

Green Plains

2023 Sustainability Report

Ingredients That Matter




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About This Report

This 2023 Sustainability Report is a public accounting of our ongoing pursuit and realization of sustainable solutions and our commitment to corporate responsibility. In the following pages, we share breakthroughs and progress made during the calendar year 2023 in support of targeted sustainability goals and our overall vision. This report also previews paths forward for 2024 and beyond.

The environmental data presented in the Planet section of this report, with the exception of the greenhouse gas, or GHG, emissions inventory, is limited to the biorefinery production segment of our operations, including our biorefining facilities. The boundary for our GHG emissions inventory is operational control. The boundary coverage for the GHG emissions inventory contains all GHG emissions from all relevant sources and subsidiaries, specifically 99.69% boundary coverage for Scopes 1 and 2 emissions and 100% boundary coverage for Scope 3 emissions. Boundary coverage represents what is evaluated and screened for consideration in reporting. From there, materiality decisions are made to determine what to ultimately measure and report. The data presented in the People and Principles sections of this report is enterprise-wide. Select data in this report has also received external limited assurance by a third party, Apex Companies, LLC. Please see page 88 for a copy of the assurance letter and a complete listing of the metrics that received limited assurance.

Inquiries related to this report and its contents should be directed to our sustainability team at sustainability@gpreinc.com. More information can also be found at **gpreinc.com/sustainability**.

Green Plains has reported the information cited in the Global Reporting Initiative, or GRI, index starting on page 68 for the period January 1, 2023, through December 31, 2023, with reference to the 2021 GRI Standards. This report also references applicable United Nations Sustainable Development Goals, or UN SDGs. We also disclose under the Biofuels Standard from the Sustainability Accounting Standards Board, or SASB, and align with the Task Force on Climate-related Financial Disclosures, or TCFD, framework. See page 67 for our Reporting Frameworks.

Letter From Our Chief Executive Officer

As I sat down to write this letter, I looked back on the letters I have written for our past sustainability reports over the years. I was struck by the progress we have made and the number of projects we have successfully implemented, all documented across the pages of these reports. Evolving quickly with our focus squarely on continuous improvement, we move from one project to the next. Successes dovetail into bigger, better ideas and innovations, and those projects of four years ago seem a distant memory, their impactful benefits to our operations becoming part of the day-to-day.

That's what meaningful progress looks like — we move so quickly that successes pile up, and the distinctions between them begin to blur. But it's a great problem to have.

And 2023 was no exception. We are eager to report the details of the year's accomplishments in partnerships with global companies, food safety certification, building a regenerative agriculture program, sustainability certification and more.

In January 2023, we announced our industry-leading joint venture with United Airlines and Tallgrass Energy — Blue Blade Energy — to develop and scale up an ethanol-to-jet fuel ketone technology. Blue Blade Energy is a first-of-its-kind collaboration that combines partners with direct ownership to the infrastructure, pipelines and feedstock supply necessary for success, backed by demand from one of the largest airlines in the world. The long-term potential of sustainable aviation fuel to the ethanol industry cannot be overstated. We believe decarbonized corn ethanol will be key to the supply, as it is perhaps the only feedstock that can be produced at scale to meet the demands of the aviation industry.

Another key technology collaboration announced in 2023 was the combination of our Maximized Stillage Co-Products™, or MSC™, protein technology and Shell's Fiber Conversion Technology to create a process that generates sugars for cellulosic ethanol while enhancing renewable corn oil and low-carbon, high-protein feed ingredient production. We continue to leverage our technology portfolio to unlock more value from each kernel of corn.

In early 2024, we completed construction of the first full-scale Clean Sugar Technology™, or CST™, installation at our Shenandoah, Iowa, biorefinery, the industry's first low-carbon dextrose and glucose process at a dry mill, with an up to 40% lower carbon footprint than alternatives on the market. The innovations developed by our majority-owned subsidiary Fluid Quip Technologies, or FQT, continue to give us a head start in diversified, high-quality ingredients.

VALIDATED PERFORMANCE

We continue to be recognized for all the strides we've made in sustainability and responsible business practices.

We continue to be recognized for all the strides we have made in sustainability and responsible business practices. We are proud to be named to the 2024 All-America Executive Team by Institutional Investor magazine, which includes second place in the Small Cap Energy sector Best ESG Program category, among others. We were also listed as one of the Newsweek and Statista top 500 Most Responsible Companies for the second year in a row and as a top 10 Impact Company by Real Leaders magazine. We recently achieved a sustainability certification from one of the world's leading sustainability ratings companies, EcoVadis, and completed our first response to the Carbon Disclosure Project in 2023. This feedback continues to prove the value of our platform as a producer of sustainable ingredients that matter.

Our protein systems in Shenandoah, Iowa, and Wood River, Nebraska, achieved Food Safety System Certification 22000, reflecting our ongoing commitment to the highest quality standards. We have fully deployed FQT's MSC™ at five of our facilities, representing 330,000 tons of annual capacity of low-carbon intensity, high-protein feed ingredients, with our turnkey joint venture partner Tharaldson coming online in early 2024 — the world's largest production facility to date.

2023 was also a profound year for the health and safety of our employees. Our OSHA recordable incident rate saw a noteworthy improvement, reflecting a collective effort toward fostering a culture of safety across our operations. We achieved a 22% reduction in our total recordable injury rate compared with the previous year, contributing to a continued downward trend over the past four years. Notably, the decrease in non-fatal serious incidents underscores our commitment to mitigating risks and ensuring the well-being of our workforce. While we celebrate these advancements, we must also acknowledge the loss of one of our valued team members, which reminds us of the importance of our ongoing efforts to prioritize safety and prevent future tragedies. We extend our deepest sympathies to the family, friends and colleagues affected by this tragic event. Our dedication to enhancing our safety culture remains unwavering as we strive to ensure the safety and security of all employees.

And in decarbonization, our tireless efforts to forge new partnerships have put us on a path to lead the ethanol industry in decarbonization for entrance into the exciting markets available to the lowest-carbon products.

We believe our three Nebraska facilities will be among the first to deploy carbon capture and storage technology as early as 2025, with our four Iowa and Minnesota locations on track for 2026 startup. The amount of biogenic carbon dioxide captured from these facilities combined will be approximately 1.75 million metric tons per year.

From our carbon capture, utilization and storage initiatives and investments in sustainable aviation fuel development to our expanding production of low-carbon intensity protein and dextrose/glucose, we are positioned to deliver on our commitments to our customers, our employees, our investors and society as a whole.

As I often say, we've always been sustainable, starting with the idea that transportation fuel could be friendlier to our planet. But we won't stop there. Through the tireless work of our dedicated people, we will continue to better ourselves. This report details the latest strategies we've used to do just that.

Todd Becker
President and CEO

About Us

Our Business

Green Plains Inc. (NASDAQ: GPRE) is a pioneering ag-tech company leveraging our expertise in agribusiness and fermentation, coupled with our prominent position in biorefining, to drive innovation across our ingredients platform.

Our **biorefineries** — focused on the four strategic categories of Protein, Renewable Corn Oil, Sugar and Carbon Reduction — produce low-carbon biofuels, renewable feedstocks for advanced biofuels, high-protein ingredients for animal diets and dextrose for application in bioplastics and biosynthetics.

Our operational efforts are geared toward:

- Extracting greater value from fewer resources.
- Seizing meaningful business opportunities.
- Innovating ingredients to meet customer requirement while supporting positive environmental stewardship.
- Developing low-carbon intensity alternatives to contribute to the reduction of GHG emissions in the global supply chain and aid the ongoing energy transition.

As leaders in ag-tech, we simultaneously prioritize investments in research and innovation. At our three **Innovation Centers and two FQT subsidiary locations,** we focus on identifying and scaling up the most effective processes to win in the lower-carbon intensity ingredients space.

Our R&D Engines

Green Plains actively pursues impactful solutions at our dedicated R&D centers.

The **Innovation Center at Omaha** features a commercial-scale aquaculture feed mill and laboratory space for aquaculture and FQT, which help Green Plains to continually innovate our aquaculture feed products.

This Innovation Center also houses the Green Plains R&D laboratory. This analytical laboratory uses and develops sophisticated testing methods to provide unique insights to support optimization, innovation and sustainability strategies for all of the biorefineries and R&D efforts at Green Plains. The highly adaptable nature of the laboratory allows the company to quickly identify, validate and use emerging technologies. By optimizing resource use, reducing environmental impact and meeting the evolving needs of customers, the solutions developed at this Omaha facility also help Green Plains address challenges facing our industry.

The **Innovation Center at York** features a world-class analytical lab for rapid testing of process yields. In addition, the center houses a pilot fermentation train, a small base biorefinery that can be used to not only test new enzyme recipes but also pilot new bolt-on technologies such as MSC™ and CST™.

York also plays an integral role in our technology collaboration with Equilon Enterprises LLC (Shell) to combine Green Plains' advanced fermentation, FQT's precision separation and processing technology (MSC™), and the Shell Fiber Conversion Technology into one platform.

This platform could catapult us beyond our goal of a 50% increase in renewable corn oil yield by releasing all available oil from corn kernels, maximizing available protein and generating low-carbon cellulosic biofuel.

The **Innovation Center at Shenandoah** consists primarily of an aqualab where our dedicated Optimal Aqua team conducts extensive feed trials across various fish species. This cutting-edge facility serves as a focal point for ongoing R&D efforts, aiming to enhance the nutritional profiles of our Optimal Fish Food and Optimal Aquafeed product lines as well as validate our Ultra-High Protein and novel ingredients in various fish diets.

Through meticulous testing and analysis, our team strives to continually improve and tailor specific formulations, ensuring optimal nutrition for diverse aquatic species.

FQT is a specialized technology subsidiary of Green Plains dedicated to developing and providing advanced process technologies for the biofuel and biochemical industries.

FQT focuses on enhancing the efficiency of biofuel production, creating value-added co-products and optimizing overall operational performance. FQT contributes significantly to our efforts to produce low-carbon biofuels, renewable feedstocks and high-value ingredients. The expertise and technological advancements pioneered by FQT are critical to our mission to drive sustainable solutions in biorefining and agricultural technology.

For more information, visit www.gpreinc.com.

Our Brand Values

To CHART our course in a rapidly decarbonizing world, we adhere to our five core brand values.

Customer-Centric

Service-oriented

Work with the internal stakeholders and external customers in mind.

Collaborative

Work effectively together to achieve common goals and objectives.

Receptive

Be open to feedback and constructive criticism.

Hungry

Competitive Spirit

Work as one team with an all-in mentality. Have a strong drive to succeed, push boundaries and achieve high-level results.

Courage

Courageously confront problems, point out correction and accept correction from others.

Curiosity

Have the desire to learn, drive innovation and continuously improve, no matter the role.

Accountability

Proactive

Be answerable to actions, decisions and objective outcomes.

Understanding Impact

Make data-driven and calculated decisions.

Forward-Thinking

Proactively identify and address issues, striving to improve and learn from past experiences. Communicate for clarity of expectations, impact and accountability.

Responsibility

Safety

Care for self, colleagues, customers and the environment.

Dependability

Do what you say you are going to do and follow through, meeting deadlines and commitments.

Ownership

Lead and own tasks, roles and responsibilities.

Transparency

Integrity

Work with honesty in all dealings and decisions, both internal and external.

Authenticity

Have open and honest collaboration and communication.

Humility

Be willing to admit mistakes, but act to improve.

Green Plains at a Glance

51.7M
metric tons of carbon reduction to date(1)

5
sustainable technology installations

903M
gallons of renewable biofuel production capacity(2)

100%
of corn purchased from non-deforested, U.S.-domestic sources(3)

289M
bushels of corn consumed in 2023

2.16M
tons of dry equivalent animal feed sold in 2023

841M
gallons of renewable biofuel sold in 2023

280M
pounds of renewable corn oil sold in 2023

907
dedicated employees

1 Estimated CO_2 amount to have been kept out of the atmosphere due to Green Plains-produced low-carbon fuel between 2007 and 2023

2 2023 10-K production capacity

3 Based on compliance with Renewable Fuel Standard regulations (40 Code of Federal Regulations § 80.1401), which require the use of "renewable biomass" as an ethanol feedstock; by definition, this means that planted crops cannot come from deforested land. Additionally, we use U.S. corn and have not imported corn from international markets where deforestation might be prevalent.

External Awards

Green Plains was named a top 10 Impact Company in the 2024 Real Leaders Impact Awards, a recognition of our achievements in reducing energy and water use, lowering operating costs and reducing our carbon footprint.

We were also named among America's Most Responsible Companies for 2024 by Newsweek and Statista — for the second year in a row.

Industry Memberships

Clean Fuels Alliance America
Fuels America — It's Already Growing
U.S. Grains Council
IRFA
Carbon Capture Coalition
GEAPS
NGFA
RFN — Renewable Fuels Nebraska
Midwest Council on Agriculture
Low Carbon Fuels Coalition
NCGA

NEW SUSTAINABILITY RATINGS AND CERTIFICATIONS

Green Plains continues to expand our disclosure and accreditation universe to support transparency and accountability.

Notable recent achievements include receiving our first Carbon Disclosure Project rating and a sustainability certification from EcoVadis.

COMMITTED ecovadis Sustainability Rating MAR 2024

CDP DISCLOSURE INSIGHT ACTION

Approach Overview

Approach

Green Plains has transformed our business model to deliver on the rapidly expanding opportunities and crucial benefits of the emerging bioeconomy.

We develop and increase renewable processes and products across our sustainable ingredients portfolio and continue to enrich our social and governance foundations to innovate solutions for a far-reaching set of stakeholders and our shared natural environment.

Determining Our **Focus**

Ongoing Stakeholder Engagement

EMPLOYEES

- Company town halls, intranet and newsletter.
- 24/7 ethics hotline.
- Social media and press releases.
- Business reviews and safety committees.

LOCAL COMMUNITIES

- Direct outreach, partnerships and site tours.
- Social media and press releases.
- 24/7 ethics hotline.
- Charitable events.

GOVERNMENT AGENCIES

- Earnings releases.
- Financial filings.
- Regulatory reporting.
- Public policy engagement.

LENDERS

- Quarterly earnings calls (public).
- Loan compliance and reporting.
- Social media and press releases.

CUSTOMERS, VENDORS, SUPPLIERS AND BUSINESS PARTNERS

- In-person and online meetings.
- Social media and press releases.
- 24/7 ethics hotline.
- Customer appreciation days.

SHAREHOLDERS

- Annual shareholder meetings and national investor events.
- Quarterly earnings calls (public).
- Direct outreach.
- Social media and press releases.
- Earnings releases and financial filings.

Our sustainability efforts focus on areas that were determined to be of greatest importance to both our business success and our key stakeholders.

We identify our key sustainability areas of focus, or key topics, by assessing a wide range of information, including:

- Proactive and ongoing stakeholder engagement.
- Internal assessments.
- Enterprise risk management data.
- Legal reviews.
- Governmental and non-governmental organization reports.
- Peer filings and industry reports.

This analysis guides our data collection, goal-setting, strategy development and disclosure. Throughout this stakeholder-oriented, data-driven and forward-looking process, we communicate directly with key internal and external stakeholders (shown at left), leverage environmental, social and governance, or ESG, research and ratings, and vet our analysis against global sustainability frameworks and standards.

We conducted a formal materiality assessment in 2021 and are examining timetables for future updates to it. In future materiality assessments, we will consider an expanded scope that incorporates the concept of double materiality.

Identified Key Topics

Planet

Climate Change and GHG Emissions

Energy Use and Efficiency

Water Management

Natural Capital and Land Stewardship

Waste Management and Compliance

People

Our Employees

- Employee Health and Safety
- Talent Management: Acquisition, Development, Progression and Engagement
- Learning and Career Development
- Employee Experience: Inclusion and Belonging

Our Customers

- Managing Product Safety and Quality

Our Suppliers

- Responsible Sourcing Program

Our Communities

- Environmental Stewardship

Principles

Our Sustainability and Climate Change Governance

Our Board Composition and Structure

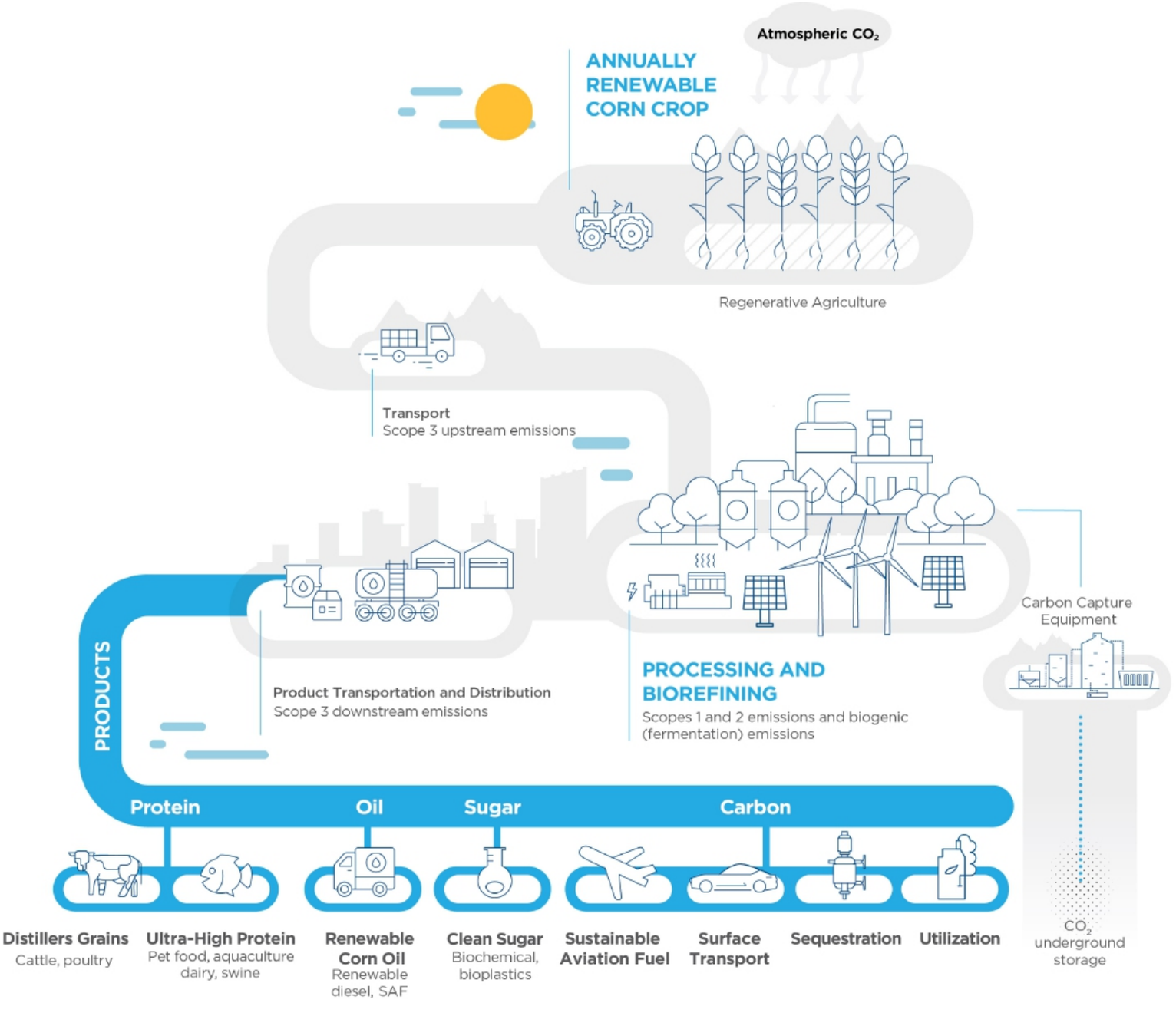
Ethics and Compliance

Spanning Our Value Chain

Contributing to a Lower-Carbon Future

Across our four growth pillars — Protein, Renewable Corn Oil, Sugar and Carbon Reduction — we are achieving progressively lower carbon intensity, or CI.

And from corn field to customer, we are working to reduce impacts across our full product life cycle.



Ingredients Overview

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Producing Lower-Carbon Alternatives

Ingredients

Green Plains is significantly expanding our ability to offer new, lower-carbon alternatives for our customer partners in rapidly growing markets.

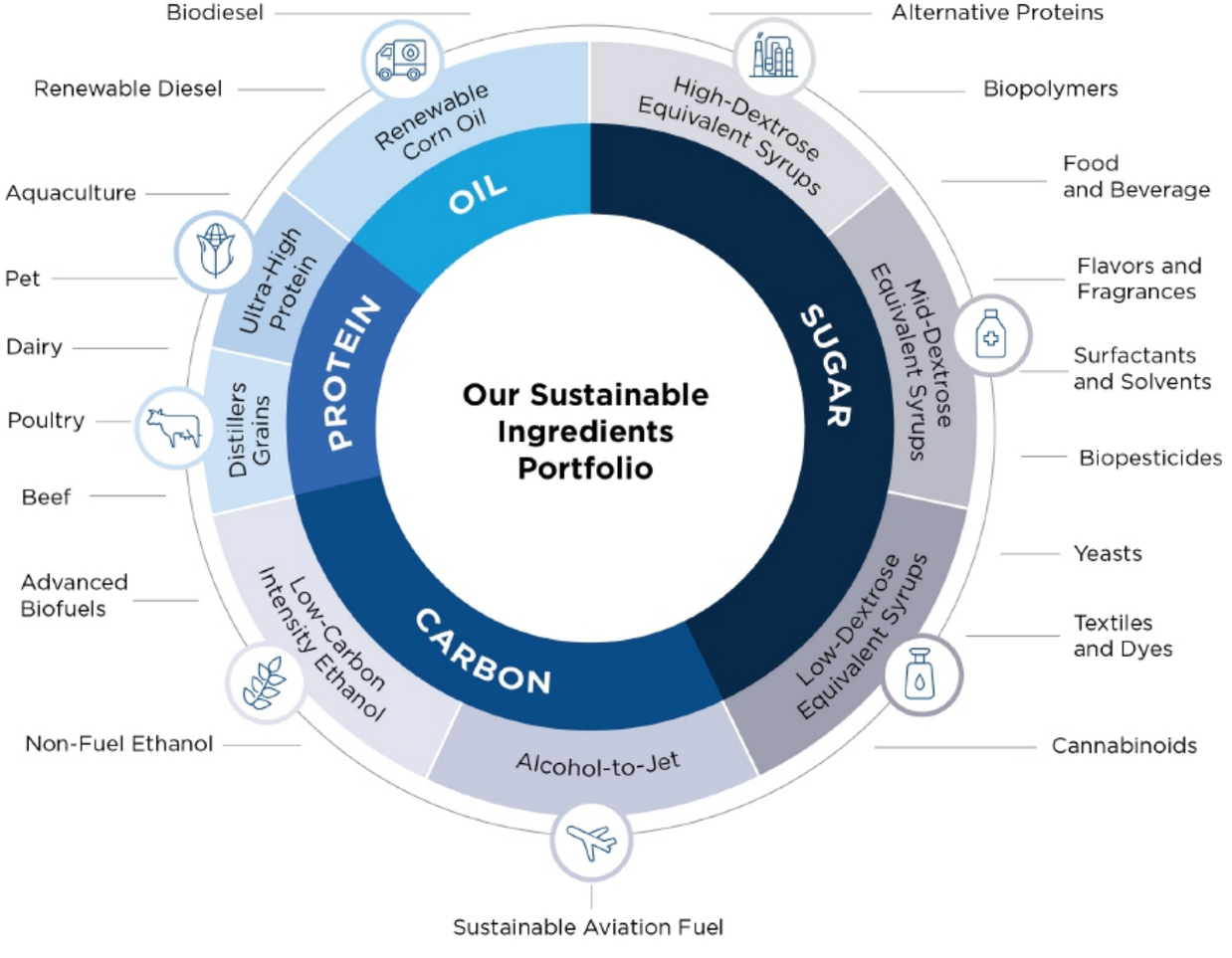
Notable recent achievements across our portfolio included producing market-disrupting clean sugar at a first-of-its-kind, full-scale production facility and developing higher-protein feed ingredients with a lower carbon footprint.

Producing Lower-Carbon Alternatives

in·gre·di·ent
/in'grēdēənt,iNG'grēdēənt/

A component part or element of something[4]

4 Oxford Languages



Green Plains leverages patented technologies to develop and continually hone our lower-carbon ingredient portfolio, shown at left. In this way, we are providing global customers with new solutions in sustainable sourcing.

Applying ongoing ag-tech innovation, we unlock more value from each kernel of corn while simultaneously lowering the CI of our ingredients across our operations.

Clean Sugar: Disruptive Dextrose and Glucose Corn Syrups

On multiple levels, our new syrups will deliver wins for our customers and the environment.

In the first quarter of 2024, Green Plains completed construction of a first-of-its-kind, full-scale CST™ production facility on our Shenandoah, Iowa, biocampus.

Developed by FQT, CST™ is foundational to our biocampus model:

- The facility is expected to produce dextrose and glucose corn syrups for shipment via rail and truck and eventually directly to over-the-fence partners.
- Production of these products will expand opportunities for Green Plains and our customer partners across the food and beverage, synthetic biology and biochemical industries.
- CST™ uses a portion of current biorefinery corn grind as a feedstock to produce dextrose and glucose corn syrups. It also returns all remaining components of the corn — proteins, fibers, oils, unused starches and sugars — to the biorefinery.

Reaching Industrial Scale

With a capacity of annually producing 200 million pounds of dextrose and glucose corn syrups, we are now able to provide industrial quantities of bio-based carbon feedstock that can be used in manufacturing applications in the growing biochemical, renewable chemical and synthetic biology industries.

It is expected that large amounts of fermentable sugars will be required for next-generation biopolymer, biochemical, biofuel and food products.[5] Consumer preferences for responsibly produced ingredients and products continue to increase demand as well.

Meeting the Market

Consumers and our customers increasingly prefer products derived from renewable sources and manufactured in a safe and non-invasive manner. By incorporating and driving the use of CST™ in our operations, Green Plains is well suited to align with these market preferences. This patented process extracts sugar from corn using simple enzymes and mechanical separation.

We further align with market preferences by earning food safety certifications. In 2022, we achieved Food Safety System Certification 22000 at our pilot CST™ production facility at our Innovation Center in York, Nebraska. Food Safety System Certification is a certification model used in the global food supply chain to ensure food safety standards and processes and is based on independent international standards such as ISO. Stringent quality management and a continuous improvement approach resulted in certification of our glucose and dextrose corn syrups at this facility. We intend to secure this certification at our Shenandoah CST™ facility as well.

5 Singh V, Stone J, Roberts JP, et al. Industrial biotechnology shaping corn biorefineries of the future. Cereal Foods World 2019;64(4)

Creating Efficiencies

Even as we celebrate our first full-scale CST™ production facility, we continue to prioritize environmental stewardship and the efficient use of natural resources related to our production of clean sugar.

Environmental stewardship priorities to manage energy and natural resource use include:

- Current testing of an advanced filtration technology at our pilot facility at the York Innovation Center, which is intended to improve the facility's effluent and potentially create a clean water source from what is traditionally thought of as a difficult-to-treat industrial wastewater stream.
- Continuing to work closely with supply chain partners to analyze the environmental impact and enhance the sustainability benefits of our dextrose and glucose corn syrup products.

A better, low-carbon feedstock

Replacing widely used traditional sugar feedstocks with low-carbon feedstocks — such as Green Plains' glucose and dextrose corn syrups — can deliver significant sustainability benefits.

CLEAN SUGAR (*continued*)

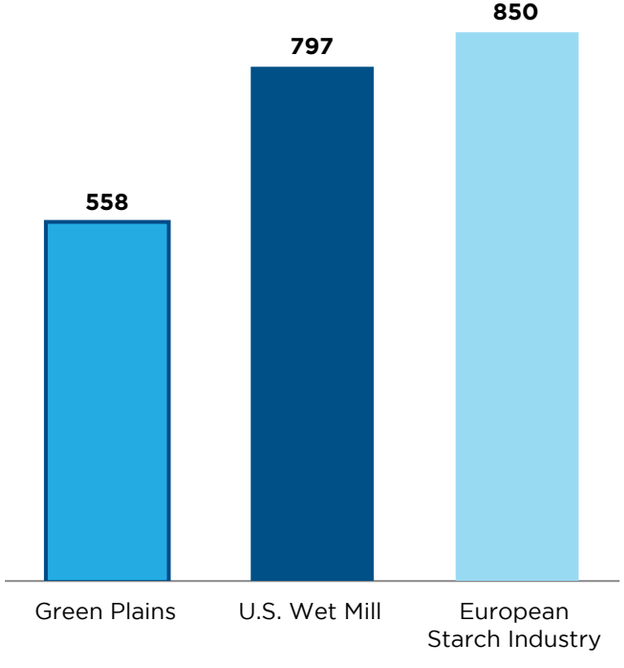
Outperforming the Field

Because our CST™-produced ingredients have lower CI than competitors,[6] these sugars present an opportunity for customers to reduce their carbon footprints and gain a competitive edge in today's sustainability-focused markets.

