



# Ingredients

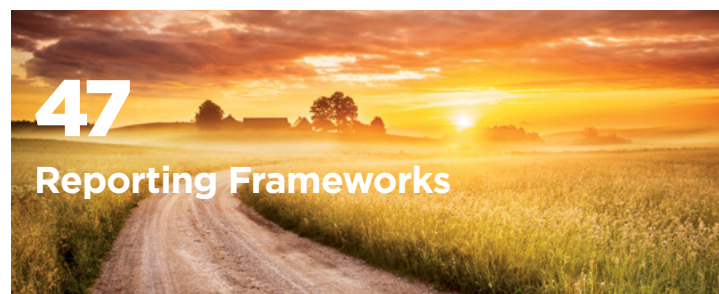
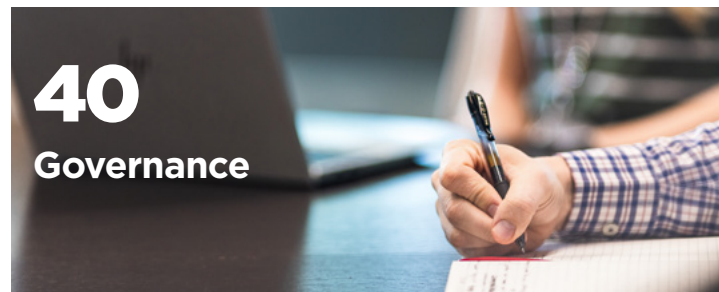
## THAT MATTER



Green Plains

2020 SUSTAINABILITY REPORT

## ESG PILLARS



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# About this Report

**This inaugural sustainability report demonstrates Green Plains' unwavering commitment to using innovative technologies to generate greater value from fewer resources, thereby reducing our impact on the planet while helping meet the needs of a growing global population. This report covers our environmental, social and governance (ESG) data and initiatives during calendar year 2020 (January 1, 2020 through December 31, 2020), though we also share details on goals and initiatives that extend into 2021 and beyond. Going forward, we plan to report our ESG progress on an annual cycle.**

The environmental data within this report is limited to the biorefinery production segment of our operations, including our biorefining facilities. The data does not include our fuel terminals, grain elevators or corporate office, as these facilities have a relatively negligible footprint.

The social and governance data in this report is enterprise-wide except for employee turnover metrics, which exclude assets divested in 2020 (Green Plains Cattle Company LLC and Green Plains Hereford LLC) as the divestment events artificially increased the turnover rate.

Inquiries related to the report and its content should be directed to our sustainability team at [sustainability@gpreinc.com](mailto:sustainability@gpreinc.com). More information can also be found at [www.gpreinc.com](http://www.gpreinc.com).

This material references select Global Reporting Initiative (GRI) 2016 standards, as well as applicable United Nations Sustainable Development Goals (UN SDGs). We also disclose under the Biofuels Standard from the Sustainability Accounting Standards Board (SASB). See page 47 for GRI and SASB indices.

**SUSTAINABLE DEVELOPMENT GOALS**



# Letter from our Chief Executive Officer

**At Green Plains, we have fully embraced the principles and practices of sustainability since our inception as a clean fuel producer focused on reducing transportation emissions. Our feedstock has always been locally sourced, our focus has always been on the environment and our sights have always been set on an innovative future.**

Now we are proudly stepping forward to tell our sustainability story more broadly. From our energy-efficient operations to our diversity, equity and inclusion initiatives, we are building upon our strong history of implementing environmental, social and governance (ESG) best practices throughout our company.

It's an exciting time at Green Plains as we transform our products, processes and workplace culture into Green Plains 2.0. From our humble origins in 2007 as a single biofuel plant, we have quickly evolved into the biorefinery platform of the future, providing sustainable ingredients that matter to a rapidly growing and changing world.

Earlier this year we announced our partnership to purchase Fluid Quip Technologies, allowing us to secure the intellectual property necessary to execute our transformation. Fluid Quip's revolutionary technology diversifies our product portfolio and has already begun adding value. Installation of the Ultra-High Protein system is complete at two of our 11 biorefineries and is underway at three more. We plan on rolling out this system across our entire platform in the coming years. As we transform, we are focused on the ESG impacts of our operations and are holding both ourselves and our suppliers accountable.

Our sustainability successes include Project 24 and the strategic use of Syngenta's Enogen corn. Both efforts have reduced energy use, greenhouse gas emissions and water usage. In addition, by 2024, we expect to have eight biorefineries connected to one of the largest proposed carbon capture and sequestration projects in the world, Summit Carbon Solutions' Midwest Carbon Express. The project aims to collect carbon dioxide from industrial and power plants across five states on a path to North Dakota for permanent underground storage. Our biorefineries separate nearly pure carbon dioxide via the fermentation process, which makes them ideally suited for carbon capture and sequestration. As we aim to cut our carbon footprint in half by 2030, and for carbon neutrality by 2050, we are leading sustainability efforts by example in the biofuels industry.

