NC Environmental Stewardship Initiative

2023 Annual Report

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Published March 2025

Executive Summary

The N.C. Department of Environmental Quality's Environmental Stewardship Initiative (ESI) is a voluntary program that assists and encourages facilities to use pollution prevention, sustainable practices, and innovation to meet and go beyond regulatory requirements. The ESI program takes a unique approach to supplement regulation by providing a robust, systematic, and holistic approach to environmental management. Each organization within ESI has committed to report annually on its progress toward its environmental goals. This program annual report summarizes the self-reported data collected from ESI members for calendar year 2023.

Reduced impacts and cost savings reported by members highlight significant results and improvements that may impact the environment, economy, and health of the citizens in North Carolina. The ESI program assists members in addressing environmental challenges through partnerships as well as a comprehensive and voluntary approach that benefits the environment and supports continued economic growth. This approach combines recognition with assistance, training, mentoring, and networking platforms. The three-tiered membership structure of Environmental Partners, Rising Environmental Stewards and Environmental Stewards allows participation from a variety of organizations. The Partner level is the entry level of the program and helps organizations set environmental goals and/or develop an environmental management system (EMS) based on ISO14001. Higher levels require organizations to be models of stewardship, set aggressive environmental goals and to mentor other program participants. In 2023, ESI ended the year with 210 member sites in 63 North Carolina counties as shown in Figure 1 below. Sixteen new Partners across 18 sites joined the program in 2023. In April, ESI and DEQ Secretary Biser presented 2022 Environmental Steward Eaton RPO with their plaque during their onsite Steward ceremony.

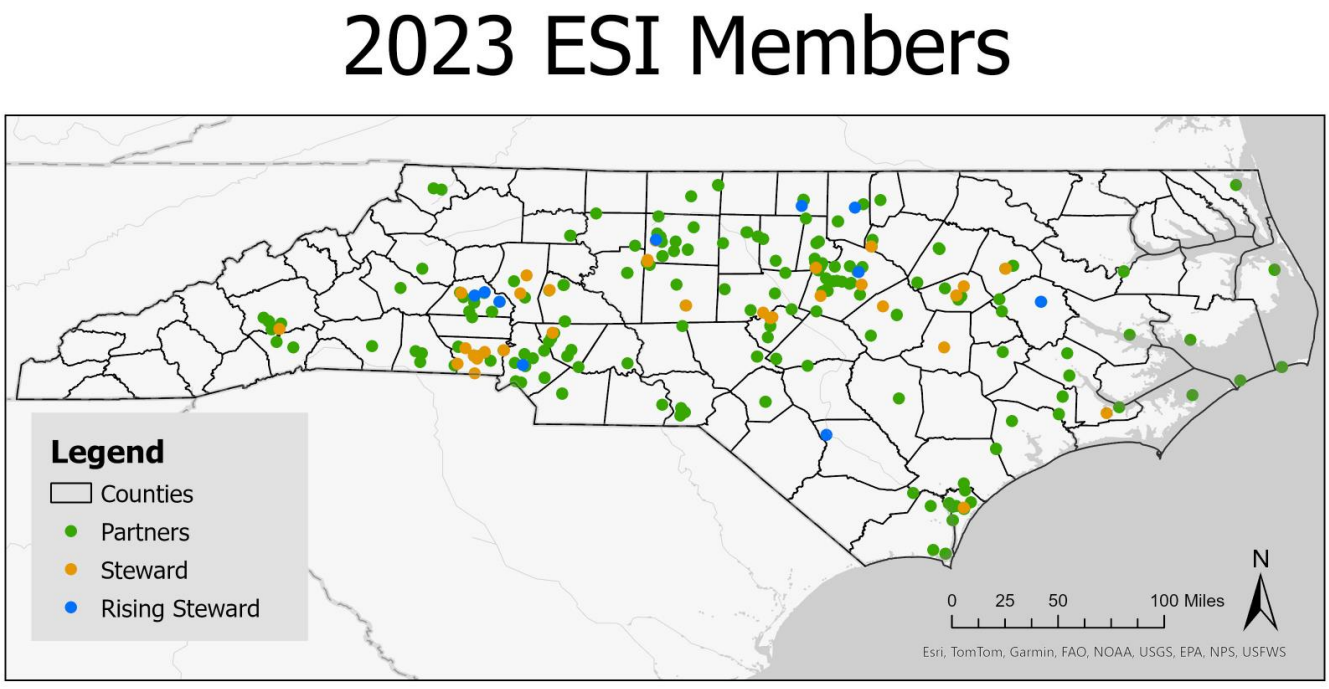


Figure 1. ESI Member Sites in 2023

ESI is open to any entity in North Carolina that commits to improving and reporting on its environmental impacts. See the Membership section on page 21 of this report for more information on eligibility and the three membership levels. ESI members commit to developing and sustaining an environmental management system (EMS) or setting and reporting annually on environmental goals that lead to continual improvement and improved environmental stewardship. In 2023, ESI members set 226 goals covering multi-media, regulated and non-regulated environmental impacts including energy and water conservation. Eighty-six members reported progress toward their goals that are summarized in this report, with one member not reporting this year being on hold.† For 2023, ESI members reported the following positive environmental impacts as shown in Table 1.

Table 1. 2023 ESI Members Reported Results

Reductions	Value	Units
Material Consumption	54	Tons
Air Emissions	750	Tons
Hazardous Waste	2,050	Tons
Wastewater Pollutants	25,300	Tons
Landfilled Waste	63,906	Tons
Greenhouse Gas Emissions*	842,766	Metric Tons CO_2e
Energy Use	1,068,305	MMBtu
Water Use	235,238,400	Gallons
Wastewater Volume	527,240,672	Gallons

Reuse	Value	Units
Biomass Recovery**	1,043	Tons
Total Recycled Volume	4,242	Tons

$7,678,869

Total Cost Savings

*Indirect not reported in energy reductions

**Category created for compost/mulch related goals

†Partners may apply to the program as a multi-site member, which allows that organization to submit a single annual report for a group of sites. New members must complete one year of program membership before their results are included in the aggregated program data. Additionally, members can request to be put on-hold for one-year to forego annual reporting. Therefore, the total number of members reporting may be less than the total membership number. See the Membership growth section for 2023 specifics.

2023 Annual Report

2023 ESI Annual Conference

ESI was established to help organizations reduce their environmental impacts beyond measures required by any permit or rule in a way that will minimize or prevent negative environmental impacts, conserve natural resources, enhance the environment, encourage community involvement, and provide long-term economic benefits. With the goal of supporting and encouraging superior environmental performance from North Carolina's industry, business, and non-business organizations, ESI assists members in implementing environmental management systems, achieving environmental goals, providing educational opportunities, connecting members and highlighting member sustainability projects. ESI helps organizations share best practices and has developed an atmosphere of collaboration while fostering a culture of continual improvement.

