, Investor Relations, External Reporting, Controllership, Treasury and Tax functions. Led financial and strategic planning, forecasting, and reporting processes.
2018 – 2019	Vice President of Finance, Carolina Tractor & Equipment Company, Charlotte, NC <ul style="list-style-type: none">• Senior Finance leader for privately held dealer of world class original class equipment manufacturer (OEM) construction equipment, material handling vehicles and cranes. Responsible for critical business processes, including the annual budgeting process, on-going evaluation and reporting of financial performance, rental fleet modeling and optimization, mergers and acquisition (M&A) evaluation, variable and incentive

compensation, investment return and KPI development and reporting.

2016 - 2018

Honeywell Safety and Productivity Solutions, Fort Mill, SC

Vice President/CFO, Industrial Safety

- Global finance leader of \$2 billion business segment with three global lines of business. Responsibilities included financial planning and reporting, strategic planning, tax strategy development and execution, credit and collections, internal controls and compliance, risk mitigation, M&A due diligence and integration, and delivering business results in accordance to the operating plan. Business partner to business unit president and mentor and coach to leadership team members and finance staff.

Vice President Financial Planning & Analysis

- Global financial planning and analysis executive for \$6 billion externally reported business segment with six global business units. Primary liaison between business segment and corporate Finance, Investor Relations, External Reporting, Controllershship and Tax functions. Led all financial and strategic planning, forecasting and reporting processes globally. Performed M&A activities including due diligence, transaction planning and analysis and integration execution.

2010 - 2016

Fifth Third Bank, Cincinnati, OH

2014 - 2016

Senior Vice President, Director of Strategic Execution

- Advised C-level executives on prioritizing strategic initiatives for optimal regulatory and financial outcomes, developing achievable yet challenging financial plans, and ensuring streamlined execution. Chair product review committee validating business case, communication plan, regulatory compliance, and risk assessment for all new/changed products.

2013 - 2014

Senior Vice President, Regional CFO

2010 - 2013

Vice President/CFO, Information Technology & Operations

2005 - 2010

Honeywell Security Group, Louisville, KY

2009 - 2010

Financial Director, Global FP&A & Integrated Supply Chain

2008 - 2009

M&A Integration Leader

2005 - 2008

Finance Director/CFO, Systems Group

1999 - 2005

General Electric, Louisville, KY, Waterford, NY and Huntersville, NC

Six Sigma Black Belt, Sourcing Finance Manager, FP&A Manager, Manufacturing Analyst

Danielle Spalding

Dspalding@batterysolutions.com | (248) 798-9837

Education and Training

Walsh College, International Business, MBA, 2011

University of Michigan-Dearborn, Marketing and Management, BBA, 2005

Relevant Research and Professional Experience

- | | |
|----------------|--|
| 2021 - Present | Vice President, Marketing & Digital Engagement, Cirba Solutions, Wixom, MI <ul style="list-style-type: none">• Senior official overseeing communications, government affairs, marketing, and product management. She leads her team to creatively elevate a brand experience through amplifying communication and connection. |
| 2019 - 2021 | Director, Marketing & Communications |
| 2012 - 2019 | The Mars Agency, Southfield, MI |
| 2014 - 2019 | Director, Client Leadership |
| 2012 - 2014 | Manager, Client Services |
| 2006 - 2012 | Daniel Brian & Associates, Rochester, MI |
| 2010 - 2012 | Account Manager |
| 2006 - 2010 | Account Executive |

Laura Kay Evans

levans@solvedbyretriev.com | (248) 561-3827

Education and Training

Wichita State University, Chemical Science, BS, 1992

Executive Development:

- Sustainable Business Strategy, Harvard Business School, 2021

Relevant Research and Professional Experience

2022 – Present	Director, Environmental Sustainability and Governance (ES&G), Cirba Solutions, Wixom, MI
2020 – 2022	Director, Business Development, Battery Solutions, Wixom, MI <ul style="list-style-type: none">• Developed programs to support ES&G efforts.
2019 – Present	Principal Sustainability Consultant, Evans Environmental Sustainability, LLC, Huntington Woods, MI <ul style="list-style-type: none">• Developed business plan and strategies to start up small firm & handle all aspects of the operation/client services, business development, pricing and accounting.
2007 – 2019	Veolia North America, Livonia, MI
2018 – 2019	General Manager, Environmental Services & Solutions Group <ul style="list-style-type: none">• Appointed to rebuild a national service line, Total Waste Management (TWM), and manage the start-up. Developed strategic plan to communicate mission of organization: to assist major clients with global sustainability programs in meeting goals.
2017 - 2018	Director, Veolia ES Industrial Services, Inc.
2010 – 2017	Area Manager, Veolia ES Industrial Services

Synergistic Activities

- Member, Texas Commission on Environmental Quality (TCEQ) Electric Vehicle Battery Reuse and Recycling Advisory Group
- Member, Suppliers Partnership (Current)
- Selected Senior Manager, Developing Leaders for the New Veolia (2016)
- Selected as Veolia High Potential, Women in Leadership (2015)

Todd Coy

tcoy@kbirecycling.com

Education and Training

California State University, Fullerton, International Business, BBA, 1988

Relevant Research and Professional Experience

Mr. Todd Coy's area of expertise is the management and recovery of advanced battery chemistries, such as lithium-ion and nickel metal hydride (NiMH) batteries, used in hybrid and electric vehicle (EV) applications.

1996 – Present **Vice President, Cirba Solutions, Lancaster, OH**

1984 – Present **Executive Vice President, KBI Recycling, Anaheim California**

Synergistic Activities

Qualification Summary

- Served on the California Lithium-Ion Battery Advisory Committee (2019 – 2022)
- Establishment of xEV strategy business division in Brea, California to provide supply chain support to electric vehicle manufacturers for end-of-life management of large format lithium-ion batteries. (2015)
- Executive program manager for Retriev Technologies 9.5-million-dollar funding from the U.S. Department of Energy for the ground up construction of a dedicated electric vehicle lithium-ion battery recycling facility in the U.S. (2009 – 2015)
- Development and project oversight of Retriev Technologies' support for Energizer Battery Company's closed loop program that utilized 4 % recycled content in the manufacturing of their Eco Advanced battery. Retriev was Energizer's exclusive North American supplier for recycled battery content. (2014 – 2015)
- Development and launch of Retriev Technologies in Lancaster, OH. (2006)
- Development and launch of the Big Green Box national program for managing small post-consumer batteries and devices containing batteries by diverting materials from landfills into the recycling stream. (2002)
- Member of the National Renewable Laboratory's (NREL) Advanced Battery Readiness Ad Hoc working group. (1998 – 2001)

Affiliations

- West Coast Chapter Board of Director for the Institute of Scrap Recycling Industries (ISRI)
- Member of ISRI legislative committee for the West Coast Chapter
- Co- Chairman of the Battery Recycling Committee for the National Alliance for Advanced Transportation of Batteries (NAATbatt)
- Board Member of the Portable Rechargeable Battery Association.

- Member of the Portable Rechargeable Battery Associate (PRBA) Legislative Committee
- Member of the Supplier Partnership, a collaborative forum for global automotive manufacturers, U.S. EPA, and other stakeholders to improve environmentally sustainable practices for the global automotive supply chain.

Andrew (Drew) Stroud

Dstroud@solvedbyretriev.com | (614) 949-1003

Education and Training

Ohio University - Russ College of Engineering, Mechanical Engineering, BS (Cum Laude), 2019

- Certificate: Entrepreneurship
- Awarded *Outstanding Leader* by Mechanical Engineering department (2019)
- Awarded *Paul Black Scholarship* for research activity (2019)

Relevant Research and Professional Experience

2022 – Present

Associate Project Engineer, Cirba Solutions, Indianapolis, IN

- Support engineering projects in conjunction with research and development (R&D) activity under the Vice President of Technology and Growth.
- Increase critical metal recovery from batteries through process design and optimization.
- Create detailed project proposals and presentations to secure funding.

2021 – 2022

Engineering Associate, The Heritage Group Accelerator, Indianapolis, IN

- Accelerated ten (10) hard-tech startups in product development, fundraising, growth strategies, customer personas, among other tasks.
- Contributed to problem solving, creativity, note taking and time management skills to effectively advance all companies.

2019 – 2021

Project Engineer, Acramed, LLC., Indianapolis, IN

- Delivered custom medical case and tray projects using CREO parametric.
- Improved engineering workflow via process improvement strategies to streamline design and manufacturing.

