



2023 IMPACT REPORT



ENVIRONMENTAL RESEARCH
& EDUCATION FOUNDATION™

ABOUT OUR WORK

MISSION

To advance scientific research and create educational pathways that enable innovation in sustainable waste management practices.

VISION

To light the way toward a more circular economy.



ADVANCING THE CIRCULAR ECONOMY

We are working to create a world where materials move through a cycle of reusing, repairing, redistributing, and recycling to preserve natural resources and minimize climate-altering emissions.



POWERING THE SCIENCE

We are the proven source for unbiased scientific reports and analysis on sustainable materials management.

FROM OUR PRESIDENT AND OUR BOARD CHAIR



Dear EREF Community,

As we close another year, I'm proud of the significant strides EREF has made toward fulfilling our mission to advance scientific research and create educational pathways that enable innovation in sustainable waste management practices.

In 2023, we established three key research priorities in response to the urgent need for innovative solutions to the most pressing environmental challenges. These priorities represent some of the most significant issues affecting resource management today. You'll read more about them in this report.

With your support, we've continued advancing our mission in 2023 with new scholarships, growing educational initiatives, and a record-breaking charitable auction. Our growing scholar community of over 130 bright minds is at the forefront of tackling critical environmental challenges across those research priorities. Their work is not just research — it's another step towards the actualization of our vision to light the way towards a more circular economy.

As we move into the future, thank you. Thank you for being an integral part of our mission and for your commitment to a more sustainable future. Together, we're making a difference, and I'm excited about the opportunities ahead.

Sincerely,

Bryan F. Staley, PhD, PE
President & Chief Executive Officer



"Our progress this year has been nothing short of inspiring. Central to our accomplishments has been the inclusion of new grantees and scholars researching solutions for more sustainable resource management. Among hundreds of environmental organizations, EREF is a real scientific organization presenting real data. Your generosity ensures that our commitment to a research-driven approach in addressing environmental challenges remains robust."

– Ven Poole, EREF Board Chair
Board Member, GFL Environmental, Inc.

RESEARCH PRIORITIES



CLIMATE CHANGE IMPACTS/GREENHOUSE GAS EMISSIONS

We're working on quantifying greenhouse gas emissions with new and existing methodologies to reduce the climate change impacts of resource management.



EMERGING CONTAMINANTS

We're examining the potential environmental and health impacts of emerging contaminants and researching the most effective management strategies for materials collection and disposal.



ADVANCING MATERIALS CIRCULARITY & RECYCLING

We're assessing the relationship between environmental burdens and the circular economy to better understand the barriers and benefits experienced across the value chain.

LEADING WITH DATA



DATA ANALYSIS

Our internal data analysis team gathers and analyzes crucial materials management data and trends so decision makers can take the most informed action.



SCHOLARSHIPS

For over twenty years, we've been creating educational pathways that enable innovation in sustainable resource management practices by funding the next generation of experts. Our total number of named scholarships grew to eleven in 2023, thanks to the generosity of industry leaders.



GRANTS

With your support, we've become one of North America's largest sources of private research funding in sustainable materials management. Our grants program empowers cutting edge research that addresses our research priorities.



EDUCATION

Leading industry voices attend in-person and virtual gatherings to explore and discuss the most challenging topics materials managers face. Our Science Sessions, Summits, courses, and eTextbook provide an objective, data-driven space for informed solutions.

ACCOMPLISHMENTS

82

E-Textbook
Users

45

Active Projects

42

Active Scholars

17

New Scholars

11

Projects
Completed

09

New Projects
Initiated

05

Educational
Events

04

Graduated
Scholars



ISABELLA IPPOLITO
University of Waterloo, MSc



JEANNIE EGAN
North Carolina State University
MS, PTR Scholar 2021



JOCELYN PLOUFFE
University of Manitoba
MS, SCS Scholar 2021



TESSA LEE
Yale University
MS, Apicella Scholar 2021



EXPANDING OUR IMPACT

EREF has been advancing science to expand the industry's knowledge and understanding of the resource life cycle for thirty years. Our Strategic Research Priorities impact many critical areas of sustainable resource management like **landfill emissions** and **elevated temperature landfills**.