But our ESG commitments go even further. We've introduced a Code of Vendor Conduct that holds our suppliers accountable, as well as Human & Labor Rights and Anti-Corruption policies to do the same for ourselves. The bedrock of these policies — and of all our ESG efforts — is our collaborative workforce. Our employees are our single most valuable asset, and they bring a wealth

of knowledge and energy to their roles. Every Green Plains employee plays a crucial role in our company's ongoing transformation.

Green Plains has a long history of sustainability, setting a solid foundation for our future successes. We have been producing low-carbon biofuels for over a decade, reducing GHG emissions and improving the quality of the air we all breathe. Biofuels are the original ESG story. We were sustainable before it was trendy. This report isn't the start of our sustainability initiatives; it's the start of Green Plains being more vocal about our existing emphasis on people, the environment and integrity.

What we've outlined in the pages that follow reflects the beliefs and values we espouse at Green Plains — values that we believe will help us build a more sustainable and inclusive future.



**Todd Becker**  
PRESIDENT AND CEO

"GREEN  
PLAINS  
has a long history of  
sustainability, setting a  
solid foundation for our  
future successes."

# About Green Plains

## Our Business

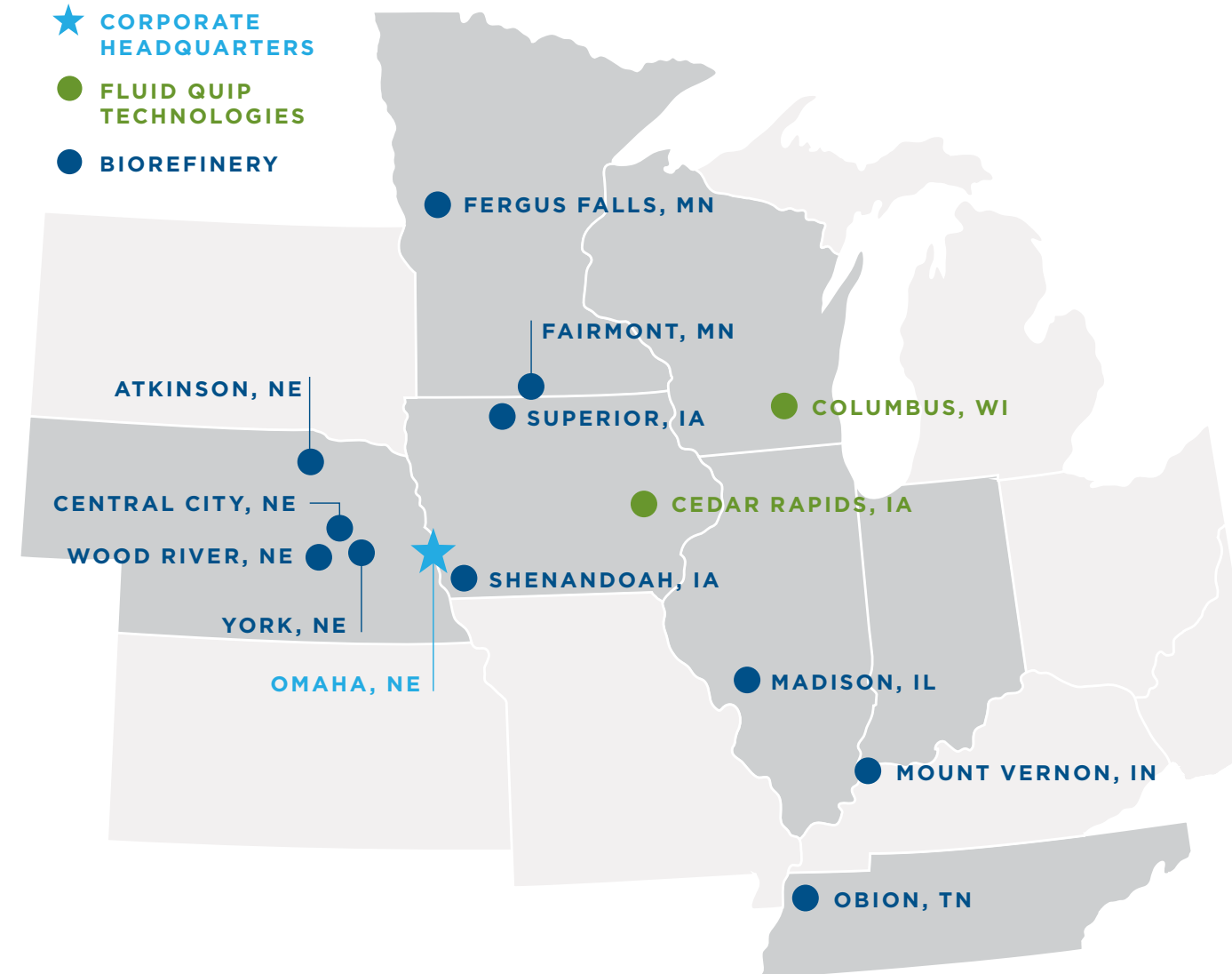
**Green Plains Inc. (NASDAQ:GPRE) is a leading biorefining company focused on the development and utilization of fermentation, agricultural and biological technologies to process annually renewable crops into sustainable, value-added ingredients. This includes the production of cleaner, low-carbon biofuels, renewable feedstocks for advanced biofuels and high-purity alcohols for use in cleaners and disinfectants.**