2018

Research Assistant, Institute of Sustainable Engineering and Environment, Athens, OH

Austin Allaby

aallaby@heritage-enviro.com | (203) 312-6161

Education and Training

Ohio University, Engineering Technology & Management, BS, 2018

- Certificates: Lean Six Sigma
- Extracurricular: Society of Manufacturing Engineers
- Capstone: Two-semester course on Product development and implementation through understanding the hypothetical planning involved and executing these plans into a real-world work environment (Production Run). Extensive time spent in SolidWorks perfecting quality and cost efficiency.
- Engineering Coursework:
 - Objective oriented programming; Micro Controller; PLC; Robotics; CNC machinery
 - Computer Architecture; Fluent in Engineer Graphics;
 - Manufacturing Operations; Power Transmission; Hydraulics;
 - Prod. Metal Machining; Industrial Plastics; Welding & Metal Fabrication

Relevant Research and Professional Experience

2021 – Present

Project Engineer, Cirba Solutions, Lancaster, OH

- Implement improvements on existing Lithium-Ion battery recycling.
- Aid in the commissioning of Cirba’s new/future battery recycling facilities.

2019 – 2020

Programming/Tooling Engineer, Coronet Machinery, Bethel, CT

- Worked closely with the head engineer to solve problems throughout the shop.
- Planned & programmed CNC mills to machine military grade devices.
- Worked as shop manager, coordinating plans of action and mitigating issues that arise throughout contracts.
- Served a major role in shop maintenance.

2017 – 2018

Engineering Manager, Senior Capstone & Course Project Management

- Project management: coordinating the processes needed towards locating, contracting and executing the creation of a “dream house” complete build.
- Project manager in Power Transmission course & Manufacturing Operations.

Thomas (Tom) Plute
(740) 501-2541

Education and Training

University of Toledo, Environmental Studies, BA, 2007

Relevant Research and Professional Experience

2017 – Present

Environmental Manager, Cirba Solutions, Lancaster, OH

- Responsible for environmental compliance and management for all permits including Part B, Air, Stormwater, RCRA, and NPDES permits.

2016 – 2017

Environmental Specialist, Honda R&D Americas, Raymond, OH

- Responsible for environmental compliance of large engine testing facility. Responded to emergency spills and accidents while keeping superiors informed of incidents.

2013 – 2015

Environmental Field Specialist

- Responsible for environmental compliance of large crude oil pipeline, trucking company and saltwater injection wells in Ohio, West Virginia, and Kentucky.

2011 – 2013

Environmental Health & Safety, Nexeo Solutions, Downers Grove, IL

Richard Abramowitz

Richard.abramowitz@outlook.com | (214) 616-2371

Education and Training

University of Texas at Austin, Community and Regional Planning, M.S.

Rutgers University, Political Science, BS

Relevant Research and Professional Experience

2013 – Present

RMA Consultants, LLC., Dallas, TX

- Provide consulting services on environmental advocacy, business development, sustainability, communications, policy development, and recycling to companies (Fortune 50), trade associations that represent Fortune 500 companies, and non-profits

2015 - 2020

Director of Communications and Government Affairs, Duracell, Dallas, TX

- Reported to the vice president for North American brand operations, provided brand and reputation protection and brand development through the political process, public relations, industry relations, crisis communications/incident management, partnership development, digital communications support, and sustainability. Managed a team of legislative and sustainability consultants with a budget of nearly \$750,000; was the North American spokesperson; managed vendor relationships and sustainability reporting.

2014

Vice President, Government Affairs, Strategic Materials, Inc., Houston, TX

- Reported to the executive vice president, chief commercial officer, was responsible for leveraging and maintaining high-level relationships with elected officials, regulators, agency officials, NGOs, trade organizations, legislative staff, professional associations, and other stakeholder groups. Managed a team of legislative consultants with a budget of nearly \$300,000 and served as enterprise wide spokesperson.

1995 - 2012

Waste Management, Inc., Houston, TX

2006 - 2012

Director of Public Affairs

- Directed strategic legislative and regulatory advocacy activities for \$1.25 billion recycling subsidiary including community management, media relations, general and sustainability communications nationwide which supported strategic priorities

of the company. Worked in coordination with a team of internal and external government affairs managers and consultants.

2004 - 2006

Project Manager

1995 - 2004

Regional Manager of Operations

1989 - 1995

Director, Environmental Programs, American Beverage Association, Washington, DC

- Directed state and local government relations. With a multi-million budget, developed and coordinated communications programs, technical assistance, and a localized community grant program. Analyzed solid waste legislation at federal, state, and local levels and led member bottler efforts to implement plant

David Fiedeldey

samdanyudanja@yahoo.com | (317) 797-3350

Education and Training

Miami University of Ohio, Engineering Physics, BS, 1987

Relevant Research and Professional Experience

- | | |
|-------------|---|
| 2019 - 2022 | Reliability and Maintenance Engineering Manager, Amazon, Plainfield, IN <ul style="list-style-type: none">● Manage Reliability, Engineering and Maintenance for entire facility, oversee capital upgrades, ensure Reliability and Maintenance activities were performed with quality and on time, and develop subordinate managers and technicians for follow-on positions. |
| 2019 - 2021 | Building Manager <ul style="list-style-type: none">● Managed maintenance technicians in maintaining and repairing the best performing site in Indianapolis node, assisted in final phase of construction, start-up, commissioning and ramp-up to record breaking performance, oversaw Base Building activities with minimal staff while establishing top tier performance. |
| 2018 - 2019 | Project Manager, Diversified Conveyors, Intl., Indiana, IN <ul style="list-style-type: none">● Managed the \$600 million FedEx Hub Upgrade project and coordinated and managed multiple projects and crews. |
| 2018 - 2018 | Associate Director, Clinical Contracts & Finance, Gilead Sciences, Foster City, CA <ul style="list-style-type: none">● Led international groups providing clinical contracts and budgets to investigator sites; developed operational excellence program to entire group; developed program for training and increasing contract responsibilities of JDS in groups; responsible for contracts and budgets of all global clinical trials. |
| 2001 - 2018 | Eli Lilly and Company, Indianapolis, IN
Senior Manager, Clinical Contracts and Grants <ul style="list-style-type: none">● Managed groups specializing in negotiation and creation of contracts, budgets, payments and grants for clinical trials, managed and developed managers and employees of 4 groups, as well as contractors, developed metrics and implemented changes to improve cycle time by 33%, and was responsible for all clinical trials in the United States, Canada and Puerto Rico. |
| 2011 - 2014 | Operations Manager |
| 2004 - 2011 | Engineering Manager |
| 2001 - 2004 | Project Manager |

- 1997 - 2001 **Project Manager, The Proctor & Gamble Company, Cincinnati, OH**
- Managed and coordinated engineering, installation, start-up and commissioning of several projects for the Paper Division/Diaper Category, including the \$130 million, Super-Dry (diaper) core upgrade initiative. Chosen to lead the \$150 million, Ultra-Care Initiative over senior project managers, due to superior management skills. Selected to head the current business programs by virtue of the unique ability to concurrently coordinate multiple projects
- 1996 - 1997 **Project Manager, Haden International Group, Auburn Hills, MI**
- Managed and coordinated the installation, start-up and commissioning of the \$27 million Chrysler, Belvidere Assembly Plant Full Body Powder Project. As Site Manager, oversaw a team of 10 Engineers, Superintendents and approximately 250 contractors in the installation of steel, sheet-metal, electrical and mechanical systems, as well as controls and robotics, on this turn-key project. As Site Manager, coordinated other General Contractors and Chrysler personnel, resulting in early installation completion.
- 1995 - 1996 **Project Manager, Durr Systems, Inc., Southfield, MI**
- Managed installation of the \$70 million Mercedes-Benz AAV Paint Shop Project in Vance, Alabama. Improved profit margin of assigned contracts from 18% to 31%. Instrumental in keeping installation and start-up phases on schedule. Led Durr's "professional" team in constructing a "World-Class facility" as cited by Mercedes-Benz's VP of Engineering. Coordinated approximately 600 subcontractors and 31 bid packages. Managed a core staff of 15 in all aspects of design, construction, installation and commissioning.
- 1992 - 1995 **Senior Engineer (Nuclear), Wisconsin Electric Power Co., Milwaukee, WI**
- Managed three laboratory technicians in qualification testing of parts/materials for use in a nuclear facility. Revised material receipt procedures, resulting in savings of approximately \$2 million the first year. Realized savings in excess of \$3M by purchasing special laboratory equipment and training technicians in its use. Researched and developed qualification testing procedures for nuclear grade materials/replacement parts. Responsible for technical and quality requirements of all purchased parts and materials. Oversaw quality program for all materials purchased at a 2-reactor generating station.