In 2023, we collaborated with experts in the field of life cycle assessment and completed an updated study of the carbon footprint of our dextrose and glucose corn syrups. This study was prepared based on the framework and principles of ISO Standards 14040, 14044 and 14067, and it reflects the cradle-to-gate impact of the life cycle GHGs of our product. The results: Our dextrose and glucose corn syrups display a CI of 558kg CO_2e/MT, or carbon dioxide equivalents/metric ton, product on a mass-allocation basis, outpacing comparable products at U.S. wet mills and in the EU starch industry, per recent studies,[7,8] as shown at right. In addition, our study indicated up to a 40% GHG impact reduction when compared to alternatives.[9]

This reduction is due to the distinctive advantages of the dry mill CST™ technology, which allows us to eliminate an energy-intensive portion of the sugar production process typically found on the front end of a wet mill. This innovative approach leads to more efficient processes, less equipment and lowered use of electricity, chemicals and water per unit of production.

CARBON INTENSITY (KG CO_2 E/MT PRODUCT)



Source: Recent internal report

While our base technology has inherent CI benefits, we also continue to invest in decarbonization across our platform, including through carbon capture, utilization and storage, combined heat and power, renewable energy and regenerative agriculture.

This forward drive puts the concept of ultra-low carbon sugar within our grasp.

Next steps include seeking ISO certification of the above-mentioned carbon footprint report as well as incorporating farm carbon data being collected from our regenerative-agriculture program into the GHG calculation. Including actual farm emissions data of our Nebraska and Shenandoah, Iowa, area growers will support a more robust assessment of the true climate impact of our product. We will continue to deepen our understanding of the complete supply chain impact of our products in pursuit of credible and transparent sustainability benefits.

6 Based on our recently completed life cycle assessment and comparisons to current research mentioned below.

7 Taylor C, Maroccia J, Masterson M and Rosentrater KA (2023), Comprehensive life cycle assessment of the corn wet milling industry in the United States. Front. Energy Res.

8 Vercalsteren An, Boonen Katrien, Asscherickx Lise, Peeters Karolien, De Smet Stefanie, LCA of starch products for the European starch industry association: Summary report, Vito, NV

9 When compared to least efficient U.S. wet milling technology

Better Protein: Breakthroughs in Low-Carbon Feed Ingredients

We are creating higher-protein offerings while reducing environmental impact.

Applying Precision Technology

Green Plains is leveraging another of FQT's patented tools, MSC™ technology, to achieve 50% and 60% or greater protein concentration in our feed ingredients. Combined with a high yeast component, these are valuable ingredients for pet, aquaculture, poultry, swine and dairy rations. MSC™ technology is similarly crucial in optimizing starch utilization and increasing the volume of the renewable corn oil we extract from the production process by up to 50% — all without expanding crop acreage. Renewable corn oil is a valuable feedstock for the production of advanced biofuels such as renewable diesel and SAF.

Five MSC™ installations — Shenandoah, Iowa; Wood River, Nebraska; Central City, Nebraska; Mount Vernon, Indiana; and Obion, Tennessee — representing 330,000 tons of protein production capacity annually and deployed across more than half of our ethanol production capacity, produced at full rates by year end.

Our MSC™ systems have achieved a baseline 50% crude protein with an optimum balance of inputs and yields, and successful full-scale production runs have demonstrated an ability to produce protein concentrations of 60%.

According to an updated analysis, the CI of our Ultra-High Protein (600 kg CO_2e/MT product) compares very favorably with many common alternative feed ingredients on the market today (as shown below). This updated Cradle-to-Gate Life Cycle Assessment followed the framework and principles of ISO 14040, 14044 and 14067.[10] The assessment included a CI from the Climate Change impact category of EF 3.1 methodology in kilograms of CO_2e per metric ton of Ultra-High Protein. It used an economic allocation to easily compare our results with those of other common feed ingredients included in the Global Feed Lifecycle Assessment Institute database.

GLOBAL PROTEINS: CLIMATE IMPACT COMPARISONS

GFLI 2.0 DATABASE SAMPLE (CRADLE-TO-GATE, ECONOMIC ALLOCATION IN USD) — **LIFE CYCLE IMPACT ASSESSMENT**

Product Name	Climate Change Impact (Kg CO_2 e/Ton Product)
Ultra-High Protein at Green Plains plant	**600**
Corn distillers dried grain with solubles at U.S. ethanol plant	655
Corn gluten meal at U.S. wet mill	799
Fishmeal at Norwegian fishmeal and oil production plant	1,041
Corn gluten meal at global wet mill plant	1,126
Pea protein-concentrate at German plant	2,560
Soybean meal at Brazilian crushing plant	4,258
Soybean protein concentrate at Brazilian crushing plant	7,271

10 The life cycle assessment study is not a fully ISO-certified report.

11 When compared with corn gluten meal at global wet mill plant from Global Feed Lifecycle Assessment Institute 2.0 Database

2023 Protein Production Milestones

- **Achieved more than 50% of total production capacity powered by MSC™, FQT's precision separation and processing technology.**
- **Successfully confirmed our ability to make and market 60% protein at commercial scale, replicating our trials from 2022.**
- **Secured updated carbon footprint results that demonstrate up to 47% lower GHG impact than alternatives[11] and support our position as a low-carbon source of protein.**

BETTER PROTEIN (*continued*)

Optimizing Nutritional Value

Our clean, high-quality proteins possess a superior nutritional profile compared with alternatives.

Green Plains' protein offerings are derived from biomass, featuring essential elements from both corn and yeast. In contrast to other plant-based proteins that rely on the use of processing aids, additives or flocculants for extraction, our protein today is made using a clean mechanical separation process for fiber, fat and protein. This approach ensures the production of consistently high quality Ultra-High Protein products.

We were pleased to achieve Food Safety System Certification 22000 at our Shenandoah, Iowa, and Wood River, Nebraska, protein production facilities in 2023.

Beyond increasing protein quality, we also work to enhance the digestibility and nutritional value of our proteins.

Through exclusive partnerships with cutting-edge biotechnology companies, we are:

- Harnessing a suite of biotech enhancements to continually improve the nutritional profile of our Ultra-High Protein.
- Empowering feed formulators by providing them with the flexibility to partially substitute an even broader spectrum of animal- and plant-based proteins.
- Elevating feed quality while reducing overall costs.

An essential metric in nutritional evaluation is digestibility — the amount of nutrients absorbed by animals being fed.

In collaboration with FQT and Green Plains nutrition researchers, extensive studies have been conducted across various animal groups, including swine, poultry and fish. The findings consistently demonstrate high amino acid digestibility for our proteins, surpassing 87%.[12] These results are in keeping with the high quantity of small peptides demonstrated in our proteins by the lab team at our Innovation Center at York, which supports their consistently high digestibility values. The patented separation and the gentle, non-contact final drying process of the MSC™ system ensures minimal protein quality degradation as the product is dried. In this way, the technology solves the perennial challenge faced by the industry of properly drying product without causing heat damage and loss of digestibility.

Another important metric in nutritional evaluation is the amino acid distribution of a protein — the levels of amino acids such as lysine, methionine, valine and tryptophan, among others. Multiple studies led by FQT, Green Plains and independent research institutes have confirmed the significant presence of these desirable amino acids in our products as well as our amino acids' excellent digestibility coefficients.

Finally, as nutritionists balance the needs of animals, they must consider the energy that feeds provide. A recent study concluded that the energy value of Green Plains' protein products is significantly higher than that of other common plant-based proteins.[13]

sequence™

Nutrition that stacks up.

In 2024, we unveiled a new brand identity for our foundational feed ingredient that delivers a combination of corn and yeast protein, concentrated at a minimum of 60%. Sequence™ brings together novel protein, high digestibility, energy and performance, easy handling, and sustainability characteristics in one package. Together, we are offering more to our customers than a single ingredient ever could. Sequence ignites nutrition without limits.

Recovering and Protecting Natural Resources

Even as we enhance the nutritional value of animal feeds, we are applying MSC™ technology to:

- Capture valuable byproducts.
- Reduce impacts on natural land and sea resources.

The MSC™ process recovers much of the spent yeast generated in our production-related fermentation processes. Yeast has been studied extensively in animal nutrition and is known to be a high-quality protein source with further immunostimulatory properties. In a recent Mississippi State University catfish disease challenge study, incorporation of our protein at high inclusion levels resulted in improved survival rates.[14] Approximately 24% of the dry matter of our high-protein product is spent brewer's yeast.

We also leverage MSC™ to create high-quality animal feed ingredients from material that humans would not otherwise consume, reducing the use of additional land or marine resources.

Because they are co-products of existing biofuel operations, our Ultra-High Protein products exemplify the dynamics of a circular economy, in which the reuse and regeneration of materials or products eases impacts on limited natural resources.

On an even larger scale, our Ultra-High Protein product is currently being tested in our aquafeed formulations and could potentially reduce demand for fishmeal in fish feed formulations, which in turn would help reduce the overfishing of the oceans.

Aquaculture is one of the fastest-growing industries in the world. Green Plains has an opportunity to become a key supplier of high-quality, plant-based aquafeed ingredients.[15]

12 Source: Study conducted by Dr. Carl Parsons, University of Illinois

13 Nutritional value of ethanol co-product evaluated for poultry, Bill Dudley-Cash, Feedstuffs Vol. 89, No. 11, November 6, 2017.

14 Fernando Y. Yamamoto, et al., Exploring the nutritional value of corn fermented protein as a replacement for soybean meal, Aquaculture. 2024.

15 We believe the inclusion of our Ultra-High Protein product in aquafeed formulations could positively impact the fish in/fish out ratio of aquafeed. Fish in/fish out represents kilograms of whole wild fish for fishmeal per every one kilogram of farmed fish production.

Earning Recognition

The sustainability of Green Plains Ultra-High Protein exports is supported by U.S. corn origin and the Corn Sustainability Assurance Protocol, which has achieved Gold-level equivalence under the Sustainable Agriculture Initiative Platform's Farm Sustainability Assessment.

SUSTAINABLE CORN EXPORTS

Green Plains can now assure our international customers of the sustainability of our Ultra-High Protein products through the issuance of Records of Sustainability under the **Sustainable Corn Exports** platform. The Sustainable Corn Exports platform provides documentation regarding the compliance of U.S. corn origin shipments with the criteria of sustainable corn volumes as defined in the **Corn Sustainability Assurance Protocol**, a Gold-level equivalent program per the Sustainable Agriculture Initiative Platform's Farm Sustainability Assessment benchmarking process.

Looking ahead, we aim to secure a third-party-verified life cycle assessment in compliance with the Product Environmental Footprint Category Rule — Feed for Food-Producing Animals in 2024. Securing a PEF-certified product impact assessment would further strengthen our position as a leader in the production of low-carbon ingredients.

Planet

As an ag-tech innovator of sustainable ingredients that matter, Green Plains is dedicated to preserving the health of our planet for current and future generations.

Notable 2023 achievements in this area included leveraging innovative technologies and partnerships to further decarbonize our platform. We also made significant progress in goals related to energy efficiency, water management and sustainable sourcing.

Our Key Topics

Climate Change and GHG Emissions

Making Generational Investments

Green Plains recognizes the interconnectedness of human activities and the natural world and strives to cultivate a harmonious relationship. From decarbonization to resource conservation to waste reduction, we are steadfast in our pursuit of environmentally responsible practices that contribute to a resilient and thriving planet.

To further protect and benefit the environment, Green Plains drives innovation. Our ongoing investments in carbon reduction are creating substantial opportunities for leadership in the energy transition:

- Green Plains has partnered to develop a novel form of sustainable aviation fuel, or SAF, that would be a paradigm shift for global emissions, if brought to scale.
- We also expect that our smaller carbon footprint will make us eligible for clean energy incentives that were created and expanded with passage of the Inflation Reduction Act.

Global climate change remains an urgent matter for both the public and private sectors, requiring a collective reduction in the emission of GHGs, or carbon emissions, which trap heat in the Earth's atmosphere.

As a producer and innovator of low-carbon fuels and ingredients, Green Plains is well positioned to contribute to climate change solutions. At the same time, we continually analyze and manage the potential risks that climate change poses to our business and communities.

In 2023, we continued to reduce the carbon footprint of our own operations, strengthened our climate risk analysis and management, and made further progress in innovative partnerships related to sustainable aviation fuel, cellulosic ethanol and the use of captured carbon.

Operational Emissions

Our products are created from annually renewable crops with a low-carbon footprint. However, our biorefineries emit biogenic CO_2 through the process of fermentation and additional CO_2 from the combustion of natural gas to run our boilers and dryers.

The majority of our operating emissions are released by the ethanol fermentation process and are classified as biogenic emissions. Most of the remaining emissions are from natural gas combustion (Scope 1) for steam generation and drying of distillers grains as well as indirect (Scope 2) emissions associated with electricity consumption. A very small amount of GHG emissions from gasoline, diesel and liquified petroleum gas fuel combustion occurs on-site related to our mobile equipment and generators and are included in our Scope 1 emissions.

Green Plains has set ambitious GHG reduction goals, with a path to carbon-neutral operations by 2050. As shown in the following charts and tables, we are monitoring our progress related to short-, medium- and long-term targets. We maintain independent third-party validation of our medium-term 2030 targets from the Science Based Targets initiative, with Scopes 1 and 2 goals in alignment with a 1.5° Celsius trajectory. This voluntary independent review demonstrates our commitment to credibility and accountability in climate change impact reporting.

Short-Term Target: Performance Tied to Our Sustainability-Linked Credit Facility

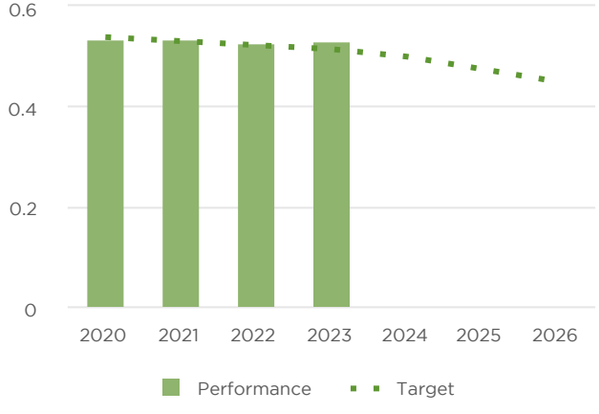
2026 GOAL:

16.5% reduction in operational GHG emissions intensity (vs. 2020)

2023 PROGRESS:

Reduced operational GHG emissions intensity by **1%** (vs. 2020)

MT CO_2e/RAW MATERIAL MT



Medium-Term Targets: Validated by the Science Based Targets initiative

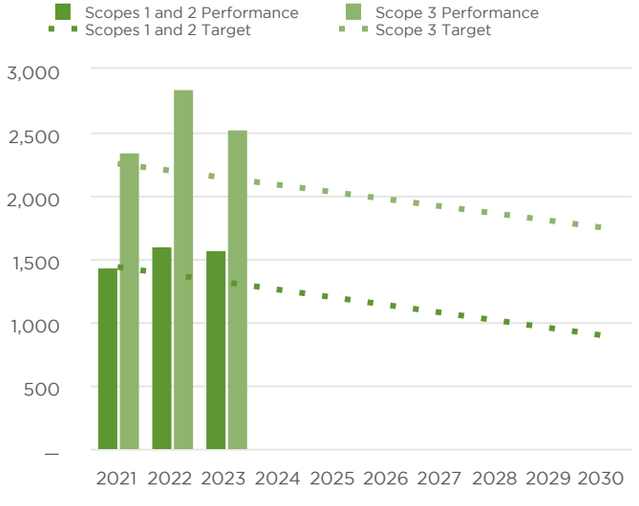
2030 GOAL:

Green Plains commits to **reducing absolute Scope 1 and Scope 2 GHG emissions 37.8%** from a 2021 base year by 2030.* Green Plains also commits to reducing absolute Scope 3 GHG emissions **22.5%** within the same timeframe.*

2023 VS. 2021 PROGRESS:

9% increase in Scopes 1 and 2 and **8%** increase in Scope 3 GHG emissions since 2021.

THOUSAND METRIC TONS CO_2e



2023 VS. 2022 PROGRESS: ON THE RIGHT TRACK

While still behind target, we made significant progress in 2023 by achieving a **2%** reduction in Scopes 1 and 2 and an **11%** reduction in Scope 3 GHG emissions over 2022.

*The target boundary includes land-related emissions and removals from bioenergy feedstocks.

Long-Term Target: Carbon-Neutral Operations

2050 GOAL:

100% reduction in operational GHG emissions (Scope 1, Scope 2 and biogenic) (vs. 2018)**

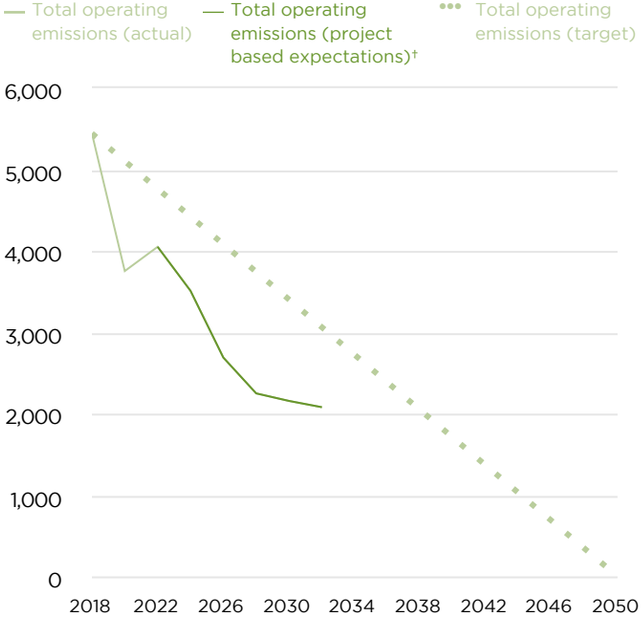
2023 PROGRESS:

Reduced operational GHG emissions by **28%** since 2018***

PATH TO CARBON-NEUTRAL OPERATIONS BY 2050

(Scope 1, Scope 2 and Biogenic)

THOUSAND METRIC TONS CO_2e



** Not validated by the Science Based Targets initiative

*** Reductions a result of energy efficiency projects and asset divestments

† 2022-2032 Project-Based Expectations. Estimates based on various carbon and energy efficiency-related projects and initiatives

Climate Change Management

Green Plains recognizes that our business is not immune to physical or transitional impacts related to climate change — including impacts on the health and wellness of our employees, how our facilities operate, the sourcing of our raw materials and customer use of our products.

In 2023, we continued to strengthen our climate risk strategy and management in the areas of governance, risk analysis and planning, opportunity assessment and decarbonization strategy.

Enhancing Governance

To decrease our exposure and build our resilience to climate change, we've enhanced our sustainability governance, including standing up a cross-functional Sustainability Workgroup comprising subject matter experts in 2021, to systematically identify and assess our climate-related risks and opportunities.

The Sustainability Workgroup met regularly in 2023, and members participated in one-on-one strategy meetings, group discussions and plenary sessions to further enhance our existing identification and assessment of climate-related risks and opportunities. Through our analysis, we consider:

- The potential size and scope of identified risks.
- Whether the identified risks and opportunities fall under short-, medium- or long-term time horizons.
- Whether the identified risks and opportunities could have a material financial impact on the organization.

In this circumstance, we consider short-term one to five years, medium-term six to 10 years, and long-term greater than 10 years. We also consider how the identified risks and opportunities could affect our business strategy and financial planning and how resilient our strategy is, given different climate-related scenarios.

We've set ambitious GHG reduction goals, with a path to carbon-neutral operations by 2050. We monitor our progress with key performance indicators that have short-, medium- and long-term targets. More information about our sustainability governance is presented in "Sustainability and Climate Change Governance" on page 60 of this report.

Analyzing Future Scenarios

We continue to enhance our climate change strategy, including through scenario analysis. Specifically, we have chosen two primary scenarios under which to consider our climate-related risks and opportunities: a 2° Celsius scenario and a business-as-usual, or BAU, scenario.

The 2°C scenario we selected aligns with the Intergovernmental Panel on Climate Change Representative Concentration Pathway, or IPCC RCP, 2.6.

The BAU scenario we selected aligns with the IPCC RCP 8.5. These IPCC scenarios are considered physical scenarios that describe the patterns of physical impacts attributable to climate change. We also considered how each one would align with the International Energy Agency World Energy Outlook, or IEA WEO, transition scenarios meant to describe scenario pathways that deliver a given limit to warming. Our 2°C scenario aligns with the IEA WEO 450ppm Scenario, and our BAU scenario aligns with the IEA WEO Current Policies Scenario.

Our chosen 2°C scenario assumes that aggressive mitigation efforts are made to combat climate change, that global emissions are halved by 2050 and that global average temperature rise is not likely to exceed 2°C above pre-industrial levels. Businesses are primarily impacted by transition risks under this scenario, and the physical impacts are constrained but not completely avoided.

Further, in this 2°C scenario, many separate efforts to reduce CO_2 emissions from the energy sector occur between now and 2040, including stronger deployment of technologies that are currently available at commercial scale today, the building of significant additional nuclear capacity and rapid deployment of carbon capture and storage. Additional key drivers and signposts that would need to occur include strong efficiency-related policy action, increased renewable energy generation, implementation of carbon pricing mechanisms, rapid deployment of electric vehicles charged with renewable electricity, and increased use of bioenergy, with biofuels making up 17% of worldwide transportation fuel demand.

Our chosen BAU scenario assumes that emissions continue rising at current rates and that global average temperature rise likely exceeds 4°C above pre-industrial levels. Business is impacted more by physical risks than transition risks. More heat waves and changes in rainfall patterns and monsoon systems occur, Arctic summer sea ice almost disappears and sea levels rise by one half to one meter. It is a future in which governments fail to follow through on policy proposals that have yet to be backed by legislation or other means of implementation and do not introduce any other policies that affect the energy sector. Additional key drivers and signposts that would occur include more unusually hot and fewer unusually cold days almost everywhere, increased ocean warming, dry areas becoming drier, wet areas becoming wetter and a decrease in glacier volumes.

Surveying Risks

We have identified inherent climate-related risks with the potential to substantively affect our financials or broader business. As the world moves toward a lower-carbon future, Green Plains acknowledges the possible risks associated with climate change, and we continually incorporate this understanding into our overall business strategy and planning.

Scenario Risks: Physical vs. Transitional

We regularly review and evaluate topics that have the potential to present physical risks under a BAU scenario and actively develop methods to mitigate those risks.

While we recognize that flooding, extreme weather and fluctuations in seasonal temperatures are occurring to some extent now, we consider these risks to hold a higher impact over the long-term time horizon. Climate change has been shown to increasingly cause more extreme weather conditions such as intense hurricanes, thunderstorms, tornadoes and winter storms as well as increased volatility in seasonal temperatures.

In partnership with our property insurer, we focus on these physical climate risks and actively work to identify and respond to high-exposure areas. Our property insurer offers premium credit to its insurance customers for their efforts to address these risks through projects aimed at improving climate resilience, such as structural improvements to increase snow-load capacity and wind resistance.

Extreme weather conditions, droughts, unpredictable or later-than-usual last freeze/frost, and associated crop damage and negative impacts on yields may adversely affect the availability, quality and price of the annually renewable agricultural commodities we rely on to supply our biorefineries as well as our operations and operating results. We also recognize that developments in drought-tolerant seed might not keep pace with these rapid changes. We may also see increased frequency of flood events similar to what occurred in our geographic area in 2019, which caused supply chain interruptions. This could also result in remapped floodplains, putting our assets in newly created flood zones and resulting in increased insurance premiums.

Our Emergency Response Plans for all of our operational sites detail the procedures for emergency scenarios, including adverse weather events. Rising mean temperatures and longer, more frequent summer heat waves would also make it more challenging to maintain the temperature of our refining process, resulting in the need to run supplementary summertime chillers for longer periods or to upgrade their capacities. Such adjustments would add to operating costs and could increase our emissions.

We also consider the potential risks associated with rapidly transitioning to a low-carbon economy under a 2°C scenario and pay close attention to relevant policy, legal, technology and market changes.

We consider these risks to be short- and medium-term. We regularly engage with stakeholders, policymakers, regulators and our industry partners about climate change issues and how they might affect our business.

Evolving Legal Landscape

Compliance with evolving environmental laws and regulations, particularly those related to climate change, could be costly. Enhanced emissions-reporting obligations and mandates on and regulation of existing products and services could result in increased operating costs, higher compliance costs and increased insurance premiums. With the SEC Climate Disclosure Rule, California Senate Bills 253 and 261, and the EU Corporate Sustainability Reporting Directive and Carbon Border Adjustment Mechanism all coming into force over the next several years, we consider these risks to be short term. Climate change legislation in the U.S. and abroad is likely to receive increased focus for the foreseeable future, with numerous past and future proposals made at the international, national, regional and state levels of government to reduce GHG emissions. Compliance with future laws or regulations over the medium and long terms to decrease GHG emissions may have an adverse impact on our operations, cash flows and financial position.

Level of Environmental Regulation

Our biorefineries are subject to extensive environmental regulations. Our ability to maintain the required regulatory permits or manage changes in environmental regulations is essential to successfully operating our biorefineries. Governing state agencies could impose costly conditions or restrictions that would be detrimental to our profitability and may have a materially adverse effect on our business. This has already been demonstrated as a short-term risk, as seen in the delays associated with permitting some of our planned MSC™ installations.

Energy Transition Costs

Costs to transition to lower-emissions process technology related to our decarbonization strategy is a medium-term risk. It could result in increased R&D expenditures related to new and alternative technologies in addition to capital investments in technology development. Possible unsuccessful investment in new technologies poses further risk. Uncertainty in market signals that result in abrupt and unexpected shifts in energy costs could have an adverse impact on our operations and is an ongoing risk over the short, medium and long terms. Our industry is particularly susceptible to large and unexpected spikes in fossil natural gas prices. For example, under the inflationary atmosphere of a post-pandemic recovery and the war in Ukraine, natural gas prices spiked to nearly $9 per MMBtu, which contributed to tight margins across the ethanol industry in 2022.

Market Fluctuations

Also, transitioning to a low-carbon economy could result in increased cost of raw materials, such as corn, enzymes and yeast. Fluctuating input prices could increase our overall production costs over the medium to long terms. Many of our biorefineries are capable of processing a variety of primary feedstocks beyond corn, including sorghum/milo and sugar beets; two of them have regulatory-approved pathways to process sugar beets into ethanol. We also have plans to secure regulatory approval to process sorghum/milo into ethanol at a select number of facilities where there is adequate local sourcing available. While we believe this risk to be of relatively low probability, this feedstock versatility is just one way to manage the various risks facing our business.

Industry Scrutiny

Further, our industry faces some scrutiny on debates about food versus fuel and land use change/conversion over the short to medium terms. While we dispute this stigmatization, it could potentially result in reduced revenue from decreased demand, including reduced or uncertain renewable volume obligations under the Renewable Fuel Standard, delayed planning approvals, or delayed air permitting for expansion projects or new construction. Increased stakeholder concern or negative stakeholder feedback over the medium to long term, related to the perceived impact that our business has on climate change or food prices, could result in a reduction in capital availability. Banks, lenders and other providers of capital may be more hesitant to invest in our business.

This discussion of our identified climate risks incorporates risks disclosed in the Risk Factors section of Green Plains Inc.'s Form 10-K SEC filing.

Anticipating Opportunities

We believe low-carbon biofuel will continue to play a critical role in decarbonizing the economy, creating well-paying science, technology, engineering and math, or STEM, jobs and reinforcing our domestic energy security.

Green Plains is in a unique position to help address one of the most significant existential risks of our time — climate change — as we are in the business of producing low-carbon ingredients and fuels that displace traditional fossil fuel-based alternatives.

Customer Compliance Solutions

Use of our products helps Green Plains' customers comply with the Renewable Fuel Standard, a law enacted by the U.S. Congress in 2005 and expanded in 2007, with goals to reduce surface transportation GHG emissions, expand the nation's renewable fuels sector, decrease our reliance on imported fossil fuels, and encourage ethanol production for use as a gasoline oxygenate to replace methyl tertiary butyl ether, which has been banned in multiple states.[16]

The renewable biofuels we produced from 2007 through 2023 have reduced GHG emissions by more than 51.7 million metric tons, or MMT, of CO_2e — the equivalent of taking 11.5 million passenger vehicles off the road for one year.[17]

As an additional environmental benefit, ethanol, the most cost-effective octane enhancer available, also displaces some of the toxic elements of gasoline — aromatics such as xylene, toluene and benzene — thereby reducing particulate matter that negatively impacts air quality in addition to reducing GHG emissions.

We have also begun to produce cellulosic ethanol at multiple biorefineries. This fuel has a significantly lower CI than traditional ethanol, which helps us better serve our customers' low-CI needs and compete in markets under California's Low Carbon Fuel Standard program. By extracting additional yield from fiber, we create more value with the same kernel of corn.