As we transition into Green Plains 2.0, we are expanding our capabilities via novel technologies and partnerships to extract additional ingredients from the same annually renewable crops. We are producing a new Ultra-High Protein ingredient for animal and aquaculture diets to help satisfy a growing global appetite for sustainable protein. At the same time, we are providing less carbon-intensive renewable biofuel options for consumers in the United States and abroad.

On January 5, 2021, we announced the purchase of a controlling stake in Fluid Quip Technologies, a strategic step to secure and

protect the intellectual property necessary for our transformation. Our combined technologies and relationships allow us to produce and market sustainable ingredients with higher protein concentration levels and nutritional characteristics that meet the needs of the pet food, aquaculture and animal feed markets globally. The partnership also helps us significantly increase our renewable corn oil production in order to meet the growing need for low-carbon fuels like biomass-based diesel and renewable diesel.

For more information, visit [www.gpreinc.com](http://www.gpreinc.com).

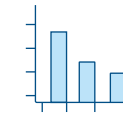


WE ASPIRE  
TO BE A  
WORLD  
CLASS  
PROVIDER

of sustainable high-protein and novel feed ingredients and low-carbon, closed-loop biofuels. We are driven to unleash the renewable energy stored within a kernel of corn.

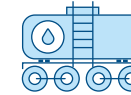
# 37.5

Million metric tons of carbon reduction to date<sup>(1)</sup>



# 1,023,000,000

gallons renewable biofuel production capacity<sup>(3)</sup>

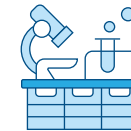


# 213,818,000

lbs of renewable corn oil sold in 2020



11 biorefineries, 8 fuel terminals, 2 Fluid Quip locations, and 1 corporate office



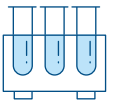
# 100%

of corn purchased from non-deforested, US-domestic sources<sup>(2)</sup>



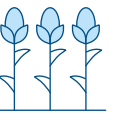
# 793,743,000

gallons of renewable biofuel sold in 2020



# 275,351,000

bushels of corn consumed in 2020



# 2.5

million tons of animal feed production capacity



1 Estimated CO<sub>2</sub> amount to have been kept out of the atmosphere due to Green Plains-produced low-carbon fuel between 2007 and 2020.

2 Based on compliance with RFS regulations (40 CFR § 80.1401), which requires the use of "renewable biomass" as an ethanol feedstock and by definition 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.

3 2020 10-K Production Capacity.

## Memberships and Awards



Green Plains was the 2020 ServeNebraska Step Forward Award Winner in the Corporate Disaster Volunteer Category for donating hundreds of thousands of gallons of high-purity alcohol to multiple states, universities and communities for hand sanitizer production during the early months of the COVID-19 pandemic.



# Our Pillars and ESG Values

We believe our five core pillars help us CHART our course and provide a framework for adapting quickly to a rapidly decarbonizing world.



We make a difference in the world by providing quality ingredients to meet customer needs in a safe manner.

- Ingredient mindset**
- Quality and safety focus**
- Understand our impact**



We are passionate, collaborative and seek achievement across all areas of our business. We are in this together.

- Competitive spirit**
- Collaborative**
- All-in mentality**



We exercise sound judgment and self-discipline to drive impactful results.

- Self-discipline**
- Sound judgment**
- Impactful results**



We serve our customers, communities, investors and families by pursuing sustainability and diversity in all that we do.

- Leadership in ESG**
- Diversity and inclusion**
- Work / life balance**



We respectfully challenge ourselves toward excellence and innovation, while focused on our clear mission to create sustainable ingredients that matter.

- Clear corporate mission**
- Respectful candor**
- Culture of innovation**

# Our Commitment TO SUSTAINABILITY

Sustainability is an integral part of our culture and guides our decision making – from how we approach our biorefinery operations to how we support our communities. We are proactive in identifying areas to improve and that positively impact our employees, customers and the environment.