Kraig Houser

houserkr@gmail.com | (810) 869-4927

Education and Training

Colorado State University, MBA, 2016

Michigan State University, Chemical Engineering, BS, 2010

Relevant Research and Professional Experience

2010 - Present

Albemarle Corporation, Charlotte, NC

2020 - Present

Global Business Director

- Managed Albemarle’s largest business by growth rate and revenue, successfully balancing long term considerations with short term risks and opportunities and improving network flexibility to support growth, utilized strategic marketing principles and value selling principles for >50 customers on 6 continents, launched transformational quality improvement on granular business case intending to maximize FCF, worked with external firms and economists to prepare for eventual commoditization of multiple products, optimized near term allocation strategy to unlock \$11 million of additional contribution margin in 2021.

2019 - 2020

Business Development Manager, Corporate Development

2017 - 2019

Corporate Development & Competitive Intelligence Specialist

2016 - 2017

Process Technology Specialist

2015 - 2016

Operations Superintendent

2015 - 2015

Sr. Operations Engineer

2013 - 2015

Unit Leader

2012 - 2013

Operations Engineer

2010 - 2012

Process Engineer

Synergistic Activities

- Proficient with Aspen, AutoCAD, C++, CHEMCAD, MathCAD, Matlab/Simulink, Minitab, MS Office, MS Visio, PipeFLO, PI & PI DataLink, Polymath, Power BI, and SAP

Novis Smith

novis.smith@verizon.net | (215) 300-0927

Education and Training

University of California - Berkeley, Chemistry, PhD

Massachusetts Institute of Technology (mit), Organic Chemistry, BS

Relevant Research and Professional Experience

2017 - Present

President, American Hyperform, Inc., Brevard County, FL

- Filed five new advanced battery recycling processes developed in its laboratory, awarded Phase I Small Business Innovation Research (SBIR) by the Defense Logistics Agency (DLA) of the Department of Defense (DoD) to further develop an advanced lithium-ion battery process.

1997 - 2016

Vice President of Technology, Retriev Technologies, Lancaster, OH

- Oversaw successful application to fourteen (14) Small Business Innovation Research (SBIR) Phase I, II, and III programs;
- Oversaw successful application to DOE American Recovery and Reinvestment Act (ARRA) grant for lithium-ion battery recycling process;
- Oversaw successful application to U.S. Advanced Battery Consortium (USABC) program involving lithium battery materials advanced lithium battery design and pilot production, advanced lithium performance, ultracapacitor technology, ionic liquids, quaternary ammonium salt;
- Developed commercially-viable recycling processes numerous batteries, including lithium-ion batteries, lead acid, NIMH, nickel-cadmium, and alkaline; and
- Awarded 20 US patents in this period relating to the programs on recycling, lithium battery materials, and ultracapacitor materials, electrolytes. Developed new process for lithium cathode materials (3 patents). Successfully developed a process for producing pure nickel hydroxide from radioactive nickel metal scrap from Oak Ridge National Lab (ORNL).

1983 - 1997

President, RK Carbon Fibers, Inc.

1983 - 1983

Vice President, Technology, Sunrez Corporation, El Cajon, CA

- Co-founder of Sunrez Corporation.

Publications

- Published 16 technical articles and four technical books with numerous technical presentations on lithium chemistry, polymers, battery recycling, R&D management, and fire resistant materials.

Synergistic Activities

- Aided in the development and initial production of optically transparent Surlyn (patents) for laminated transparent hurricane glass for Dupont de Nemours, Inc., and ballistic transparencies with a number of patents.
- Memberships: American Chemistry Society; American Institute of Chemical Engineers (AIChE); American Ceramic Society; American Association for the Advancement of Science (AAAS); The Electrochemical Society; and National Defense Industrial Association.

Chad Vecitis

vecitis@nthcycle.com | (617) 708-5200

Education and Training

Yale University, Chemical & Environmental Engineering, YIBS Post-Doctoral Fellow 2010
California Institute of Technology, Chemistry, PhD, 2008
Johns Hopkins University, Chemistry, B.A., 2001

Relevant Research and Professional Experience

2017 - Present **Co-Founder and Chief Technology Officer, Nth Cycle, Inc., Beverly, MA**

2010 - Present **Harvard University, Cambridge, MA**

2018 - Present Associate of Environmental Science & Engineering

2014 – 2018 Associate Professor of Environmental Engineering

2014 – 2018 Assistant Professor of Environmental Engineering

Publications

- Y. Liu, G. Gao, C.D. Vecitis, "Prospects of an Electroactive Carbon Nanotube Membrane toward Environmental Applications", *Accounts of Chemical Research*, 2020, 53 (12), 2892-2902.
- M.H. Schnoor, C.D. Vecitis, "Quantitative Examination of Aqueous Ferrocyanide Oxidation in a Carbon Nanotube Electrochemical Filter: Effects of Flow Rate, Ionic Strength, and Cathode Material", *Journal of Physical Chemistry C*, 2013, 117, 2855-2867.
- Q. Zhang, J. Wang, C.D. Vecitis, "Fouling reduction and recovery during forward osmosis of wastewater using an electroactive CNT composite membrane", *Journal of Membrane Science*, 620, 2021, 118803.
- G. Gao, Q. Zhang, C.D. Vecitis, "CNT-PVDF Flow-Through Electrode for Single-Pass Sequential Reduction-Oxidation", *Journal of Materials Chemistry A*, 2014, 2 (17), 6185-6190.
- G. Gao, Q. Zhang, Z. Hao, C.D. Vecitis, "Carbon Nanotube Membrane Stack for Flow-through Sequential Regenerative Electro-Fenton", *Environmental Science & Technology*, 2015, 49 (4), 2375-2383.
- G.J. Silverberg & C.D. Vecitis, "Wrinkling and Periodic Folding of Graphene Oxide Monolayers by Langmuir-Blodgett Compression", *Langmuir*, 2017, 33 (38), 9880-9888.
- C.A. Amadei, P. Arribas, L. Cruzado, C.D. Vecitis, "Graphene Oxide Membranes on a Hierarchical Elemental Carbon-based Support", *Environmental Science: Nano*, 2020, 7, 891-902.
- C.D. Vecitis, "Antiviral-Nanoparticle Interactions and Reactions", *Environmental Science: Nano*, 2021, 8, 11.
- Y. Wang, Y. Xu, S. Dong, P. Wang, W. Chen, Z. Lu, D. Ye, B. Pan, D. Wu, C.D. Vecitis, G. Gao, "Ultrasonic activation of inert poly (tetrafluoroethylene) enables piezocatalytic generation of reactive oxygen species", *Nature Communications*, 2021, 12, 3508.

- Q. Zhang, C.D. Vecitis, “Conductive CNT-PVDF Membrane for Capacitive Organic Fouling Reduction”, *Journal of Membrane Science*, 2014, 459, 143–156.

Richard Holman

RHolman@6Kinc.com | (617) 504-9695

Education and Training

Massachusetts Institute of Technology (MIT), Materials Science and Engineering, PhD, 2001
University of Tennessee, Materials Science and Engineering, BS, 1996

Relevant Research and Professional Experience

2018 - Present **Senior Vice President, Battery Products, 6K Inc., North Andover, MA**

2012 - 2018 **Vice President, Product Development, 24M Technologies Inc.,
Cambridge, MA**

2002 - 2012 **A123Systems, Inc., Waltham, MA**
Director, Core Cell Engineering,
Research Manager, New Materials Group
Engineering Manager, New Products Development - Chemistry
Senior Development Scientist
Development Scientist