Potential Cost Decreases

We also recognize that there may be some unexpected outcomes in a BAU world. Rising mean temperatures could create the right circumstances for an increase in domestic double-cropping, as is currently common in Brazil. This increase in the supply of crop feedstocks could positively impact availability and put downward pressure on corn prices.

The transition opportunities available to Green Plains under a 2°C scenario cannot be overstated.

Federal Credit Earnings

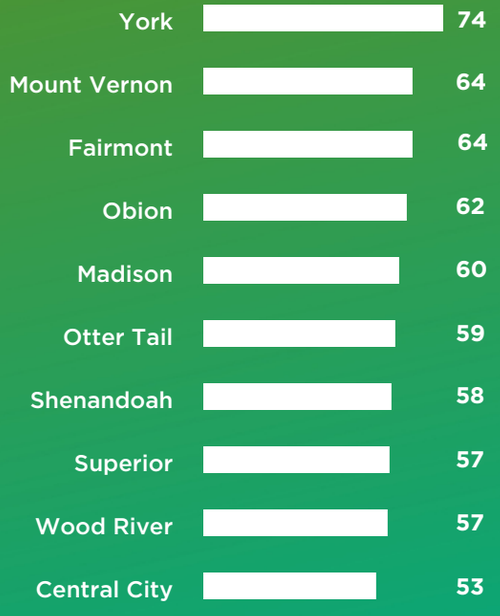
We believe the passage of the Inflation Reduction Act, and in particular the creation of the Clean Fuel Production Credit under section 45Z, presents an enormous opportunity for low-carbon liquid fuel producers like us. The CFPC would allow a biofuel producer to be eligible for a tax credit of $0.02 per gallon for every CI point below 50kgCO_2e/MMBtu, up to $1.00 per gallon. Our biorefinery platform has the capacity to produce 903 million gallons of renewable biofuels annually. The basis for the CI calculation under this program is the most recent Argonne Greenhouse Gases, Regulated Emissions and Energy Use in Transportation, or GREET model as measured in kilograms of CO_2e per Metric Million British Thermal Units, or MMBtu. The current estimated Argonne GREET CI scores of our facilities (shown at right) align with the most up-to-date studies analyzing the CI of corn ethanol.

16 https://www.epa.gov/renewable-fuel-standard-program

17 https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

U.S. ethanol has a 46% lower GHG profile on average than petroleum-based gasoline.[18]

ARGONNE GREET CI SCORES KG CO_2E/MMBTU



18 https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf

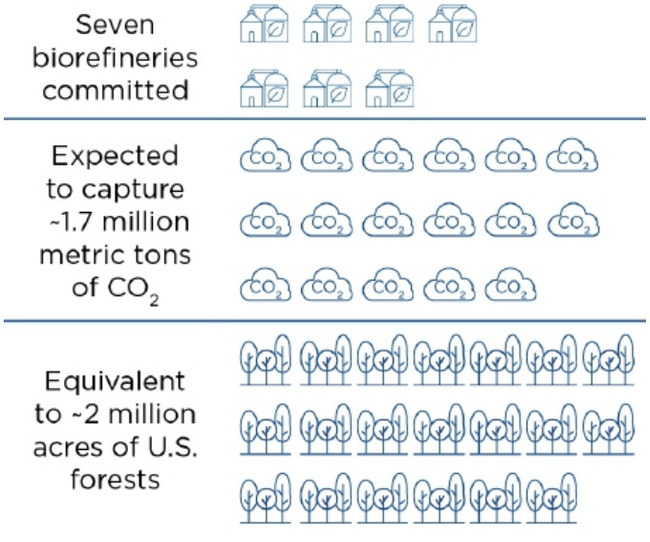
Carbon Reduction Strategy

We continue to adapt our carbon reduction strategy as the viability and feasibility of a range of technologies across our platform progresses.

Over the past 15 years, we have used existing low-carbon fuel markets that incentivize the use of low-carbon biofuels, such as California's Low Carbon Fuel Standard program and other state-level programs, as the basis for identifying our energy-transition opportunities. Using this approach, we have focused on analyzing existing tools while also assessing new technologies to reduce our emissions and improve carbon efficiency.

Securing Economic Viability

With the passage of the Inflation Reduction Act and the creation of the Clean Fuel Production Credit, our carbon reduction and energy transition strategy now has an additional federal layer that allows for a consistent framework to evaluate the technical feasibility and, most importantly, the economic viability of energy transition investments.



Seven of our biorefineries are already committed to carbon sequestration pipeline projects, which are expected to capture approximately 1.7 million metric tons of CO_2 from our facilities — the same amount that would be sequestered by 2 million acres of U.S. forests in a year.[19] The CI of our biofuel is expected to drop 25 to 30 points.

As such, capturing and sequestering our biogenic CO_2 is our No. 1 priority and represents a major step in our decarbonization journey.

It is important to note that none of this captured CO_2 will be used for enhanced oil recovery. We are also exploring opportunities to capture and use or sequester CO_2 at our biorefineries that are not on a carbon pipeline.

To further reduce the CI of our biofuels and other products/ingredients, however, we will need to invest in additional technology. We are evaluating technologies such as:

- Combined heat and power cogeneration systems.
- Anaerobic digesters and gasification systems to produce biogas and renewable natural gas.
- Photovoltaic solar, wind turbines and other cogeneration technologies such as steam let-down turbines.

We have already begun engineering and/or construction on several projects that are expected to result in emission reductions (as shown in the chart on page 29). The CST™ installation at our Shenandoah biorefinery is expected to reduce our biogenic emissions. We are also driving a steam let-down turbine cogeneration project targeting our Scope 2 emissions at our Shenandoah biorefinery as well as evaporation system upgrades that are expected to reduce Scope 1 emissions from natural gas combustion at our Obion biorefinery.

In December 2023, the U.S. Department of Treasury issued updated guidance on the 40B SAF tax credit, which indicated that the new GREET model, set for release in early 2024, will integrate climate-smart agricultural practices as a GHG reduction strategy, This gives us added confidence in our ongoing work with farmers to reduce the CI of our feedstock by promoting regenerative agriculture practices such as utilizing cover crops, green ammonia, reduced tillage, manure and other practices.

Though site-dependent, these practices are expected to have a significant impact on our CI score, with a path to making our feedstock carbon-neutral or even carbon-negative.

Customizing Solutions

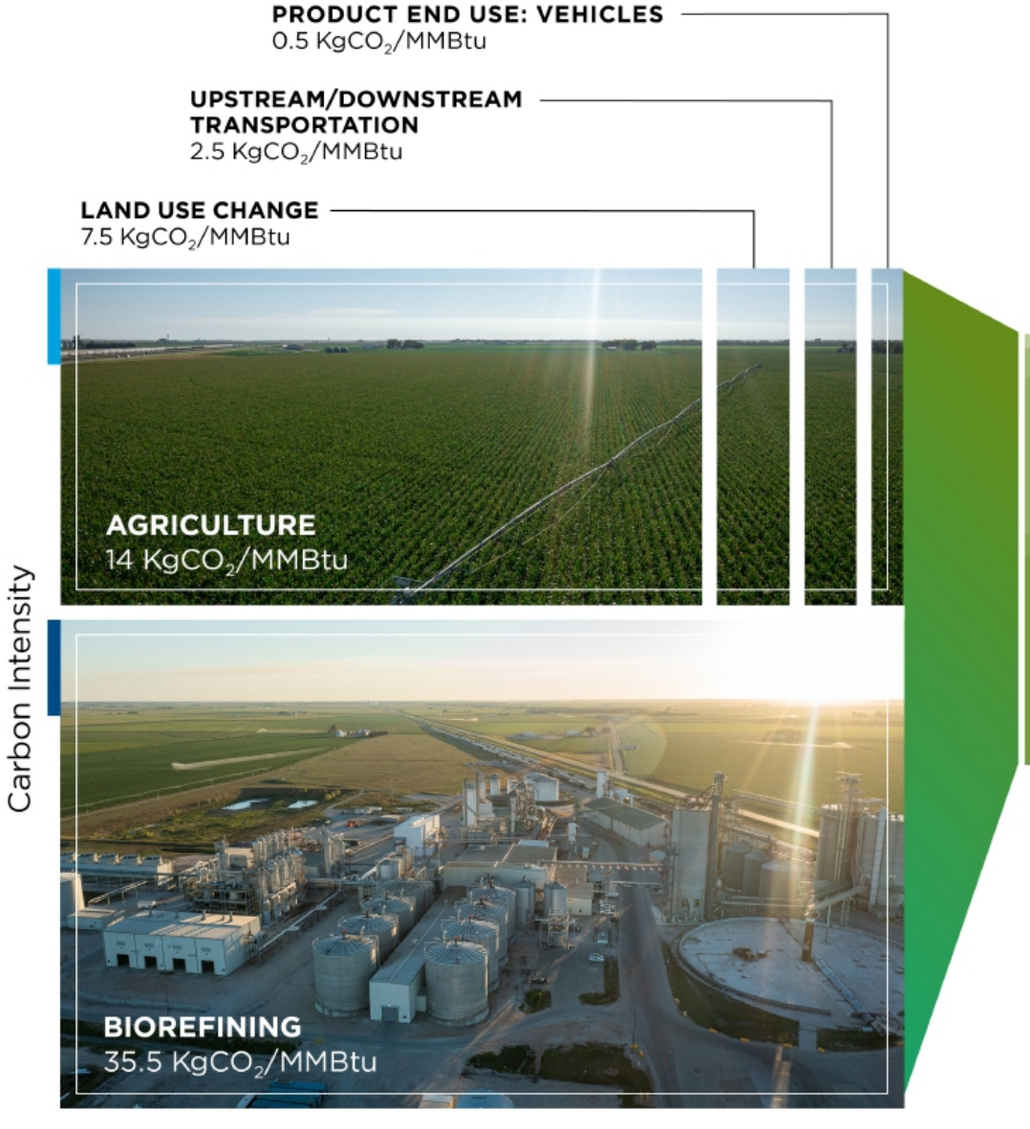
Our decarbonization strategy is based on the particular operational circumstances and technical specifications of each of our biorefineries.

Each one has unique characteristics that will require a varying combination of low-carbon technologies. For example, while one facility may be suitable for wind turbines and photovoltaic solar due to land availability and wind speeds, another may lack Federal Aviation Administration clearance due to a nearby airport, and the available land may not be suitable due to wetlands or other protected habitats. Any sites not suitable for traditional low-carbon technology may have to rely more heavily on combined heat and power systems and other technologies.

Additionally, the viability of biogas and renewable natural gas production via anaerobic digestion and gasification will depend on sourcing feedstock of sufficient quality and regularity. Examples of how different technologies impact the CI of our biofuel under the GREET model are shown on the following page. Each location's waterfall will be different, with the end goal remaining the same: carbon-neutral or carbon-negative liquid biofuels. Whether converted into SAF or used in legacy internal-combustion surface-transportation vehicles, there is a bright future ahead for the planet by using biofuels that can achieve carbon neutrality.

19 https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator

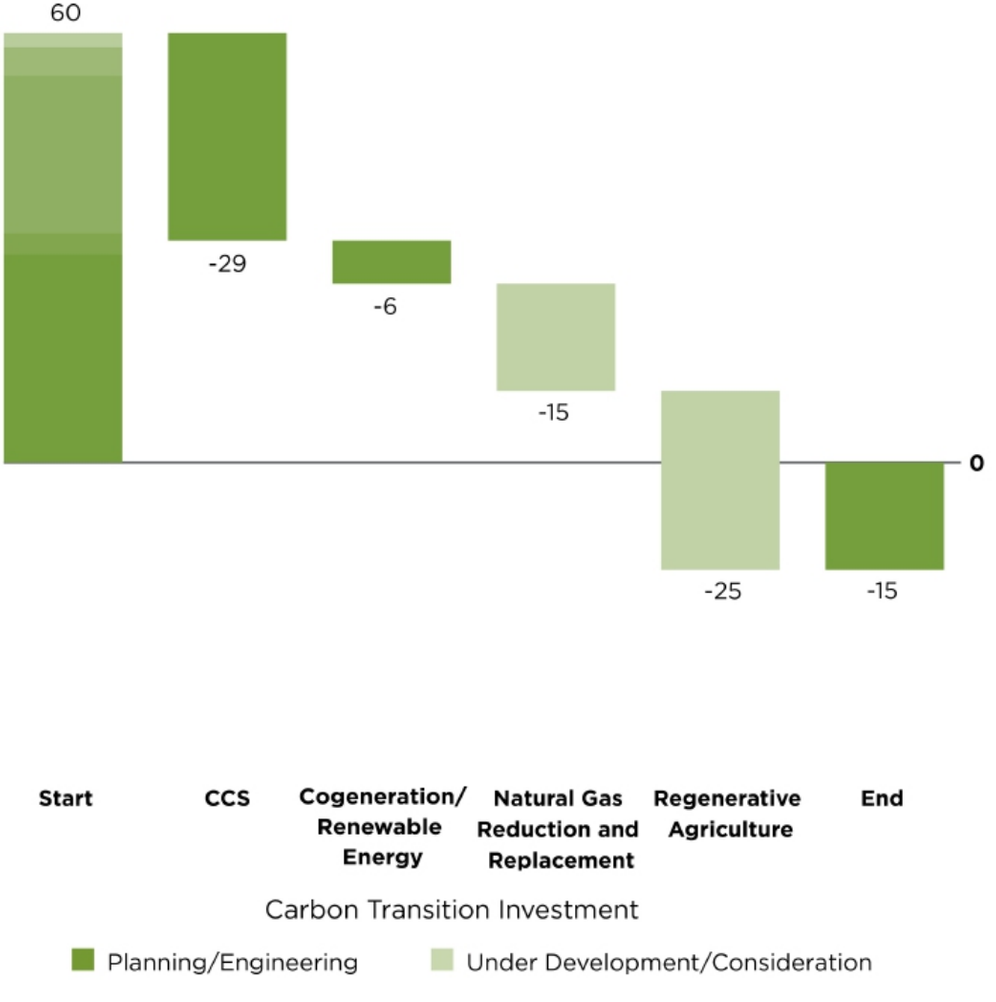
Pathway to Net-Zero Ethanol



Investing to Decarbonize

To offset our total emissions, Green Plains has begun assessing, engineering or deploying an array of technologies and approaches to suit our individual facilities and value chain partnerships.

Expected emission reductions from these investments are shown below, with a goal of achieving not only low-carbon ethanol but potentially net-zero ethanol.



SAF: A Global Emissions Game-Changer

Efforts to decarbonize the aviation industry, one of the greatest sources of global GHGs, represent a significant opportunity for biofuel producers such as Green Plains.

New alcohol-to-jet solutions will be needed to achieve the U.S. government's ambitious volume targets for SAF. The "SAF Grand Challenge," as it's known, calls for 3 billion gallons of SAF by 2030 and 35 billion gallons by 2050, up from the approximately 15 million gallons the U.S. produces today. Reaching those target levels would require large volumes of feedstock, and the U.S. ethanol industry already produces more than 15 billion gallons of alcohol annually.

Green Plains is partnering to drive progress and breakthroughs in SAF. Our joint venture with Tallgrass and United Airlines — Blue Blade Energy — is a first-of-its-kind business model in the SAF space.

Beginning in September 2022, Green Plains entered into a partnership with Tallgrass to develop a Pacific Northwest National Laboratory SAF technology. This novel catalyst converts ethanol to a ketone with a carbon-oxygen bond that requires less energy to break for conversion to the final jet fuel. Because the ethanol-to-ketone conversion is a single-step process, we believe this technology can be a significant step forward in the efficient conversion of low-carbon alcohol to a drop-in SAF, if realized at industrial scale.

United Airlines joined the initiative in early 2023 to help develop the catalyst and if successful construct pilot and then full-scale production facilities. Green Plains contributes ethanol feedstock as well as production and technological expertise. United Airlines is seen as a demand partner that can not only use the fuel but also invest in technology development.

The realization of alcohol-to-jet solutions that use decarbonized ethanol as feedstock is an area of great interest to Green Plains, our shareholders, the ethanol industry and all who depend on climate solutions, so we continue to explore multiple technologies in this space.

Climate Impact Tracking

To align our climate strategy and risk management processes with our assessment of climate-related risks and opportunities, we track and publish relevant metrics and key performance indicators in our annual sustainability reports, including this year's.

From these metrics, we develop short-, medium- and long-term goals and targets. Our Sustainability Workgroup evaluates, monitors and establishes targets by working with goal owners who develop specific plans, budgets and timelines to achieve individual goals. These are then reviewed and approved by our Senior Leadership Team with oversight from our board's Nominating and Governance Committee.

We report on several key areas of impact, metrics and targets associated with climate-related risks and opportunities, including:

- GHG emissions, energy use, water use and land stewardship.
- Absolute GHG emissions, including the procedures and methods to collect data critical for calculating these emissions, as our primary metric in this area.
- Additional metrics associated with our climate change strategy, including operational GHG emissions intensity at the organizational level as measured in metric tons of CO_2e per metric ton of raw material feedstock, as well as the CI of our biofuel as measured in kilograms of CO_2e per MMBtu.

Through the tracking of these metrics, we can closely monitor our environmental impact and adjust our approach as needed. We continue to analyze our overall environmental performance across our Company and identify areas for improvement. We have robust processes in place and continue to implement improvements to better understand and minimize our environmental impact.

FIVE-YEAR GHG PERFORMANCE*

Green Plains Performance Data	Unit of Measurement	2023	2022	2021	2020	2019
Direct GHG Emissions (Scope 1)	Thousand MT CO_2e	1,205	1,252	1,098	1,179	1,316
Carbon Dioxide (CO_2)	Thousand MT	1,203	1,251	1,096	1,178	1,315
Methane (CH_4)	Thousand MT CO_2e	0.570	0.596	0.519	0.557	0.620
Nitrous Oxide (N_2O)	Thousand MT CO_2e	0.722	0.779	0.631	0.677	0.739
Indirect GHG Emissions (Scope 2)	Thousand MT CO_2e	366	357	338	348	527
CO_2	Thousand MT	364	355	336	345	524
CH_4	Thousand MT CO_2e	0.949	0.928	0.893	0.910	0.215
N_2O	Thousand MT CO_2e	1.616	1.608	1.536	1.567	2.599
Biogenic GHG Emissions (CO_2 from Fermentation)	Thousand MT	2,344	2,441	2,101	2,225	2,444
Total Operational GHG Emissions (Scope 1, Scope 2 and Biogenic)	Thousand MT CO_2e	3,915	4,050	3,537	3,752	4,287
Operational Emissions Intensity	MT of CO_2e/raw material MT	0.533	0.528	0.536	0.536	0.566
Indirect GHG Emissions (Scope 3)	Thousand MT CO_2e	2,533	2,849	2,342	—	—
Category 1 (Purchased Goods and Services)	Thousand MT CO_2e	1,954	2,128	1,751		
Category 2 (Capital Goods)	Thousand MT CO_2e	30	48	45		
Category 3 (Fuel and Energy Related Activities Not Included in Scopes 1 or 2)	Thousand MT CO_2e	344	463	345		
Category 4 (Upstream Transportation and Distribution)	Thousand MT CO_2e	50	52	45		
Category 7 (Employee Commuting)	Thousand MT CO_2e	2	2	2		
Category 9 (Downstream Transportation and Distribution)	Thousand MT CO_2e	78	78	87		
Category 11 (Use of Sold Products)	Thousand MT CO_2e	75	77	67		

* Our Scopes 1, 2, 3 and biogenic emissions are calculated using a GHG Inventory Management Plan based on GHG Protocol standards and rules. We primarily use consumption data along with commonly accepted and publicly available emission factors to calculate our relevant emissions. We use a grid/location-based method of converting purchased electricity into GHG emissions. For Scope 3 emissions: Category 1 consists primarily of the corn we purchase; category 2 is our capital goods purchases such as plant equipment; category 3 is the upstream emissions from Scopes 1 and 2 energy-related activities; category 4 is the upstream transportation and distribution associated with the corn we process; category 7 is emissions from our employee commuting; category 9 is all of the downstream transportation and distribution associated with all of our products produced from corn; and category 11 is use of sold products, such as the combustion of the non-biogenic portion of denatured ethanol blended in gasoline in internal combustion engines.

Controlling Other Air Emissions and Pollution

Biorefineries like ours produce some level of volatile organic compounds, hazardous air pollutants and particulate matter in the ingredient drying process. To reduce these emissions from our operations, we employ thermal oxidizer and regenerative thermal oxidizer emissions systems to remove up to 98% of the volatile organic compounds, hazardous air pollutants and particulate matter caused by the manufacturing process.

We regularly evaluate and upgrade environmental controls for our dryers when necessary. Emission control upgrades like these have the added benefit of lowering the biorefinery's natural gas consumption, thereby reducing Scope 1 GHG emissions (MT CO_2e) at the facility as well. Other operational achievements in the area of pollution control include removing 99% of ethanol and other organic vapors from process vent streams through the use of CO_2 scrubbers, achieving 95% reduction of particulate matter through use of dust control bag house systems and achieving 95% reduction of nitrogen oxide emissions by using low nitrogen oxide burners.

We take our responsibility to the environment via pollution control seriously and maintain a robust risk mitigation approach. All of our biorefineries have leak detection and repair and mechanical integrity programs in place. Additionally, many of our biorefineries are equipped with continuously monitored critical emissions control systems on their thermal oxidizers. Further, all of our emission control systems are subject to daily internal inspection, with some subject to additional quarterly and annual internal inspections and testing. All pollution control systems are also subject to scheduled and unscheduled emission inspections by state and federal environmental agencies.

2025 GOAL:

Reduce air permit deviations by **60%** (vs. 2020).

2023 EARLY ACHIEVEMENT:

Air permit deviations were reduced by **93%** (vs. 2020).

ENTERPRISE-WIDE AIR EMISSIONS (EXCLUDES GHGs)*

Green Plains Performance Data	Unit of Measurement	2023	2022	2021	2020	2019
Sulfur Dioxide (SO_2)	Thousand Metric Tons	0.074	0.089	0.087	0.098	0.099
Nitrogen Oxides (NO_X)	Thousand Metric Tons	0.500	0.551	0.482	0.551	0.634
Volatile Organic Compound Emissions	Thousand Metric Tons	0.602	0.696	0.649	0.563	0.583
Carbon Monoxide Emissions	Thousand Metric Tons	0.331	0.375	0.341	0.354	0.377
Particulate Matter Emissions	Thousand Metric Tons	0.376	0.371	0.329	0.379	0.397
Air Quality Permits, Standards and Regulations	Incidents of Non-Compliance	100	161	959	1,532	

* Investments in emissions control systems exceed local environmental regulations.

Energy Use and Efficiency

Green Plains recognizes the need for a global energy transition to combat climate change.

2026 GOAL:

2% reduction per year of our natural gas intensity (MMBtu/raw material MT)

2023 PROGRESS:

Reduced natural gas intensity by **0.45%** (vs. 2022)

In 2023, Green Plains focused our work in this area on accelerating our energy transition and decarbonization strategy and contributing to increased production of low-CI renewable corn oil, as detailed in the following pages.

To convert our feedstock into biofuels, feed and ingredients, we require purchased electricity and the combustion of natural gas fuel. We are managing how and where we source this energy and how efficiently we manage it. We currently source 100% grid electricity, of which 33% is renewable, and fossil natural gas. Our electrical energy is used to power our pump motors, centrifuges, fans, separation equipment, lights and other process machinery. Our natural gas supply serves two primary purposes: production of steam in our boilers and combustion in our feed ingredient dryers. Approximately two-thirds of our natural gas usage is for steam production, with the remaining one-third for drying. We use various steam generation technologies, each with their own efficiency advantages.

Some of our biorefineries use traditional boilers for steam production and more efficient stand-alone regenerative thermal oxidizer pollution control technology on the dryer exhaust. Others use less efficient thermal oxidizer pollution control technology on the dryer exhaust but also integrate a heat recovery steam generator or waste heat boiler technology for steam production into the thermal oxidizer system.

Proactive Transitions

In 2023, we continued to reduce our energy use and increase energy efficiency across our platform as a key component of our climate change strategy.

One of the highlights of 2023 was the installation of a new boiler at our Central City location with a ConDex Condensing Economizer System. This system is able to:

- Reclaim heat energy that is lost in the flue gases.
- Transfer heat from the flue to a cold process water stream.
- Cool flue gas below the water vapor dew point, which results in water savings as well.

We are considering a variety of energy efficiency and clean energy-generation technologies, including combined heat and power systems, renewable natural gas/biogas via anaerobic digestion, wind turbines and photovoltaic solar. Due to the nature of many of these projects, we are able to take advantage of a capital light structure to finance our energy transition. Little to no upfront capital is required as many are based on direct Power Purchase Agreements after project completion.

We continue to evaluate combined heat and power systems at key locations throughout our platform and will deploy where it best fits our overall energy transition strategy. Progress is also being made on the suitability of directly connected wind and solar energy systems. Work is progressing on the potential applicability of on-site anaerobic digestion systems to produce biogas or renewable natural gas for use directly in biorefinery operations or sale on the open market. Various biorefinery waste streams are currently being studied as digester feedstocks.

In addition to "capital light" energy projects, we continue to allocate our own capital into the energy transition where it best fits our capital allocation priorities. Through our 2024 capital plan, we are exploring and evaluating numerous projects, including low-energy distillation systems, energy reclamation projects, evaporation system upgrades, steam-letdown turbines, boiler economizers, centrifuge power packs, variable frequency drives, and heat exchanger projects that aim to reduce our natural gas usage and generate additional efficiencies on power consumption. Each project will still have to be justified through our capital improvement request process and, depending on capital allocation priorities and final economics, one or more of these projects may move forward.

FIVE-YEAR ENERGY PERFORMANCE

Green Plains Performance Data	Unit of Measurement	2023	2022	2021	2020	2019
Electricity Use	Thousand Megawatt Hours	759	726	650	661	735
Electricity From the Grid	Percent	100				
Electricity From Renewable Sources	Percent	33				
Electricity From Non-Renewable Sources	Percent	67				
Electricity Intensity	Kilowatt Hours/raw material MT	103.352	94.635	98.438	94.533	97.055
Natural Gas	Metric Million British Thermal Unit	22,636,322	23,517,446	20,622,819	22,158,963	24,778,741
Natural Gas Intensity	MMBtu/raw material MT	3.081	3.067	3.125	3.168	3.272
Mobile Fuel (Diesel, Gasoline, Propane)	Gallons	232,388				
Total Energy Use	Gigajoules	26,649,316				
Total Energy Use From Renewable Sources	Percent	3				
Total Energy Use From Non-Renewable Sources	Percent	97				

Clean Fuel Expansions

Green Plains is a crucial player in the production of clean fuels in addition to the creation of low-carbon feedstocks for advanced biofuel production. We are actively increasing our yields of renewable corn oil to make a larger contribution to the production of low-CI fuels, such as renewable diesel and SAF.

2025 GOAL:

50% increase in average renewable corn oil yield (vs. 2020) in order to reach 1.2 pounds per bushel

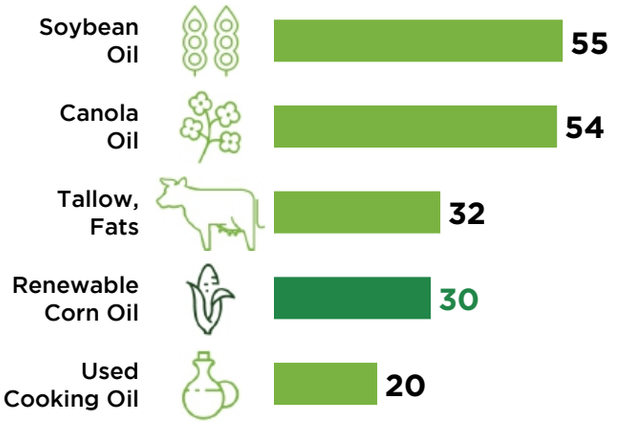
2023 PROGRESS:

Increased average renewable corn oil yield by 25% (vs. 2020), reaching a yield of 0.97 pounds per bushel

Renewable corn oil has a lower CI than most available feedstocks,[20] and because it is not suitable for human consumption, it is considered a "waste oil" under the Renewable Fuel Standard and Low Carbon Fuel Standard programs. The renewable corn oil produced at our biorefineries is an ideal low-CI feedstock for renewable diesel, biodiesel and SAF. We are on track to achieve our 2025 target of increased yields, primarily driven by our FQT MSC™ systems. MSC™ technology enhances renewable corn oil yields, allowing us to increase the production of an important clean energy feedstock source without expanding cropland acreage. This is a prime example of how we continually work on extracting additional value from every kernel of corn we procure, creating more value for farmers and our stakeholders while also supplying fuels that reduce GHG emissions.

20 https://iopscience.iop.org/article/10.1088/1748-9326/abde08

AVERAGE CI PATHWAYS FOR BIODIESEL AND RENEWABLE DIESEL FEEDSTOCK



Source: Company analysis of California Air Resources Board's pathways

Lean Product Transport

Green Plains benefits from the bulk product transport used in our industry and its comparatively small carbon footprint. We also actively work to create further efficiencies in our supplemental forms of transport.