CHALLENGE: LANDFILL EMISSIONS

PROJECT HIGHLIGHT: GAS MAPPING LIDAR AND TRACER CORRELATION METHODS

Researchers conducted an objective intercomparison between two methods for measuring methane emissions in Landfills. With waste management listed by EPA as the third largest source of methane emissions in North America, **research like this is vital to enhance emissions monitoring technologies and help mitigate the impacts of Climate Change.**

PROJECT HIGHLIGHT: A CONTROLLED RELEASE EXPERIMENT

Using technologies like LiDAR and Tracer Correlation and others, EREF initiated a groundbreaking controlled release methane study with St. Francis Xavier University's FluxLab at a closed landfill in Ontario, Canada. **Results from this study will inform key decision makers in their ongoing efforts to quantify, capture, and recover methane emissions from waste.** Stay tuned for results from this study in our 2024 Impact Report.

CHALLENGE: ELEVATED TEMPERATURE LANDFILLS

PROJECT HIGHLIGHT: COMPARATIVE MICROBIOLOGY OF TYPICAL AND ELEVATED TEMPERATURE LANDFILLS

Researchers from the University of Illinois, Chicago, found that ETLFs have distinct microbial communities and are significantly impacted by construction waste, antibiotics, and microplastics. **Data like this can substantially improve landfill management practices and our understanding of their environmental impacts.**

"Throughout my 34 year academic career, EREF has been a key partner, supporting more than 10 of my own research projects across various facets of sustainable resource management. This controlled release project, like so many others before it, will add to the body of research that's already contributed to tangible improvements in waste and landfill management methods. The study will benefit corporate, research, and regulatory bodies, and ultimately, everyday citizens in our ongoing climate change mitigation efforts"

Morton Barlaz, PhD

Professor Emeritus
Department of Civil, Construction,
& Environmental Engineering
NC State University
EREF Research Council Member

Steven Menoff, PE

Civil & Environmental Consultants
EREF Research Council Member

"Managing and preventing the development of elevated temperature landfills remain an ongoing challenge for the solid waste management industry. EREF's research helps us understand which waste materials facilitate the development of elevated temperature conditions, which helps landfill managers more effectively manage their sites to avoid ETLF conditions."

EXPANDING OUR INFLUENCE

We've continued to leverage our impact to increase our reach. In 2023, EREF's data **informed conversations** at the highest levels of **decision-making**.

WE JOINED INDUSTRY LEADERS ON CAPITOL HILL

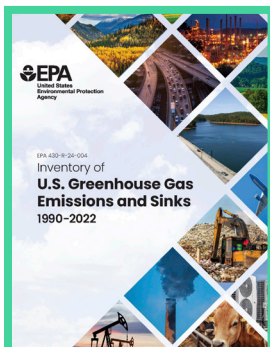
We had discussions with multiple legislators to share our mission and ability to be a resource as they educate themselves on the science behind multiple policy challenges. These meetings included the state of Per- and polyfluoroalkyl substances (PFAS) science along with EREF's other current research efforts and strategic priorities.

PAVING THE WAY FOR PFAS ACTION THROUGH ESSENTIAL BRIEFINGS

We joined local, state, and other nonprofit leaders to present EREF's extensive research on PFAS to a United States Senate staff briefing.

TEMPERATURES RISE AT VIRGINIA DEQ'S HEADQUARTERS

Dr. Staley, along with academics and waste company representatives, met with over 50+ VA DEQ personnel in Richmond, Virginia, to share nearly a decade of scientific and operational research that showcased lessons learned, how to identify and manage elevated temperature landfills (ETLF) and causes of the phenomenon.