## Our Key Areas of Impact

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Carbon  
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ESG Highlights



# Our Commitment to Sustainability

**Sustainability is an integral part of our culture and guides our decision making - from how we approach our biorefinery operations to how we support our communities. We are proactive in identifying areas to improve and that positively impact our employees, customers and the environment.**

As a company, we are transforming the lens through which we view our impact on the environment, economy and society as a whole. Our sustainability journey started by looking inward and gathering information from internal stakeholders via a cross-departmental environmental, social and governance (ESG) work group comprised of associates and executives, overseen by the Nominating & Governance Committee of our Board of Directors. We mapped our key areas of impact and set 2018 as our baseline year utilizing feedback from our stakeholders. We then vetted each topic against recognized ESG reporting frameworks. In particular, we considered the four Reporting Principles of the Global Reporting Initiative (GRI): Stakeholder Inclusiveness, Sustainability Context, Materiality and Completeness.

## Our Key Areas of Impact



# SUSTAINABLE DEVELOPMENT GOALS

## Integrating Sustainability Throughout Our Entire Value Chain

Our Green Plains 2.0 transformation includes combining the knowledge, resources and world-class technologies of exclusive strategic partners with our years of expertise in fermentation and agricultural technology. As we further integrate sustainability principles and practices throughout our value chain, we are doing more than just lowering our own operational footprint – as important as that is - we are providing the products needed by our customers - from pet food manufacturers to sustainable aquaculture producers to disinfectant and sanitizer manufacturers - to help them make *their* products and services more sustainable. The ripple effect of these downstream sustainability benefits then help communities around the globe live more inclusive and sustainable lives – in line with the United Nations Sustainable Development Goals\*. Our goal is to transform our entire platform by 2024.

\* <https://sdgs.un.org/goals>

### 1 NO POVERTY



Directly supports over 700 jobs across the U.S.

### 7 AFFORDABLE AND CLEAN ENERGY



Provides consumers with less expensive, renewable biofuel alternatives to regular gasoline

### 13 CLIMATE ACTION



Reduces particulate matter emissions and carbon footprint of liquid fuel vehicles

### 2 ZERO HUNGER



Meets growing global demand for plant-based protein in a sustainable way

### 8 DECENT WORK AND ECONOMIC GROWTH



Plays a significant role in agricultural economic activity in the U.S. Midwest, including purchasing corn locally and directly from American farmers

### 14 LIFE BELOW WATER



Develops innovative aquaculture diets to reduce overfishing of our oceans

### 3 GOOD HEALTH AND WELL-BEING



Contributes to global health and safety through production of high-purity alcohol for hand sanitizer and disinfectants

### 9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



Drives innovative biorefinery process and product development

### 15 LIFE ON LAND



Reduces need to further deforest land for agricultural purposes by using locally sourced corn

### 6 CLEAN WATER AND SANITATION



Engages in robust efforts to clean water and efficiently manage water resources across 11 biorefineries