Each organization within ESI has committed to report annually on its progress toward its environmental goals. This program annual report summarizes the self-reported data collected from ESI members for calendar year 2023. Starting in 2005, members began to include cost savings from implementing environmental improvements in their reporting. Reporting on greenhouse gas (GHG) emission reductions was first included in 2008. A new category was created in 2010 for biomass recovery to capture activities related to composting and mulching as a means of beneficial reuse by diverting organic waste from landfills. In 2012, ESI was opened to organizations not regulated through North Carolina Department of Environmental Quality (DEQ) to increase the program's reach and build a larger network of organizations working together to make North Carolina a model of environmental stewardship. The annual report form was updated for the 2016 reporting year, allowing members to provide additional reduction data that may not have been directly tied to a site's environmental goals. An example of when this could occur is if a site replaces a piece of equipment

with a more efficient version but does not have an energy reduction goal; however, they are tracking their energy usage data for other management reasons and choose to report that data. The 2022 reporting year saw the launch of online reporting in line with DEQ's goal to streamline and modernize the department's processes. This change allows for automation of data analysis and faster tabulation of member and program key results and performance metrics. In 2023, the software for annual reporting was switched to a different online platform that has the capability for users "a-save-as-you-go' function, as requested by the membership.

2023 Pollution Prevention award presentation to TE Connectivity Pegg Road

Program Achievements

Membership Growth

ESI membership has grown eight-fold since it launched in 2002 increasing from 27 member sites to 210 member sites in 2023 (Figure 2).

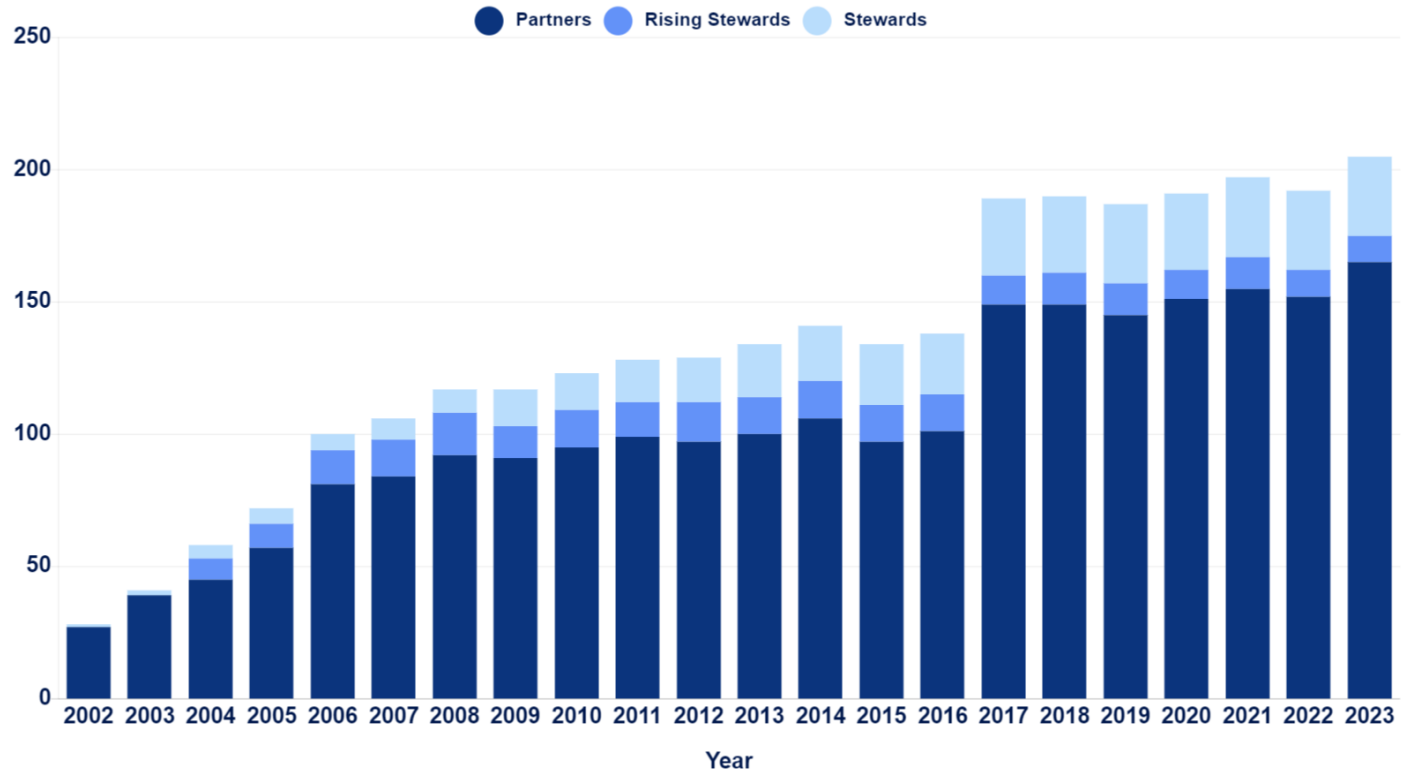


Figure 2. ESI Membership Growth, 2002-2023

Program participation includes members of all sizes; the smallest having two employees and the largest employing more than 20,300 (Figure 3). Forty-nine member sites were registered to the ISO 14001:2015 international standard for environmental management systems by third-party auditors, and seven have been deemed functionally equivalent to that same standard by ESI staff.

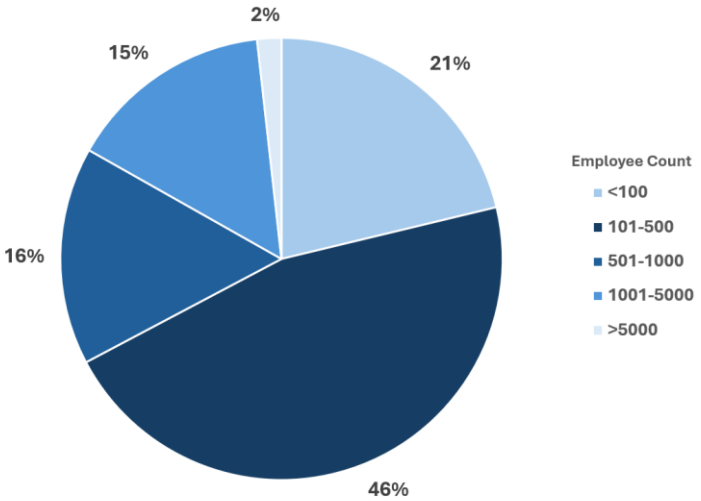


Figure 3. Number of Employees per ESI Member in 2023

In 2023, one Partner member (3 sites) was removed from the program for failure to submit the required ESI annual report and one Partner member voluntarily left the program. Three members asked for their membership to be placed "On hold" (2 Partners and 1 Steward). In 2023, sixteen new members across 18 sites joined the program (Table 2).