INVENTORY OF U.S. GREENHOUSE GAS EMISSIONS AND SINKS

EREF was cited in USEPA's Methodology Report for Inventory of US Greenhouse Gas Emissions and Sinks by State: 1990-2021.

EREF Staff also presented for key leaders at WasteExpo, Bank of America, Stifel, and the Center for Strategic and International Studies.

IMPACT



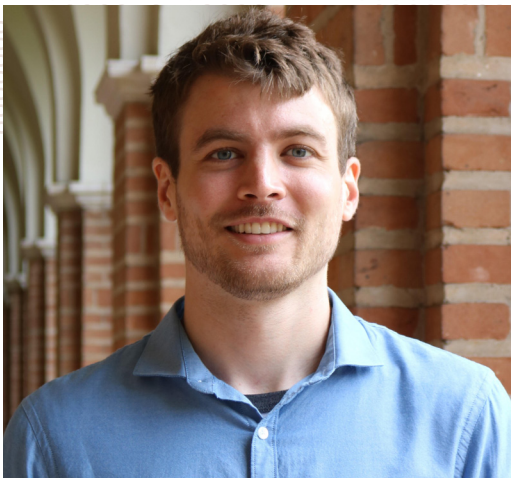
Recognizing EREF's role in bolstering the industry, I have the highest admiration for EREF's efforts in education and industry research. I'm passionate about investing in environmental education and research, emphasizing the need for technically oriented professionals to handle the evolving challenges in the industry. I know my support isn't just about recognizing challenges, it's about providing solutions.

**Carl Apicella, Continuum Environmental,
Carl J. Apicella Scholarship**



My scholarship enabled me to study the renewable energy transition, particularly the critical mineral demands and recycling potential. During my research, I was able to quantify the raw material requirements for various decarbonization pathways and explore strategies to mitigate the strain on global mineral supplies. This project wouldn't have been possible without EREF and their commitment to advancing environmental research, and I'm grateful for their support.

Tessa Lee, Carl J. Apicella Scholarship recipient



As the recipient of the Poole Scholarship, I've been afforded the freedom to explore, innovate, and push the boundaries of what's possible. At its core, my research is about more than just finding sustainable alternatives to current practices; it's about reimagining the future and paving the way for a world where waste is not just discarded but repurposed. My journey, furthered by EREF's support, is an example of what's possible when passion meets purpose.

**Zachary LaTurner, Waste Industries Scholarship Honoring
Lonnie C. Poole Jr. recipient**

FINANCIAL OVERVIEW

\$379,650
in Scholarship Funding

\$1,444,426
in Project & Grant Funding

Revenue Highlights

\$250,000 Scott & Vicki Dols Impact
Scholarship endowment

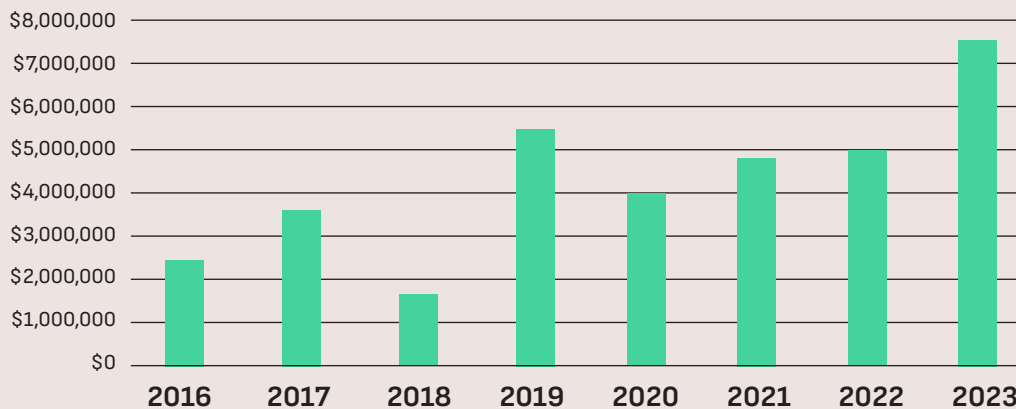
\$150,000 HHH Safety & Spirit of the
Waste Industry Scholarship