### 12 RESPONSIBLE CONSUMPTION AND PRODUCTION

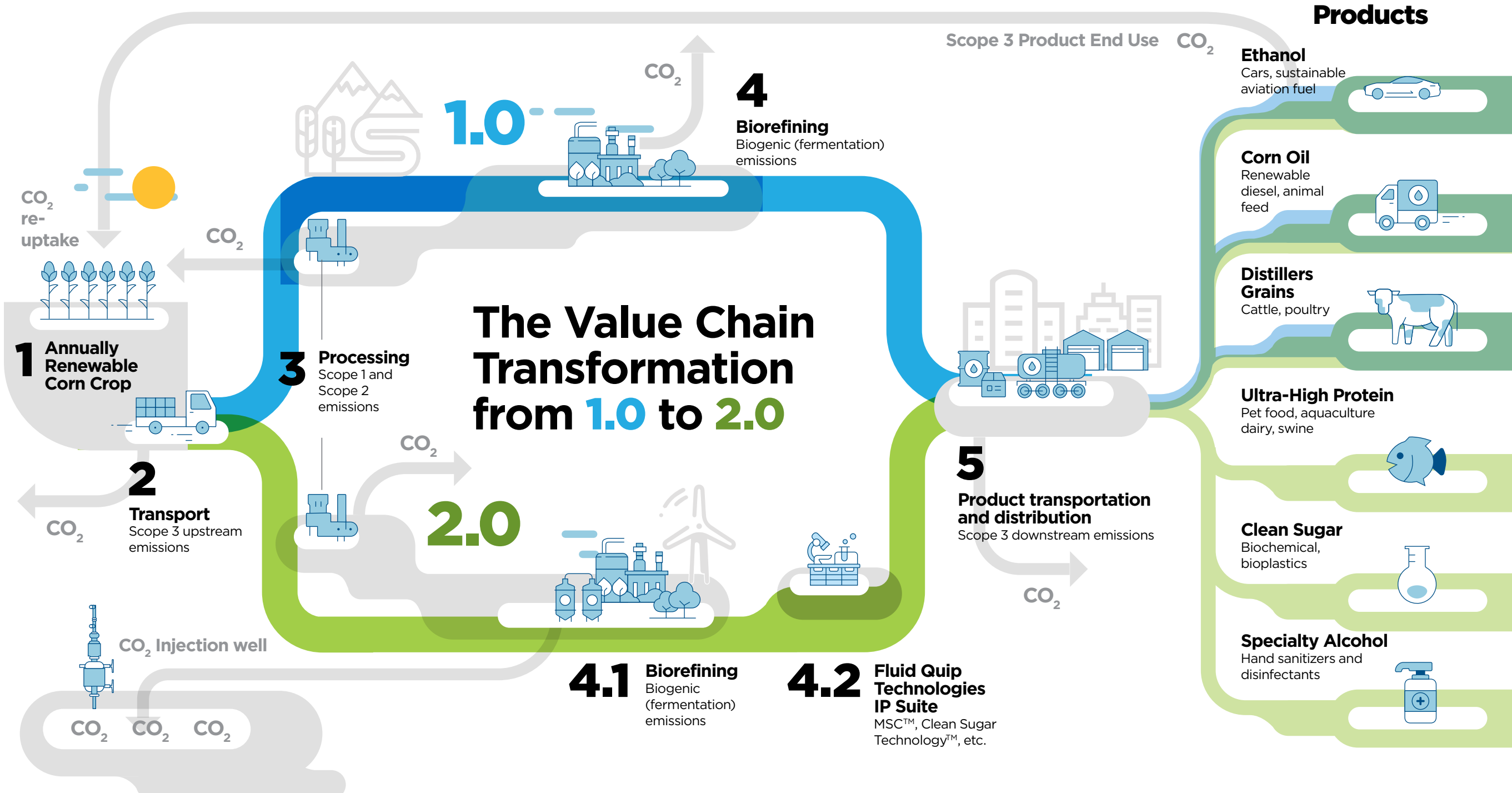


Meets the world's growing food and dietary protein demands with high-protein and plant-based feeds

### 17 PARTNERSHIPS FOR THE GOALS



Engages with strategic partners to deploy advanced agricultural technology and achieve sustainability goals



# UNDER OUR GREEN PLAINS 2.0 TRANSFORMATION, WE ARE:



## Providing less expensive and less carbon-intensive renewable biofuel options for consumers in the United States and abroad.

In 2005, the U.S. Congress created the Renewable Fuel Standard to reduce GHG emissions, expand the nation's renewable fuels sector and decrease our reliance on imported fossil fuels.<sup>1</sup> We believe that low-carbon ethanol will continue to play a critical role in decarbonizing the economy while creating green jobs and reinforcing our domestic energy security. 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 fuel ethanol we produce is RFS compliant.

Our ethanol has a 46% lower GHG profile on average than petroleum-based gasoline.<sup>2</sup> In addition, it's the most cost-effective octane

enhancer available and displaces some of the toxic elements of gasoline – aromatics like xylene, toluene and benzene – thereby reducing particulate matter as well as GHG emissions.

The renewable corn oil produced at our biorefineries is a low carbon intensity (CI) feedstock for the rapidly expanding renewable diesel market. Renewable corn oil has a lower carbon intensity than most available feedstocks.<sup>3</sup>

From 2007 through 2020, the renewable biofuels we produced have reduced GHG emissions by over 37.5 million metric tons of carbon dioxide equivalents (MMT), the equivalent of taking 8.1 million passenger vehicles off the road for one year.<sup>4</sup> Our platform has the capacity to produce nearly 1 billion gallons of renewable biofuels

## AVERAGE CI PATHWAYS FOR BIODIESEL AND RENEWABLE DIESEL FEEDSTOCK

Soybean Oil	55
Canola Oil	54
Tallow, Fats	32
<b>Corn Oil</b>	<b>30</b>
Used Cooking Oil	20

Source: California Air Resources Board's Company Analysis of CARB Pathways

**executing across four strategic areas of growth – value-added ingredients, renewable corn oil, clean sugar and carbon capture and sequestration – to achieve our long-term goals and lead the way to a low-carbon future.**

annually and future opportunities abound, including pathways to convert ethanol to sustainable aviation fuel.