We move the majority of our biorefinery output by rail or barge. According to the Association of American Railroads, moving freight by rail rather than truck reduces GHG emissions by up to 75%.[21] We met our 2023 goal of maintaining at least 50% in bulk transport last year to keep our CI scores low, achieving 74%.

The balance of our freight moves by truck, and we optimize efficiencies in the local trucking services we employ. In 2023, we explored a volunteer backhaul program with our third-party carriers to decrease deadheading.

In such a program, third-party carriers would voluntarily share what percentage of shipments originating out of our biorefineries and terminals are backhauls. Deadheading is any trip from our product's destination, usually our terminals, back to our biorefineries with an empty trailer. Traveling with an empty trailer significantly increases the GHG emission intensity of the trip (MT CO_2e per ton-mile). Studies show that decreasing deadheading can reduce Scope 3 emissions by 3% to 20%.[22]

In 2022, we met with all of our top outside carriers to discuss and collaborate on sustainability goals, alignments and the backhaul program. In 2023, we faced some challenges in implementing the backhaul program due to information privacy reasons. We will continue to evaluate ways of reducing deadheading and unlocking new and novel efficiencies in our transportation and distribution supply chain.

We also manage our product transportation footprint through our established network of biofuel storage facilities, at or near our 10 biorefineries.

Our network of biofuel storage facilities:

- Allow fuel and other value-added products to be easily loaded into rail cars and tanker trucks.
- Feature fuel storage tanks and access to major rail lines for transportation at each location.
- Enable Green Plains to further reduce the need to truck biofuel over long distances by using rail transportation assets.

We oversee a leased rail car fleet with an aggregate capacity of 85 million gallons dedicated to transporting end products. Our wholly owned subsidiary, BlendStar LLC, and its network of rail-accessible fuel terminals, have a combined storage capacity of approximately 6.9 million gallons. The rail car fleet and fuel terminals allow us to reach Southern U.S. markets that previously did not have efficient access to renewable fuel.

21 https://www.aar.org/wp-content/uploads/2020/06/AAR-Sustainability-Fact-Sheet.pdf

22 Lin, Dung Ying and Nig, Kuok Hou. (December 2021). "The impact of collaborative backhaul routing on carbon reduction in the freight industry." Transportation Research Part D: Transport and Environment, Volume 17, Issue 8, pp. 626-628.

Water Management

Cognizant of the risks posed by water scarcity, Green Plains actively manages water use in our operations wherever possible. We use emerging technologies and processes to help safeguard this vital natural resource.

In 2023, we continued to drive new water use efficiencies in our biorefineries, reduce our water intensity and incorporate water as a shared resource into our regenerative agricultural program.

Water scarcity poses significant risks to ecosystems, communities and global food security. The environmental impact of water scarcity includes damage to aquatic ecosystems, loss of biodiversity and compromised water quality, underscoring the urgency of sustainable water management practices worldwide.

Water Sourcing

Each of our biorefineries requires a consistent and reliable supply of water to operate. Efficient water use in production minimizes water disruption and pollution in the communities where we operate.

Green Plains uses water sourced from groundwater (well water) and, to a lesser degree, from third-party providers (i.e., municipal water, including recycled municipal water). Much of the water used is recycled back into our biorefinery process. Since 2018, we have realized an 8% reduction in water withdrawn (one thousand cubic meters), and we are acting to build on this progress.

Water Intensity Reduction

2025 GOAL:

Reduce water intensity by **10%** (vs. 2021).

2023 PROGRESS:

Water intensity was reduced by **4%** (thousand cubic meters/raw material MT) (vs. 2021).

Water Resource Management

Our approach is being validated by the steady achievement of important water management goals.

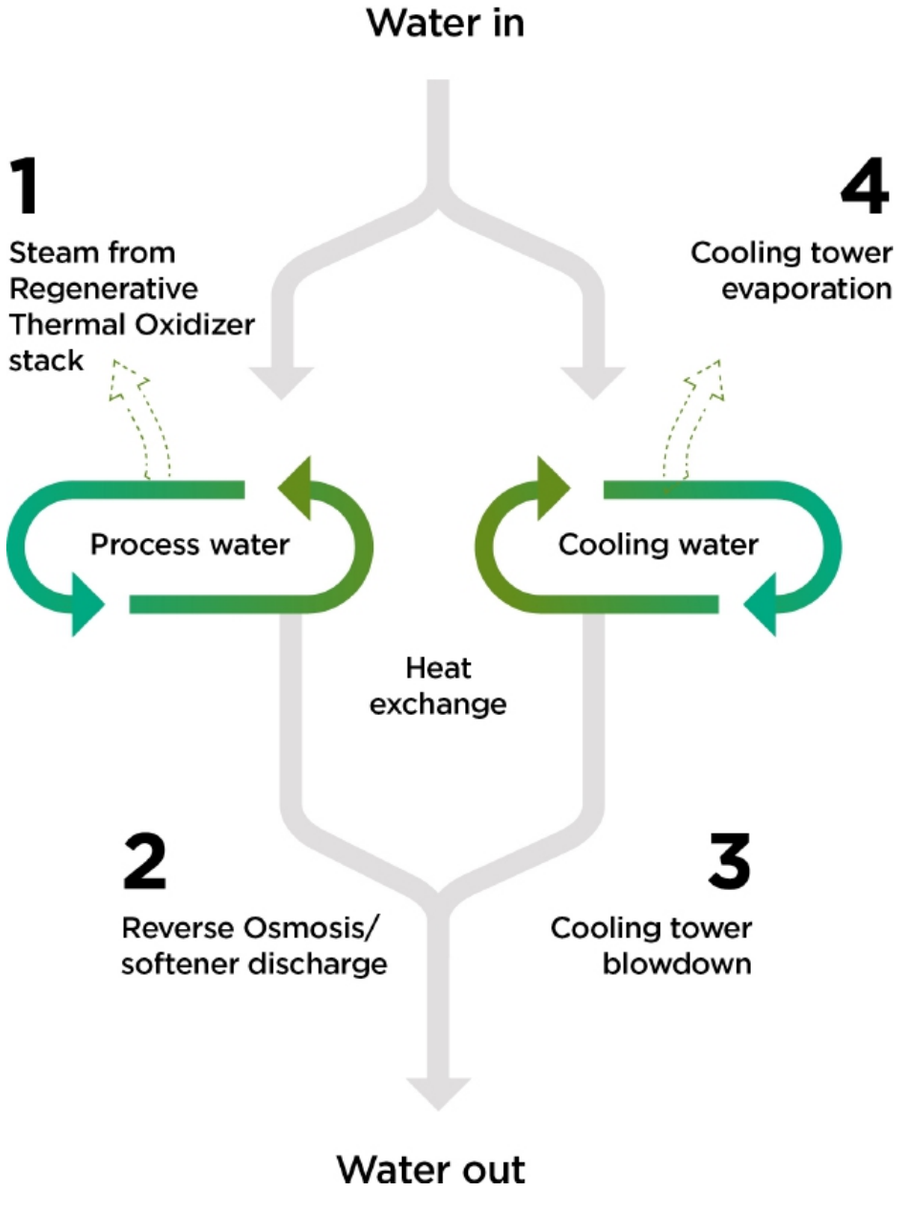
In 2023, we continued to hone our water resource management plan to help us achieve our goals. We are actively incorporating new ways to reduce water usage into our strategic plan.

We have implemented several efficiency and process improvements to reduce our operational water use, including:

- Eliminating water additions to yeast propagators.
- Successfully installing a controlled backwash system at our Otter Tail facility, which now returns water that was previously being discharged to the river back into our processes, increasing water efficiency.
- Performing periodic stack testing in 2023, which allowed us to reduce the water flow and consumption of our CO_2 scrubbers at some of our biorefineries.

Planned efficiency solutions include implementing a dryer-exhaust energy reclamation system that condenses the process water vapor exiting our dryer stack back into liquid form for recycling.

As seen in the diagram to the right, two streams of water are used in our biorefinery processes — cooling water and process water — and they do not come into contact with each other. Due to this stream separation, the majority of our cooling water and nearly all of our process water can be recirculated. Some water is lost through water treatment discharge (reverse osmosis reject and softener regeneration), boiler blowdowns, evaporation via dryer stacks, evaporation via cooling towers, or (at all but one of our facilities) the discharge of cooling water via continuous or periodic cooling tower blowdowns. Continuously recirculating cooling water eventually builds up dissolved solids to the point where it needs to be replenished with new water.



Risk Mitigation and Control Systems

Through careful design, our biorefineries are engineered to maximize water reuse and resource efficiency of freshwater sources:

- Our process-water streams incorporate internal recycling and are designed for zero-liquid-discharge, i.e., no industrial wastewater discharged into the environment.
- Our process and cooling water streams have heating and cooling efficiencies.
- We also use process efficiency measures, recycled water for evaporative cooling and evaporative reuse via boiler economizers, and we maintain peak CO_2 scrubber efficiency to reduce the amount of water required to operate.

Further, we maintain the best available control systems. All of our biorefineries are equipped with stormwater containment ponds and boom systems, and all hazardous chemicals are stored in containment structures. Finally, all of our biorefineries are subject to scheduled and unscheduled water inspections by state and federal environmental agencies.

Regulatory Compliance

We seek to comply with all local and federal appropriation, pollution and permitting requirements for water use at our facilities, and all but one of our facilities have zero-liquid process-water discharge.

Additionally, our Shenandoah facility uses treated municipal recycled water in its cooling tower, reducing the amount of new water we pull from the local community. Currently, no known significant water-related impacts have been identified by local authorities or other stakeholders.

All of our facilities are regulated for effluent standards by various state and federal regulatory agencies. Each state or federal authority applies specific standards to meet the needs of local bodies of water receiving effluents.

We work with these authorities to ensure that proper standards are applied. Our water discharge is managed through stormwater monitoring and planning and through National Pollutant Discharge Elimination System permitting, monitoring and reporting.

FIVE-YEAR WATER PERFORMANCE

Green Plains Performance Data	Unit of Measurement	2023	2022	2021	2020	2019
Groundwater Withdrawal	Thousand Cubic Meters	8,460	9,187	9,182	8,861	9,328
Surface Water Withdrawal	Thousand Cubic Meters	0	0	0	0	0
Municipal Water Withdrawal	Thousand Cubic Meters	1,787	1,683	759	1,239	1,458
Freshwater Withdrawal From Areas With High Baseline Water Stress	Percent	40				
Saltwater Withdrawal	Thousand Cubic Meters	0	0	0	0	0
Reclaimed Water Withdrawal	Thousand Cubic Meters	406	257	288	313	317
Total Water Withdrawal	Thousand Cubic Meters	10,653	11,128	10,229	10,413	11,103
Total Water Discharged	Thousand Cubic Meters	3,475	3,596	3,546	3,966	4,151
Total Water Use	Thousand Cubic Meters	7,178	7,532	6,683	6,447	6,952
Total Water Intensity	Cubic Meters Water/raw material MT	0.977	0.982	1.013	0.922	0.918
Water Quality Permits, Standards and Regulations	Incidents of Non-Compliance	15	7	15	41	

Natural Capital and Land Stewardship

Green Plains works to preserve and protect shared natural capital, including promoting sustainable sourcing and farming practices.

Nature-Related Assessments

In 2023, we continued to assess the nature-related dependencies, impacts, risks and opportunities of our business operations.

We have begun to analyze how our existing sustainability and environmental program infrastructure aligns with the recently released Taskforce on Nature-related Financial Disclosures requirements. We already report on several nature-related metrics and targets, including volume of wastewater discharge, weight of hazardous and non-hazardous waste generated, non-GHG air pollutants, water withdrawal from areas of high baseline water stress, and quantity of natural commodities sourced from land (as presented in corresponding sections of this report). Additionally, nature-related key topics are currently included in the existing sustainability governance structure covered on pages 60 and 62 of this report.

Considering the coverage of that preexisting structure, our Board oversees and our management has a role in assessing nature-related key topics, which include consideration of dependencies, impacts, risks and opportunities. We maintain a robust human and labor rights policy that takes into consideration the rights, cultures and traditions of the communities where we operate, including indigenous and land-connected peoples and their interest in the land, waters and the environment. Our process for identifying, assessing and prioritizing nature-related key topics in our operations and value chain is incorporated into our Sustainability Workgroup function, with each key topic covered by a cross-functional team of subject matter experts. The results of the workgroup's efforts are then distributed to business units with the appropriate scope and authority to manage any identified dependencies, impacts, risks and opportunities.

Identifying Dependencies

Each of our biorefineries uses on average approximately 31 million bushels of corn annually, and we rely on our strong relationships with local farmers to ensure that we receive a steady supply of corn.

Many valued and sustainable products are made from corn — most notably ethanol, a clean, environmentally friendly and necessary octane booster for gasoline that helps extend the liquid fuel supply. Other co-products include renewable corn oil, CO_2 for commercial use or permanent sequestration, feed for animals (~30% of the kernel) that would otherwise consume corn and other row crops, and feed for land-based farmed fish that would otherwise be fed fish.

Clarifying Impacts

Historically, an unfounded criticism of biofuel production has been focused on the amount of U.S. farmland used to grow crops for fuel rather than for human consumption.

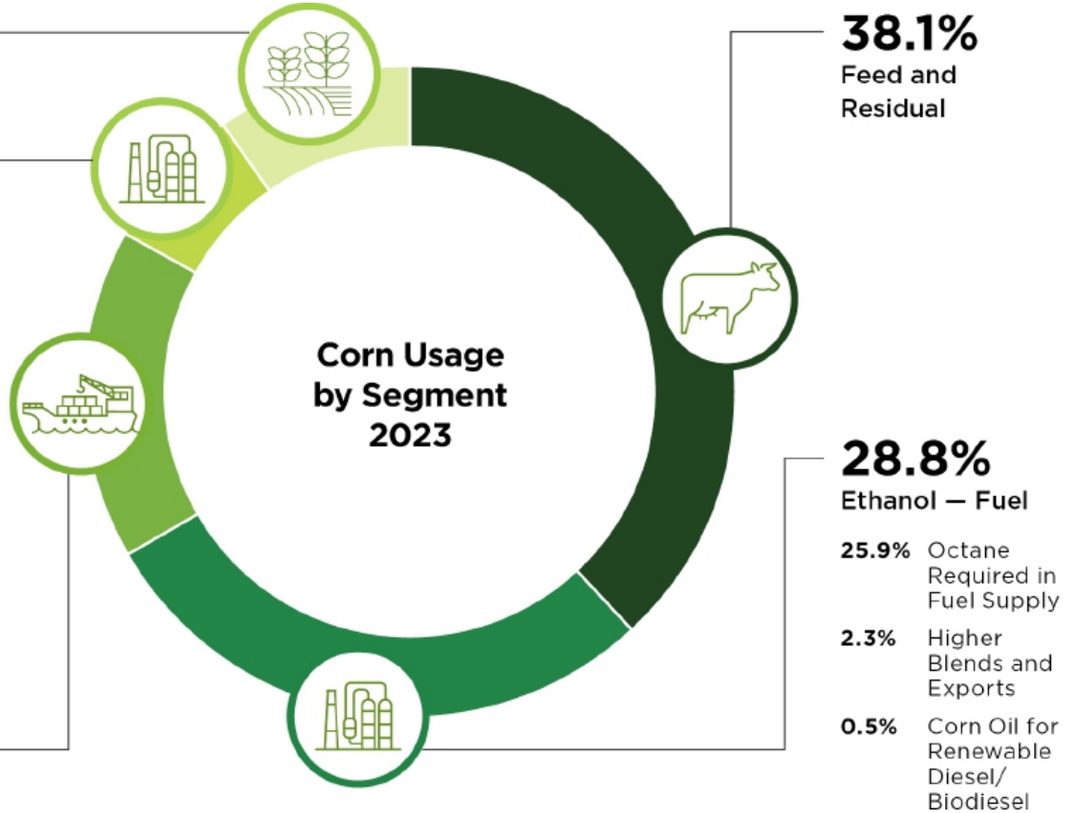
It is important to note, however, that biofuels and the food system are not separate entities. The corn kernels processed in biorefineries do not entirely leave the food system. Rather, nearly a third of each kernel becomes feed for poultry, cattle, fish and other animals consumed in human diets. As detailed below, less than 10% of corn grown in the U.S. is processed directly into products for human consumption.

We source 100% of corn feedstock from farmers, grain elevators and cooperatives in the U.S., with more than 90% sourced within a 30-mile trucking distance from each of our biorefineries. Our practice of buying locally from U.S. farmers not only keeps family farms in business and supports local communities but also helps mitigate deforestation around the globe and decrease the use of long-haul transportation and its environmental impacts. The amount of corn we processed in 2023 can be grown on 261,000 fewer acres than in 2007,[23] and none of our feedstock comes from land converted to cropland from forests, grasslands or wetlands, which is in compliance with Renewable Fuel Standard regulations for renewable biomass.

Over the long term, we help ensure sustainable land use by keeping existing land in agricultural production, which in turn fosters soil regeneration and resilient ecosystems. By contrast, urban development claims 2 million acres of farmland per year in the U.S.[24]

23 (289,267,000 bushels of corn processed in 2023/average U.S. corn yield in 2007 of 150.7 bushels per acre) minus (289,267,000 bushels of corn processed in 2023/average U.S. corn yield in 2023 of 173.3 bushels per acre) equals 261,224.38.

24 Farmland losing to urban sprawl | Farm Progress



Source: Adapted from https://ncga.com/world-of-corn-iframe/#corn-usage-by-segment

Targeting Risks and Opportunities

New and evolving technologies and agricultural practices are improving the way that corn is grown and biofuels are produced in the U.S.

These advances continue to make it possible to grow more corn on fewer acres while using fewer inputs, creating positive environmental trend lines in biofuel production. Our natural capital and land stewardship road map incorporates and builds on these improvements.

While overall production of corn, the most abundant crop in the U.S., has increased dramatically over the past 100 years, the amount of land used to grow corn has been decreasing over time. As shown in the graph below, while corn yields have increased, the total acres planted have decreased from averages that hovered near 100 million acres in the early 1900s to fewer than 90 million acres in 2022,[25] as estimated by the USDA.

Scientific and technological advances, along with new production practices, notably precision agricultural technology and better seed genetics, are responsible for these higher yields per acre of corn planted.

Yields have risen by 15% since 2007 (as shown below), when the Renewable Fuel Standard was expanded. These increased yields per acre have also been accompanied by reductions in chemical, fertilizer and water inputs for every kernel grown, including a 50% reduction in the amount of nitrogen fertilizer application (in pounds per bushel of corn) since the 1970s.[26]

In addition, biofuel production helps combat price inflation for food and fuel by reducing the cost of transportation fuel.

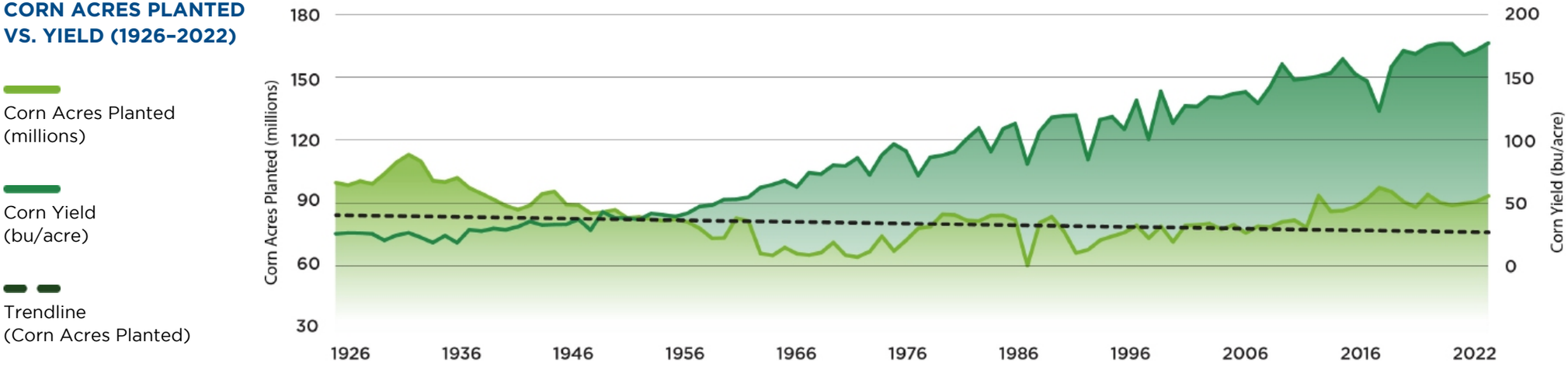
A recent study showed that ethanol saves the average U.S. household more than $750 per year, or $0.77/gal on average, for a total savings of $95 billion per year.[27]

The price of oil plays a more significant role in both food and fuel price inflation.[28] In many instances, retail food prices are most significantly correlated with transportation,[29] marketing and labor costs, and the cost of the underlying commodity has a lower impact on the final retail prices of food.

Therefore, increased use of biofuels could lower food and fuel prices by extending the liquid fuel supply and making it more cost-effective.

Finally, the impact of GHG emissions associated with land use change is often overstated. A recent study found that a much longer period than five to 10 years must be considered to accurately assess the impact of land use change on soil carbon and that overall soil carbon sequestration of more than 35 years (even on land that fluctuates between fallow/Conservation Reserve Program and cash crop rotations) yields a net positive soil carbon value.[30]

CORN ACRES PLANTED VS. YIELD (1926–2022)



25 USDA/National Agricultural Statistics Service QuickStats ad hoc query tool

26 USDA Economic Research Service - Fertilizer Use and Price

27 https://ethanolrfa.org/media-and-news/category/news-releases/article/2023/02/new-study-ethanol-industry-s-impact-on-the-u-s-economy-strengthened-in-2022

28 Fuels Prices – In Context, Not Hype | Fuels Institute

29 Luft, R. Z. (2008, May 6). Food vs. fuel, a global myth. Chicago Tribune.

30 Copenhaver, K.; Mueller, S. Considering Historical Land Use When Estimating Soil Carbon Stock Changes of Transitional Croplands. Sustainability 2024, 16, 734.

Regenerative Agriculture Program

Given our interdependent relationship with local farmers and their crops, land stewardship and the conservation of natural resources are top priorities for Green Plains.

In 2023, we continued to develop our multiyear farm-carbon strategy and grain-origination road map to coordinate and drive sustainable farming practices and outcomes. We intend to work with our farmer customers to:

- Help reduce the CI of the feedstock they produce and we process.
- Keep carbon in the soil.
- Reduce water use.
- Minimize erosion of valuable topsoil.

Accelerating Climate-Smart Practices

Our farmers are continually innovating, using the latest production practices, available technologies and the latest science to produce more crop on the same acreage. Leaps forward in seed technology have dramatically increased yields and enhanced drought tolerance and weed resistance. When coupled with regenerative production practices such as cover crops, reduced tillage and split application of crop nutrients, these new seed technologies enable farmers to produce more while using fewer inputs, conserving water and making fewer trips across the field.

As opportunities to advance sustainable agriculture expand every year, we seek to partner with farmers to lower their CI even further.

These CI reductions not only are the right thing to do but are also supported by state and federal policy, including Low Carbon Fuel Standard programs and incentives codified in the 2022 Inflation Reduction Act. Technology-neutral clean fuel policy, such as the Section 45Z Clean Fuel Production Credit, can incentivize dramatic improvements in on-farm conservation, and early indications are that climate-smart agriculture practices will be a component of the 45Z regulations. This is monumental for progress in regenerative agriculture and can help expand adoption of sustainable practices.

Additionally, having an accurate, complete picture of the CI and sustainable characteristics of our primary feedstock is becoming more essential to participation in high-value end-use markets. Many of our downstream customers are beginning to more closely scrutinize the CI of our animal feed products, which is itself impacted heavily by feedstock CI. As we continue to roll out our farm-carbon strategy in 2024, we are gaining greater visibility into the true CI and sustainability of our baseline feedstock. In 2023, we embarked on a pilot program with DTN to analyze the carbon footprint and sustainable practices of our growers near our Shenandoah, Iowa, biorefinery. Through this program, we can gather field-specific carbon emissions data or aggregate by farmer, biorefinery draw area or region. Early learnings from this program reveal that the actual CI of our farmers' corn feedstock may be lower than "default" CI values, such as GREET values published by the Argonne National Laboratory, which are typically relied on for analyzing corn CI. This ability to track field-specific data is valuable for gaining a more precise understanding of our actual corn CI profile and also will set a baseline and create a framework for tracking and incentivizing the implementation of regenerative agriculture practices. As we work to reduce the carbon footprint of our supply chain, we plan to work side by side with our farmers to incentivize and scale sustainable farming practices.

Sourcing Sustainably

A number of farmers in our supply chain already employ sustainable farming techniques, such as precision agriculture and the split application of nutrients, to increase yields while lowering the levels of traditional inputs needed

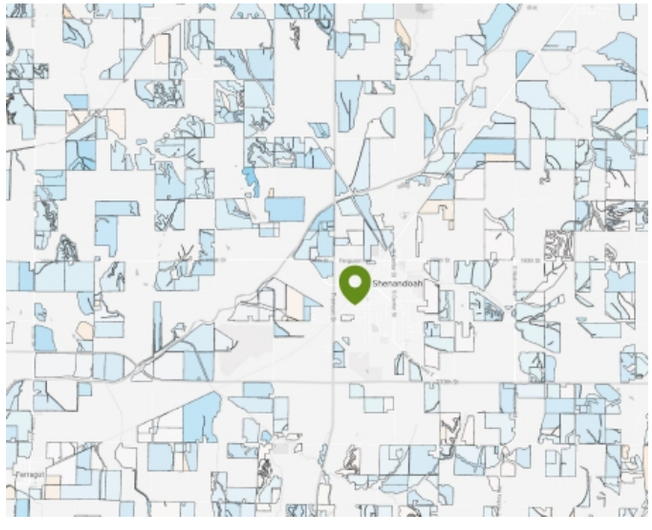
(such as land, water, fertilizer, herbicides and insecticides).[31] Many of these farmers also use cover crops and conservation tillage practices to reduce the risk of land degradation and often enroll marginal ground in federal conservation programs.

2030 GOAL:

Source **100%** of primary feedstock sustainably.

2023 PROGRESS:

- Continued development of a multiyear farm carbon strategy/grain origination road map.
- Began a pilot program at our Shenandoah, Iowa, biorefinery to better understand the true carbon impact of our corn feedstock.



Preliminary data from our DTN pilot program indicates approximately 33% lower CI corn (4,694 g/bu) vs. GREET default baseline (6,990 g/bu).[32]

31 See https://sustainableamerica.org/blog/what-is-precision-agriculture/ and https://nutrientstewardship.org/implementation/split-fertilizer-application-helps-optimize-nutrient-management/.

32 When comparing CI data of a portion of our growers from the **DTN EcoField** product to the GREET default for Fremont County, Iowa, as calculated using the **Feedstock Carbon Intensity Calculator**.

Waste Management and Compliance

Our biorefinery operations are part of a circular regeneration of renewable resources. Green Plains works to reduce the relatively minimal waste resulting from our processes while also ensuring compliance with all applicable laws and regulations.

Minimal Intrinsic Waste

Very little waste is produced by biorefinery operations.

When feedstock, primarily corn, arrives on-site, it is unloaded from trucks in bulk and deposited directly into a receiving pit. From there, the corn is passed through a scalping deck that removes any cobs and husks, leaving only corn kernels. Because the farm machinery that harvested the corn separates the kernels from the rest of the plant, the number of cobs and husks is low.

The water treatment process at some of our biorefineries produces some lime cake and other biosolids, which is disposed of as solid waste. Our Superior, Iowa, facility donates its lime to local area farmers for field application and our York, Nebraska, facility has been land-applying its biosolids as organic fertilizer for several years.

Almost No Packaging

A further benefit of biorefinery operations is that very little to no packaging is needed for our products.

The ingredients we produce are shipped in bulk quantities and loaded directly onto outbound rail cars and trucks. From there, the products are consumed relatively quickly, either by being blended and then combusted in an engine or by being consumed by livestock and other animals. There is no packaging to be left behind after these forms of consumption. A small number of our products ship in packages.

This lack of packaging for a majority of our products differentiates Green Plains and our industry from businesses that rely more heavily on finite materials and make products that require or use significant packaging for transport and preservation.

Tracking Reuse, Recycling and Disposal

Beyond the circularity of our biorefinery operations, we take steps to optimize the reuse, recycling and disposal of other waste at our facilities.

In 2023, Green Plain enhanced the tracking and consolidation of non-hazardous waste data for all of our biorefineries into what is sent for disposal and diverted from disposal.

2030 GOAL

Zero waste to landfill by 2030

Environmental Compliance

We work to protect natural resources and comply with all related laws and regulations, including those addressing waste prevention and management.

The **environmental management system policy** on our website serves as our key framework for managing environmental compliance across the company. It is structured based on ISO principles and the ISO cycle of continuous improvement — Plan-Do-Check-Act.