Table 2. 2023 New ESI Members

Facility Name	ESI Level	City	County
Advance Pierre Foods	Partner	Claremont	Catawba
Arauco North America, Inc.	Partner	Moncure	Chatham
Asana Partners	Partner	Charlotte	Mecklenburg
Carolina Utility Customers Association, Inc.	Partner	Raleigh	Wake
Clearwater Paper Shelby, LLC	Partner	Shelby	Cleveland
Corning Optical Communication (Trivium Cable Plant)	Partner	Newton	Catawba
Culp Home Fashions	Partner	Stokesdale	Guilford
Direct Pack, Inc.	Partner	Rockingham	Richmond
Eaton Aeroquip, LLC-Middlesex	Partner	Middlesex	Nash
FCR, LLC	Partner	Charlotte	Mecklenburg
Fresenius Kabi – Wilson Facility	Partner	Wilson	Wilson
Gerresheimer Glass	Partner	Morganton	Burke
NC Museum of Natural Sciences	Partner	Raleigh	Wake
NC Museum of Natural Sciences – Prairie Ridge Ecostation	Partner	Raleigh	Wake
Sterling Pharma	Partner	Cary	Wake
Wicked Weed Brewing, LLC-Clean Production	Partner	Candler	Buncombe
Wicked Weed Brewing, LLC-Funk House HQ	Partner	Arden	Buncombe
ZIEHL-ABEGG	Partner	Greensboro	Guilford

2023 Eaton Raleigh Production Operations New Steward Ceremony

Member Goals

In 2023, ESI members reported on 226 goals that covered both regulated and non-regulated environmental impacts. As shown in Figure 4, the greatest number of goals set in 2023 were related to energy and water use reductions. Energy use reduction (not including GHG) has been the primary goal reported by members since 2008. Zero-waste-to-landfill (ZWTL), and greenhouse gas emission reductions were the next most common reduction goals reported. A variety of other environmental and other goals were also reported, including but not limited to wastewater, stormwater, recycling, material consumption reductions, compliance, wildlife habitat improvements, hazardous waste reductions, air pollution reductions and community involvement.

Figure 4. 2023 ESI Member Goals

Member Results

ESI members are required to report on performance toward environmental goals and reductions in environmental impacts. While there are 210 sites in the program, there are 11 multi-site Partner members that account for 115 of the sites reporting. New members are not required to submit annual reports until after their first full year of membership. Therefore, 86 members reported progress toward their goals, resulting in environmental impact reductions and cost savings shown in Tables 3 through 6 below. All data is self-reported by member facilities and not verified by the

department. While reductions are only counted in the first year of their occurrence, most are permanent reductions. The greenhouse gas emission reductions increased dramatically in 2023 due to one facility reporting for the first time.

Table 4. ESI Member Energy and Air Emission Reductions 2004-2023

Year	Energy Reductions (MMBtu)	Greenhouse Gas Emissions Reductions* (Metric Tons CO_2e)	Air Emissions Reductions** (Tons)
2004	11,737		297
2005	48,451		208
2006	123,821		232
2007	28,527,501	9,370	243
2008	9,196,666	5,466	29
2009	1,549,175	64,224	155
2010	598,591	1,444	46
2011	1,626,534	18,677	4
2012	547,878	1,277	13
2013	8,643,348	2,041	73
2014	79,175	11,136	112
2015	22,289,629	818	76
2016	295,075	3,562	2,973
2017	1,093,033	2,546	1,694
2018	3,065,511	30,616	2,595
2019	847,583	24,190	247
2020	8,203,092	22,321	498
2021	666,966	10,377	663
2022	1,264,662	73,802	142
2023	1,068,305	842,766	750
Total	**89,746,732**	**1,124,632**	**11,051**

*Indirect not reported in energy reductions
**Not including Greenhouse Gas (GHG) emission reductions

Table 3. Total Cost Savings from Member Reported Environmental Projects

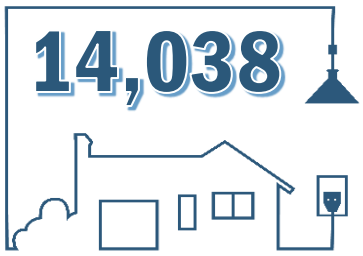
Year	Total Cost Savings
2005	$12,721,772
2006	$10,393,930
2007	$2,961,039
2008	$4,523,391
2009	$3,070,439
2010	$3,270,504
2011	$13,292,968
2012	$5,262,972
2013	$836,537
2014	$2,188,478
2015	$2,626,307
2016	$8,221,015
2017	$8,178,746
2018	$6,717,739
2019	$11,331,947
2020	$7,193,816
2021	$2,500,986
2022	$5,396,288
2023	$7,678,869
Total	**$118,367,743**

Mecklenburg County Solid Waste landfill tour with ESI staff

Energy Data

Forty-one goals related to reducing consumption of energy (natural gas, fuel oil and electricity) as well as fuel used in vehicle fleets (gasoline and diesel) were reported. In total, members reduced their energy usage by more than 1 million MMBtus (million British Thermal Units, or BTUs). Most of these reductions came from reductions in natural gas and electricity usage in 2023. LED lighting projects; process efficiency improvements and; boiler, chiller, HVAC, roof replacements, and compressed air projects all contributed to the energy reductions. Replacement of older equipment with more efficient devices and software programming or upgrades was credited with efficiency increases which either reduced the overall energy needed or kept demand steady during production changes. Additionally, replacement of gas- or diesel-fueled vehicles with hybrid and fully electric vehicles, and the generation or purchasing of renewable energy were reported to reduce associated CO_2e emissions. The significant increase in GHG reductions this year was due to one facility which had not previously reported GHG reduction numbers.

In 2023, ESI continued the Energy Toolkit project, which allows members free access to energy monitoring equipment and was used by two members in 2023. Each member used components of the Energy Toolkit for two months. The toolkit includes an ultrasonic leak detector, an infrared camera, an AC current probe, a LED light meter, power data loggers and electricity usage monitors.



Number of North Carolina homes that could be powered for a year by ESI member energy savings in 2023.

ESI Energy Toolkit

ESI members reported saving over $6 million on environmental projects in 2023.

Water Data

Thirty-five goals related to water usage were reported with reductions of 235,238,400 gallons of water as noted in Table 5. This reduction is over 83 million more than what was reported in 2022. Reductions were attributed to leak detection; maintenance; new chillers and other equipment replacements; implementation of closed-loop cooling systems and other water reuse projects; elimination of inefficient equipment; and employee education campaigns.

Table 5. ESI Member Water and Wastewater Reductions 2004-2023

Year	Water Use Reductions (Gallons)	Wastewater Volume Reduction (Gallons)	Wastewater Pollutants Reductions (tons)
2004	369,529,216		379
2005	54,201,286	85,566,162	527
2006	591,356,273	106,092,200	400
2007	83,929,264	881,690	0
2008	183,587,248	202,701	105
2009	1,444,617,822	18,304,480	138
2010	41,895,325	20,449,660	4
2011	347,399,898	5,904,175	7,210
2012	455,656,908	10,862,255	230
2013	547,725,143	16,252	3,616
2014	2,105,928,788	7,381,860	11,139
2015	2,439,754,313	1,690,643	3,530
2016	1,239,254,545	230,263,919	806
2017	1,038,806,743	490,620,971	6,783
2018	2,091,856,088	1,840,602,313	109,134
2019	1,052,916,723	3,632,451,983	399,871
2020	1,290,141,538	1,032,748,100	6,777
2021	512,073,937	747,744,377	74,803
2022	151,764,223	98,641,150	8,965
2023	235,238,400	527,240,672	25,300
Total	**16,277,633,683**	**8,857,665,563**	**659,717**

Nine facilities reported goals related to wastewater discharge volume, resulting in total reductions of 527,240,672 gallons of wastewater, a significant increase from reductions reported in 2022. The highest wastewater volume reduction reported was from a facility with a newly operational anaerobic digester lagoon. Three companies reported specific goals related to stormwater management improvement projects. Projects related to stormwater included map and inspect outfalls, re-routing drainage inlets, and regrading on-site surfaces to improve run-off quality. Goals related to wastewater included maintenance projects, and updating equipment.