Publications

- Y. Koyama, T.E. Chin, U. Rhyner, R.K. Holman, S.R. Hall, Y.-M. Chiang, "Harnessing the Actuation Potential of Solid State Intercalation Compounds," *Adv. Funct. Mater.*, 16, 492-498 (2006).
- R. Holman, S. Uhland, M. Cima, and E. Sachs, "Surface Adsorption Effects in the Inkjet Printing of an Aqueous Polymer Solution on a Porous Oxide Ceramic Substrate," *Journal of Colloid and Interface Science*, Vol. 247, pg. 266-274, 2002.
- S. Uhland, R. Holman, S. Morissette, M. Cima, and E. Sachs, "Strength of Green Ceramics with Low Binder Content," *Journal of the American Ceramic Society*, Vol. 84, n. 12, December 2001.
- R. Holman, M. Cima, S. Uhland, and E. Sachs, "Spreading and Infiltration of Inkjet-Printed Polymer Solution Droplets on a Porous Substrate," Vol. 249, pg. 432-440, 2002.
- S. Uhland, R. Holman, Y. Enokido, H. Tsuchiya, M. Cima, E. Sachs, and S. Sumita, "Establishment of Redispersion Technology on Slurry-based 3DPTM Process," *Journal of the Society of Materials*, Vol. 13, n. 2, pg. 63-68, December 2000.
- S. Uhland, R. Holman, M. Cima, E. Sachs, and Y. Enokido, "New process and materials developments in 3-dimensional printing, 3DPTM," *Solid Freeform and Additive Fabrication: Proceedings of the Materials Research Society*, Vol. 542, pg. 153-158, 1999.
- S. Uhland, R. Holman, B. DeBear, P. Saxton, M. Cima, E. Sachs, Y. Enokido and H. Tsuchiya, "Three-dimensional printing, 3DPTM, of electronic ceramic components," *Proceedings of the Solid Freeform Fabrication Symposium, University of Texas at Austin*, August 9-11, 1999, pg. 865-872.
- R. Holman and P. Liaw, "Methodologies for predicting fatigue life," *JOM*, Vol. 49, n. 7, pg. 46-52, July 1997.

2678-1670 Retrieval Solutions DMP

Department of Energy (DOE)

Retrieval Solutions, LLC

Retrieval Lancaster Lithium-Ion Battery Plant Expansion to Produce Battery Grade Raw Materials

A. Data types and sources

Retrieval Solutions (Retrieval) will collect and store large datasets of data information; produce product model output data statistics; and results of analysis, which might include reformatting and synthesis of multiple input datasets. A significant component of the Project will be high-quality data that can serve as a supplement to publications and other published available work.

Field Data

- Raw equipment data recorded from instruments and sensors, curated as necessary to prevent invalid data from being misunderstood as valid data. This will data from equipment sensors.
- Meta data – information associated with instrument data such as equipment reports, inbound reports, outbound reports, photos, and sample analysis reports.

Model and Analysis Output Data

- Data generated from the modeling and simulation teams, including model runs, scenario outputs, and analysis of samples generated.
- These data are generated from the model run and simulations, and may consist of images, video files, binary files in various formats, and tabular data files such as CSV or spreadsheets.

Project Management Data

- Information critical to the success of the project from a management and operational standpoint, including schedules, timelines, staffing, and Gantt charts.
- These data will be accessible by project partners as needed for the duration of the project but will not be made available to the public as they often are typically considered trade secrets or commercial information.

Curated Project Data

- Information that is a result of the Project will be distilled and vetted for public consumption at the end of the project. Except for any trade secrets, commercial information, and materials necessary to be held confidential.
- Where applicable, identification of datasets with persistent identifiers such as Digital Object Identifiers (DOIs) will be used.

Publication Data

Data associated with a specific publication and linked to ensure reproducibility of results.

Retriev also expects to generate data and information typically considered trade secrets, commercial information, materials necessary to be held confidential by a researcher until they are published, or similar information which is protected under law. This is due to the nature of the project serving a mostly commercial purpose while providing the research necessary to ensure the domestic supply of lithium batteries for the United States.

Should the Project require publication of data or the results of the research Retriev will post-application provide a detailed plan for making all research data resulting from the proposed project open, machine-readable, and digitally accessible to the public at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, any underlying digital research data used to generate the displayed data will be made as accessible as possible to the public.

Any source data used as inputs to the Project will be properly referenced in resulting publications and data submissions, and if publicly available online, may be linked to as part of one or more data submissions, but will not be actively managed by this Project. This Project may use proprietary source data subject to license agreements that forbid its public release. Any derivative data products resulting from this work will be made publicly available at the time of publication and will include references to the source data, but due to license restrictions, some source data may not be made available.

B. Content and format

As stated above Retriev expects the data generated as part of this project to be format necessary to ensure that the project will meet its commercial purpose of ensuring a domestic supply of lithium batteries for the battery supply chain.

The Project will leverage existing data standards established by DOE's Office of Science and Technical Information (OSTI), and the General Services Administration's (GSA's) Project Open Data.

Project Management data, as defined above, will be stored in team-accessible folders on a corporate site and made available to the team to access throughout the duration of the Project. Project Management data will be made available to DOE upon request. Data will be stored in a combination of proprietary databases (included with off-the-shelf manufacturing software packages), object store (or data lake), relational databases and NoSQL databases, as appropriate for the specific data types. Standard technologies will be selected to ensure maximum data portability and enable enterprise data analytics with sufficient security to protect confidential information.

During the lifecycle of the Project, data will be stored in the most useful format for the Project team, which may occasionally include proprietary formats. Data stored in proprietary formats will be exported to more commonly accessible formats prior to public dissemination, to ensure maximum utility and availability of data resulting from this Project.

C. Sharing and preservation

We expect to use several repositories for data.

At the conclusion of the Project, publicly accessible data derived the Project will be hosted at the Company website. Once data are published to the Company website, they will be curated by the Project team, assigned a unique identifier, and will remain unchanged, available to the public. A DOI will be assigned to each dataset, which provides another means of permanently identifying individual datasets and providing a clear audit trail for digital assets. The Project team will work with the team to ensure that Project data submissions are packaged in useful, logical bundles and contain sufficient, accurate metadata to reach the widest audience possible.

For data outside the scope of the share site, we will host a webpage for the Project and make data available at the end of the Project. Retrieval will create a share site for team data.

Retrieval expects to generate data and information typically considered trade secrets, commercial information, materials necessary to be held confidential by a researcher until they are published. Data sharing will occur after the project is completed and published at which time it will be made available to people outside the organization. Data preservation under Retrieval's current data management protocols will be accomplished for and beyond the life of the project.

D. Protection

Retrieval will house critical Project data in the Project database, which is hosted behind firewalls in a secure environment on the Company's intranet site. Access is limited to users who must have an account to access the network and the applications and databases within the network. Vendor data is maintained by Retrieval and protected and backed up regularly.

Additionally, Retrieval applies modern information security standards such as SOC 2 Type 2, as well as industry best practices for corporate intellectual property. Retrieval employees are bound by

confidentiality clauses within their employee agreements and partners are bound by nondisclosure agreements.

Guided by SOC 2 Type 2, Retriev applies modern information security practices to protect corporate IP. This involves the application of a Data Loss Prevention program that focuses on ensuring Retriev establishes the appropriate controls to protect confidential materials.

E. Rationale

The collecting and sharing of data are essential to advancing battery technology and accelerating scientific discovery, and we intend to follow the FAIR Guiding Principles for scientific data management and stewardship, as when possible. Generally, whenever possible, data from this Project will be made available to the public. The data management and provenance strategy adopted by this Project is essential for building trust in the scientific community and ensuring that any data cited in derivative works continue to be discoverable, supporting the validity of those works.

We believe the data that we develop and collect will help establish a template for future technologies to improve the battery and battery supply chain process, a data stream to optimize the operation of those factories, and ultimately a scalable solution to design, manufacture and deliver high-quality products to customers with predictability and precision.

The results of the project will be validated when the project is completed and Retriev is able to process recycled batteries back into the battery supply chain.

RETRIEV SOLUTIONS (RETRIEV)

Quality Jobs and Community Benefit Plan ("Equity Plan")

Retrieval Solutions, LLC (Retrieval) is pleased to submit the following Equity Plan, as outlined in Funding Opportunity Announcement Number DE-FOA-0002678. Retrieval Solutions uses a circular business model to provide a sustainable alternative to mining the critical materials necessary to produce electric vehicle (EV) batteries. The company was founded to address growing market demand for safe, sustainable solutions for lithium-ion batteries near or at end-of-life; and to accomplish this through the recovery and reuse of critical battery precursor resources that exist in finite supply across the globe.

In August 2021, Retrieval Technologies was acquired by Heritage Battery Recycling — a subgroup of the Heritage Group, a family-owned company established in 1930. In March 2022, Retrieval purchased Battery Solutions, the North American leader in sustainable, end-to-end management solutions for end-of-life batteries, creating the first and only comprehensive battery management solution in North America. The combined offering brought together two complementary industry leaders to create the first and only organization that excels at sophisticated cross-chemistry collection, exceptional battery-centric logistics network, large end-of-life battery sorting capabilities, and customer-centric approach to end-of-life battery management complemented by Retrieval's long heritage as the oldest and largest lithium-ion battery processing operation. Today, Retrieval is a diverse and inclusive company providing over 225 well-paying, skilled jobs throughout North America.