Green Plains products help our customers meet the following state, national and international policies:

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

<sup>1</sup> <https://www.epa.gov/renewable-fuel-standard-program>

<sup>2</sup> <https://iopscience.iop.org/article/10.1088/1748-9326/abde08/pdf>

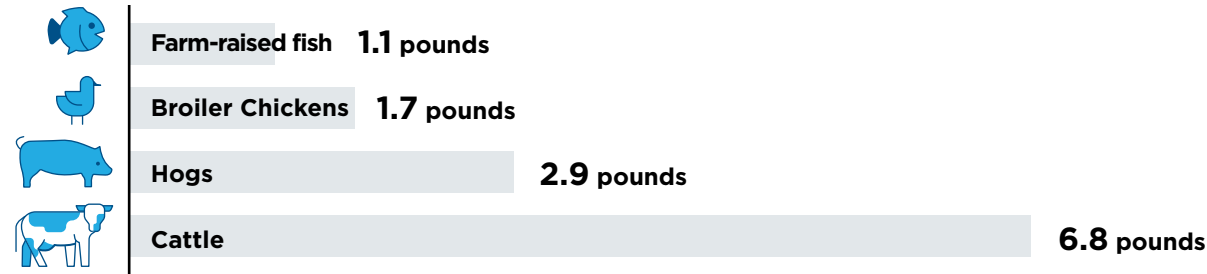
<sup>3</sup> <https://iopscience.iop.org/article/10.1088/1748-9326/abde08>

<sup>4</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



**FEED CONVERSION RATIO**

Estimated feed required to gain one pound of body mass.



Source: Aquaculture Alliance

**Meeting the world’s growing dietary demands with high-protein, plant-based feeds for healthier livestock and sustainable aquaculture practices that use less land.**

In 2020 and 2021, Green Plains deployed Fluid Quip’s Maximized Stillage Co-products (MSC™) protein technology at our Shenandoah, Iowa and Wood River, Nebraska biorefineries, allowing us to achieve protein concentrations of 50% or greater through mechanical separation. The corn-based Ultra-High Protein we produce is cleaner, more consistent and higher in nutrition than traditional distillers grains. For example, our product’s concentrated yeast and improved amino acid profile improve digestibility. Additionally, through our exclusive partnership with Novozymes, we can leverage a suite of biotechnology enhancements to achieve even higher concentrations of protein and further improvements to the nutrition profile.

In addition to serving the pet and livestock industries, our Ultra-High Protein has the potential to be used by the growing aquaculture industry. We have an opportunity to become a key supplier of high-quality plant-based aquafeed, including for land-based recirculating aquaculture systems (RAS), thereby reducing overfishing of our oceans. Feed production is the largest environmental impact from RAS, but plant-based feed has the potential to lower those impacts.<sup>5</sup> Our Ultra-High Protein product is being tested in Optimal Aquafeed formulations (made up of plant-based proteins, algae, and other single-cell protein ingredients) and could potentially reduce demand for fish meal in fish feed formulations, reducing

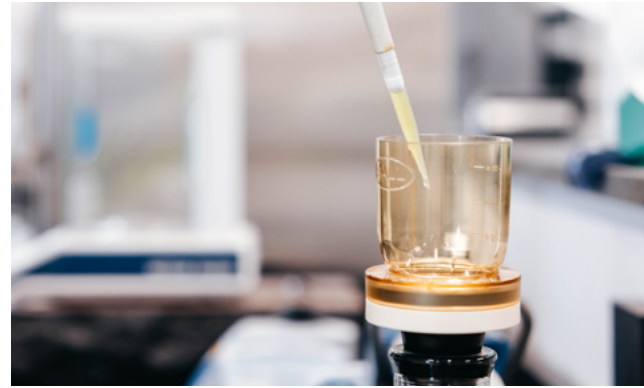
the need to feed animals to animals. Additionally, farmed fish have a higher feed conversion ratio than traditional livestock, reducing the amount of land, water and raw materials needed to produce nutritious protein.<sup>6</sup> The plant-based Ultra-High Protein product included in our Optimal Aquafeed is produced at facilities where we plan to capture and sequester carbon for permanent geologic storage, thereby reducing its carbon intensity.



5 <https://pubs.acs.org/doi/full/10.1021/acs.est.0c01100>  
6 <https://www.globalseafood.org/about-gsa/>

# QUICKLY EVOLVING

**into the biorefinery platform of the future, providing sustainable ingredients that matter to a growing and changing world.**



## **Driving innovative biorefinery process and product development.**

In January 2021, Fluid Quip Technologies began engineering and constructing a fully scalable commercial Clean Sugar Technology™ production facility at the Green Plains Innovation Center in York, Nebraska. With this technology it is possible to transform a dry-mill facility into a clean sugar biorefinery where dextrose/glucose replaces ethanol as the primary product. We believe this technology has the ability to provide industrial quantities of carbohydrate feedstock for manufacturing applications in the growing biochemical, renewable chemicals and synthetic biology industries at a lower carbon intensity than other technologies today. For example, clean sugar produced at a dry-mill facility like ours has a dramatically lower CI than dextrose produced at a wet-mill.



## **Reducing the demand for more land for agricultural purposes by utilizing locally sourced corn.**

The pressure on existing farmland around the world to meet growing global demand increases every year, potentially putting forests and other ecosystems at risk. We only source from U.S.-based farmers, keeping working farms in business and boosting rural economies across America. What's more, Fluid Quip Technologies' MSC™ protein technology enhances renewable corn oil yields, so increased production can be achieved without expansion of cropland acreage.