Members reported 25,300 tons of wastewater pollutant reductions. Projects included upgrading wastewater treatment equipment, performing stormwater best management practices, and maintenance to reduce leaks and improve efficiencies.

Waste Data

Sixty-one goals related to solid waste reduction were reported in 2023, with a reduction of 63,906 tons of waste going to landfill and 4,242 tons of material being recycled. Process improvements, including material consumption reductions, waste-to-energy and beneficial reuse, packaging changes, finding new markets to advance circular economy efforts, increased recycling efforts, and educational campaigns were reported for many of the solid waste reductions. A significant increase to landfill waste reductions was seen primarily due to continued ZWTL efforts and aggressive recycling efforts. Material consumption reduction dropped drastically because one company significantly increased raw material use reporting.

Table 6. ESI Member Waste Reductions and Beneficial Reuse Totals 2004-2023

Year	Hazardous Waste Reductions (tons)	Landfilled Waste Reductions (tons)	Material Consumption Reductions (tons)	Total Biomass Recovered* (tons)	Total Recycled Volume (tons)
2004	12	997	509		10,015
2005	119	82,453	37,728		8,047
2006	405	59,441	973		12,594
2007	13	205,169	60		23,986
2008	200	737	2,136	2,783	4,777
2009	10	4,072	639	258,635	34,233
2010	6	10,245	1,792	333,375	36,667
2011	15	3,755	115	346,437	29,901
2012	4	3,071	666	2,959	33,837
2013	37	1,605	24	3,122	46,350
2014	1,538	11,505	23,073	17	32,158
2015	284	42,737	589	54,360	42,150
2016	314	2,535	376	93,888	159,194
2017	105	350,911	356	95,625	97,774
2018	30	3,430,522	515	89,607	329,229
2019	158	988	1,749	77,939	189,404
2020	723	32,268	600	86,620	341,881
2021	710	64,015	374	71,665	113,477
2022	191	3,577	185,661	61,128	176,125
2023	2,050	63,906	54	22,171	239,323
Total	**6,926**	**4,374,511**	**257,988**	**1,600,331**	**1,961,122**

*Category created for compost/mulch related goals

Nine goals were reported on hazardous waste reductions that reduced 2,050 tons of hazardous waste. Reclassification of some materials as non-hazardous by finding recycling options, efficiency improvements, material swap-outs, and increased analysis of waste streams/disposal information all contributed to these reductions.

Twelve goals were reported related to increased recycling efforts. Some of these efforts included training new staff members, finding new vendors to take previously unrecyclable materials, and improving recycling infrastructure.

Eight facilities reported goals for reduction in waste-to-energy.

Air Quality Data

Members implemented ten goals related to air pollutant emissions, not including GHG emissions, that resulted in reductions of 751 tons of various air pollutants. These included almost 91 tons of volatile organic compounds (Table 7) from coating and solvent operation efficiency improvements.

Table 7. ESI Member 2023 Air Emission Reductions

Air Emissions Reductions	Value	Units
CO Reduction	8.2	Tons
CO_2 Reduction (GHG)	64,010.2	Tons
NOx Reduction	317.0	Tons
PM10 Reduction	63.4	Tons
SOx Reduction	265.2	Tons
Total HAPs Reduction	6.2	Tons
VOCs Reduction	90.9	Tons

Members noted 15 goals specific to GHG emission reductions not associated with energy reductions and a decrease of 64,010 metric tons of CO_2 and CO_2e emissions. Additional information on GHG energy emission reductions can be found in the GHG section.

Other Goals

In 2023, members reported on 11 goals related to environmental compliance and 9 goals related to EMS development or improvement. EMS goals pertained to implementing a new EMS, increased staff training, and maintaining ISO 14001 certification.

Members also reported on goals related to wildlife and habitat improvements (2 goals), improved community involvement (5 goals), and other environmentally related goals specific to individual sites (10 goals). Wildlife habitat goals mentioned bee boxes, enhancing timber management programs, and improving habitats for native flora and fauna.

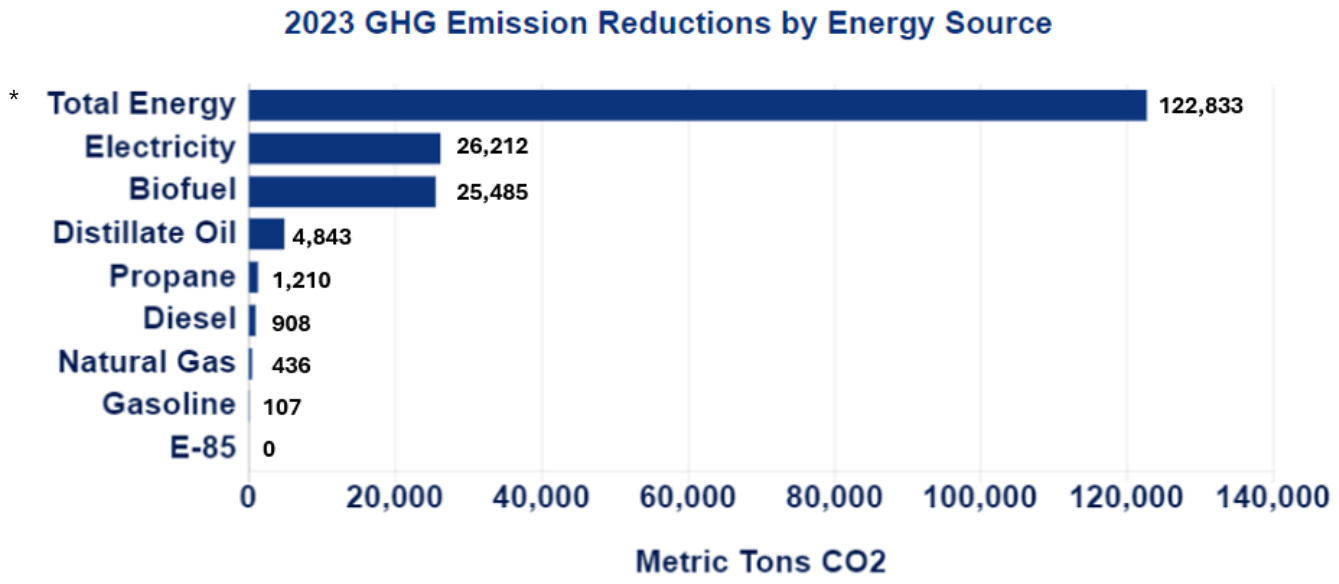
Greenhouse Gas Reductions

ESI member energy reductions can be converted to GHG reductions to show a direct positive effect on the environment from their efforts to reduce their impacts. Figure 5 provides a summary of reductions by type of energy use resulting in the total subsequent metric tons of carbon dioxide prevented from entering the atmosphere. Results also include the GHG reductions that members reported to ESI separately from energy reductions. The Simplified Greenhouse Gas Calculator tool provided by the U.S. Environmental Protection Agency's Center for Corporate Climate Leadership program was used to convert the reported electricity and combustion fuel values to metric tons of carbon dioxide equivalent (CO_2e). This tool can be found on the EPA website.