As Retrieval embarks on our journey to establish standard operating practices as a combined entity, our company culture and future sustainable actions will be influenced by dedication to the objectives of quality job growth and the advancement of equity, environmental, and energy justice. **These objectives aren't just initiatives, they are woven into the framework of our organization, influencing every action and decision.** To support our inclusive culture, Retrieval has invested in a full time Environmental, Social, and Governance (ES&G) position at the Director level. This role ensures that equity considerations are included in the development of our company's mission, goals, and principals.

Our mission is to create a diverse and inclusive community that balances personal passions and purposeful work. Retrieval is committed to increasing energy-efficient processes, renewable energy options and increasing the availability of recycling. All while being fully transparent and enforcing our standards and values.

Retrieval has an established plan (illustrated below) to layout our ES&G roadmap that starts with a baseline assessment which will ultimately culminate in goal setting and tracking.

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A key component of our roadmap is a materiality study. A Materiality Assessment is an exercise where a company like Retriev engages its stakeholders (internal: employees and leadership as well as external: customers and vendors) to determine the most significant influences to success for its sustainability journey. The results of a Materiality Assessment are used to define future sustainability strategies, goals, and reporting.

Example Materiality Study

This Equity Plan provides an overview of Retriev's dedication to equity framework and details

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not

our approach to this proposed project specifically as it pertains to 1) Community Engagement, 2) Quality Jobs, 3) Diversity, Equity, Inclusion, and Accessibility, and 4) the goals of the Justice40 Initiative.

A. COMMUNITY ENGAGEMENT

It is critical that federal investments in battery manufacturing and materials processing sector support sustainable community economic development and prosperity, as well as advance our values as outlined above. Retrieval is well-situated to be a part of that effort and is dedicated to ensuring the proposed plan would not only meet but exceed the goals stated in the FOA.

Communities where we work, live, and conduct business play a significant role in our success. Giving back through corporate community involvement is important, not only because it's the right thing to do, but also for all the additional benefits supporting our company's long-term sustainability vision. Retrieval strives to keep our cities, states, and counties safe, resilient, and sustainable.

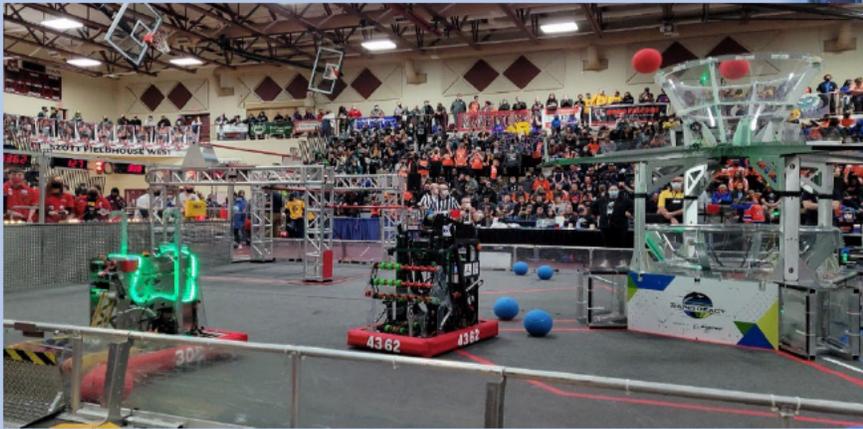
Our proposed project aligns perfectly with our values to make the community a better place to work and live. Retrieval has been operating recycling activities at the Lancaster, OH site since 2003 and to date have not had any pollutant complaints including noise or odor. Quantities of the emissions resulting from the expansion are not yet known since the production process has not been implemented. As production ramps up, stack testing will be performed to quantify emissions.

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Retrieval has a long history of supporting our communities and environmental stewardship through collaboration, community engagement and environmental impact. Retrieval works with organizations such as Flint South End Soup Kitchen, Crim Foundation Kids health, Edible Flint, Lancaster Parks & Recreation, and Habitat for Humanity. Retrieval is engaged through monetary donation, supporting our employees with paid volunteer hours, community education, and donation of services such as battery recycling. Below are a few examples of how Retrieval engages with local communities:

Robotics Competition Battery Recycling and Education

Retrieval Solutions provided support by supplying battery collection and recycling to the Youth Robotics Competition season. Providing a collection container that visually draws attention and educational materials supporting household battery recycling, participants and spectators can bring in all types of consumer batteries for recycling. Volunteers transport the collection kiosk to each competition sending any batteries collected to Retrieval to be recycled through our mail back program.



Electrifying our Community Green Thumbs

Repurposing obsolete packaging containers from EV batteries for urban farming, raised bed gardening. This initiative advances corporate and local sustainability goals in enabling fresh foods to disadvantaged communities, while keeping packaging material from the landfill. Working with key community partners in the Flint, MI area, including non-profit organizations, universities, and a cross-functional team of industry leaders we were able to

convert the containers into raised garden beds. The beds were deployed to organizations such as Edible Flint, and local soup kitchens growing farm to table food sources for underserved communities. This project goes beyond reuse addressing 10 out of the 17 UN sustainability goals.

Our Journey Continues.....

The projects listed above are examples of past and on-going projects. Retriev continues to be dedicated to engaging with local communities and expanding on past programs. Our parent company, Heritage, has established partnerships that work directly with disadvantaged communities, Retriev will also participate in these partnerships. Below are a few examples:

- Dove Recovery House for Women- Drug addiction recovery and job placement
- Fathers & Families Center- Job Placement
- Habitat for Humanity
- SeaScope Inc.- Diversity in Science, Aquatics, and Conservation
- Center for Leadership Development- Central Indiana African American student advancement
- Canopy NW Arkansas- Afghan refugee assistance & job placement

In addition to those listed above, Retriev has engaged the following parties establishing how to best support their important causes.

- Fairhope Hospice
- Fairfield County 2-1-1-provides general assistance to those in need, including: food, financial, clothing,
- YMCA

Employee engagement is at the heart of corporate community engagement programs. Employees will be a driving force bringing their own passions to the program. Retriev recognizes employee engagement and retention are two byproducts of implementing a corporate community engagement program. People want to work for companies that care and enable them to make a meaningful difference. Retriev will engage our employees with opportunities similar to the one listed below.

Let's Take Action – Together

As we look to recognize Pride Month and Juneteenth, we want to learn from you where our support and efforts can have the biggest impact. We're committed to donate to three 501(c)(3) charitable organizations supporting diverse communities by the end of the summer, and we want to know what organizations are near and dear to our Heritage family.

By Thursday, June 23, please email [HES Marketing](#) with the name and URL of the charitable organizations that mean the most to you, and we'll select three organizations at random to support with our contributions.

Once submissions have been received, we'll share which organizations were chosen and how we'll contribute. Your participation this month will help us identify future areas where Heritage can make a difference in our communities as we continue our diversity, equity, and inclusion practices.

Retrieval has a goal to make battery recycling accessible to everyone. Collecting small format batteries drives critical supply for the domestic supply chain. Additionally, "urban mining" for batteries improves safety in our homes, in transit, and at landfills or material recycling facilities (MRF).

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[Redacted]

[Redacted]

B. QUALITY JOBS AND SKILLED WORKFORCE

Retrieval continues to strengthen our company as a workplace of choice through competitive pay, excellent benefits for long-term financial and personal health, a safe and accessible work environment, opportunities for growth and a focus on sustainability.

[Redacted]

[Redacted]

[Redacted]

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Retriev recognizes that raw materials to support the domestic manufacturer of EV batteries is very important, and that having educated, trained, battery knowledgeable work force is equally important to securing domestic production of EV batteries. Retriev will make available a number of intern positions from various disciplines that will represent battery design and manufacturer including;

- Engineering (Chemical, Mechanical, Industrial, Environmental)
- Chemistry
- Local Trade Programs (Welding, Electrician, Operators, etc.)

Further, Retriev plans to work with local community colleges and universities to implement a work study program to create a hands-on curriculum that produces experienced students ready to enter the work force. Below is a list of curriculums that are good fits for such programs.