Throughout our operations, we seek to comply with all applicable environmental laws and regulations, including the management of hazardous chemicals.[33] All of our biorefinery locations are registered as Renewable Fuel Producers with the U.S. Environmental Protection Agency and meet the requirements for the Renewable Fuel Standard (Title 40 Code of Federal Regulations Part 80). Additionally, 100% of the denatured fuel ethanol we produce is RFS-compliant.

THREE-YEAR WASTE PERFORMANCE

Green Plains Performance Data	Unit of Measurement	2023	2022	2021
Hazardous Waste Disposal[34]	Thousand Metric Tons	0.003	0.001	0.002
Non-Hazardous Waste Diverted From Disposal - Reuse Total	Thousand Metric Tons	1.476		
Non-Hazardous Waste Diverted From Disposal - Recycle Total	Thousand Metric Tons	0.013		
Non-Hazardous Waste Disposal - Incineration Total	Thousand Metric Tons	0		
Non-Hazardous Waste Disposal - Landfill Total	Thousand Metric Tons	4.769	4.670	

FIVE-YEAR COMPLIANCE PERFORMANCE

Environmental Compliance	Unit of Measurement	2023	2022	2021	2020	2019
Number of Sites	Count	11[35]	11	12	14	14
Number of Reportable Spills[36]	Count	0	0	1	1	1
Volume of Reportable Spills	Liters	0	0	1,210	9,971	22,933
Number of Environmental Fines	Count	2	0	1	1	1
Amount of Environmental Fines	USD	$305,355	$0	$13,992	$25,000	$2,720

33 Green Plains complies with environmental laws and regulations from the following U.S.-based agencies: Nebraska Department of Environment and Energy, Department of Health and Human Services, Iowa Department of Natural Resources, Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, Minnesota Department of Health, Illinois Environmental Protection Agency, Indiana Department of Environmental Management and Tennessee Department of Environment and Conservation.

34 Ethanol facilities are classified as "very small quantity generators," per U.S. Environmental Protection Agency HazWaste Requirements (40 Code of Federal Regulations Part 262.14), disposing of hazardous materials or waste according to authorized HazWaste haulers (Categories of Hazardous Waste Generators | U.S. Environmental Protection Agency).

35 Includes our Atkinson, Nebraska facility, which was sold in September 2023.

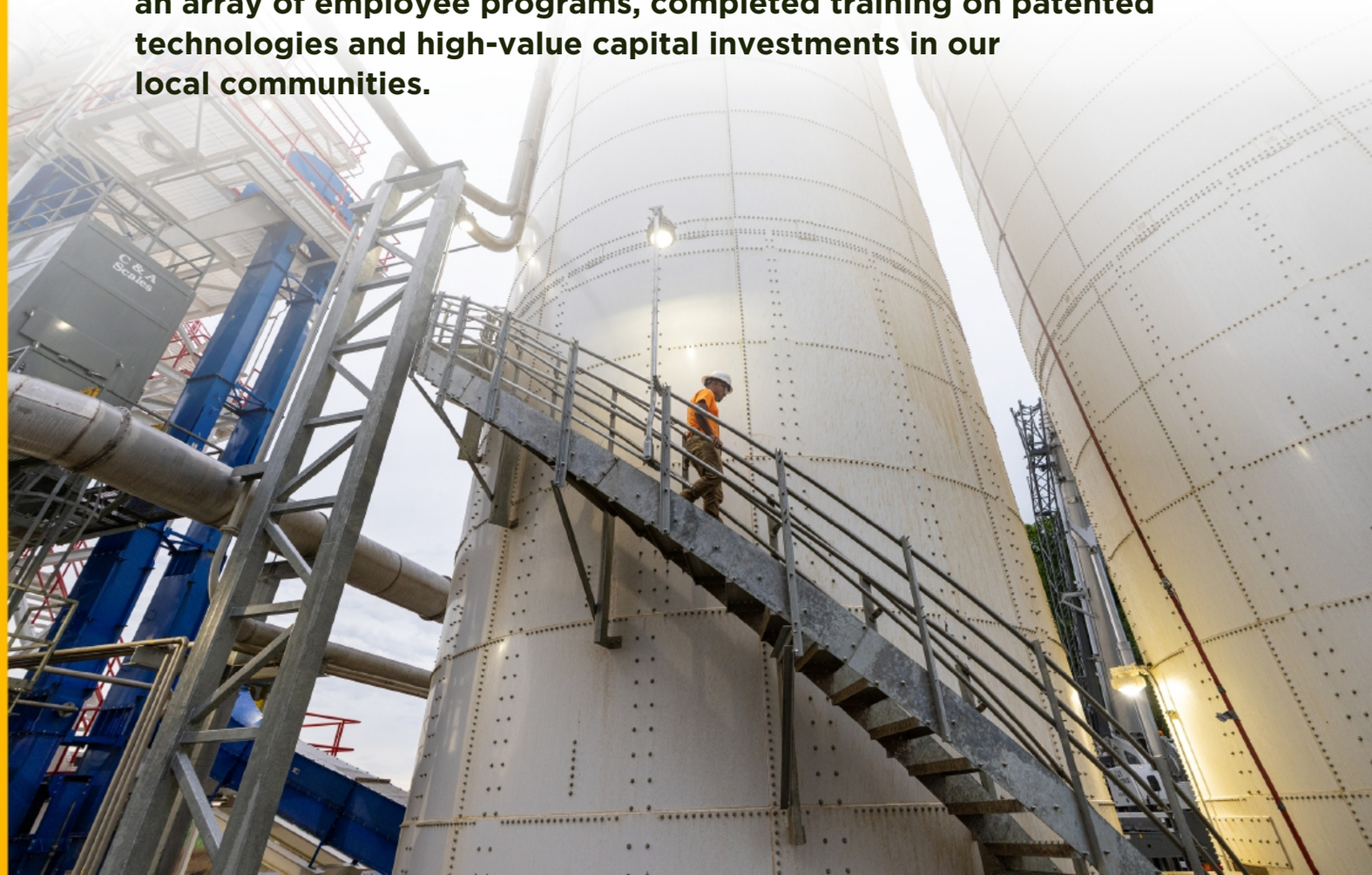
36 As defined by the U.S. Environmental Protection Agency, a reportable spill is an uncontrolled release of material to the ground in excess of the reportable quantity.

People

Green Plains recognizes the value of all who make our success and our sustainable ingredients possible. We endeavor to support and empower our employees, customers, suppliers and communities in all that we do.

Notable 2023 achievements in this area included enhancements to an array of employee programs, completed training on patented technologies and high-value capital investments in our local communities.

Our Key Topics



Our Employees

Green Plains is invested in the well-being of our employees, who enable our business success and sustainability outcomes. We seek to promote a safe and rewarding workplace where employees and innovation can thrive.

In 2023, we continued to invest in our employees, notably by enhancing efforts related to safety training and audits, talent attraction and retention, competitive wages, learning and professional development, and inclusion.

Our occupational health and safety management system is based on recognized risk management standards:

- OSHA
- Process Safety Management
- American National Standards Institute
- National Fire Protection Association
- Steel Tank Institute

Employee Health and Safety

We actively monitor and evaluate our employee health and safety programs, practices and outcomes to best protect the health and safety of our employees. We strive for continual improvements across all employee health and safety areas as Green Plains evolves and grows.

According to the U.S. Department of Energy, industrial plant activities often involve "working with heavy industrial equipment, fixing any worn or broken machinery parts, and testing the quality of the end products." It further states, "Within the bioenergy sector, plant workers can also be engaged with combining chemicals and testing fuel and chemical end-product quality."[37]

Green Plains fully appreciates the critical importance of effective employee health and safety policies and practices for our valued employees and our business, given the scientific and technical nature of the work performed in our biorefineries. Further, we believe transparency and disclosure about incidents and hazards, as well as safety achievements, is the best strategy for optimal employee safety.

In 2023, we continued to make significant progress on our safety journey, including achieving our 2023 goals related to safety training and audits.

2023 GOALS:

Reimagine safety training for 2023 to be more available and interactive.

Implement **layered audit program** across the platform.

2023 ACHIEVEMENTS:

- Enhanced safety training throughout the year by developing company-specific content, with increased in-person training.
- More than 30% of our workforce achieved OSHA 30-Hour or 10-Hour certification.
- Layered internal auditing was initiated at all locations.

37 https://www.energy.gov/eere/bioenergy/bioenergy-career-map-plant-manager

Despite our ongoing achievements and efforts, we are deeply saddened to report the loss of one of our colleagues in the line of duty in 2023. As we continue to prioritize employee health and safety, we are committed to learning from this incident and enhancing our safety protocols to prevent such occurrences in the future.

Guiding Employee Health and Safety: Our Programs and Policies

Our Health and Safety programs consist of policies, controls, hazards elimination and safety training designed to support operational safety. We regularly evaluate and seek to improve this program through our **Program Review and Enterprise Implementation framework**,

Specifically, we conduct regularly scheduled safety trainings, inspections and incident reporting and investigations. We also ensure the completion of internal and independent external audits. A Health and Safety Committee is in place at each of our facilities, and all employees are invited to participate in its monthly meetings, which include multifunctional panel discussions and decision-making.

Our **Process Safety Management** policy and procedures cover all employees at our 10 biorefineries. Process Safety Management defines protocols for regulated, highly hazardous chemicals as well as non-regulated chemicals, among other safety protocols.

Additional Green Plains programs, policies and procedures designed to prevent or mitigate significant negative occupational health and safety impacts linked to our operations include:

- OSHA policies and procedures.
- Our Contractor Management System.
- Our Emergency Response Planning and Training program.

Our Occupational Health and Safety Management System

Program Review and Enterprise Implementation • Cardinal Rules	**Safety Training** • Program Matrix • Emergency Response Planning and Training	**Hazard Assessment and Identification** • Process Hazard Analysis • Inspections • Audits
Controls • Hierarchy of Controls • Contractor Management System (First, Verify) • Process Safety Management Program Policy	**Risk Management Standards** • American National Standards Institute • National Fire Protection Association • American Petroleum Institute • Steel Tank Institute	**Hazard Communication Program** • Globally Harmonized System of Classification and Labeling of Chemicals
OSHA Policies • Industrial Hygiene Testing • Audiometric Surveys • Hearing Conservation • Respiratory Fit Testing	**Incident Reporting System** • Incident Investigation Policy and Procedure • Incident Investigation Teams • Corrective Actions	**Health and Safety Committees** • Monthly meetings • All employees welcome to participate

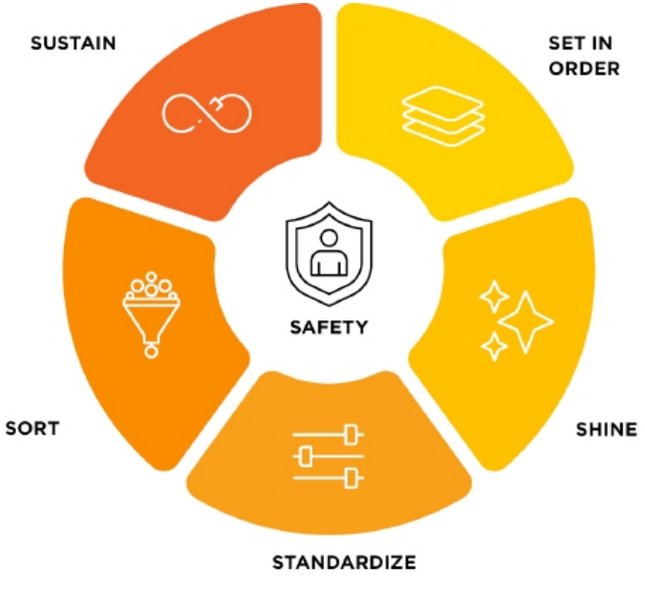
2023 Strategic Safety Initiatives

Key health and safety initiatives implemented by Green Plains in 2023:

- Continued 6S Lean implementation across our platform.
- Completed third-party assessment of our safety culture through the Building Our Best Workplace initiative (described in more detail on page 52) and gained actionable insights to apply to our ongoing safety prioritization strategy.
- Experienced zero process-related safety incidents in 2023.

Productivity With Safety

6S Lean, otherwise known as 5S + Safety, is a system that promotes and sustains a high level of productivity and safety throughout a workspace.



Source: www.safetyculture.com

Our Cardinal Rules of Safety

All occupational incidents, injuries and environmental harm are preventable, in our view. We continue to require adherence to our Environmental, Health, Safety and Security **Cardinal Rules**. We monitor adherence in several ways, including monthly internal scoring, semiannual corporate audits and regular safety compliance monitoring walk-arounds.

All employees and contractors of Green Plains and our related subsidiaries, as well as visitors to Green Plains and subsidiaries, are expected to understand and abide by our Cardinal Rules. Any of these individuals who believes a rule is not being followed or that an unsafe condition or hazard is present in the workplace has stop-work authority.

Hazard and Incident Risk Assessment

On both a routine and an as-needed basis, we assess safety risks and work to identify and prevent potential work-related hazards. Following best practices, we collect and evaluate safety risk information in several ways, including:

- Job hazard assessments.
- Process hazard analyses.
- Safety committees.
- Periodic internal and independent external audits and inspections.
- Hierarchy of controls.
- Industrial hygiene testing.
- Audiometric surveys.
- Hearing-conservation programs.
- Respiratory fit testing.
- Internal and independent external health and safety assessments.

Hazard and Incident Reporting and Remediation

Green Plains employees can — and are encouraged to — report work-related hazards and hazardous situations through our **Incident Reporting System,** our **Employee Concerns Reporting system** and our **GP Alert Line System.**

Our Incident Investigation Policy and Procedure and our Incident Investigation teams investigate work-related incidents and determine corrective actions and improvements. Employees may also participate in Safety and Process Safety Management committees and meetings to voice concerns and identify solutions.

We also follow the **Hazard Communication Program of the Globally Harmonized System of Classification and Labeling of Chemicals,** which is recognized by multiple government agencies as best practice for the biofuel, petroleum and chemical industries.

In addition, we have instituted a **Hazard Communication Policy** at each of our biorefineries with hazardous chemicals. The policy comprises employee training, management responsibilities, maintenance of chemical listings and associated documentation (e.g., safety data sheets, container labeling and pictogram requirements). We review and update this policy annually.

Employee Safety Training

Green Plains provides safety training for all of our employees. Our **Safety Training Program Matrix** encompasses all OSHA-covered and related applicable topic areas. Our employee safety training consists of:

- Monthly online training sessions.
- Quarterly classroom training sessions.
- On-the-job training for all production employees.

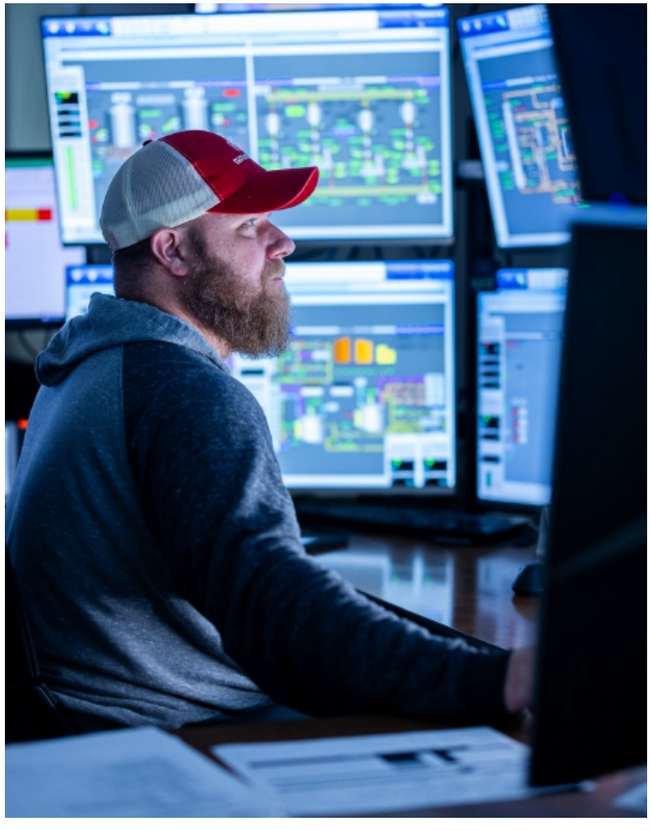
Production employees at each of our 10 biorefineries must complete at least 25 hours of safety training each year.

Safety Performance and Executive Compensation

We continued to connect executive compensation to the achievement of safety goals in 2023, which was the 11th consecutive year that we formally incentivized safety performance in this way.

Our annual incentive bonus is linked to a biorefinery safety goal with 11 leading and lagging safety and environmental metrics, including:

- OSHA and lost time injury rates.
- Safety training and safety drill completion rates.
- Environmental plan reviews and training.
- Environmental incident and third-party audit closeouts.
- Process safety management compliance.



THREE-YEAR SAFETY PERFORMANCE

	Total Number			Rate		
	2023	2022	2021	2023	2022	2021
Employee fatalities as a result of work-related injury	1	0	0	0.11	0.00	0.00
Employee days away from work injuries	1	1	2	0.11	0.11	0.24
Employee total recordable work-related injuries	14	18	22	1.56	1.99	2.66
Hours worked	1,796,619	1,807,662	1,656,538			

* per 200,000 hours worked

Talent Management

Acquisition, Development, Progression and Engagement

Green Plains depends on top talent to run our biorefineries, develop and apply cutting-edge technology, and sustain our position as a leading provider of sustainable ingredients that matter.

We work to hone and advance our talent management, leadership training, and inclusivity programs and strategies to attract and retain the exceptional talent we need.

In 2023, we introduced a host of initiatives aimed at retaining our current talent and optimizing our ability to attract additional skilled team members, as follows:

- Implemented pre-employment behavioral assessments for core operations job candidates, allowing us to better evaluate the cultural fit of new talent.
- Partnered with Hiring Our Heroes.
- Shortened duration of recruiting cycles for core operations.
- Fostered an internal transfer and promotion program that positions our talent in the most effective part of our organization as possible.
- Leveraged communications pathways to better reach diverse audiences.
- Launched a more interactive and informative Careers page on our website in January 2023:
  - Features mechanisms to stay engaged with Green Plains via our talent community.
  - Highlights our uniqueness as an employer, technically and culturally.
- Updated Green Plains onboarding and orientation programs and materials to better reflect Company history and current strategy, Company pillars, safety culture, accounting and finance, business technologies, business policies and procedures, and employee benefits.

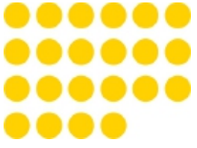
- Enhanced our talent acquisition infrastructure, including laying the groundwork for traineeship programs at select universities:
  - The traineeship program was piloted at Iowa State University in 2023, bringing 30 to 40 students to one of our biorefineries, where they received application exercises that they applied to a classroom project and for which they received course credit.

Following the hiring and onboarding process, we promote engagement with and among our employees through The Loop, an internal social media platform. This one-stop hub provides relevant information on key events happening in and outside of our Company. Additional resources include customer news alerts, employee recognition notices, posts on available employee benefits, key event notices, executive insights and other beneficial information.

Attracting and Retaining Next-Gen Innovators

In 2023, we welcomed 20 student interns who worked across multiple areas of our business. It was our second year in a row with an intern class of 20 or more students. What's more, in 2022 and 2023, 80% of students were offered either full-time positions or other internship opportunities at Green Plains:

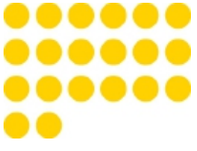
2022:



22 interns

4 interns transitioned to full-time employment

2023:



20 interns

6 interns transitioned to full-time employment

2023 Employment Type	Full-Time	Part-Time
Male	705	10
Female	187	5
Total	892	15

THREE-YEAR EMPLOYMENT PERFORMANCE

Employee Turnover	2023	2022	2021
All Employees	34%	30%	24%
Male	81%	80%	76%
Female	19%	20%	24%
Under 30	33%	32%	23%
30-50	43%	41%	51%
Over 50	24%	27%	26%

Spotlight: Hiring Our Heroes

Through our partnership with Hiring Our Heroes, Green Plains supports U.S. military service members and veterans as they transition from military to civilian life.

Hiring Our Heroes is a program of the U.S. Chamber of Commerce and the VetJobs family, which includes **VetJobs** and **MilitarySpouseJobs.** Our partnership helps connect veterans and service members with posted career opportunities across all locations of Green Plains and FQT.

Green Plains is working to be recognized as a military-active employer, which is defined as an employer actively pursuing avenues and partnerships to hire veteran and military members (versus military-friendly, which is defined as an employer that is open to hiring veteran and military members). Green Plains seeks to proactively support veterans, active duty and transitioning service members, as well as military spouses, through the Hiring Our Heroes program.

As part of an ongoing commitment to our heroes, throughout 2023, we:

- Published Heroes Highlights on our internal social media site, The Loop, to recognize the veterans and service members on our teams and share their stories.
- These Highlights were the most-read posts on The Loop since its inception, indicating a high level of interest and support for this program among our employees.
- Held events at several of our locations that were attended by local leaders, Green Plains representatives and area veterans to better understand the impact that Hiring Our Heroes can have on our local communities.

Compensation and Benefits

Competitive wages and employee benefits are an indispensable tool for attracting and retaining top talent.

Green Plains boosted wages by 13.5% in 2021 and continued to provide competitive wage increases in 2023. These wage increases were enacted even as 2023 presented continuing challenges, including the headwinds of persistent pressure on employees' household budgets and a competitive talent market for employers.

Green Plains has maintained a 100% success rate in timely payroll over our history of more than 15 years. We recognize the importance of relying on scheduled paydays, which many cannot take for granted. All of our employees are paid well above the federal minimum wage.

We continue to ensure competitive total rewards for our employees, regularly benchmarking our approach to ensure attractive pay and benefits that addresses our employees' key needs.

For 2024, we further enhanced our employee benefits package and updated it to reflect a broader, more diverse portfolio of benefits for both current and prospective employees. We offer benefits options that reflect a wide range of individual and family needs, with the ultimate goal of meeting the benefits needs of all of our employees.

4.44x

Ratio of average new employee wage to the federal minimum wage (2023)

Employee Benefits

401(k)

Green Plains offers a defined contribution 401(k) plan to interns and temporary, part-time and full-time employees. The plan features 100% immediate vesting and matches up to 6% of eligible employee contributions upon hire and an additional 2% at five years of service, for a potential total match of 8%.

Employee Wellness Plan

Employees can participate in a wellness program that will reward them for the actions they are already taking toward their overall wellness and incentivize them to adopt a healthier lifestyle. They complete tasks for points in the system that they can redeem for gift cards.

Corporate employees have access to an on-site wellness facility and are offered free weekly fitness classes.

Company Holidays

New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Good Friday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day and two floating holidays of the employee's choosing

Other Benefits

- Flexible Spending Account (Medical and Dependent)
- Health Savings Account.
- Travel Assistance.
- Identity Protection.
- Hearing Discount Program.
- Tuition Reimbursement.
- Medicare Resources.

Employee Assistance Plan

Our Employee Assistance Plan, or EAP, is available to all full-time employees and their dependents.

The EAP assists with matters related to:

- Family and relationships.
- Emotional well-being.
- Financial wellness.
- Substance abuse and addiction.
- Legal assistance.
- Physical health.
- Work and career.

Health Benefits

All full-time employees can enroll in the following:

- Medical insurance coverage, with three options.
- Dental insurance and two options for vision insurance, including a tiered Lasik benefit.
- Voluntary supplemental medical coverages:
  - Accident insurance.
  - Critical illness insurance.
  - Hospital indemnity insurance.
- Voluntary life and AD&D insurance for employees, spouse and children.
- Pet wellness benefit and pet insurance.

Green Plains also offers and pays for:

- Life and AD&D insurance for employees, spouse and children.
- Short-term disability insurance.
- Long-term disability insurance.

Bonding leave for:

- Birthing parent - 12 weeks, 100% paid.
- Non-birthing parent - 2 weeks, 100% paid.

Learning and Career Development

Green Plains drives continual learning, career development and training to build top-performing teams, support biorefinery operations and drive technological innovation.

In 2023, we expanded the course offerings in UKG Pro Learning, our one-stop shop for learning and developmental resources. Employees can now access more than 2,700 courses in myriad subject areas, including workplace safety, business skills, ethics, compliance, information technology, HR policies, leadership and management essentials, legal procedures, technical skills development and more. In-person training efforts for OSHA 30-Hour provided numerous opportunities throughout the year to share experiences in a learning environment, serving as a transformation enabler for our culture overall.

We also launched a role-based skill block training program in 2023. Skill blocks are distinct units of technical knowledge and abilities within a role, designed to break down complex skills into manageable components

Using the 70/20/10 learning model, skill blocks take a blended learning approach consisting of e-learnings, on-the-job training and formal assessments to enable individuals to acquire, develop and master essential skills that are required in various fields. The skill block program offers biorefinery new hires with an onboarding plan for quicker time to capability and production as well as a competency-focused road map to help open new career progression opportunities over time.

In the area of career development, managers and employees can engage in ongoing discussions that involve annual goal-setting, career development planning and performance feedback. This engagement is designed to ensure progress relative to Company and individual goals and is provided to all of our employees.

THREE-YEAR TRAINING PERFORMANCE

Average Hours of Training	2023	2022	2021
Male	30	26	25
Female	30	26	25
Production	38	26	25
Corporate	7	1	0

Employee Experience

Inclusion and Belonging

Green Plains believes in fostering an inclusive workplace that is representative of diverse backgrounds, culture and thought. Diverse experience, thought and skills are key drivers of innovation, and they are essential to achieving operational excellence, continuous improvement and good corporate responsibility.

We foster an enjoyable, safe and healthy workplace for all of our employees and strive to be the best place to work in each of our communities. Our Talent Management practices support workforce inclusion and belonging.

Throughout 2023, we embarked on a Company-wide initiative called **Building Our Best Workplace**, with the goal of guiding impactful, feedback-driven and positive change for our organization. This is an ongoing effort focused on identifying opportunities to recognize team and individual successes, along with opportunities for improvement. In 2023, the initial structure was piloted, with plans to solidify local action plans in 2024 to ensure ongoing meaningful recognition and continuous improvement action plans.

2023 GOAL:

Enhance the data quality and reliability of our candidate pool diversity metrics to allow us to better track the success of our recruiting action plans.

Taking Action

We understand that the work of building inclusion and belonging is continual and ongoing. In 2023, we:

- Continued to partner with recruiting and outreach networks in organizations that support the presence of more women and diverse candidates in STEM and other professional fields, including **Society of Women Engineers**, the **Rise-Up Program** and others.
- Offered training material internally to communicate the value of diversity, equity and inclusion, covering how everyone can help build a workplace that promotes dignity and respect through daily interactions.
- Offered all employees equal access to training opportunities within their respective departments and roles.

2023 EMPLOYEE DEMOGRAPHICS

Employees per diversity category*	2023		2022		2021	
Male	715	(78.8%)	719	(80.9%)	680	(80.3%)
Female	192	(21.2%)	170	(19.1%)	167	(19.7%)
Under 30	195	(21.5%)	194	(21.8%)	162	(19.1%)
30-50	465	(51.3%)	445	(50.1%)	415	(49.0%)
Over 50	247	(27.2%)	250	(28.1%)	270	(31.9%)
Caucasian/White	803	(88.5%)	811	(91.2%)	788	(93.0%)
Hispanic/Latin American	41	(4.5%)	26	(2.9%)	18	(2.1%)
American Indian/Alaskan Native	4	(0.4%)	4	(0.4%)	4	(0.5%)
Asian	14	(1.5%)	12	(1.3%)	8	(0.9%)
Native Hawaiian or Other Pacific Islander	1	(0.1%)	—	(—%)	—	(—%)
Black or African American	29	(3.2%)	24	(2.7%)	23	(2.7%)
Two or More Races	15	(1.7%)	5	(0.6%)	4	(0.5%)
Unspecified	—	(—%)	7	(0.8%)	2	(0.2%)
Total Employees	907	(100%)	889	(100%)	847	(100%)

* All of our employees are based in North America.

Our Customers

Our loyal customer base includes individual farmers and retailers, many of whom are our neighbors across seven U.S. states. We also sell to traders and international corporations in multiple countries.