In 2023 ESI members reduced greenhouse gas emissions equivalent to more than

153,230

passenger vehicles driven for one year!



* Some members combined all energy sources and reported it as total energy.

Figure 5. 2023 Member Greenhouse Gas Emission Reductions by Energy Source

Cost Savings

Almost $6.2 million in cost savings were reported by ESI members from their 2023 reported environmental projects which is greater than 16% increase from 2022. ESI does not require cost savings to be reported; therefore, only a fraction of realized cost savings are reported each year by members. Members reported cost savings within the energy, water and waste reduction categories and Figure 6 shows the breakdown by goal type.

Figure 6. 2023 ESI Member Cost Savings by Goal Type

Community Involvement

In addition to reporting on environmental goals, ESI members also submit information on their involvement with their surrounding community. ESI Stewards are the only membership level required to engage with their local communities on their environmental performance. However, many members have broader community involvement programs. Other members are encouraged to connect with their local communities and may choose to report on their activities as well. For 2023, 303 events and activities were reported by 67 members (30 Stewards, 10 Rising Stewards, 27 Partners), an increase from the previous year. The ESI program encourages community involvement activities that are meaningful and environmentally focused. Some examples of community outreach reported include stream or highway litter clean ups, habitat restoration, coordinating with local first responders for improved emergency preparedness, working with college students on scientific projects, and hosting tours for students (elementary, middle, and high school) at their facilities. Some members also hosted meetings with community organizations, while others focused on providing educational information (often recycling) geared towards facility workers and their families through Earth Day events. These events and efforts described by members have been categorized into 9 groups. Figure 7 shows a summary of the number of each type of activity completed by members.

Figure 7. 2023 ESI Member Community Involvement by Event Type

Program Updates

The ESI program is managed and supported by seven staff members within the DEQ Division of Environmental Assistance and Customer Service (DEACS) on behalf of the DEQ Secretary. The program operates on a limited budget that is funded by an EPA pollution prevention grant and appropriations from the N.C. General Assembly. DEACS staff provide day-to-day management of the program and support members through one-on-one interaction from a dedicated coach and member sharing of pollution prevention and sustainability strategies. DEACS program support also includes providing trainings; hosting an annual conference; facilitating networking events and the annual Steward Forum; hosting a member listserv; distributing an electronic newsletter; leading technical events; organizing Advisory Board meetings; analyzing member data; developing technical and program documents; providing on-site assistance; leading EMS functional equivalent site visits; marketing program services and benefits; and recognizing member achievements. DEACS staff conduct various site visits to ESI members which include general coaching, technical assistance, site verification, and member renewal visits. In addition, DEACS staff will visit potential members to discuss the benefits of ESI. ESI staff continues to expand programming offered to members. One event is the Environmental Benchmarking Series, which is an event hosted by a member at their facility for other ESI members in a peer-to-peer setting to collaborate and share success stories. Additional networking opportunities are being discussed for future years.

DEQ staff working with the DEQ rooftop beehives

In 2023 ESI staff:

- Provided in-person ISO 14001 EMS training to 2 members in January.
- Conducted EMS training and guidance for NC State University students within the Department of Forestry and Natural Resources during their ET 460 senior class project in January, February and April.
- Performed a functional equivalent EMS audit for ESI Steward Pfizer in February.
- Co-hosted the Pathways to Carbon Neutrality: Pfizer's Approach webinar with Waste Reduction Partners program for 62 attendees in March.
- Presented a program overview for 139 attendees at the two North Carolina Manufacturers Alliance (NCMA) Air Quality Compliance Workshops in March.
- Provided a virtual ISO 14001 Overview training in May for ESI Steward Eaton Corporation Asheville.
- Performed a functional equivalent EMS audit for ESI Partner Jowat Corporation in June.
- Hosted the annual ESI Steward Forum in July for 31 attendees.
- Performed a functional equivalent EMS audit for ESI Steward Leggett & Platt ON64 High Point Furniture in August.
- Presented a program overview for 269 attendees during the USEPA Pollution Prevention (P2) Grantee Showcase in August.
- Organized and hosted 159 attendees at the two-day ESI Annual Conference in September.
- Assisted ESI Rising Steward Wolfspeed, Inc. with a 3-day internal audit of their combined ISO 14001 and 45001 management system in October.
- Facilitated an Environmental Benchmarking Series (EBS) event featuring the benefits of ProMoss™ hosted by ESI Steward Uchiyama Manufacturing America in October for 14 attendees.
- Facilitated a PFAS listening session for ESI Rising Stewards and Stewards in October to understand member technical assistance and guidance needs.
- Hosted the Spring (May) and Fall (November) ESI Advisory Board meetings in-person to review 7 Steward and Rising Steward membership renewals and discuss program improvement recommendations.
- Co-hosted the Deploying Rooftop Solar PV at Industrial & Manufacturing Facilities with the NC Clean Energy Technology Center that included a case study from Sierra Nevada Brewing Company's Mills River Brewery for 59 attendees in November.
- Co-sponsored a listening session in November on potential actions for Industrial Decarbonization in North Carolina as part of NCDEQ's proposed priority action plan under the EPA Climate Pollution Reduction Grant program.
- Performed a functional an ISO 14001 equivalent EMS audit for ESI Rising Steward Mecklenburg County Solid Waste Operations in December.
- A total of 28 site visits were conducted in 2023.

Membership

Using pollution prevention and other innovative approaches, the ESI program offers benefits and recognition to members for developing and implementing environmental projects to meet and go beyond regulatory requirements. Any company or organization that operates one or more facilities in North Carolina and whose activities impact the environment is eligible to voluntarily participate in the program. This includes manufacturers, businesses, agribusiness, service providers, government agencies, utilities, schools, and nonprofit organizations. Members can enter the program at any of the three tiers: Environmental Partner, Rising Environmental Steward, or Environmental Steward. Membership criteria in ESI varies depending on the tier.

Criteria

Partner

The Environmental Partner level is designed for adoption by a broad range of organizations that are interested in beginning the process of developing a systematic approach to improving their environmental performance by developing an EMS. Partners have the option of implementing measurable goals in lieu of developing an EMS. Partner

applications may include multiple sites. By the end of 2023, the program had 66 Environmental Partners at 170 Partner sites.

To be considered at the Partner level the applicant must meet the following:

- Demonstrate a commitment to compliance.
- Set environmental performance goals that include pollution prevention and are appropriate to the nature, scale, and environmental impact of the organization and/or commit to developing, implementing, and maintaining an environmental management system based on the ISO 14001 standard or a functionally equivalent model.
- Not be under any environmental criminal indictment or conviction.
- Agree to report annually on progress toward the organization's environmental performance goals, reductions in environmental emissions and/or discharges, solid and hazardous waste disposal, use of energy and water and any reportable noncompliance events.

Rising Steward

The Rising Environmental Steward level is designed for those organizations that have a mature environmental management program. Rising Steward applications must be for a single site, or multiple sites managed under one EMS. The program had 10 Rising Environmental Stewards as of December 31, 2023.

Rising Environmental Steward applicants must meet all Partner criteria and the following:

- Set measurable environmental performance goals that are adopted into the framework of the EMS, include pollution prevention and/or process efficiency improvement activities.
- Demonstrate a mature EMS based on the ISO 14001 or a functionally equivalent model. The EMS for the site must be ISO 14001 third-party certified or be reviewed and deemed functionally equivalent by DEQ staff.
- Demonstrate commitment to meet and go beyond compliance.