## **Meeting global sanitizer needs with more sustainable options.**

In January 2021, we announced the completion of a facility upgrade at our York, Nebraska biorefinery to produce United States Pharmacopeia (USP) grade alcohol, which is higher in purity and quality than traditional fuel-grade ethanol. The upgrade to USP-grade alcohol solidifies us as a strategic provider of high-quality alcohols for use in sanitizers and disinfectants, allowing us to contribute to the fight against COVID-19 and future pandemics. We donated hundreds of thousands of gallons to multiple states, universities and communities to help produce enough hand sanitizer when there were massive shortages early in the pandemic.

## GREEN PLAINS 1.0

### Fuel Ethanol Producer with Byproducts

**ETHANOL** is produced by the fermentation of sugars found in grains and other biomass, and is the most economical source of octane for transportation fuel available today. Gasoline blended with 10% ethanol – the standard in the U.S. – is on average much more cost-effective than gasoline with 0% ethanol.

#### RENEWABLE CORN OIL

is recovered from the thin stillage evaporation process immediately prior to production of distillers grains. It is a vital low-CI feedstock for producing renewable diesel and biodiesel.

**DISTILLERS GRAINS** or DDGS, the primary coproduct of the ethanol production process, are principally used as a high-energy animal feed supplements marketed to the dairy, beef, swine and poultry industries. About one third of every kernel of corn we process ends up as DDGS.

## GREEN PLAINS 2.0

### Biorefinery with Multiple Sustainable Products

**SPECIALTY ALCOHOL**, currently produced as USP-grade at our York, Nebraska, facility, and as FCC-grade at our Wood River, Nebraska, facility, is distilled specifically for the production of cleaning products and disinfectants and is higher in purity and quality than traditional fuel grade ethanol.



Green Plains has deployed Fluid Quip Technologies' patented MSC™ technology at our Shenandoah and Wood River biorefineries. It is a bolt-on technology that uses mechanical separation to extract **ULTRA-HIGH PROTEIN** feed product from the traditional distillers grain stream. This investment demonstrates our commitment to becoming a premier provider of sustainable proteins and novel ingredients to help meet the growing global demand in human and animal nutrition.



Green Plains formed Optimal Aquafeed to address the fast-growing **AQUACULTURE FEED** markets and to produce high-quality aquaculture feeds utilizing proprietary techniques and Ultra-High Protein feed ingredients.

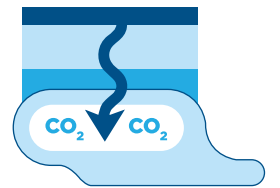


By incorporating high-quality agricultural products along with plant-based proteins, algae, and other single-cell protein ingredients, Optimal Aquafeed will be able to provide our customers with innovative solutions to increase feed conversions and help them reduce land use, water use and the raw materials it takes to produce nutritious protein for consumers, furthering our growing focus on ESG initiatives.

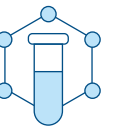
Our biorefineries at Central City, Nebraska, and Shenandoah, Iowa, are approved to sell low carbon-intensity ethanol, under the California **LOW CARBON FUEL** Standard (LCFS). Our renewable corn oil is also used as a feedstock in the production of low carbon-intensity biodiesel and renewable diesel, as well as sustainable aviation fuel.



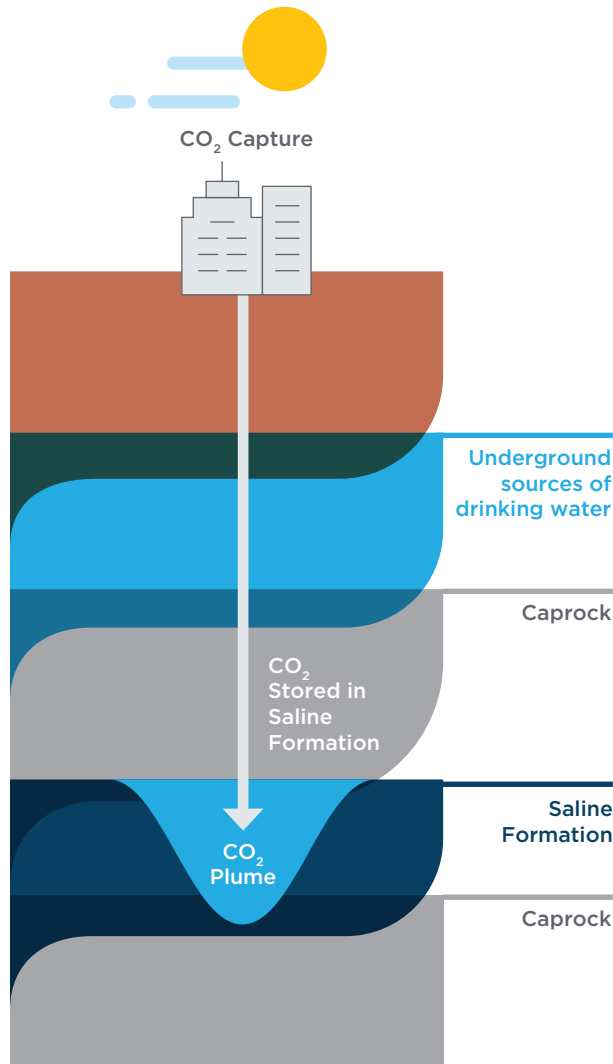
**CARBON DIOXIDE** was previously little more than a necessary result of the fermentation process. It can now be captured, sequestered, and monetized via LCFS compliance credits, 45Q tax credits and voluntary carbon credit marketplaces. 45Q credits are currently \$50/ton for saline sequestration, and the market value for CI reduction varies with the value of LCFS credits and other private market opportunities.