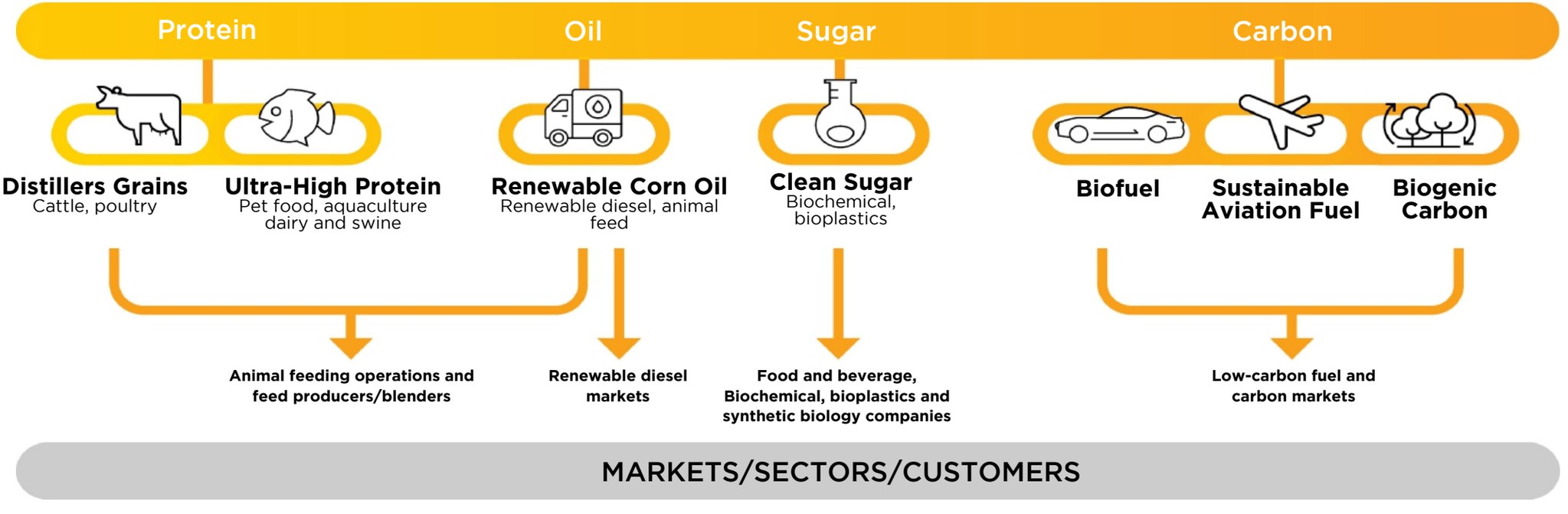
Green Plains has grown from an early commodity business that turned corn into ethanol into a modern biorefinery platform that transforms byproducts into valuable low-carbon co-products in the areas of Protein, Renewable Corn Oil, Sugar and Carbon Reduction, as depicted below, Our planned carbon capture initiatives would lower the carbon profile of our ingredients even more.

Green Plains Trade Group, our marketing and distribution segment, sells and distributes ingredients from our 10 biorefineries.

In 2023, we delivered 841 million gallons of renewable biofuel, 2.2 million tons of animal feed and 280 million pounds of renewable corn oil to the market. We strive to deliver the best product at the highest value as safely and efficiently as possible. Delivery from our facilities in the Midwest to almost anywhere in the country is convenient, fast and efficient. Trucks transport our ingredients to local markets, major U.S. rail carriers and barges transport shipments to other parts of the country, and ocean vessels ship internationally. Our terminals also allow us to deliver to gasoline blenders in previously underserved regions, further expanding our customer base.

Our low-CI oils and biofuel products are helping customers meet the following U.S. and international clean-energy standards and laws:

- U.S. Renewable Fuel Standard
- California Air Resources Board Low Carbon Fuel Standard
- Oregon Clean Fuels Program
- Washington State Clean Fuel Standard
- British Columbia's Greenhouse Gas Reduction Act and the Renewable & Low Carbon Fuel Requirements Regulation
- Canadian Clean Fuel Standard
- Brazil's RenovaBio



Managing Product Safety and Quality

The safety and quality of our ingredients is of the utmost importance to our customers, to food and fuel systems, and to us.

Green Plains helps ensure the safety and quality of our products for our customers and their purposes by using a range of tools and standards:

- All products are subject to a Certificate of Analysis process, testing to earn feed tags with guarantees or another form of quality assurance testing.
- All facilities are audited by the FDA to assess our compliance with Food Safety Modernization Act regulations. There has been only one negative finding at one of our facilities from these FDA audits.
- **Safety Data Sheets** are maintained for all products, recording information such as sourcing of components, substances that might produce an environmental impact, and safe use and disposal requirements.

Because product safety and quality are fundamental responsibilities of our business and integral to our success, we regularly assess and evolve our assurance processes.

In 2023, we continued to implement the following for facilities already equipped with MSC™ technology:

- Product Quality and Food Safety Manual procedures.
- Quality Management System processes and corresponding quality procedures.
- Quality Deviation Report guidelines and training.
- Corrective action and preventative action programs, tools and training for all employees.

We also accomplished the following additional product safety and quality initiatives in 2023:

- Maintained an internal audit program to achieve no negative findings on future FDA audits.
- Leveraged database to pull testing (e.g., feed tags, Certificates of Analysis) for product specifications to establish limits and identify out-of-specification products.
- Tracked percentage of products meeting specifications.

2024 GOALS:

Implement Quality Management System and corresponding quality procedures at all facilities equipped with MSC™ technology coming online in 2024.

No findings on FDA audit for Food Safety Modernization Act program in 2024.

Quality Deviation Report training for all employees working at MSC™-equipped facilities coming online in 2024.

Ongoing tracking of percentage of shipped products meeting specifications.

2023 ACHIEVEMENTS:

- Implemented Quality Management System at MSC™ facilities that came online in 2023.
- Completed Quality Deviation Report training for all new MSC™ facilities that came online in 2023.

Our **Suppliers**

Green Plains understands the significance of responsible sourcing to our customers and the environment.

By ensuring that feedstocks and supplies are ethically and sustainably sourced, businesses can build trust with stakeholders and earn recognition with environmentally and socially conscious consumers. Ethical and sustainable sourcing mitigates supply chain risks, supports long-term sustainability outcomes and builds resilience in the face of evolving market dynamics. We strive to partner with suppliers that are, like Green Plains, working to advance sustainability in their operations and to adhere to responsible business practices.

We maintain relationships with a dedicated group of suppliers, primarily based in North America, that consistently meet the needs of our growing business. We do not outsource any significant part of our activities.

Responsible Sourcing Program

The Green Plains Responsible Sourcing Program is focused on three primary objectives:

- **Bind** our suppliers and vendors to legal compliance with environmental, human rights and employee health and safety laws via our **Terms and Conditions.**
- **Communicate** our responsible sourcing expectations via our **Code of Vendor Conduct, Human and Labor Rights Policy**, **Environmental Policy** and **Occupational Health & Safety Policy.**
- **Screen** our vendors and suppliers for serious violations of laws, regulations and our policies via our vendor screening program.

Setting Expectations

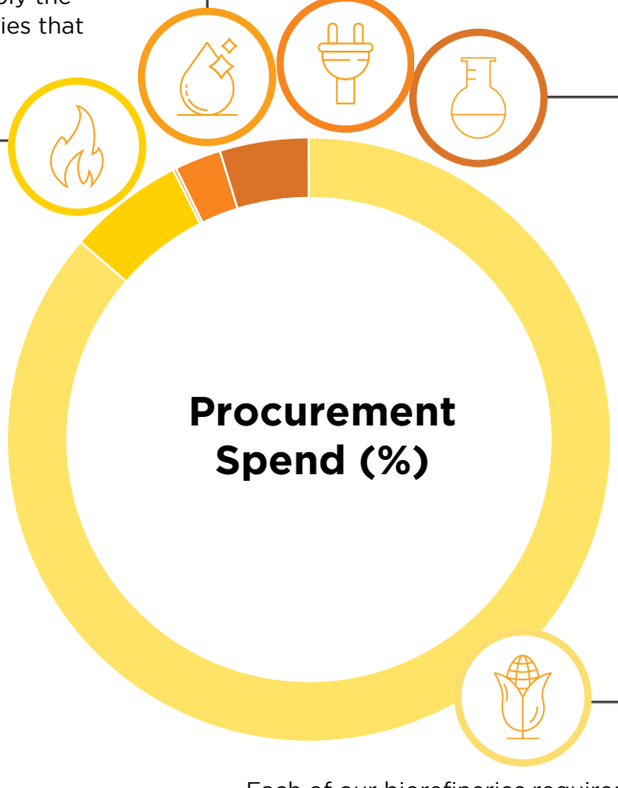
Our **Code of Vendor Conduct** outlines our Company's expectations of responsible business conduct for our vendors and suppliers. We expect our vendors and suppliers to do business ethically, with integrity and in compliance with all laws, regulations and industry standards. The code is based on the standards and guidelines set by the International Labour Organization Declaration on Fundamental Principles and Rights at Work.

Enhancing Screening

While we have monitored the majority of our vendors using limited ESG screening criteria since 2018, we have been running an enhanced vendor screening program since 2021 that uses watchlists, sources and data published by the International Trade Administration and other departments of the U.S. government.

Our Supplier and Service Providers

We rely on strong relationships with suppliers and local municipalities for the following goods and services.



0.2%

Water

Many of our biorefineries use groundwater, including one that uses recycled municipal water, for operations. Drinkable water is also obtained from the city. Local municipalities supply the necessary water to biorefineries that do not have on-site wells.

2.5%

Electricity

Local utilities supply on average approximately 0.9 kilowatt hours of electricity per gallon of production to each of our biorefineries. Many of these utilities source a significant portion of their energy from renewable sources.

6.2%

Natural Gas

Our biorefineries use approximately 27,500 British Thermal Units of natural gas per gallon of production. We have service agreements to acquire the natural gas we need and transport it through pipelines to our biorefineries.

4.8%

Other Suppliers

Enzymes, yeast, denaturant and bulk commodity chemicals are obtained from primarily domestic suppliers.

86.4%

Corn

Each of our biorefineries requires on average approximately 31 million bushels of corn annually, depending on production capacity. We spend more than 80% of our procurement spend on local corn suppliers, many of which are family farms. Corn is an annually renewable crop that captures CO_2 from the air as it grows and also sequesters CO_2 in the soil and in the kernel.

Our Communities

With close ties to Midwestern U.S. states, Green Plains works to contribute to the environmental, economic and social health of our local communities.

Environmental Stewardship

To help protect the health and safety of our local communities, we evaluate the environmental impacts of our operations. We do this by:

- Ensuring that 100% of our operations have implemented environmental impact assessments.
- Performing ongoing monitoring via the U.S. Environmental Protection Agency's Risk Management Program and our own Process Safety Management policy and procedures

As an example of our commitment to the health and safety of our communities, our Otter Tail facility was one of a select number of wastewater treatment facilities recognized for operational excellence by the Minnesota Pollution Control Agency in 2023.

Capital Investments

Green Plains also supports local communities by contributing to rural economies and livelihoods as well as to the U.S. economy as a whole.

In 2023, we continued to maintain a mutually beneficial relationship with local farmers, infusing capital into rural economies and communities throughout the Midwest:

- Green Plains directly deployed over $1.8 billion into local communities near our biorefineries via grain purchases in 2023, including approximately $690 million in direct purchases from area farmers.
- During construction, our MSC™ installations have an $11 million impact in their communities, through increased hotel, restaurant, entertainment and local contract spending.

Charitable Giving and Service

We continued to support a number of industry-relevant events and organizations in 2023, including:

- Women in agriculture and women in leadership events.
- Youth and college-level engineering programs.
- State- and local-level Future Farmers of America chapters.
- 4-H, state and county fairs.

We also restructured our corporate giving process in 2023, designating five employees from various departments to join the Community Impact Committee to determine the best use of our available funds. The new structure allows for more employee engagement and ownership in our giving.

Community involvement highlights for 2023 included fundraising for and volunteering with Habitat for Humanity, supporting community housing in Omaha through sponsorship of the Siena Francis House's "Hope for the Homeless" 5K race, and sponsoring the American Lung Association's Corporate Cup in support of education as well as lung disease research, support, programs and services.

Our biorefineries also support local causes in their communities, including food pantries, fundraisers for families in need, school district projects and more.

Green Plains was more active in the area of charitable giving and service in 2023 than ever. We will continue to seek opportunities to make a positive impact in our local communities.

Principles

Green Plains seeks to deliver on the promise of sustainability while ensuring the utmost accuracy and integrity in our work.

Our governance bodies and frameworks establish the principles by which we conduct business, innovate across our portfolio and manage sustainability disclosure. 2023 enhancements in this area included the appointment of an independent Board Chairman and continued progress in our declassification process.

Our Key Topics

page 60

Our Sustainability and Climate Change Governance

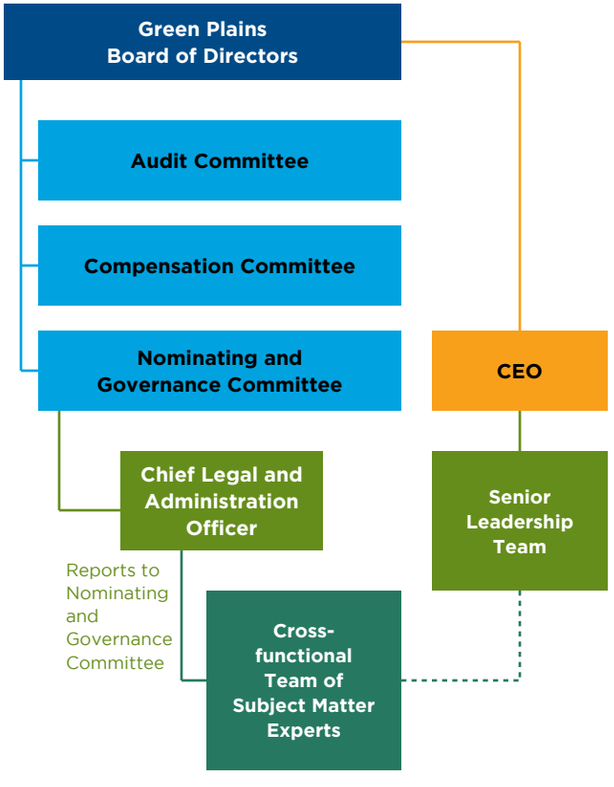
page 62

Our Board Composition and Structure

page 65

Ethics and Compliance

Our Sustainability and Climate Change **Governance**



Board Oversight

The Green Plains board of directors monitors our compliance with regulatory requirements and oversees sustainability topics, including climate change, GHG emissions, employee safety and others. The Nominating and Governance Committee of the board has primary oversight of our sustainability initiatives, with the goal of integrating sustainability strategy into our overall business strategy. Other board committees provide support to the entire Senior Leadership Team by overseeing certain key topics.

Nominating and Governance Committee

Pursuant to its **charter**, the Nominating and Governance Committee oversees sustainability topics, including the development, approval and updating of the Company's sustainability and responsible business purpose, mission statements, strategies, policies and goals. This committee is responsible for monitoring the progress of our strategy and goals and reviewing climate-related topics quarterly. The committee is committed to transparency and is responsible for overseeing our sustainability initiatives, including this Sustainability Report.

Audit Committee

The **Audit Committee** monitors compliance with the Company's **Code of Ethics**, monitors reporting to the third-party EthicsPoint **hotline** and reviews conflicts of interest and related-party transactions. The Audit Committee is also responsible for assessing risks related to cybersecurity and mitigating those exposures with policies and procedures.

Compensation Committee

The **Compensation Committee** determines remuneration policies in consultation with third-party compensation consultants. The committee holds Green Plains executives accountable for our sustainability priorities by integrating performance measures that align with our sustainability goals. Since 2012, we have included a safety metric in our annual incentive award program and adopted a compensation recovery policy that goes beyond legal requirements and emphasizes ethics and compliance. In 2023, for the third year in a row, our compensation program has included sustainability performance criteria beyond employee safety.

Management Oversight

Our President and CEO is the most senior member of the Senior Leadership Team responsible for overall Green Plains strategy and performance, including oversight of sustainability topics such as climate-related risks and opportunities. The Senior Leadership Team is composed of the President and CEO, the Chief Financial Officer, the Chief Transformation Officer, the Chief Legal and Administration Officer, the Chief Human Resources Officer, the Executive Vice President of Investor Relations, the Executive Vice President of Operations & Technology, the Executive Vice President of Commercial Operations and the Executive Vice President of Product Marketing & Innovation. The President and CEO is also a member of the board and regularly reports to the board.

Recognizing the importance of integrating sustainability across the organization, our Senior Leadership Team is actively engaged with:

- Developing governance practices responsive to climate-related issues.
- Regularly reviewing the Company's performance against goals in areas such as GHG emissions, energy use, customer relationships, employee safety, customer safety and community outreach.
- Incorporating risk assessment and sustainability strategy into financial and operational plans.
- Making recommendations to our Compensation Committee to link executive compensation to sustainability performance.
- Implementing technical and operational changes that improve climate-related performance.
- Engaging with investors on climate-related issues.
- Participating in the Company's climate-related disclosure practices.

Ensuring Integration

The Senior Leadership Team is the highest management level responsible for climate-related issues, and the Sustainability Workgroup is responsible for the day-to-day identification and management of our key topics and their impacts, risks and opportunities. This workgroup consists of cross-functional subject matter experts at the associate, management and executive levels and is led by the ESG Manager and Senior Vice President of Corporate and Investor Relations, who coordinates with the Chief Legal and Administration Officer. The Senior Leadership Team and the Sustainability Workgroup review and approve all policies and approaches developed by subject matter experts and track metrics relative to sustainability goals over time to the fullest extent possible.

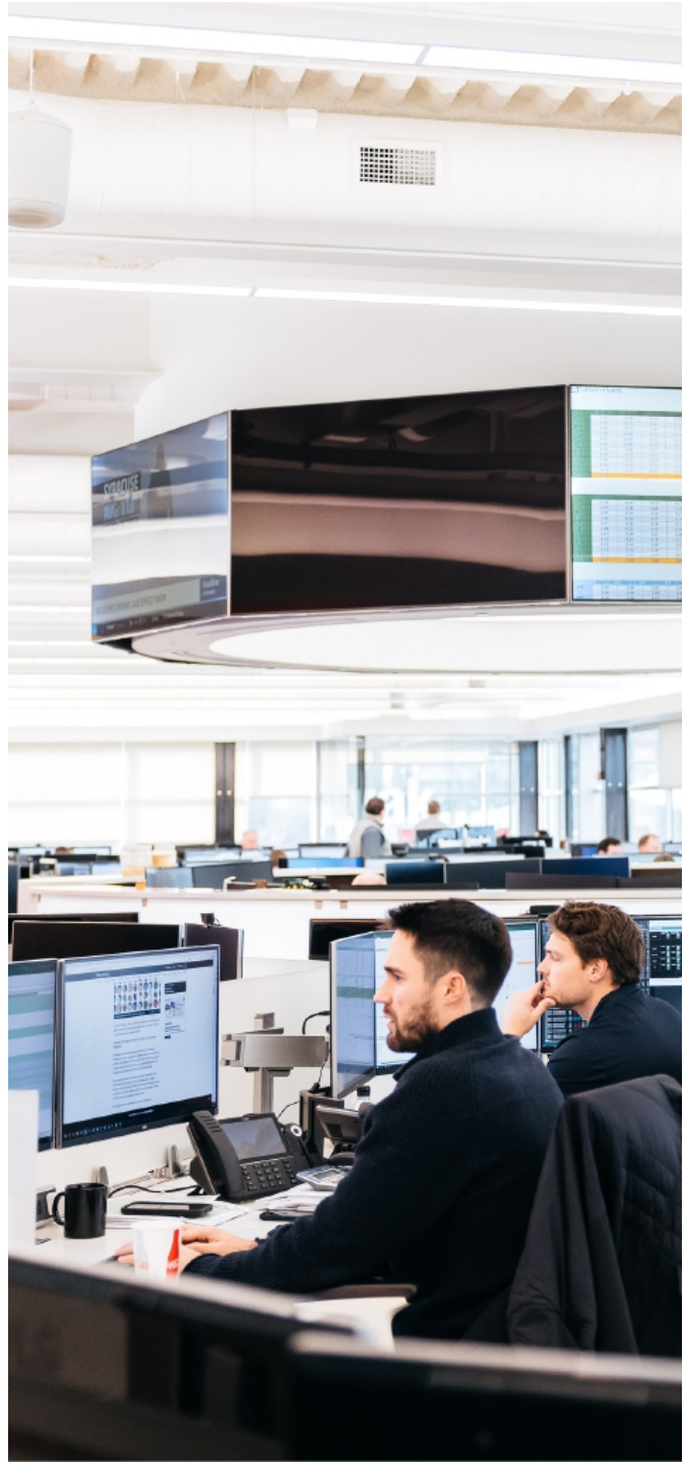
Our position as a leading biorefining company transforming annually renewable crops into sustainable, value-added ingredients dictates our responsibility to sustainability issues at all levels.

By including representatives from all key areas and levels of the Company, the Sustainability Workgroup ensures a coordinated, company-wide approach. The importance of sustainability performance is well integrated across Operations, Legal, Trade, Finance, Accounting, Product Sales, Technology, Environmental, Health, Safety and Security, Investor Relations, and Human Resources. The Sustainability Workgroup facilitates outreach between certain stakeholders and the board, using various means to consult with stakeholders and subsequently reporting back through the Chief Legal and Administration Officer to the Nominating and Governance Committee.

Members of the Sustainability Workgroup meet with the Senior Leadership Team quarterly to report on our environmental performance and the status of initiatives and to discuss sustainability-related strategy. The Sustainability Workgroup, through the ESG Manager, reports directly to the Chief Legal and Administration Officer, who meets quarterly with the Nominating and Governance Committee on all sustainability matters, including climate-related risks and opportunities.

Tracking Performance

Our committee charters and corporate governance policies can be found on our **website**. We continuously track our sustainability performance based on analysis from ESG rating agencies (including Sustainalytics, MSCI™, Institutional Shareholder Services, Refinitiv, the Carbon Disclosure Project and the S&P Corporate Sustainability Assessment) as well as through stakeholder engagement processes, Q&As during quarterly earnings calls, annual shareholder meetings, feedback from our 24/7 ethics hotline and direct engagement with investors.



Our Board Composition and **Structure**

Board Overview

The Green Plains board of directors consists of eight members with diverse qualifications, qualities and skills that support our short- and long-term strategies, including the ongoing decarbonization of our platform.

We made a key governance enhancement in 2022, acting on a change in Iowa law that eliminated the requirement that company boards remain classified. In February 2022, we put forward a proposal to our shareholders for a vote at its Annual Meeting of Shareholders in May 2022 to declassify our board. This proposal was approved by an overwhelming majority of shareholders.

The declassification process is a multiyear process. All future director elections, which began with the elections at our 2023 Annual Meeting of Shareholders, will be for one-year terms. Three incumbent directors were up for reelection at the 2023 Annual Meeting serving one-year terms, expiring in 2024. These three directors, along with three incumbent directors, will be up for reelection at the 2024 Annual Meeting; if reelected, they will serve one-year terms, expiring in 2025. These six directors, along with two incumbent directors, will again be up for reelection at the 2025 Annual Meeting and will serve one-year terms if reelected. This will result in fully declassified board elections occurring at the 2025 Annual Meeting, when all eight members will be up for reelection.

2023 ACHIEVEMENT:

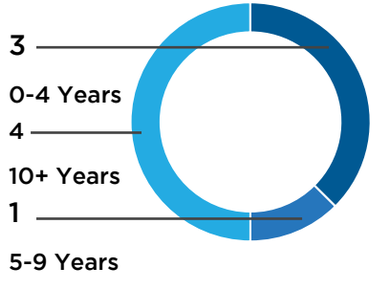
We achieved our goal to reduce the size of our board to eight members by the 2023 Annual Meeting of Shareholders with the retirement of Board Chairman, Wayne Hoovestol, effective May 9, 2023.

	2023 Key Skills and Experience	James D. Anderson	Farha Aslam	Todd A. Becker	Ejnar A. Knudsen	Brian Peterson	Martin Salinas Jr.	Alain Treuer	Kimberly Wagner
Industry	Industrial Manufacturing and Ingredient Production	●	●	●	●	●		●	●
	Commodity Markets/Marketing	●	●	●	●	●	●	●	
Strategic	Strategy Development	●	●	●	●		●	●	●
	International Business	●	●	●	●			●	●
	Mergers and Acquisitions/Partnerships	●	●	●	●		●	●	●
	Capital Markets	●	●	●	●		●	●	
Leadership	Audit/Risk/Cybersecurity	●	●	●	●	●	●	●	●
	Legal/Regulatory/Govt. Relations	●	●	●				●	●
	Public Company/Corp. Governance/ESG	●	●	●	●		●	●	●
	Executive Leadership	●	●	●	●	●	●	●	●
	Executive Compensation	●	●	●			●	●	

2023 BOARD COMPOSITION AND PARTICIPATION

Board of Directors

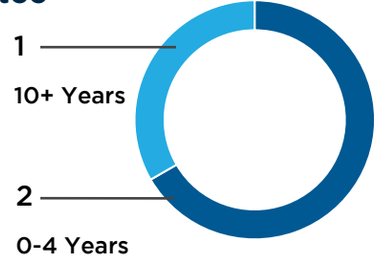
88%
Independent



	2023	2022	2021
Executive	12%	11%	11%
Independent	88%	67%	67%
Tenure			
0-4 years	3	3	3
5-9 years	1	1	1
10+ years	4	5	5

Audit Committee

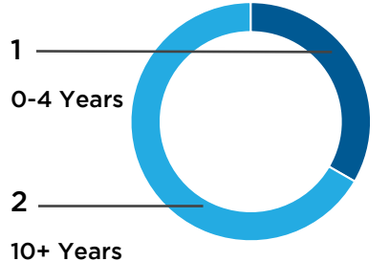
100%
Independent



	2023	2022	2021
Executive	0%	0%	0%
Independent	100%	100%	100%
Tenure			
0-4 years	2	2	2
5-9 years	0	0	0
10+ years	1	1	1

Compensation Committee

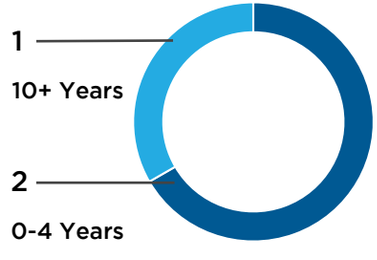
100%
Independent



	2023	2022	2021
Executive	0%	0%	0%
Independent	100%	100%	100%
Tenure			
0-4 years	1	1	1
5-9 years	0	0	0
10+ years	2	2	2

Nominating and Governance Committee

100%
Independent



	2023	2022	2021
Executive	0%	0%	0%
Independent	100%	100%	100%
Tenure			
0-4 years	2	2	2
5-9 years	0	0	0
10+ years	1	1	1

95%
Results of Annual Say on Pay Vote

95%
Board Meeting Attendance Rate

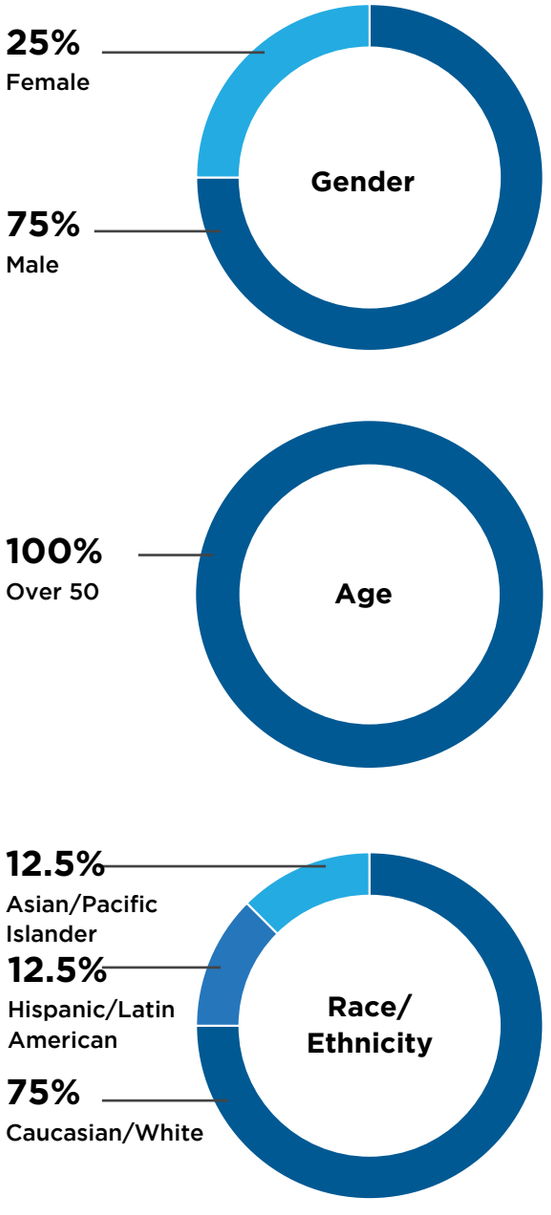
	2023	2022	2021
Board Meeting Attendance Rate	95%	97%	85%
Executive Compensation			
Annual Total Compensation Ratio of CEO to Median Employee	63/1	63/1	69/1
Annual Say on Pay Vote	Yes	Yes	Yes
Results in Favor of Annual Say on Pay Vote	95%	93%	88%

Growing Board Diversity

The board recognizes the value of nominating directors who bring varying perspectives, opinions, skills, experiences, backgrounds and personal characteristics to discussion and decision-making. Diversity is one of several key factors that our Nominating and Governance Committee considers when identifying director candidates. Our **Board Qualifications and Diversity Policy** requires that each time a vacancy arises on the board, the Nominating and Governance Committee must ensure that any search firm hired is instructed to provide a candidate pool that comprises at least 50% candidates who are women or otherwise considered diverse and that at least 25% of the interviewed candidates are women or otherwise considered diverse. The Nominating and Governance Committee views diversity broadly and considers diversity of experience, skills and viewpoint as well as traditional diversity concepts such as race/ethnicity, gender identity or expression, national origin, religion, and sexual orientation when making nominations.