Steward

The Environmental Steward level is for those organizations that display a commitment to exemplary environmental performance beyond what is required by law. Steward applications must be for a single site, or multiple sites managed under one EMS. By the end of 2023, the program had 30 Environmental Stewards.

Environmental Steward applicants must meet all Partner and Rising Steward criteria plus the following:

- Set aggressive environmental performance goals.
- Have a process for communication with the local community on program activities and progress toward performance goals.
- Demonstrate how their EMS is integrated into core business functions.
- Agree to mentor other ESI members.

Rising Stewards and Stewards are reassessed after each five-year period of membership for renewal at their current level. Partner members are reviewed annually, through their annual report submissions, to assess progress made toward environmental performance and overall program goals.

Benefits

All ESI members are eligible for the following:

- Technical assistance on developing an environmental management system (EMS), internal auditing, pollution prevention approaches, environmental management and treatment technologies and maintaining compliance with local, state and federal regulations;
- Specialized or customized training and technical assistance including the use of ESI Energy Toolkit;
- Networking platforms including an annual conference, environmental benchmarking events, and topic-specific roundtables, trainings, workshops, and webinars;
- Listserv open to members as well as DEQ and Waste Reduction Partner staff to provide a forum for sharing ideas and examples of best practices and finding solutions to member concerns/issues/questions;
- Recognition of program participation through press releases, ESI website, newsletters, social media posts or inclusion in other DEQ materials;
- Use of the program logo for the achieved level;
- Access to Stewards and other members as mentors where appropriate;
- Single point-of-contact within DEQ;
- Member awards and ceremony at the Annual ESI conference;
- Letter signed by the DEQ Secretary when joining or advancing in the program; and
- Other benefits as deemed appropriate by the DEQ Secretary based on recommendations from the Advisory Board and the DEQ Internal Workgroup.

Environmental Stewards have the following additional benefits:

- Formal public recognition from the DEQ Secretary that may include an on-site award ceremony including the presentation of a formal plaque, public announcements, and press releases;
- Participation in the Steward Forum chaired by the DEQ Secretary;
- Specialized topic meeting discussions (ex. PFAS) with DEQ regulatory staff;
- Priority membership on the ESI Advisory Board when appropriate positions are available.

During the annual ESI Conference, members are recognized for their achievements. Newly accepted facilities starting at the Environmental Partner level receive a certificate signed by the DEQ Secretary. Rising Environmental Stewards receive a plaque recognizing their program advancement. Newly recognized Stewards are offered an opportunity to share their environmental management program successes and are recognized for their achievement to the highest membership level. Renewals at five-year intervals for Rising Stewards and Stewards are also celebrated at the conference. Additionally, organizations that have reached their five-, ten-, and twenty-year milestone as an ESI member are also acknowledged. In 2022, to honor the program's 20th anniversary additional recognition categories were launched including Member of the Year awards at each level of membership and P2 awards for member completed pollution prevention projects and these presentations will be a central part of the conference each year.

Application Process

Partner, Rising Steward, and Steward applications are accepted year-round. The ESI Advisory Board meets twice per year to review applications and renewal site visits with associated reports at the higher two membership levels; discuss program challenges; and review potential program improvements, changes, or other updates. While applications at the higher levels are under review, the applicants join ESI as Partners to begin receiving benefits such as newsletters, listserv postings, training/networking event notifications, and an assigned coach. Figure 8 depicts the application and review process for facilities.

Following receipt of an application, an environmental compliance check is completed by the DEQ Internal Workgroup

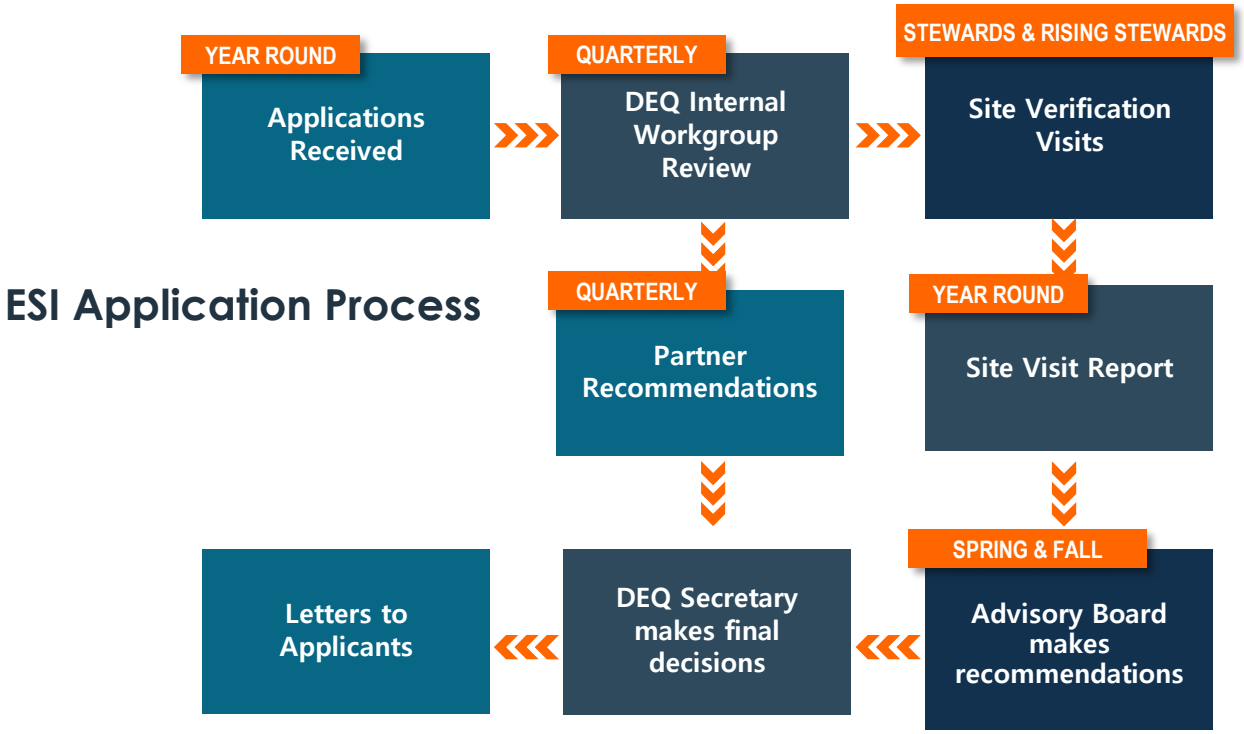


Figure 8. ESI Member Application Process

to determine their compliance status over the preceding five years, as well as identify any pending compliance issues.