\$3,519,795 Revenue From
Auction

\$302,442 Revenue from Fall Classic
Golf Tournament



Annual Revenue & Investments



Cumulative accrued-based revenue reached \$34.6 million from 2016 to 2023, with an average annual growth rate of 35% and \$0.83 of every dollar invested in programs.



*Candid: Formerly Guidestar

Visit erefdn.org for more information.

*Please note that the financial summary included in this report is unaudited and provided as a preliminary overview. The final audited financial statements will be available upon completion of the audit process.



"EREF scholars are the future of sustainable resource management – a field that we've been proud to be a part of and contribute to together. We created an endowed scholarship to guarantee funding that will support the objective science and research these students work tirelessly to provide. One of many ways we see EREF impacting productive and applicable change. It's our hope that others will also invest in the future and keep the momentum going alongside us."

Scott & Vicki Dols: Scott & Vicki Dols Impact Scholarship

OUR 2024 TEAM

STAFF

Bryan Staley, PhD, PE

President and Chief Executive Officer

Kyle Kusterer

Vice President of Development

Stephanie Hollomon

Senior Director of Administration and Finance

Caitlin Conklin

Senior Director of Engagement

Suzie Boxman, PhD

Director of Programs

Caroline Saul, PhD

Programs Project Manager

Stephen Aber

Communications Manager

Allison Exum

Events Manager

Kate Howard

Assistant Engagement Manager

Meg Gibson

Development Manager

Lily Liu

Project Manager

Sarah Ledogar, PhD

Research and Scholarships Program Coordinator

Alyssa Knowlton

Programs Data Coordinator

Amanda Meehan

Research Grants Coordinator

Kaitlin Peck

Programs Data Coordinator

Erin Wawzyniecki

Events and Education Coordinator

Hayden Hill

Research Coordinator

Erin Snider

Executive Assistant

BOARD OF DIRECTORS

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Vice Chair

Executive Vice President – Engineering and Disposal, Waste Connections Inc.

Pat Carroll

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CEO, BTR

Kristin Kinder

Vice President, Research & Waste Stream Sustainability, Wastequip

Mike McLaughlin

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Paul Mitchener

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Henry Saint Bris

President, ANSA Services

Michael Savage

President, PTR Baler and Compactor

Paul Stauder

Executive Vice President, Business Development, M&A, Reworld

Joseph Ursuy

Executive Vice President, Comerica Bank

Derek Veenhof

CEO, Modern Corporation

James Walsh, PE, BCEE

Chairman, SCS Engineers



OWN YOUR IMPACT

Supporting the Next Generation

We grow future leaders by providing scholarships for some of the brightest minds in sustainability. Our Scholarship Program fosters the next generation of researchers, who will continue to provide critical research and data well into the future.

How Today's Contributions Shape Tomorrow

We are committed to advancing a circular economy through our research and educational initiatives, including 125 research projects and 15 reports. The foundation emphasizes the need to broaden research and educational outreach to meet the sustainability needs of diverse stakeholders.

Get Involved

development@erefdn.org

Financial Support

Making a monetary gift to EREF provides immediate and efficient support to the foundation's mission.

Leave a Legacy

Your planned estate gift can change the trajectory of future research and generations of scholars to come.

Donate Stock

When you donate stock or other assets, you will not only make a financial impact on our mission but you could also receive advantageous tax benefits.

Get Involved

Whether you are volunteering at one of our events or joining our group of technical advisors, we would like to hear more about your interest in our foundation.





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www.erefdn.org

3301 Benson Drive, Suite 101
Raleigh, North Carolina 27609
919.861.6876