Green Plains is committed to maintaining a board composed of diverse viewpoints and has made significant progress related to board diversity since 2020. With the addition of two new board members in 2021, we accomplished our goals to appoint two female directors and one director who adds diversity, reaching 33% gender/ethnically diverse board members prior to the 2022 Annual Meeting. As part of its ongoing refreshment initiative, the board also rotated the leadership and adjusted the composition of its key committees. Jim Anderson serves as the independent Board Chair; Martin Salinas Jr. serves as Audit Committee Chair; Kimberly Wagner serves as the Nominating and Governance Committee Chair; and Brian Peterson serves as the Compensation Committee Chair.

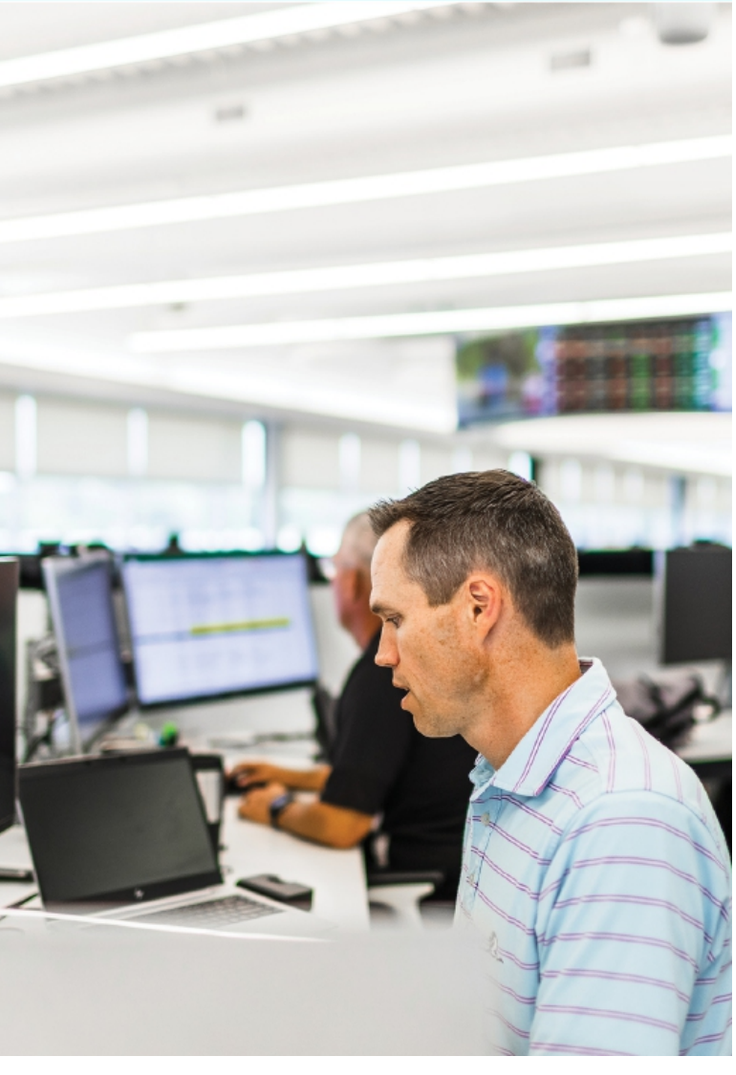
2023 BOARD DIVERSITY



PERCENTAGE OF INDIVIDUALS WITHIN OUR HIGHEST GOVERNANCE BODY IN EACH OF THE FOLLOWING DIVERSITY CATEGORIES

Unit of Measurement		2023	2022	2021
Gender				
Male	%	75%	78%	78%
Female	%	25%	22%	22%
Age				
30-50	%	0%	0%	11%
Over 50	%	100%	100%	89%
Race/Ethnicity				
Caucasian/White	%	75%	78%	78%
Hispanic/Latin American	%	12.5%	11%	11%
Black/African American	%	0%	0%	0%
Asian/Pacific Islander	%	12.5%	11%	11%
American Indian/Alaskan Native	%	0%	0%	0%
Two or More Races	%	0%	0%	0%
Unspecified	%	0%	0%	0%

Ethics and Compliance



Green Plains has made several enhancements in the areas of ethics and compliance in recent years.

Throughout 2023, we continued to maintain or build on initiatives put in place in 2021, including our Responsible Sourcing Vendor Screening Program. This screening process uses watchlists and other data sources to search for unlawful business practices, including corruption, human rights violations, sanctions and criminal activity. At least 440 additional screens (consisting of information relating to prospective or new international customers, suppliers and other vendors) were run in 2023, ensuring that Green Plains was not conducting business with sanctioned or blocked counterparties. Further, as of December 2023, all employees had received updated training material related to the Green Plains **Code of Business Ethics and Conduct** in our learning management system.

In 2023, we made financial and in-kind political corporate contributions of $10,000 and political action committee contributions of $60,200.

Our Compliance Program and Code of Ethics

Green Plains has a robust compliance program modeled on guidelines and/or recommendations of the U.S. Department of Justice as well as the U.S. Sentencing Commission.

Our program includes approximately 163 areas of compliance that the Company has identified as being applicable to our business. Each area of compliance is assigned to one or more responsible corporate employee(s), who are primarily responsible for maintaining a thorough knowledge of laws, regulations and guidelines applicable to their area and for implementing compliant policies and procedures (with support from secondary departments or employees as needed). Our Legal Department conducts audits of the Compliance functions, choosing one or more primary areas to focus on each year. During 2023, various aspects of Commodities Trading were reviewed, followed by related policy and training updates.

Political Advocacy Disclosure

As an ag-tech company engaged in the production of sustainable ingredients, Green Plains regularly engages on public policy issues that impact us, our customers and our farmer partners.

During the reporting period, Green Plains actively advocated on issues related to agriculture, energy, environment, international trade, tax and transportation policy, among other topics. We identify emerging policy risks and opportunities to help support our business units, and we regularly engage with policymakers to educate them about issues impacting Green Plains and the broader agricultural and energy industries.

We engage employees, farmer customers and other stakeholders in policy conversations. Please see **Global Reporting Initiative Disclosures 102-12 – External Initiatives and 102-13 – Membership of Associations** for a list of the industry organizations of which Green Plains is a member.

Our political action committee, **the Green Plains Inc. Political Action Committee**, is funded through voluntary employee and board member donations. Our political action committee provides employees a way to voluntarily support candidates who are aligned with the Company's policy priorities. Green Plains Inc.'s federal lobbying reports are available at **lobbyingdisclosure.house.gov/** and **www.disclosure.senate.gov**.

We abide by our **Code of Ethics** and aim to operate at the highest levels of integrity and good corporate citizenship. Our board of directors is responsible for the Code and has entrusted our management team with its implementation in satisfaction of Section 406 of the Sarbanes-Oxley Act of 2002. The Code:

- Prohibits employees and directors from taking unfair advantage of anyone through manipulation, concealment, abuse of privileged information, misrepresentation of material facts or any other unfair dealing practice.
- Contains a Conflicts of Interest policy that applies to all directors and employees and outlines expectations and requirements, including mandatory reporting. Employees and directors are obligated to report any potential conflict of interest, and they cannot personally take opportunities or achieve personal gain using Company property, information or position. Additionally, employees and directors may not compete with the Company in any manner.
- Provides advice about ethical and lawful behavior and offers various methods for seeking additional information; also summarizes certain government laws and regulations.

Employees, customers, suppliers and the general public have access to a Compliance Hotline to report concerns about unethical or unlawful behavior either by telephone (844-957-2596) or via our **online portal**. This hotline is operated by a third party and is completely confidential. The Chief Legal and Administration Officer and Audit Committee Chair receive all reports, and the Chief Legal and Administration Officer, or that individual's designee, investigates all complaints.

Every employee, upon hire, needs to acknowledge both the Code of Ethics and **Code of Business Ethics and Conduct**. All new hires are obligated to participate in our New Employee Legal Orientation, during which we highlight our corporate policies and procedures, including the Code of Ethics. In 2023, the training presented to new hires was revised and updated to include additional content.

Ethical Standards

Anti-Corruption

We make every effort to conduct our business in accordance with the highest ethical standards to maintain the complete confidence and trust of our customers, shareholders and the public. Every employee, officer and director is expected to perform their business responsibilities ethically and in accordance with our **Anti-Corruption Policy**.

Human and Labor Rights

Green Plains is committed to upholding human rights where we operate, including protecting and promoting the labor rights of our employees and providing a safe work environment. We are also dedicated to respecting the rights of disadvantaged people. We monitor suppliers and customers for human rights violations and aim to create a positive impact in our communities. We abide by our **Human and Labor Rights Policy** and **Code of Vendor Conduct**, both of which prohibit child and forced labor at Green Plains and by our suppliers and customers.

Cybersecurity Governance

- Cyberattacks are a leading risk and continue to evolve and increase in sophistication and frequency.
- Our Information Security Program uses the latest technologies to keep our systems secure and provide training resources to keep our users informed. As a key producer in the ag-tech space, we have a zero-incident vision for our cybersafety — zero incidents, zero breaches and zero leaks, thefts or losses of customer data. **In 2023, we maintained zero identified leaks, thefts or losses of customer data.**
- As with any operational risk, Green Plains has a strong governance structure for cybersecurity.
- We have a centralized IT function at our corporate headquarters for clear visibility into how well our policies enhance cybersecurity. We continuously monitor for potential threats, perform regular tests of our ability to respond and recover, and conduct continuous assessments of our cybersecurity standards. To further mitigate threats, we collaborate with governments and regulatory agencies and attend external events to enhance our knowledge of the emerging threat landscape. We also engage independent third parties to audit our cybersecurity program, in accordance with top information security standards such as ISO 27001.

Cybersecurity is embedded in our organizational structure and overall business strategy, with the Senior Leadership Team briefing the Audit Committee about cybersecurity matters quarterly. The most senior manager responsible for cybersecurity matters is our Chief Financial Officer, who, along with our Senior Vice President of Business Technology, regularly discusses the current state of information security with the rest of the Senior Leadership Team. The Board Audit Committee provides oversight for the Cybersecurity Program. We engage in response readiness, cybersecurity training, disaster recovery and business continuity considerations.

Our cybersecurity training program is a multidimensional information security learning experience with annual online video training sessions as well as ongoing dynamic, cross-functional and interactive learning exercises throughout the year. These measures are designed to hone cybersecurity awareness in all leaders and employees and enhance our overall information security performance. Green Plains carries a broad cyber insurance policy covering information security risks and partners with our insurers for optimal transparency and risk mitigation.

Frameworks and Standards

Frameworks

This report references certain 2021 GRI standards. We also disclose under the SASB Biofuels Standard and align with the TCFD framework and UN Sustainable Development Goals.

Global Reporting Initiative

GRI 2: General Disclosures 2021		
Disclosure Number	**Disclosure Title**	**Response or Disclosure Location**
2-1	**Organizational details**	Green Plains Inc. 1811 Aksarben Drive, Omaha, NE 68106 2023 Sustainability Report: About Green Plains, pages 6-9 2023 Form 10-K: Item 1: Business – Overview, page 5; Operating Segments, pages 8-12 We are a publicly traded company on the NASDAQ Stock Exchange. Our state of organization is Iowa, and our legal form is domestic for-profit corporation. 2023 Form 10-K: Cover, page 1
2-2	**Entities included in the organization's sustainability reporting**	2023 Form 10-K: Exhibit 21.1: Subsidiaries of the Company
2-3	**Reporting period, frequency and contact point**	This report houses our sustainability data and initiatives from January 1, 2023, through December 31, 2023, though we also share details on goals and initiatives that extend into 2024 and beyond. 2023 Sustainability Report: About This Report, page 3 Annual Inquiries related to the report and its content should be directed to our sustainability team at sustainability@gpreinc.com. More information can also be found at www.gpreinc.com. 2023 Sustainability Report: About This Report, page 3
2-4	**Restatements of information**	There have been no restatements of information.
2-5	**External assurance**	Our current policy and practice includes seeking external assurance for certain data in our report through Apex Companies, LLC. Apex Companies, LLC has assured the data as outlined in its letter. The relationship between Green Plains Inc. and Apex is limited in scope to sustainability disclosure auditing services. There are no known conflicts of interest between Green Plains Inc. and Apex. Senior executives, including the CEO, approved the selection of the external assurance provider.

GRI 2: General Disclosures 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
2-6	Activities, value chain and other business relationships	2023 Sustainability Report: Letter from Our Chief Executive Officer, pages 4-5; About Green Plains, pages 6-7; People – Our Customers; Our Suppliers, pages 54-57 2023 Form 10-K: Item 1: Business – Overview, page 5; Operating Segments, pages 8-12; Human Capital Resources, page 13 Net Revenues: $3,295,743,000 Total Capitalization (Assets): $1,939,322,000 2023 Sustainability Report: People – Our Employees, pages 46-53 There were no significant changes to our supply chain during the reporting period that can cause or contribute to significant economic, environmental and social impacts. All of our corn suppliers and the majority of our other suppliers are based in North America, and we do not outsource any significant part of our activities. 2023 Form 10-K: Item 7: Liquidity and Capital Resources, pages 43-44
2-7	Employees	2023 Sustainability Report: People – Our Employees, pages 46-53 2023 Form 10-K: Item 1: Business – Human Capital Resources, page 13 The data was compiled from internal employee records.
2-8	Workers who are not employees	The portion of Green Plains' activities performed by workers who are not employees is not significant.
2-9	Governance structure and composition	2023 Sustainability Report: Principles – Board Composition and Structure, pages 62-64 2024 Proxy Statement: Corporate Governance – Committees of the Board, page 25 2024 Proxy Statement: Proxy Summary – Board Highlights, pages 8-11; Corporate Governance – Director Nominee Biographical Information and Experience, pages 15-21; Corporate Governance – Leadership Structure – Diversity and Refreshment, page 24
2-10	Nomination and selection of the highest governance body	2023 Sustainability Report: Principles – Board Composition and Structure - Growing Board Diversity, page 64 2024 Proxy Statement: Corporate Governance – Director Nomination Process, page 22
2-11	Chair of the highest governance body	Board Chairman Jim Anderson is an independent non-executive director. 2024 Proxy Statement: Corporate Governance – Leadership Structure, page 23

GRI 2: General Disclosures 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
2-12	Role of the highest governance body in overseeing the management of impacts	2023 Sustainability Report: Our Commitment to Sustainability – Determining Our Focus and Identified Key Topics, page 11; Sustainability and Climate Change Governance, pages 60-61 Pursuant to its charter, the Nominating and Governance Committee oversees sustainability topics, including the development, approval and updating of the Company's sustainability purpose, mission statements, strategies, policies and goals. 2024 Proxy Statement: Corporate Governance – Board Oversight, pages 28-31 2024 Proxy Statement: Corporate Governance – Board Oversight – Risk Oversight, page 28
2-13	Delegation of responsibility for managing impacts	2023 Sustainability Report: Principles – Sustainability and Climate Change Governance, pages 60-61
2-14	Role of the highest governance body in sustainability reporting	The Nominating and Governance Committee is responsible for the review and approval of our sustainability reporting, including this Sustainability Report. 2023 Sustainability Report: Principles – Sustainability and Climate Change Governance, pages 60-61
2-15	Conflicts of interest	2023 Sustainability Report: Principles – Ethics and Compliance, pages 65-66 Code of Ethics Code of Business Ethics and Conduct
2-16	Communication of critical concerns	2023 Sustainability Report: Principles – Ethics and Compliance, pages 65-66 2024 Proxy Statement: Corporate Governance – Other Governance Principles – Communications With the Board, page 34
2-17	Collective knowledge of the highest governance body	2023 Sustainability Report: Principles – Board Composition and Structure, pages 62-64 2024 Proxy Statement: Proxy Summary – Board Highlights – Board Snapshot – Skills and Experience, pages 8-11
2-18	Evaluation of the performance of the highest governance body	Corporate Governance Guidelines: Annual Performance Evaluation of the Board, page 3
2-19	Remuneration policies	2023 Sustainability Report: Principles – Sustainability and Climate Change Governance, pages 60-61 2024 Proxy Statement: Corporate Governance – Compensation of Directors, page 36; Executive Compensation – Compensation Discussion and Analysis, pages 43-62
2-20	Process to determine remuneration	2024 Proxy Statement: Corporate Governance – Investor Engagement, page 32; Compensation of Directors, page 35; Executive Compensation – Compensation Discussion and Analysis, pages 43-62

GRI 2: General Disclosures 2021		
Disclosure Number	**Disclosure Title**	**Response or Disclosure Location**
2-21	**Annual total compensation ratio**	2023 Sustainability Report: Principles – Board Composition and Structure – 2023 Board Composition and Participation, page 63 2024 Proxy Statement: Executive Compensation – CEO Pay Ratio, page 73
2-22	**Statement on sustainable development strategy**	2023 Sustainability Report: Letter from Our Chief Executive Officer, pages 4-5
2-23	**Policy commitments**	Although we do not currently apply the Precautionary Principle or approach, as defined by the Rio Declaration on Environment and Development, in our operational risk management planning or when we develop and introduce new products, we do consider potential environmental issues, including whether the proposed operation or product could pose a serious threat of irreversible environmental damage. 2023 Sustainability Report: About Green Plains – Our Brand Values, page 8
2-25	**Processes to remediate negative impacts**	2023 Sustainability Report: Principles, pages 59-66
2-26	**Mechanisms for seeking advice and raising concerns**	2023 Sustainability Report: Principles – Ethics and Compliance, pages 65-66 2024 Proxy Statement: Corporate Governance - Other Governance Principles - Code of Ethics and Other Policies, page 33
2-27	**Compliance with laws and regulations**	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44
2-28	**Membership associations**	2023 Sustainability Report: About Green Plains – External Awards and Industry Memberships, page 9
2-29	**Approach to stakeholder engagement**	2023 Sustainability Report: Determining Our Focus and Identified Key Topics, page 12 We engage with stakeholder groups based on an analysis of our business impacts.
2-30	**Collective bargaining agreements**	None
GRI 3: Material Topics 2021		
3-1	**Process to determine material topics**	2023 Sustainability Report: About This Report, page 3; Our Commitment to Sustainability – Determining Our Focus and Identified Key Topics, page 12
3-2	**List of material topics**	2023 Sustainability Report: Determining Our Focus and Identified Key Topics, page 11-12 No significant changes in the list of key topics or topic boundaries

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
3-3	Management of material topics	Although we do not currently apply the Precautionary Principle or approach, as defined by the 'Rio Declaration on Environment and Development', in our operational risk management planning or when we develop and introduce new products, we do consider potential environmental issues including whether the proposed operation or product could pose a serious threat of irreversible environmental damage. The environmental data within this report, with the exception of the GHG emissions inventory, is limited to the biorefinery production segment of our operations, including our biorefining facilities. The GHG emissions inventory covers all relevant GHG emissions, from all relevant sources and subsidiaries. The boundary coverage for scope 1 and 2 emissions is 99.69% and the boundary coverage for scope 3 emissions is 100%. The social and governance data in this report is enterprise-wide. 2023 Sustainability Report: About this Report, page 3; Our Commitment to Sustainability, pages 10-13; Planet section, pages 21-44; People section, pages 45-58; Principles section, pages 59-66
200	Economic topics	
201	Economic Performance 2016	
201-2	Financial implications and other risks and opportunities due to climate change	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32 2023 Form 10-K: Item 1A: Risk Factors, pages 13-28
202	Market Presence 2016	
202-1	Ratios of standard entry level wage by gender compared to local minimum wage	All of our hourly employees are paid well above the federal minimum wage, and we monitor local minimum wages to ensure that we are complying and are paying above the higher applicable wage rate. 2023 Sustainability Report: People – Our Employees – Compensation and Benefits, page 51
203	Indirect Economic Impacts 2016	
203-1	Infrastructure investments and services supported	2023 Sustainability Report: People – Our Communities, page 58
203-2	Significant indirect economic impacts	2023 Sustainability Report: People – Our Communities, page 58
204	Procurement Practices 2016	
204-1	Proportion of spending on local suppliers	2023 Sustainability Report: Planet – Natural Capital and Land Stewardship, pages 39-42; People – Our Suppliers, page 56-57
205	Anti-corruption 2016	
205-1	Operations assessed for risks related to corruption	Anti-Corruption Policy, Scope, page 1

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
205-2	Communication and training about anti-corruption policies and procedures	Green Plains board receives annual compliance updates. Anti-Corruption Policy, Scope, pages 1 and 6
205-3	Confirmed incidents of corruption and actions taken	2023 Sustainability Report: Principles – Ethics and Compliance – Anti-Corruption Policy, page 66
206	Anti-competitive Behavior 2016	
206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	2023 Sustainability Report: Principles – Ethics and Compliance – Anti-Corruption Policy, page 66
300	Environmental topics	
301	Materials 2016	
301-1	Materials used by weight or volume	Our products are almost completely absent of any packaging. 2023 Sustainability Report: About Green Plains – Our Business, pages 6; Planet – Waste Management and Compliance, pages 43-44; People – Our Suppliers, page 56-57
302	Energy 2016	
302-1	Energy consumption within the organization	2023 Sustainability Report: Planet – Energy Use and Efficiency, pages 33-35
302-2	Energy consumption outside of the organization	2023 Sustainability Report: Planet – Energy Use and Efficiency, pages 33-35
302-3	Energy intensity	2023 Sustainability Report: Planet – Energy Use and Efficiency, pages 33-35
302-4	Reduction of energy consumption	2023 Sustainability Report: Planet – Energy Use and Efficiency, pages 33-35
303	Water and Effluents 2018	
303-1	Interactions with water as a shared resource	2023 Sustainability Report: Planet – Water Management, pages 36-38
303-2	Management of water discharge-related impacts	2023 Sustainability Report: Planet – Water Management, pages 36-38
303-3	Water withdrawal	2023 Sustainability Report: Planet – Water Management, pages 36-38

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
303-4	Water discharge	2023 Sustainability Report: Planet – Water Management, pages 36-38
303-5	Water consumption	2023 Sustainability Report: Planet – Water Management, pages 36-38
304	Biodiversity 2016	
304-1	Operational sites owned, leased, managed in or adjacent to protected areas and areas of high biodiversity value outside protected areas	2023 Sustainability Report: Planet – Natural Capital and Land Stewardship – pages 39-42
304-2	Significant impacts of activities, products and services on biodiversity	2023 Sustainability Report: Planet – Natural Capital and Land Stewardship – pages 39-42
304-3	Habitats protected or restored	2023 Sustainability Report: Planet – Natural Capital and Land Stewardship – pages 39-42
305	Emissions 2016	
305-1	Direct (Scope 1) GHG emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
305-2	Energy indirect (Scope 2) GHG emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
305-3	Other indirect (Scope 3) GHG emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
305-4	GHG emissions intensity	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
305-5	Reduction of GHG emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
305-7	Nitrogen oxides (NO_x), sulfur oxides (SO_x) and other significant air emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32
306	Waste 2020	
306-1	Waste generation and significant waste-related impacts	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44
306-2	Management of significant waste-related impacts	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
306-3	Waste generated	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44
307	Environmental Compliance 2016	
307-1	Non-compliance with environmental laws and regulations	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44
400	Social Topics	
401	Employment 2016	
401-1	New employee hires and employee turnover	2023 Sustainability Report: People – Our Employees, page 46-53
401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	2023 Sustainability Report: People – Our Employees – Compensation & Benefits, pages 51
401-3	Parental leave	2023 Sustainability Report: People – Our Employees – Compensation & Benefits, pages 51
403	Occupational Health and Safety 2018	
403-1	Occupational health and safety management system	2023 Sustainability Report: People – Our Employees – Occupational Health and Safety Management System, page 47
403-2	Hazard identification, risk assessment and incident investigation	2023 Sustainability Report: People – Our Employees, pages 46-53
403-3	Occupational health services	2023 Sustainability Report: People – Our Employees, pages 46-53
403-4	Worker participation, consultation and communication on occupational health and safety	2023 Sustainability Report: People – Our Employees, pages 46-53
403-5	Worker training on occupational health and safety	2023 Sustainability Report: People – Our Employees, pages 46-53
403-6	Promotion of worker health	2023 Sustainability Report: People – Our Employees, pages 46-53

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	2023 Sustainability Report: People – Our Employees, pages 46-53
403-8	Workers covered by an occupational health and safety management system	2023 Sustainability Report: People – Our Employees, pages 46-53
403-9	Work-related injuries	2023 Sustainability Report: People – Our Employees, pages 46-53
404	Training and Education 2016	
404-1	Average hours of training per year per employee	2023 Sustainability Report: People – Our Employees, page 46-53
404-2	Programs for upgrading employee skills and transition assistance programs	2023 Sustainability Report: People – Our Employees, page 46-53
404-3	Percentage of employees receiving regular performance and career development reviews	2023 Sustainability Report: People – Our Employees, page 46-53
405	Diversity and Equal Opportunity 2016	
405-1	Diversity of governance bodies and employees	2023 Sustainability Report: People – Our Employees, pages 46-53; Principles – Board Composition and Structure – 2023 Board Diversity, page 64
408	Child Labor 2016	
408-1	Operations and suppliers at significant risk for incidents of child labor	Green Plains does not permit the employment of underage children in our workforce or the use of forced or compulsory labor in any of our operations. Human and Labor Rights Policy
409	Forced or Compulsory Labor 2016	
409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	Green Plains does not permit the employment of underage children in our workforce or the use of forced or compulsory labor in any of our operations. Human and Labor Rights Policy
410	Security Practices 2016	

GRI 3: Material Topics 2021

Disclosure Number	Disclosure Title	Response or Disclosure Location
410-1	Security personnel trained in human rights policies or procedures	All security personnel hired are required to attend formal training relating to our Human and Labor Rights Policy.
413	Local Communities 2016	
413-1	Operations with local community engagement, impact assessments and development programs	2023 Sustainability Report: People – Our Communities, page 58
414	Supplier Social Assessment 2016	
414-1	New suppliers that were screened using social criteria	2023 Sustainability Report: People – Our Suppliers, page 56-57; Principles – Ethics and Compliance, page 65-66
414-2	Negative social impacts in the supply chain and actions taken	2023 Sustainability Report: People – Our Suppliers, page 56-57; Principles – Ethics and Compliance, pages 65-66
415	Public Policy 2016	
415-1	Political contributions	2023 Sustainability Report: Principles – Ethics and Compliance, page 65-66
416	Customer Health and Safety 2016	
416-1	Assessment of the health and safety impacts of product and service categories	We ensure the health and safety of our customers by guaranteeing that 100% of our products are subject to either a Certificate of Analysis process, feed tag with guarantee or another type of quality assurance document. 2023 Sustainability Report: People – Our Customers, pages 54-55
416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	Our facilities continue to perform well during audits by the FDA regarding compliance with the Food Safety Modernization Act regulation, with no facilities receiving negative findings. 2023 Sustainability Report: People – Our Customers, pages 54-55
418	Customer Privacy 2016	
418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	In 2023, we have not had any identified leaks, thefts or losses of customer data. 2023 Sustainability Report: Principles – Ethics and Compliance – Cybersecurity Governance, page 66

Biofuels Standard From the Sustainability Accounting Standards Board

Topic	Metrics	Category	Unit of Measure	Code	Answer, Cross-Reference, Omissions and Explanations	Location
Air Quality	Air emissions of the following pollutants: (1) NOx (excluding N2O), (2) SOx, (3) volatile organic compounds, (4) particulate matter and (5) hazardous air pollutants	Quantitative	Metric tons (t)	RR-BI-120a.1	Yes, except hazardous air pollutants (HAPs)	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, page 32
	Number of incidents of non-compliance associated with air quality permits, standards and regulations	Quantitative	Number	RR-BI-120a.2	100 incidents	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, page 32
Water Management in Manufacturing	(1) Total water withdrawn, (2) total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	Quantitative	Thousand cubic meters (m3), Percentage (%)	RR-BI-140a.1	Yes, under Water Management section	2023 Sustainability Report: Planet – Water Management, pages 36-38
	Description of water management risks and discussion of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	RR-BI-140a.2	We currently do not have any known significant water-related impacts identified by local authorities or other stakeholders.	2023 Sustainability Report: Planet – Water Management, pages 36-38
	Number of incidents of non-compliance associated with water quality permits, standards and regulations	Quantitative	Number	RR-BI-140a.3	7	2023 Sustainability Report: Planet – Water Management, page 38
Lifecycle Emissions Balance	Life cycle greenhouse gas emissions, by biofuel type	Quantitative	Grams of CO2-e per megajoule (MJ)	RR-BI-410a.1	Discloses Scope 1, Scope 2 and Scope 3 GHG emissions as well as life cycle GHG emissions	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-32

Topic	Metrics	Category	Unit of Measure	Code	Answer, Cross-Reference, Omissions and Explanations	Location
Sourcing and Environmental Impacts of Feedstock Production	Discussion of strategy to manage risks associated with environmental impacts of feedstock production	Discussion and Analysis	n/a	RR-BI-430a.1	Yes, under Natural Capital and Land Stewardship section	2023 Sustainability Report: Planet – Natural Capital and Land Stewardship, pages 39-42
	Percentage of biofuel production third-party certified to an environmental sustainability standard	Quantitative	Percentage (%) of gallons	RR-BI-430a.2	All of our biorefinery locations are registered as Renewable Fuel Producers with the U.S. Environmental Protection Agency (EPA) and meet the requirements for the Renewable Fuel Standard (Title 40 CFR Part 80). Additionally, 100% of the denatured biofuel we produce is RFS-compliant.	2023 Sustainability Report: Planet – Waste Management and Compliance, pages 43-44
Management of the Legal and Regulatory Environment	Amount of subsidies received through government programs	Quantitative	Reporting currency	RR-BI-530a.1		
	Discussion of corporate positions related to government regulations and/or policy proposals that address environmental and social factors affecting the industry	Discussion and Analysis	n/a	RR-BI-530a.2		2023 Form 10-K: Item 1: Business – Regulatory Matters, pages 12-13; Item 1A: Risk Factors – Risks Related to our Business and Industry, pages 13-28
Operational Safety, Emergency Preparedness and Response	Process Safety Incidents Count, Process Safety Total Incident Rate and Process Safety Incident Severity Rate	Quantitative	Number, Rate	RR-BI-540a.1	There were no Process Safety Incidents in 2023	2023 Sustainability Report: People – Our Employees, page 46
Activity Metrics	Biofuel production capacity	Quantitative	Millions of gallons (Mgal)	RR-BI-000.A	903,000,000 gallons renewable biofuel production capacity	2023 Sustainability Report: About Green Plains – Our Business, page 9
	Production of: (1) renewable fuel, (2) advanced biofuel, (3) biomass-based diesel and (4) cellulosic biofuel	Quantitative	Millions of gallons (Mgal)	RR-BI-000.B	840,819,000 gallons sold in 2023	2023 Sustainability Report: About Green Plains – Our Business, page 9
	Amount of feedstock consumed in production	Quantitative	Metric tons (t)	RR-BI-000.C	289,276,000 bushels of corn consumed in 2023	2023 Sustainability Report: About Green Plains – Our Business, page 9

Task Force on Climate-related Financial Disclosures

Topic	Recommended Disclosure	Response or Location
Governance: Disclose the organization's governance of climate-related risks and opportunities.	a. Describe the board's oversight of climate-related risks and opportunities.	2023 Sustainability Report: Principles – Sustainability and Climate Change Governance, pages 60-61; Planet – Climate Change and GHG Emissions, page 24 2024 Proxy Statement: Corporate Governance – Board Oversight – Sustainability Oversight, pages 29-31
	b. Describe management's role in assessing and managing climate-related risks and opportunities.	2023 Sustainability Report: Principles – Sustainability and Climate Change Governance, pages 60-61; Planet – Climate Change and GHG Emissions, page 24
Strategy: Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material.	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium and long terms.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 24-27
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 24-31
	c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 24-31
Risk Management: Disclose how the organization identifies, assesses and manages climate-related risks.	a. Describe the organization's processes for identifying and assessing climate-related risks.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, page 24
	b. Describe the organization's processes for managing climate-related risks.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-31
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 24-27; Principles – Sustainability and Climate Change Governance, pages 60-61
Metrics and Targets: Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-23 & 30-31
	b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas emissions and the related risks.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, page 31
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	2023 Sustainability Report: Planet – Climate Change and GHG Emissions, pages 22-23 & 30-31

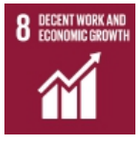
United Nations Sustainable Development Goals

Our commitment to sustainability is ingrained in our operations and culture. We not only have set meaningful and actionable goals for ourselves but also hold our partners and suppliers to the same standards of equality, responsibility and accountability.