The DEQ Internal Workgroup (Workgroup) reviews the compliance status of all new member applications, and this information is considered by the DEQ Secretary regarding acceptance of new organizations as Partners in the program. The Workgroup also reviews the compliance history of Rising Steward and Steward members during each 5-year renewal period and when members request to advance to a higher level to ensure the member is meeting regulatory requirements and maintaining permit compliance. This information is shared with the ESI Advisory Board as part of their review. The Workgroup is comprised of representatives from the following regulatory and non-regulatory divisions within DEQ:

- Division of Air Quality
- Division of Energy, Mineral and Land Resources

- Division of Water Resources
- Division of Waste Management
- Division of Environmental Assistance and Customer Service

The DEQ Secretary established a volunteer Advisory Board to oversee program development and implementation. Membership consists of manufacturers, industries, industry trade groups, environmental and citizen nongovernmental organizations (NGOs), small businesses, representatives of city and county governments, DEQ representatives and others as deemed appropriate. A DEQ employee, appointed by the Secretary, serves as the board's chairperson.

Membership on the Advisory Board rotates at four-year intervals and is capped at 15 members. Whenever possible, Environmental Stewards are given priority for membership for the business, government, and at-large seats The 2023 Board Members are listed in Figure 9.

Rising Steward and Steward applicants receive an on-site verification visit by DEQ staff to ensure the implemented EMS is functioning and gather observations supporting the organization's application. All information obtained through the application and the on-site verification visit is documented and summarized in a report presented to the Advisory Board for review. The Advisory Board then makes recommendations to the DEQ Secretary regarding acceptance of the Rising Steward and Steward applicants. The same process is used for the 5-year renewals.

The DEQ Secretary reviews the recommendations made by the Advisory Board and makes final decisions regarding the recommendations. Organizations accepted into the program at the higher two membership levels are usually announced in the second and fourth quarter of each year.

2023 ADVISORY BOARD MEMBERS AND REPRESENTATION

NCDEQ – CHAIR
CHIEF DEPUTY SECRETARY TIM WATKINS

ENVIRONMENTAL NON-PROFIT
VACANT

STEWARD - LARGE BUSINESS
DAVID AUGE – Grifols Therapeutics, LLC
BILL COVERT– Leggett & Platt ON64
GARRETT CHRISTY – Daimler Truck North America -

STEWARD - AGRIBUSINESS
BRANDON FARLEY – Smithfield Packing Wilson

STEWARD – LOCAL GOVERNMENT
DARREN STEINHILBER – Mecklenburg County Solid Waste

STEWARD – SMALL BUSINESS
TEDDY CHRISMAN – Uchiyama
JARRAD BOTTS – Eaton Youngsville

STEWARD – STATE/FEDERAL FACILITY
KAITLIN HARTMAN – US EPA

STEWARD – AT LARGE
BILL COVERT– Leggett & Platt ON64
DAN BUDREAU – John Deere Turf Care
ROSIE HUFFMAN – Firestone Fibers and Textiles

ACADEMIA
DR. WILLIAM PAIGE –NC State University

INDUSTRIAL TRADE GROUP
JIMMY CARTER – NC Manufacturers Alliance

2023 ESI Spring Advisory Board Meeting

Conclusions

The results from the ESI annual report show that an organization's environmental management approach that exceeds regulatory requirements can lead to a reduction of negative environmental impacts and natural resource consumption while having significant positive economic and environmental outcomes. These achievements can often benefit the community surrounding the member site(s). Therefore, the DEQ ESI program is unique in its ability to collect environmental data across environmental media and sectors, including monetary savings associated with the environmental improvements made by its members. These savings to the financial and environmental bottom line help North Carolina organizations be resilient and promote economic growth and responsible environmental management. ESI encourages its members to share their environmental success stories across sectors to provide a better environment for everyone in the state. ESI members work in partnership with DEQ to protect and enhance North Carolina. Members seek direct communciation with department and serve as partners in finding solutions that benefit private industry and the state. The over 20 year unique partnership of the regulated community with the regulating body should serve as an example to other states and entities.

Glossary of Terms

DAQ – Division of Air Quality – regulatory division within DEQ that is responsible for protecting and improving outdoor, or ambient, air quality in North Carolina.

DEACS – Division of Environmental Assistance and Customer Service – non-regulatory division within DEQ that helps expand the use of sustainable practices regarding waste reduction, energy efficiency, water conservation and emissions reductions including pollution prevention. DEACS also helps promote recycling and material management programs and helps expand recycling infrastructure thereby creating economic growth. DEACS also manages two recognition programs: NC GreenTravel and ESI.

DEQ –Department of Environmental Quality – North Carolina Cabinet level state agency that is the lead stewardship agency for the protection of North Carolina's environmental resources; formerly known as NCDENR.

DEQ Divisions – DEQ is organized into multiple units including regulatory (based on media – air, water, waste, etc.) and nonregulatory (environmental assistance, public affairs, etc.) functions.

DEQ Internal Workgroup – advisory group comprised of representatives from regulatory and non-regulatory divisions within DEQ (DAQ, DEACS, DEMLR, DWM, and DWR) that perform compliance checks and provide a point of contact for questions by ESI staff pertinent to their media.

DEQ Secretary – appointed by the Governor and confirmed by the North Carolina General Assembly as a cabinet officer responsible for the overall management of the DEQ.

DEMLR – Division of Energy, Mineral, and Land Resources – regulatory division within DEQ that is responsible for protecting North Carolina's land and geologic resources. The division regulates and provides technical assistance related to mining, dams, sediment and erosion control and stormwater management.

DOE – (United States) Department of Energy – federal agency with a mission to ensure America's security and prosperity by addressing its energy, environmental and nuclear challenges through transformative science and technology solutions.

DWM – Division of Waste Management – regulatory division within DEQ that is responsible for assuring that solid and hazardous wastes and underground storage tanks are managed properly, and that existing contamination is cleaned up. This is accomplished through the Hazardous Waste, Solid Waste, Superfund, and Underground Storage Tank Programs. In addition, the Brownfields Program promotes redevelopment of abandoned, idle and/or under-utilized sites.

DWR – Division of Water Resources – regulatory division within DEQ that is responsible for ensuring safe drinking water in accordance with federal requirements, issuing pollution control permits, monitoring permit compliance, evaluating environmental water quantity and quality, and carrying out enforcement actions for violations of environmental regulations.

EMS – Environmental Management System - part of an organization's business management system used to develop and implement an environmental policy and manage its environmental impacts. ISO 14001:2015 is the mostly commonly used international standard to provide auditable guidelines for an EMS.

Environmental Partner or Partner – assistance/introductory level within ESI. Members at this level must not be under any criminal indictment for environmental issues and must set either 2 measurable goals or commit to implementing an EMS.

Environmental Rising Steward or Rising Steward – middle level of ESI. Members at this level must meet the requirements of the Partner level and then must have both a mature EMS as well as measurable environmental goals.

Environmental Steward or Steward – highest level of ESI. Members at this level must meet the requirements of the two lower levels and must have aggressive environmental goals, have their mature EMS integrated into their core business functions, demonstrate going beyond compliance, and have community involvement related to the environment. Stewards also agree to mentor others on environmental topics.

EPA – (United States) Environmental Protection Agency – federal agency with a mission to protect human health and the environment.

ESI – Environmental Stewardship Initiative – no-cost assistance and recognition leadership program administered by NC DEQ.

ESI Advisory Board – volunteer group created to oversee ESI program development and implementation. Membership consists of manufacturers, industries, industry trade groups, environmental and citizen nongovernmental organizations (NGOs), small businesses, representatives of city/county governments, state/federal government agencies, and others as deemed appropriate. A DEQ employee, appointed by the Secretary, serves as the board's chairperson. Stewards in ESI are given priority membership on this board which reviews and makes recommendations to the DEQ Secretary on applications to the two higher levels of the program.