Applicable Programs from Ohio State University - Columbus Ohio

- Operations management and supervision
- Logistics, materials, and supply chain management
- Environmental science
- Materials engineering
- Human resources management/personnel administration
- Natural resources management and policy
- Sustainability studies

Applicable programs from Columbus State Community College – Columbus Ohio

- Electrical and electronic engineering technologies/technicians
- Plumbing technology/plumber
- Construction engineering technology/technician
- Fire science/firefighting (Fire Fighter Training with Ron Butler from E-Cell Secure)
- Automotive engineering technology/technician (EV Vehicle Disassembly)
- Mechanical engineering related technologies/technicians
- Environmental health
- Instrumentation technology/technician
- Welding technology/welder

- Industrial production technologies/technicians
- Logistics, materials, and supply chain management

Retrieval supports a continuous learning culture. Our talent management program is designed to reach employees at all levels and is an important way we maximize engagement and retention. Hiring, selecting, and developing future leaders, as well as evaluating employees in alignment with our values. Our on-boarding process includes initial, and on-going, training designed to allow employees to embrace our culture of safety, and diverse and inclusive community that balances personal passions and purposeful work.

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Retrieval's workforce includes a wide range of roles that require an even wider variety of skill sets, our training programs are designed to meet the needs of employees. Training categories include:

- [Redacted]

In addition to training, we manage performance through regular check-ins, coaching and feedback, goal-setting and annual performance reviews. Annual evaluations set accountability expectations for employees with the understanding that progress is monitored throughout the year. Talent reviews and succession planning are designed to recognize and reward high-performing and hard-working employees. Retrieval's succession planning is designed to promote from within and helps employees maximize their effectiveness and grow in their careers.

We also recognize the value of learning that occurs beyond our internal curriculum. Employees are encouraged to take advantage of our tuition reimbursement programs available to all

employees. The program is inclusive of in-person and on-line training degreed and certification courses. Additionally, we offer employee's children scholarship opportunities.

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C. DIVERSITY, EQUITY, ACCESSIBILITY, AND INCLUSION (DEAI)

Retrieval serves our customers, employees, communities, and the environment with integrity. Through this commitment, we'll embody a workplace where all feel welcome, accepted, empowered, and respected. We embrace the variety of personal experiences, values, and worldviews that arise from differences of culture and circumstance. Such differences include race, ethnicity, gender, age, religion, language, abilities/disabilities, sexual orientation, socioeconomic status, geographic region, and more.

Retrieval provides fair treatment, access, opportunity, and advancement for all employees at every stage of their career development, while at the same time striving to identify and eliminate barriers that have prevented the full participation of marginalized groups.

Diversity and inclusion start at the very top of any organization, Retrieval's Executive Leadership team consists of eleven members, five (45%) of which are women occupying the highest levels in our organization. We have defined employee succession plans for team members at all levels with embedded goals to improve employee diversity through recruiting practices, training, and education, focusing on disadvantaged communities.

Retrieval has an established training platform to embrace diversity and inclusion. Training content includes topics such as embracing diversity at work, inclusion of employees with

disabilities, blindness or visual impairment, deafness or hearing impairments, physical disabilities, development and learning disabilities, mental health illness and cultural differences. These training courses are mandatory for all employees.

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[Redacted]

- [Redacted]
- [Redacted]
- [Redacted]

[Redacted]

- [Redacted]

Retrieval's inclusive company culture is woven into the framework of our organization as evidenced by the message below from Ernie Walker, President Heritage Environmental Services (Retrieval's Parent Company). This type messaging is distributed periodically enterprise wide.

Creating an Inclusive Culture for All

June 16, 2022

We're all familiar with our Core Values: Safe and Compliant or Not at All, Problem Solving Through Innovation, Integrity Matters, and Freedom to Learn and Grow. But this June, I'd like to celebrate one of these values in particular, as we look to reinforce our commitment to diversity, equity, and inclusion: Integrity Matters. Our integrity propels us to create an inclusive culture for all – and inspires us to be the best neighbor we can be.

Our company culture is defined by the employees who show up each day. Our differences – whether they be of age, race, gender, nationality, sexual orientation, physical ability, and background – provide us with new perspectives that challenge us to think differently as we learn from one another. But for us to fully embrace these perspectives, it is essential that we maintain a safe space where all feel welcome – both at work and in our communities. As we respect Pride Month and Juneteenth this month, I'm proud of the integrity that the Heritage family demonstrates each day, that consistently motivates us to retain and attract a wide spectrum of employees who each add to the dynamic, collaborative culture we share.

We're committed to continuing our growth as an inclusive organization, but there's still work to do – especially as we look towards our individual growth as supportive allies. We're excited to share the following opportunity with you today as we seek to expand our impact, learn from each other, and support our neighbors.

[REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

One of the project's largest expenses will be the construction of the new building. This will require construction contractors, surveyors, consultants, landscapers, etc. Retrieval will make

every effort to award these services to local minority owned businesses that source materials sustainability.

[REDACTED]

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[REDACTED]

To maintain a sustainable workforce that is educated, trained, and battery knowledgeable, Retrie will make available a number of intern positions from various disciplines that will represent battery design and manufacturer including;

- Engineering (Chemical, Mechanical, Industrial, Environmental)
- Chemistry
- Local Trade Programs (Welding, Electrician, Operators, etc.)

Further, Retrie plans to work with local community colleges and universities to implement a work study program to create a hands-on curriculum that produces experienced students ready to enter the work force. The curriculum can be designed to be flexible to support degree and certification tracts.

[REDACTED]

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[REDACTED]

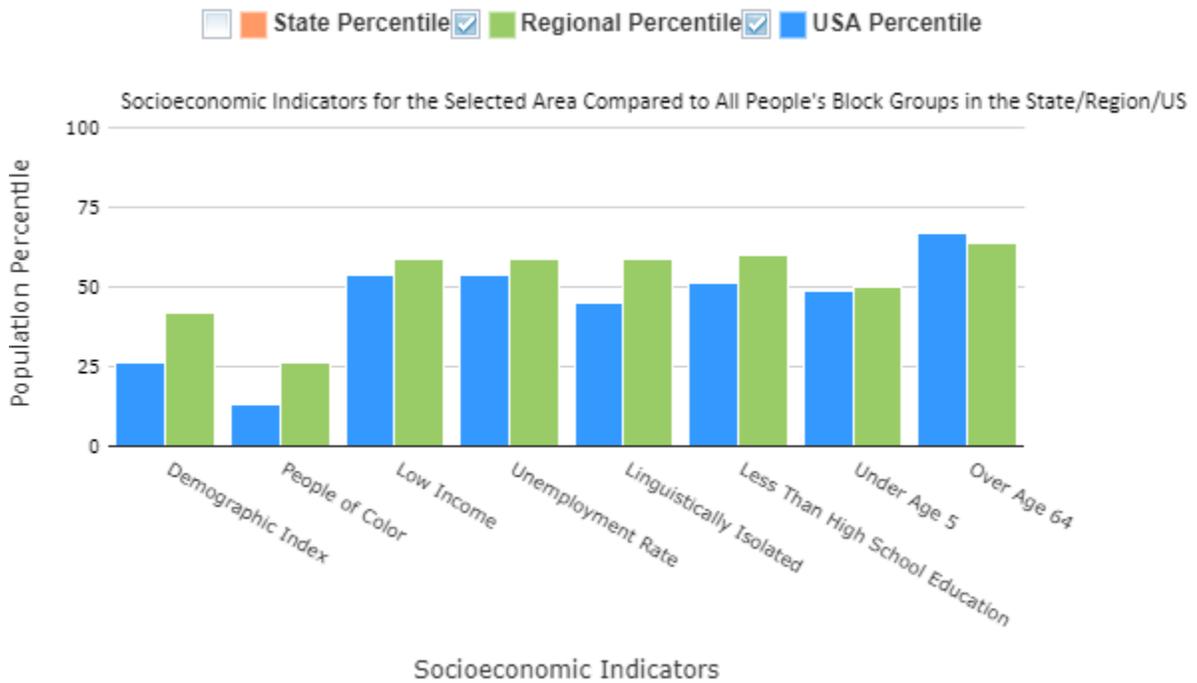
Having set these goals at the proposal-writing stage, this team is on a strong trajectory to meeting or exceeding these goals. The following partner-specific descriptions of diversity, equity, and

inclusion plans, goals, and objectives demonstrate how the team is already meeting some of the aforementioned SMART goals or is well positioned to do so throughout the course of the project.