The United Nations Sustainable Development Goals are a guide to our sustainability efforts, and several of our initiatives and goals support these principles.

Using the SDGs as a guide further helps Green Plains to positively impact communities here and around the world.

	Goal	Targets and Indicators	Green Plains Alignment
	**End hunger, achieve food security and improved nutrition, and promote sustainable agriculture.**	2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, help maintain ecosystems, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters, and progressively improve land and soil quality. 2.4.1 Proportion of agricultural area under productive and sustainable agriculture	100% sustainably sourced primary feedstock by 2030
	**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.**	4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university. 4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex	Tracking average hours of training per year for men, women, production and corporate employees. Launched a Learning Management System in 2022 to increase participation.
	**Ensure availability and sustainable management of water and sanitation for all.**	6.4 By 2030, substantially increase water use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and to substantially reduce the number of people suffering from water scarcity. 6.4.1 Change in water use efficiency over time	Reduce water intensity 10% by 2025 over 2021 baseline

	Goal	Targets and Indicators	Green Plains Alignment
	**Ensure access to affordable, reliable, sustainable and modern energy for all.**	7.2 By 2030, substantially increase the share of renewable energy in the global energy mix. 7.2.1 Renewable energy share in the total final energy consumption 7.3 By 2030, double the global rate of improvement in energy efficiency. 7.3.1 Energy intensity measured in terms of primary energy and GDP 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil fuel technology, and promote investment in energy infrastructure and clean energy technology.	Contribute to the production of low-CI renewable diesel via a 50% increase in average renewable corn oil yield over 2020 baseline by 2025. Goal to reduce natural gas intensity (MMBtu/raw material MT) 2% per year through 2026 Partnering with United Airlines and Tallgrass to develop alcohol-to-jet SAF using advanced Pacific Northwest National Laboratory technology Partnering with Osaka Gas USA and Tallgrass to study the feasibility of synthetic methane production from low-carbon hydrogen and biogenic CO_2
	**Promote sustained, inclusive and sustainable economic growth, full and productive employment, and decent work for all.**	8.4 Through 2030, progressively improve global resource efficiency in consumption and production and endeavor to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programs on Sustainable Consumption and Production, with developed countries taking the lead. 8.4.1 Material footprint, material footprint per capita and material footprint per GDP 8.8 Protect labor rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment 8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status 8.8.2 Level of national compliance with labor rights (freedom of association and collective bargaining) based on International Labor Organization textual sources and national legislation, by sex and migrant status	Products derived from renewable biomass and currently tracking carbon footprint of multiple products (biofuel, high-protein, renewable corn oil) with a carbon reduction strategy in place to work toward improved resource efficiency Goal to reduce OSHA total recordable incident rate by 35% compared to 2020 baseline by 2025 Enhanced Human and Labor Rights Policy adopted in May 2021 with goal to have 100% of Green Plains employees trained on Code of Ethics, Anti-Corruption and Human and Labor Rights policies by 2022.

	Goal	Targets and Indicators	Green Plains Alignment
	**Build resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation.**	9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries 9.2.1 Manufacturing value added as a proportion of GDP and per capita 9.2.2 Manufacturing employment as a proportion of total employment 9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities. 9.4.1 CO_2 emission per unit of value added	Five Sustainable technology installations (MSC high protein) with clean sugar construction underway in 2023 Goal to raise inclusive share of employment in manufacturing: • Enhance the data quality and reliability of our candidate pool diversity metrics to allow us to better track the success of our recruiting action plans. Carbon reduction strategy under development with goal to reduce our operational GHG emissions intensity 16.5% compared to a 2020 baseline by 2026.
	**Ensure sustainable consumption and production patterns.**	12.2 By 2030, achieve the sustainable management and efficient use of natural resources. 12.2.1 Material footprint, material footprint per capita and material footprint per GDP 12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycles, in accordance with agreed-upon international frameworks, and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment. 12.4.2 (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment 12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse. 12.5.1 National recycling rate, tons of material recycled 12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle. 12.6.1 Number of companies publishing sustainability reports	Products derived from renewable biomass and currently tracking carbon footprint of multiple products (biofuel, high-protein, renewable corn oil) with a carbon reduction strategy in place to work toward improved resource efficiency Currently tracking and publishing all hazardous waste generated and developing active waste management plan in support of our zero waste goal. Finalized our corporate recycling program plan and established new goal: zero waste to landfill by 2030 Published third annual Sustainability Report with commitment to continue reporting on sustainability efforts
	**Take urgent action to combat climate change and its impacts.**	13.2 Integrate climate change measures into national policies, strategies and planning. 13.2.2 Total greenhouse gas emissions per year	Climate disclosure aligned with TCFD framework, tracking and publishing of GHG emissions (Scopes 1, 2, and 3 and biogenic) as well as science-based targets of 37.8% reduction in Scopes 1 and 2 and 22.5% reduction in Scope 3 GHG emissions from 2021 baseline by 2030; 100% reduction in operational GHG emissions from a 2018 baseline by 2050

	Goal	Targets and Indicators	Green Plains Alignment
	**Conserve and sustainably use the oceans, seas and marine resources for sustainable development.**	14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices, and implement science-based management plans to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics. 14.4.1 Proportion of fish stocks within biologically sustainable levels	Developing high-protein plant-based feed ingredients currently being tested in our aquafeed formulations; potentially could partially replace fishmeal in fish feed formulations. Fishmeal is a significant contributor to overfishing our oceans.
	**Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation, and halt biodiversity loss.**	15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements. 15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.	Actively pursue opportunities to protect biodiversity and reduce deforestation while also partnering with our farmer customers to advance sustainable sourcing and farming. 100% of corn purchased from non-deforested, U.S.-domestic sources via compliance with RFS regulations. Established new goal of 100% sustainably-sourced primary feedstock by 2030 and began phase implementation of sustainable sourcing/farm carbon grain origination road map
	**Promote peaceful and inclusive societies for sustainable development, provide access to justice for all, and build effective, accountable and inclusive institutions at all levels.**	16.5 Substantially reduce corruption and bribery in all their forms. 16.6 Develop effective, accountable and transparent institutions at all levels. 16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels.	The Company made numerous governance enhancements in 2021, including adopting new Board Governance Guidelines and Company Bylaw improvements concerning shareholder rights. Proposal to declassify Board included in 2022 Proxy Statement, with vote occurring at our 2022 Annual Meeting of Shareholders, resulting in passage Enhanced Anti-Corruption Policy and Human and Labor Rights Policy adopted in May 2021, with required training for 100% of workforce implemented in 2022
	**Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.**	17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation; enhance knowledge-sharing on mutually agreed-upon terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism. 17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.	Partnering with Osaka Gas USA and Tallgrass to study the feasibility of synthetic methane production from low-carbon hydrogen and biogenic CO_2 to support Japan's climate goals Partnering with United Airlines and Tallgrass to develop alcohol-to-jet SAF using advanced technology of the Pacific Northwest National Laboratory, a U.S. Department of Energy research institution

* https://sdgs.un.org/goals

Additional Information

Additional Information

The information included in the following pages is meant to provide additional context and clarity for the sustainability disclosure contained in this report.

Acronyms and Abbreviations

6S	Otherwise known as 5S (Sustain, Set in Order, Shine, Standardize, Sort) + Safety
AD&D	Accidental Death and Dismemberment
ANSI	American National Standards Institute
API	American Petroleum Institute
CAPA	Corrective Action and Preventative Action
CFR	Code of Federal Regulations
CI	Carbon Intensity
CLAO	Chief Legal and Administration Officer
CO_2	Carbon Dioxide
CO_2 e	Carbon Dioxide Equivalent
COA	Certificate of Analysis
CST™	Clean Sugar Technology™
DAFW	Days Away From Work
DEI/ DE&I	Diversity, Equity and Inclusion
DHHS	Department of Health and Human Services
EAP	Employee Assistance Plan
EPA	Environmental Protection Agency
ESG	Environmental, Social and Governance
FDA	Food and Drug Administration
FIFO	Fish In/Fish Out
FQT	Fluid Quip Technologies
FSMA	Food Safety Modernization Act
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GHS	Globally Harmonized System
GREET	Greenhouse Gases, Regulated Emissions and Energy Use in Transportation
GRI	Global Reporting Initiative
HAPs	Hazardous Air Pollutants
IDEM	Indiana Department of Environmental Management
ISS	Information Security Standard
IT	Information Technology
KPI	Key Performance Indicators
kWh	Kilowatt Hours
LCFS	Low Carbon Fuel Standard
LDAR	Leak Detection and Repair
LMS	Learning Management System
LPG	Liquified Petroleum Gas
LTI	Lost Time Injury
LUC	Land Use Change
MDH	Minnesota Department of Health
MMBtu	Metric Million British Thermal Unit
MNDNR	Minnesota Department of Natural Resources
MPCA	Minnesota Pollution Control Agency
MSCI™	Morgan Stanley Capital International
MSC™	Maximized Stillage Co-Products™
MT	Metric Tons
MTBE	Methyl Tertiary Butyl Ether
NDEE	Nebraska Department of Environment and Energy
NFPA	National Fire Protection Association
NO_x	Nitrogen Oxides
OSHA	Occupational Safety and Health Administration
PAC	Political Action Committee
PM	Particulate Matter
PSM	Process Safety Management

Q&A	Question and Answer
QDR	Quality Deviation Report
QMS	Quality Management System
RD	Renewable Diesel
RFS	Renewable Fuel Standard
RO	Reverse Osmosis
RTO	Regenerative Thermal Oxidizer
S&P	Standard and Poor's
SASB	Sustainability Accounting Standards Board
SDS	Safety Data Sheets
SLT	Senior Leadership Team
SO2	Sulfur Dioxide
SOX	Sulfur Oxide
STEM	Science, Technology, Engineering and Mathematics
STI	Steel Tank Institute
SVP	Senior Vice President
TCFD	Task Force on Climate-related Financial Disclosures
TDEC	Tennessee Department of Environment and Conservation
TO	Thermal Oxidizer
TRIR	Total Recordable Incident Rate
UN SDGs	United Nations Sustainable Development Goals
USD	United States Dollar
USDA	United States Department of Agriculture
VFD	Variable Frequency Drives
VOCs	Volatile Organic Compounds
VP	Vice President
VSQGs	Very Small Quantity Generators
WIA	Women in Agriculture

Apex Letter

INDEPENDENT LIMITED ASSURANCE STATEMENT

APEX

To: The Stakeholders of Green Plains Inc.

Introduction and Objectives of Work

Apex Companies, LLC (Apex) has been engaged by Green Plains Inc. to provide limited assurance of its Greenhouse Gas (GHG) emissions (Scope 1, Scope 2 [location-based], Scope 3 [Purchased Goods and Services, Capital Goods, Fuel and Energy-Related Activities, Upstream Transportation and Distribution, Employee Commuting, Downstream Transportation and Distribution, Use of Sold Products], and Biogenic emissions for 2023 ("Subject Matter"). This assurance statement applies to the Subject Matter included within the scope of work described below.

This information and its presentation are the sole responsibility of the management of Green Plains Inc. Our sole responsibility was to provide independent assurance on the accuracy of the Subject Matter.

Scope of Work
The scope of our work was limited to assurance of the metrics listed above for the period January 1, 2023 to December 31, 2023. The metrics assured by Apex are included in the attached table.

Data and information supporting GHG Emissions (Scope 1, Scope 2 [location-based], Scope 3, Biogenic) were primarily historical in nature.

Reporting Boundaries
The following are the boundaries used by Green Plains Inc. for reporting sustainability data:

- Operational Control
- United States
- Bioethanol production sites

Reporting Criteria
Reporting criteria include the following:

- World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas (GHG) Protocol Corporate Accounting and Reporting Standard (Scope 1 and 2)
- World Resources Institute (WRI)/World Business Council for Sustainable Development (WBCSD) Greenhouse Gas (GHG) Protocol GHG Protocol Corporate Value Chain Accounting and Reporting Standard (Scope 3)

Limitations and Exclusions
Excluded from the scope of our work is any assurance of information relating to:

- Activities outside the defined assurance period;
- Material outside the scope of work;
- Fugitive GHG emissions from refrigerants (de minimis); and,
- Optimal Fish Food, Bio-Process Algae, Fuel Stations (8), and Green Plains' Omaha, Nebraska Headquarters facility.

This limited assurance engagement relies on a risk-based selected sample of sustainability data and the associated limitations that this entails. The reliability of the reported data is dependent on the accuracy of metering and other production measurement arrangements employed at site level, not addressed as part of this assurance. This independent statement should not be relied upon to detect all errors, omissions or misstatements that may exist.

APEX

Responsibilities
The preparation and presentation of the Subject Matter are the sole responsibility of the management of Green Plains Inc.

Apex was not involved in the development of the Subject Matter or of the Reporting Criteria. Our responsibilities were to:

- obtain limited assurance about whether the Subject Matter has been prepared in accordance with the Reporting Criteria;
- form an independent conclusion based on the assurance procedures performed and evidence obtained; and
- report our conclusions to the Stakeholders of Green Plains Inc.

Assessment Standards
We performed our work in accordance with Apex's standard procedures and guidelines for external Assurance of Sustainability Reports and International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board. GHG emissions were verified in accordance with ISO 14064-3: Second edition 2019-04: *Greenhouse gases -- Part 3: Specification with Guidance for the Verification and Validation of Greenhouse Gas Statements*. A materiality threshold of ±5 percent was set for the assurance process.

Summary of Work Performed
As part of our independent assurance, our work included:

1. Assessing the appropriateness of the Reporting Criteria for the Subject Matter;
2. Querying information and data related to the Subject Matter from relevant personnel;
3. Reviewing the data collection and consolidation processes used to compile Subject Matter, including assessing assumptions made, and the data scope and reporting boundaries;
4. Reviewing documentary evidence provided by relevant personnel; and,
5. Agreeing a selection of the Subject Matter to the corresponding source documentation.

Conclusion
On the basis of our methodology and the activities described above:

- Nothing has come to our attention to indicate that the Subject Matter is not fairly stated in all material respects; and,
- It is our opinion that Green Plains Inc. has established appropriate systems for the collection, aggregation and analysis of quantitative data.

Statement of Independence, Integrity and Competence
Apex is an independent professional services company that specializes in Health, Safety, Social and Environmental management services including assurance with over 30 years history in providing these services.

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day-to-day business activities.

No member of the assurance team has a business relationship with Green Plains Inc., its Directors or Managers beyond that required of this assignment. We have conducted this verification independently, and there has been no conflict of interest.

APEX

The assurance team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, and has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the assurance of sustainability data.

Mary E. Armstrong-Friberg, Lead Assuror
ESG Program Manager
Cleveland, Ohio

John Rohde, Technical Reviewer
ESG Principal Consultant
Lakewood, Colorado

March 1, 2024

APEX

Data Subject to Assurance

Green Plains Inc.	Units	Value[1]
GHG Emissions[2]		
Scope 1	Thousand tCO2e[3]	1,205
CO2	Thousand tCO2	1,203
CH4	Thousand tCO2e	0.570
N2O	Thousand tCO2e	0.722
Scope 2 (Location-Based)	Thousand tCO2e	366
CO2	Thousand tCO2	364
CH4	Thousand tCO2e	0.949
N2O	Thousand tCO2e	1.616
Biogenic	Thousand tCO2e	2344
Total Operating GHG Emissions (Scopes 1, 2, and Biogenic)	Thousand tCO2e	3,915
Total Operating GHG Emissions Intensity	tCO2e/ton of raw material	0.533
Scope 3: Purchased Goods and Services[4]	Thousand tCO2e	1,954
Scope 3: Capital Goods	Thousand tCO2e	30
Scope 3: Fuel and Energy-Related Activities	Thousand tCO2e	344
Scope 3: Upstream Transportation and Distribution	Thousand tCO2e	50
Scope 3: Employee Commuting	Thousand tCO2e	2
Scope 3: Downstream Transportation and Distribution	Thousand tCO2e	78
Scope 3: Use of Sold Products (2021)	Thousand tCO2e	75

[1]Values are for period CY 2023 unless otherwise specified

[2]These values may be impacted by rounding

[3]tCO2e is an abbreviation of metric tons of carbon dioxide equivalent

[4]Scope 3 – Purchased Goods and Services includes only purchased corn, estimated at 75-80% of total company spend

INDEPENDENT LIMITED ASSURANCE STATEMENT

APEX

To: The Stakeholders of Green Plains Inc.

Introduction and Objectives of Work

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This information and its presentation are the sole responsibility of the management of Green Plains Inc. Our sole responsibility was to provide independent assurance on the accuracy of the Subject Matter.

Scope of Work
The scope of our work was limited to assurance of the metrics listed above for the period January 1, 2023 to December 31, 2023. The metrics assured by Apex are included in the attached table.

Data and information supporting Health and Safety, Production, Energy, Air Pollutants, Water Withdrawals, Water Discharge, and Social data were primarily historical in nature.

Reporting Boundaries
The following are the boundaries used by Green Plains Inc. for reporting sustainability data:

- Operational Control
- United States
- Bioethanol production sites

Reporting Criteria
Reporting criteria include the following:

- 2021 GRI Sustainability Reporting Standards
- OSHA definitions and requirements for injuries and reporting
- Company-specific criteria for reporting of Production and Production Systems

Limitations and Exclusions
Excluded from the scope of our work is any assurance of information relating to:

- Activities outside the defined assurance period;
- Material outside the scope of work.

This limited assurance engagement relies on a risk-based selected sample of sustainability data and the associated limitations that this entails. The reliability of the reported data is dependent on the accuracy of metering and other production measurement arrangements employed at site level, not addressed as part of this assurance. This independent statement should not be relied upon to detect all errors, omissions or misstatements that may exist.

Responsibilities
The preparation and presentation of the Subject Matter are the sole responsibility of the management of Green Plains Inc.

Apex was not involved in the development of the Subject Matter or of the Reporting Criteria. Our responsibilities were to:

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APEX

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The assurance team has extensive experience in conducting assurance over environmental, social, ethical and health and safety information, systems and processes, and has over 20 years combined experience in this field and an excellent understanding of Apex's standard methodology for the assurance of sustainability data.

Mary E. Armstrong-Friberg, Lead Assuror
ESG Program Manager
Cleveland, Ohio

John Rohde, Technical Reviewer
ESG Principal Consultant
Lakewood, Colorado

April 5, 2024

APEX

Data Subject to Assurance (Calendar Year 2023)

Green Plains Inc.	Units	Value[1]
Production		
Corn Bushels Consumed	Metric Tons	7,347,770
Corn Oil Yield	Lbs per bushel	0.97
Production Systems		
Number of Maximized Stillage Co-products (MSCTM) systems in operation at production facilities	Count	5
Air Emissions		
Sulfur Dioxide	Thousand Metric Tons	0.074
Nitrogen Oxides	Thousand Metric Tons	0.500
Volatile Organic Compounds	Thousand Metric Tons	0.602
Carbon Monoxide	Thousand Metric Tons	0.331
Particulate Matter	Thousand Metric Tons	0.376
Electricity Usage[2]		
Electricity Usage	Thousand MWh	759.41
Electricity Use Intensity	kWh/metric tons of raw material	103.352
Natural Gas Usage[2]		
Natural Gas Usage	MMBTU	22,636,322
Natural Gas Use Intensity	MMBTU/metric tons of raw material	3.081
Water Usage		
Groundwater Withdrawals	Thousand m^3	8,460
Municipal Water Withdrawals	Thousand m^3	1,787
Reclaimed Water Withdrawals	Thousand m^3	406
Saltwater Withdrawals	Thousand m^3	0
Surface Water Withdrawals	Thousand m^3	0
Total Water Withdrawals	Thousand m^3	10,653
Total Water Discharged	Thousand m^3	3,475
Total Water Usage	Thousand m^3	7,178
Total Water Use Intensity	m^3/metric tons of raw material	0.977
Environmental Compliance		
Number of Sites	Count	11
Number of Reportable Spills	Count	0
Volume of Reportable Spills	Liters	0
Number of Environmental Fines	Count	2
Amount of Environmental Fines	USD	$305,355
Employee Retention		
Full-Time (Male)	Count	705
Part-Time (Male)	Count	10
Total (Male)	Count	715
Full-Time (Female)	Count	187
Part-Time (Female)	Count	5
Total (Female)	Count	192

APEX

Employee Turnover		
All	%	34
Male	%	81
Female	%	19
Under 30	%	33
30-50	%	43
Over 50	%	24
Employee Compensation		
Ratio of average new employee wage to the federal minimum wage	Ratio	4.44
Diversity[2]		
Male	Total Number (%)	715 (78.8)
Female	Total Number (%)	192 (21.2)
Under 30	Total Number (%)	195 (21.5)
30-50	Total Number (%)	465 (51.3)
Over 50	Total Number (%)	247 (27.2)
Caucasian/White	Total Number (%)	803 (88.5)
Hispanic/Latin American	Total Number (%)	41 (4.5)
American Indian/Alaskan Native	Total Number (%)	4 (0.4)
Asian	Total Number (%)	14 (1.5)
Native Hawaiian or Other Pacific Islander	Total Number (%)	1 (0.1)
Black or African American	Total Number (%)	29 (3.2)
Two or More Races	Total Number (%)	15 (1.7)
Unspecified	Total Number (%)	0 (0)
Training and Education		
Male	Average hours/employee	30
Female	Average hours/employee	30
Production	Average hours/employee	38
Corporate	Average hours/employee	7
Health and Safety		
Fatalities	Total Number	1
Lost Time Incidents	Total Number	1
Lost Time Incident Rate	Incidents per 200,000 hours worked	0.11
Recordable Incidents	Total Number	14
Recordable Incident Rate	Incidents per 200,000 hours worked	1.56
Hours Worked	Total Number	1,796,619

[1]Values are for period CY 2023 unless otherwise specified

[2]These values may be impacted by rounding

[3]tCO2e is an abbreviation of metric tons of carbon dioxide equivalent

Forward-Looking Statements

This sustainability report includes forward-looking statements that reflect management's current views of Company performance, industry conditions and future economic environment. These statements are based on assumptions and various factors that are subject to risks and uncertainties. Green Plains has provided additional information about such risks and uncertainties that could cause actual results to differ materially from those expressed or implied in its reports filed with the SEC. Forward-looking statements are made in accordance with safe harbor provisions of the Private Securities Litigation Reform Act of 1995. These statements are based on current expectations, which involve a number of risks and uncertainties and do not relate strictly to historical or current facts but rather to plans and objectives for future operations. These statements include words such as "anticipate," "believe," "continue," "estimate," "expect," "intend," "outlook," "plan," "predict," "may," "could," "should," "will" and similar words and phrases as well as statements regarding future operating or financial performance or guidance, business strategy, environment, key trends, and benefits of actual or planned acquisitions. Factors that could cause actual results to differ from those expressed or implied are discussed in our 10-K report under "Risk Factors" or incorporated by reference. Specifically, we may experience fluctuations in future operating results due to a number of economic conditions, including competition in the ethanol industry and other industries in which we operate; commodity market risks, including those that may result from weather conditions; financial market risks; counterparty risks; risks associated with changes to government policy or regulation, including changes to tax laws; risks related to acquisitions and disposition activities and achieving anticipated results; risks associated with merchant trading; risks related to our equity method investees; disruption caused by health epidemics, such as the COVID-19 outbreak; and other factors detailed in reports filed with the SEC. We believe our expectations regarding future events are based on reasonable assumptions; however, these assumptions may not be accurate or account for all risks and uncertainties. Consequently, forward-looking statements are not guaranteed. Actual results may vary materially from those expressed or implied in our forward-looking statements. In addition, we are not obligated and do not intend to update our forward-looking statements as a result of new information unless it is required by applicable securities laws. We caution investors not to place undue reliance on forward-looking statements, which represent management's views as of the date of this report or documents incorporated by reference. This sustainability report also includes estimated projections of future operating results. This information is not fact and should not be relied on as being necessarily indicative of future results; the projections were prepared in good faith by management and are based on numerous assumptions that may prove to be wrong. Important factors that may affect actual results and cause the projections to not be achieved include, but are not limited to, risks and uncertainties relating to the Company and other factors described in the "Risk Factors" section of the Company's Annual Report on Form 10-K. Actual results may differ materially from those contained in the estimates. Accordingly, there can be no assurance that the estimates will be realized. Neither the SEC nor any other regulatory body has assessed the accuracy or adequacy of this sustainability report. Any representation to the contrary is a criminal offense. Except as otherwise indicated, this sustainability report speaks as of the date hereof. The delivery of this sustainability report shall not, under any circumstances, create any implication that there has been no change in the affairs of the Company after the date hereof. Certain information contained herein may be derived from information provided by industry sources. While the Company believes such information is accurate and that the sources from which it was obtained are reliable, it has not independently verified data from these third-party sources.

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