GHG – Greenhouse Gases - gases that trap heat in the atmosphere, often used interchangeably with the term carbon emissions, however GHG includes more than carbon dioxide and methane. Carbon dioxide (CO2) is the primary greenhouse gas emitted through human activities and is used to calculate equivalent emissions from energy production.

ISO14001 ISO 14001 is the internationally recognized standard for environmental management systems (EMS). It provides a framework for organizations to design and implement an EMS and continually improve their environmental performance.

LED – Light Emitting Diode – a semiconductor diode which glows when power is applied frequently used in energy efficient lighting.

NCMA – North Carolina Manufactures' Alliance – non-profit association representing the interests of North Carolina manufacturing industries.

NCSU – North Carolina State University

NGO – Non-Governmental Organization

PFAS – Per- and Polyfluoroalkyl Substances, a group of synthetic chemicals that are persistent in the environment; PFAS are widely used in commercial and consumer products, and also in many industrial and manufacturing processes.

P2 – pollution prevention – also known as source reduction, is any practice that reduces, eliminates, or prevents pollution at its source prior to recycling, treatment, or disposal.

PPE – personal protective equipment – devices meant to provide some protection from injury or illness and includes masks, safety glasses, safety shoes, earplugs, and other such materials.

WTE – Waste-to-Energy – process of generating energy in the form of electricity and/or heat from the combustion of solid waste.

ZWTL – Zero-Waste-to-Landfill – Indicates that a facility or organization has diverted at least 90% of waste from landfill disposal using methods other than waste to energy. ZWTL claims can only be made after third-party validation to the UL 2799A standard.

2023 ESI Members

Environmental Stewards

- Ajinomoto Health & Nutrition North America, Inc. (Raleigh)
- Bridgestone Americas Tire Operations, LLC Wilson
- Corning Incorporated Wilmington Optical Fiber
- Corning Optical Communications Hickory Manufacturing and Technology Center
- Daimler Truck North America Cleveland Truck Manufacturing Plant
- Daimler Truck North America Gastonia
- Daimler Truck North America Mount Holly Truck Manufacturing Plant
- Dell Technologies Apex Manufacturing
- DENSO Manufacturing North Carolina Inc. Statesville Plant
- Eaton Corporation Asheville
- Eaton Corporation Raleigh Production Operations
- Eaton Corporation Youngsville Plant Operations
- Firestone Fibers & Textiles Company, Kings Mountain & Gastonia Plants
- Fleet Readiness Center East (Cherry Point)
- GKN Driveline Sanford
- Grifols Therapeutics LLC (Clayton)
- Hitachi Astemo Indiana, Inc. Tarboro Plant
- John Deere Turf Care (Fuquay-Varina)
- Keystone Powdered Metal Company (Troutman)
- Leggett & Platt Branch 0N64 High Point Furniture
- North Carolina Zoo (Asheboro)
- Pfizer (Sanford)
- Smithfield Packaged Meats Corp Wilson Facility
- Stanley Black & and Decker Kannapolis DC
- TE Connectivity Pegg Rd (Greensboro)
- Thomas Built Buses, Inc. (High Point)
- Two Rivers Utilities Wastewater Treatment Division (Gastonia)
- Two Rivers Utilities Water Supply & Treatment (Gastonia)
- Uchiyama MFG America LLC (Goldsboro)
- U.S. Environmental Protection Agency at Research Triangle Park

Environmental Rising Stewards

- Bridgestone-Bandag, LLC Oxford Plant
- CommScope Inc. Catawba
- CommScope Inc. Claremont
- GKN Automotive Roxboro Assembly
- GKN Sinter Metals (Conover)
- Hyster-Yale Group (Greenville)
- Mecklenburg County Solid Waste Operations (Charlotte)
- QORVO, Inc. (Greensboro)
- Smithfield Fresh Meats Corp Tar Heel Facility
- Wolfspeed, Inc. Durham and RTP

Environmental Partners

- Advance Pierre Foods (Claremont)
- Alliance One International Inc. (4) *
- Alphagary (Pineville)
- American Emergency Vehicles (2) *
- Aptar Group Lincolnton Facility
- Arauco North America, Inc. (Moncure)
- Asana Partners (Charlotte)
- Best Western Hendersonville Inn
- BorgWarner, Inc. (Arden)
- Burt's Bees Manufacturing Plant (Morrisville)
- Cape Fear Public Utility Authority (8) *
- Cascades Tissue Group North Carolina Inc., a Division of Cascades Holding US Inc. (Rockingham)
- Carolina Utility Customers Association, Inc. (Raleigh)
- Charlotte-Mecklenburg Schools
- City of Gastonia Field Operations Division
- City of Shelby First Broad River Wastewater Treatment Plant
- City of Shelby Water Treatment Plant
- Clearwater Paper Shelby, LLC
- Corning Newton Cable Plant
- Corning Optical Communications Trivium Cable Plant (Newton)
- Cree LED (Durham)
- Crown Equipment Corporation (Kinston)
- Culp Home Fashions (Stokesdale)
- Cygnus Technologies (Southport)
- Direct Pack, Inc. (Rockingham)
- Dominion Energy North Carolina, Inc. (21) *
- Domtar Paper Company, LLC (Plymouth)
- Eaton Aeroquip, LLC (Middlesex)
- Eaton Corporation Capital Production Operations (Raleigh)
- FCR, LLC (Charlotte)
- Fresenius Kabi Wilson Facility
- Freudenberg Performance Materials (Durham)
- General Electric Aerospace Durham Engine Facility
- Gerresheimer Glass (Morganton)

- HAECO Airframe Services (Greensboro)
- Industrial Connections & Solutions LLC (Mebane)
- International Paper Riegelwood Mill
- Jowat Corporation (Archdale)
- Kao Specialties Americas LLC (High Point)
- Kewaunee Scientific Corporation (Statesville)
- Liberty Tire Recycling, LLC (2) *
- Linamar North Carolina (Asheville)
- Martin Marietta (58) *
- MATREX A Division of Leggett & Platt Components Company, Inc. – Northridge (Greensboro)
- Siemens Healthineers Cary Campus
- Smithfield Fresh Meats Corp Clinton
- Sterling Pharma (Cary)
- Tarboro Brewing Company
- The Hempville (Siler City)
- The Plant (Pittsboro)
- Unilever (Raeford)
- Universal Leaf North America U.S., Inc. (2) *
- Water and Sewer Authority of Cabarrus County (3) *
- Wicked Weed Brewing, LLC (2) *
- ZIEHL-ABEGG (Greensboro)
- Mattamy Homes Raleigh Division (Cary)
- Michelin Aircraft Tire Company (Norwood)
- National Institute of Environmental Health Sciences (Research Triangle Park)
- N.C. Dept. of Transportation Ferry Division (9) *
- N.C. Museum of Natural Science (2) *
- Novartis Gene Therapies (Durham)
- Piedmont Service Group (3) *
- Reich LLC (Arden)
- Revlon (Oxford)
- Riverbend Malt House (Asheville)
- RTI International (Durham)

*** Denotes multi-site Partners**

N.C. Department of Environmental Quality

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Cover Photos: Photo from ESI member facility tour