D. Justice40 Initiative Plan

The Lancaster expansion project site is located in Fairfield County, Ohio. As of 2020, the region’s population increased by 8.7% since 2010, growing to 158,921. The population was expected to increase by about 1% by 2022, adding 1,592. Concerning educational attainment, 29.0% of Fairfield County, Ohio residents possess a bachelor’s degree or higher (6.5% above the national average). From 2018 to 2019, employment in Fairfield County grew at a rate of 2.93%, from 72,000 employees to 74,000 employees. In 2019, the top three industries in Fairfield County were Health Care and Social Assistance (11,607 people), Retail Trade (10,209 people), and Manufacturing (7,099 people). Below is a graphic depiction of the socioeconomic indicators with in a 15-mile radius of the facility.

EPA Environmental Justice Screen and Mapping Tool
Lancaster Environmental and Demographic Indicators



Retrieval has been operating recycling activities at the Lancaster, OH site since 2003 and to date has not had any pollutant complaints including noise or odor. Additionally, the investment in

newer more advanced pollution abatement equipment is anticipated to have a positive impact the air quality, specifically particulate matter which is in the 34 percentile in comparison to the rest of the state.

Our program, in conjunction with our recruiting, training, and university partners will recruit with a preference towards minorities and disadvantaged communities to ensure traditionally excluded talent has access to Retrieval's opportunity for high paying skilled positions resulting from the expansion project.

[REDACTED]

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As discussed above, our talent management program is designed to reach employees at all levels and is an important way we maximize engagement and retention. Hiring, selecting, and developing future leaders, as well as evaluating employees is in alignment with our values. Our on-boarding process includes initial, and on-going, training designed to allow employees to embrace our culture of safety, diversity, and inclusion.

[REDACTED]

[REDACTED]

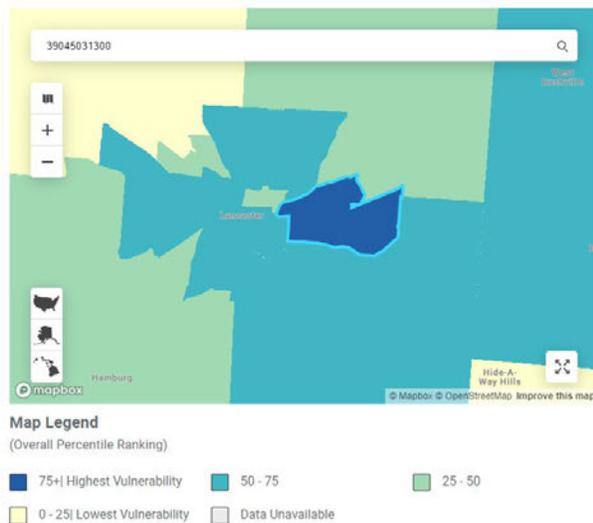
This industry partnership with JISEA and its partner universities will result in a publication and dissemination of analysis on opportunities for the battery materials processing and recycling industry to support Justice40 goals and support expanded energy and environmental justice.

Benefitting disadvantaged and vulnerable populations

The Retrie Lancaster, Ohio facility proposal for expanded battery recycling capacity is in a census tract in the top quintile for social vulnerability according to the Center for Disease Control (SLOPE 2022), with 98 percentile ranking for housing type and transportation vulnerabilities. This census tract also ranks high for household composition and disability and socioeconomic status vulnerabilities, including poverty, unemployment, income, and lack of a high school diploma. High wage, entry-level employment opportunities will increase through the facility expansion and can help alleviate some of these vulnerabilities in this community. The Retrie facility is also near two census tracts identified as disadvantaged by the Energy Justice Dashboard with high unemployed and low-income populations.

Through the partnership with JISEA, this proposed work will analyze how battery recycling facilities can target equitable outcomes in local vulnerable populations.

Overall Social Vulnerability Index

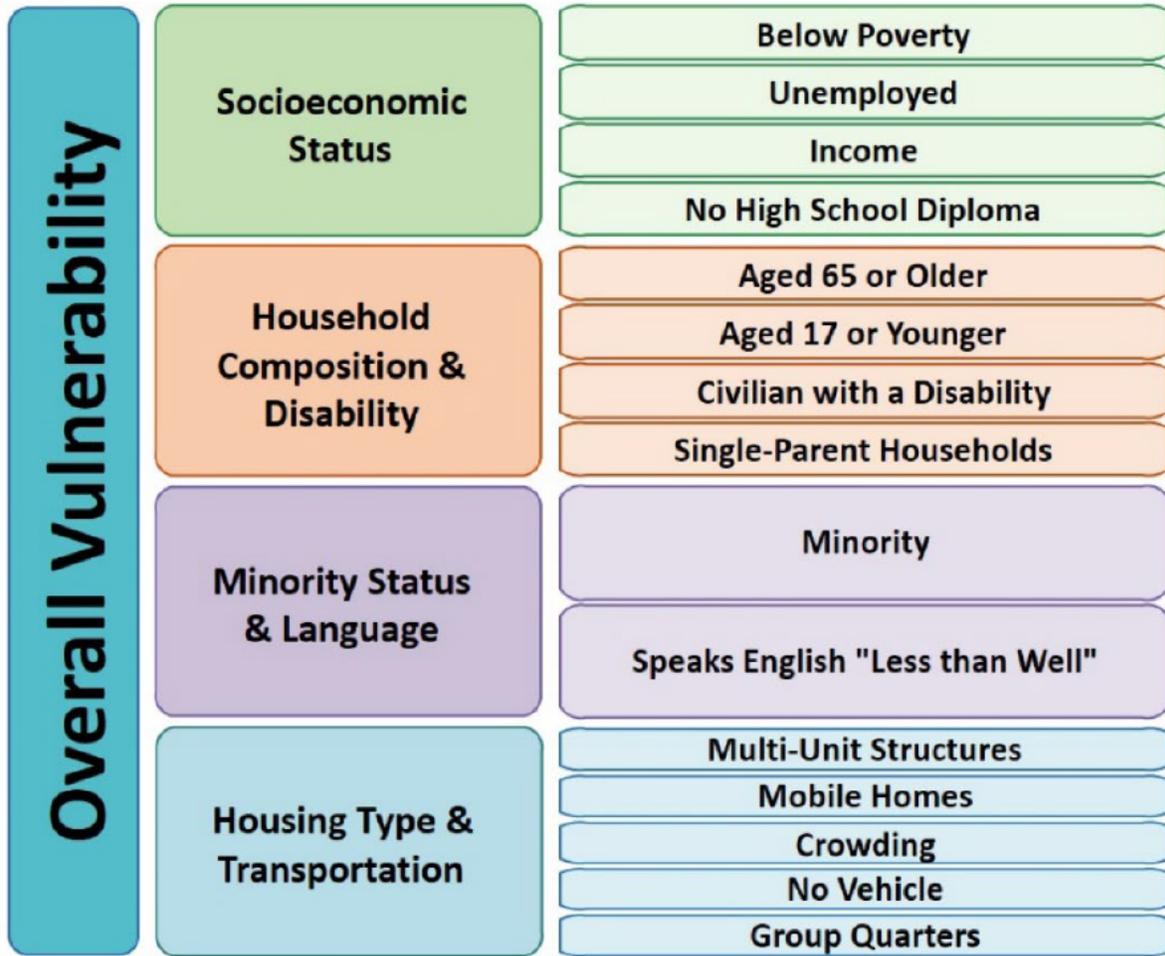


Social Vulnerability Index Rankings

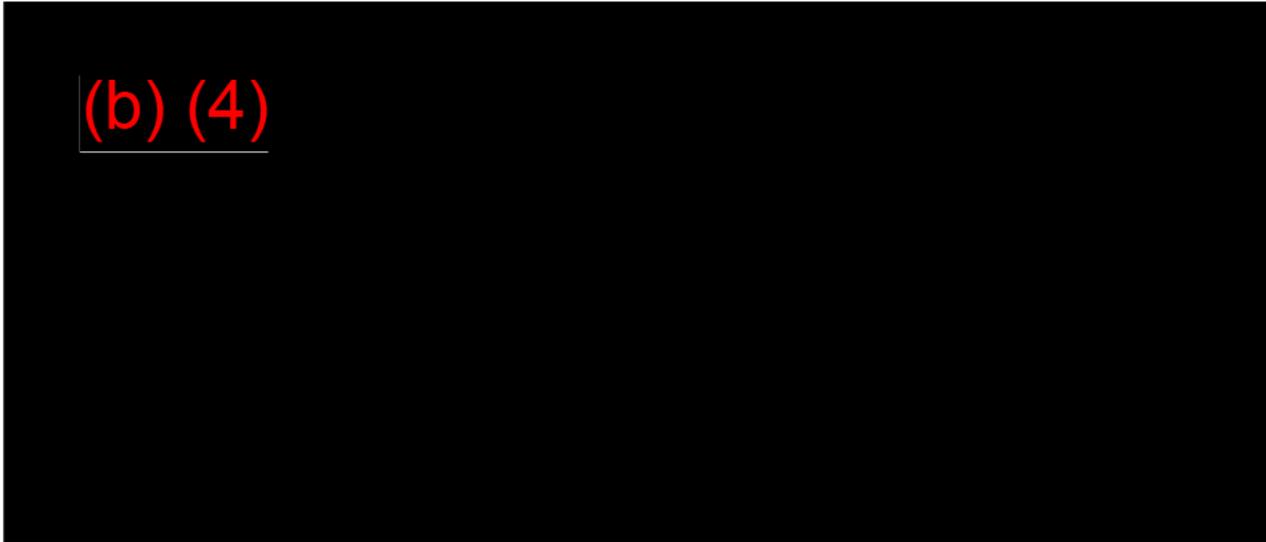


(SLOPE 2022)

National Renewable Energy Laboratory. "Social Vulnerability Index," State and Local Planning for Energy, accessed 6/23/2022, <https://maps.nrel.gov/slope>.



https://www.atsdr.cdc.gov/placeandhealth/svi/documentation/pdf/SVI2018Documentation_01192022_1.pdf



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E. CONCLUSION

As stated previously in our Equity Plan, Retrieval goes to great lengths to not only limit environmental exposure and burdens to the communities where we operate, but to improve them. These efforts and commitments are demonstrated through our support of urban farming initiatives, the lack of noise or air quality complaints where we currently operate, and our work to expand the accessibility of battery recycling. In addition to these efforts, Retrieval will make measurable investments to increase the clean energy job pipeline and job training through our work with local community colleges and universities to implement work study programs and create hands-on curriculum that produce experienced students ready to join our team. Finally, this plan makes clear our commitment to contract with minority-owned and/or diverse business enterprises to the extent possible as we carry out the project.

Disclosure of Lobbying Activities

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure)

1. Type of Federal Action: a. contract <input checked="" type="checkbox"/> b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. Status of Federal Action: a. bid/offer/application <input checked="" type="checkbox"/> a. b. initial award c. post-award	3. Report Type: a. initial filing <input checked="" type="checkbox"/> a. b. material change
4. Name and Address of Reporting Entity: <input type="checkbox"/> Prime <input checked="" type="checkbox"/> Subawardee Tier _____, if Known: Nth Cycle 100 Cummings Center, #151B Beverly MA 01915 Congressional District, if known: MA-07	5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime: Retriev Solutions 265 Quarry Rd SE Lancaster, OH 43130 Congressional District, if known:	
6. Federal Department/Agency: U.S. Department of Energy	7. Federal Program Name/Description: EERE CFDA Number, if applicable:	
7. Federal Action Number, if known: DE-FOA-0002678	9. Award Amount, if known: \$ 2,150,120	
10. a. Name and Address of Lobbying Registrant <i>(if individual, last name, first name, MI):</i> N/A	b. Individuals Performing Services <i>(including address if different from No. 10a)</i> <i>(last name, first name, MI):</i> N/A	
11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.	Signature:  Print Name: <u>Chad D. Vecitis</u> Title: <u>CTO</u> Telephone No.: <u>617-708-5200</u> Date: <u>06/30/2022</u>	
Federal Use Only	Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)	

Summary for Public Release

Applicant: Retrieval Solutions, LLC¹

Project Title: North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery-Grade Raw Materials

Technical Point of Contact: Anthony Rogers

Project Objectives & Description. Funding for the Project will be used to expand and upgrade the Applicant's existing lithium-ion recycling facility at its Lancaster, Ohio headquarters. At full operation (targeted for 2026), the facility will be the largest commercial-scale recycling facility in North America. The Applicant will be able to shred and separate tens of thousands of tons of lithium-ion batteries, producing enough battery-grade raw materials to power 100,000 new electric vehicles (EVs). This capacity of lithium-ion battery recycling is imperative for the US to take a permanent technological lead in best-in-class lithium-ion recycling.

Potential Impact. The Applicant supports a critical area in the battery supply chain and will create an estimated 100 jobs, while also supporting the broader community. Advancement of equity, environmental, and energy justice are woven into the framework of the organization. From adding skilled jobs, to the team working with a wide range of organizations, including a woman owned small business to support environmental recruiting in the local area. Communities where we work, live, and conduct business play a significant role in the Applicant's success. The Applicant will work with organizations such as Lancaster Parks & Recreation, Edible Flint, Habitat for Humanity and more. They will also support battery education and recycling to groups such as youth robotics teams.

The transformation of the electrical vehicle market is here and growing year-over-year. Recycling will help support a viable and sustainable resource for critical materials. The Applicant's legacy of operating the most-experienced lithium-ion processing facilities in North America and knowledge of adapting to the changing battery market needs shows the innovative approach by this organization. The DOE grant will support closing the loop in the battery supply chain and creating a true circular economy domestically while creating jobs and positively impacting local communities.

Major Participants. The project will be primarily driven by the Applicant's project management and executive team. The Project Director is Shane Thompson and additional members of the team include: Anthony Rogers, Technology; Dawn New-Echlin, Sales; Stephanie Dix, Logistics; John Kelly, Operations; Meredith Barius, People & Culture; Phil Enck, Material Sales; Erin Sharpe, Finance & IT; Danielle Spalding, Marketing & Communication, Laura Evans, ES&G, as well as Todd Coy and Novis Smith. Included as a sub-recipient and a partner is Nth Cycle, who will be an extractive partner that will assist in evaluating best practices for efficient extraction.

¹ In June 2022, Retrieval Solutions unveiled a new corporate identity, Cirba Solutions. This entity combined Retrieval Solutions, Battery Solutions, and Heritage Battery Recycling into the most complete and comprehensive battery management and materials provider. The new name represents circularity and batteries coming together, which reflects this expansion plan.

North America Expansion Plan Lancaster, OH Plant Expansion – Lithium-Ion Battery Recycling to Produce Battery Grade Raw Materials

SHANE THOMPSON / ANTHONY ROGERS - RETRIEV SOLUTIONS

Project Summary

This project will expand and upgrade Retriev's existing lithium-ion recycling Lancaster Facility

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The expanded facility will incorporate a host of fire safety technologies and solutions to prevent and mitigate any fires produced during the LIB recycling process.

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Primary Initiative I	Expand lithium-ion mechanical black mass processing capacity at the Lancaster Plant to 35,000 tpy through the installation of two new LIB recycling mechanical processing lines.
Primary Initiative II	Produce MHP via newly patented Retriev process that will use a modified idled alkaline hydrometallurgical processing line. This process also recovers lithium and anode carbon
Primary Initiative III	Expansion of the patented MHP process and alkaline processing line to produce battery-grade Ni and Co salts.
Primary Initiative IV	Implement facility and process improvement in parallel with the other stated initiatives: <ul style="list-style-type: none"> A. Construct 75,000 square-foot building to expand capacity; B. Install new emissions control equipment to service new processing lines; C. Copper and aluminum recovery; D. Upgrade fire safety systems; and E. Recommission the deactivated rail spur.

Key Personnel/Organizations

Retriev Solutions	Meredith Barius
David Klanecky	Phil Enck
Shane Thompson	Erin Sharpe
Anthony Rogers	Todd Coy
Dawn New-Echlin	
Stephanie Dix	Consultant
John Kelly	Novi Smith

Budget and Timeline

Federal funds: \$74,999,925 Cost-share: \$107,515,014 Total: \$182,514,939

Key Milestones & Deliverables

Period 1:

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Project Impact

The demand for critical battery materials is outpacing supply. Retriev Solutions is prepared to dramatically scale its capacity for recycling LIBs to enable a circular battery supply chain for the industry. The Lancaster Facility will create a competitive edge by utilizing the best performing separation to be the largest commercial-scale recycling facility in North America, shredding and separating more than 35,000 tpy of LIBs, producing enough battery-grade raw materials to power 100,000 new EVs. This capacity of lithium-ion battery recycling is imperative for the US to take a permanent technological lead in best-in-class LIB recycling.

Enable a circular battery supply chain by ramping up experienced and existing battery recycling facilities.