**CLEAN SUGAR** Technology™ (CST) production facility at the Green Plains Innovation Center at York effectively transforms a dry milling facility into a clean sugar biorefinery where dextrose/glucose can replace ethanol as the primary product. The CI of this product is dramatically lower than the CI of those produced at a wet mill.



## CARBON SEQUESTRATION



## Renewable Biofuel and Carbon Sequestration

Corn naturally sequesters carbon dioxide (CO<sub>2</sub>) throughout the growing season and stores it in the soil and the corn kernel. We grind corn kernels into their main components – starch/ alcohol, fibrous protein-rich solids, and CO<sub>2</sub> – via fermentation. Currently this CO<sub>2</sub> is released back into the atmosphere and subsequently captured again during the growing season by corn and other plants. While this life cycle loop makes our biofuel less carbon intensive than gasoline, we knew there was room for further improvement.

Under our Green Plains 2.0 model, we are aiming to keep that carbon dioxide from being released back into the atmosphere via a Carbon Capture and Sequestration (CCS) project in collaboration with Summit Carbon Solutions (SCS), a subsidiary of Summit Agricultural Group. This innovative venture puts our ethanol on a path toward achieving carbon neutrality and helps to address the urgent global need for decarbonization.

All eight of our Nebraska, Iowa, and Minnesota biorefineries are expected to be connected to the SCS project by 2024. The remaining three locations (Madison, Mount Vernon, and Obion) may be suitable for capture and direct onsite injection of CO<sub>2</sub>.

Once completed, SCS's project will be able to transport up to 10 million metric tons of liquified CO<sub>2</sub> annually from midwestern biorefineries and other industrial sources to North Dakota for deposit into geologic storage, dramatically reducing the carbon footprint of the biofuels produced at connected biorefineries. Geologic sites for sequestration include depleted oil and gas fields, deep coal seams, and saline formations.<sup>7</sup> **Importantly, none of this CO<sub>2</sub> will be used for enhanced oil recovery (EOR).**

The amount of Green Plains CO<sub>2</sub> sequestered per year is expected to be approximately 1.9 million metric tons, the same amount that would be sequestered by 2.3 million acres of U.S. forests in a year.<sup>8</sup>

Further, by capturing and sequestering the CO<sub>2</sub> from our biorefineries, we believe we will be able to reduce the carbon intensity score of our ethanol by as much as 50%, making it comparable to or lower than other low-carbon fuels available in the market today and positioning our renewable fuels for low-carbon markets globally.

We plan on monetizing our carbon capture and sequestration initiatives through several channels, including:

- California Air Resources Board (CARB) compliance offset credits
- U.S. Treasury Department and Internal Revenue Service 45Q tax credits for carbon dioxide capture and sequestration. Tax credit amounts vary by project type and are currently \$50 a ton for saline sequestration.
- Voluntary carbon credit marketplaces. The market value of voluntary credits varies with the value of LCFS credits and other private market opportunities.
- Other state, regional and national low-carbon initiatives.

<sup>7</sup> [https://19january2017snapshot.epa.gov/climatechange/carbon-dioxide-capture-and-sequestration-overview\\_.html](https://19january2017snapshot.epa.gov/climatechange/carbon-dioxide-capture-and-sequestration-overview_.html)

<sup>8</sup> <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>



## ESG Highlights

### WHERE WE ARE (2020/2021) PROGRESS SINCE 2018

### WHERE WE ARE GOING (2021 AND BEYOND)

<b>Emissions and Air Quality*</b>	<p><b>22%</b> reduction in total GHG emissions (kg CO<sub>2</sub>) per gallon of ethanol produced</p> <p>As of April 2021, 70% of platform committed to carbon offtake agreement with Summit Carbon Solutions</p>	<ul style="list-style-type: none"> <li>— Science-based target of 50% reduction in operational emissions from 2018 baseline by 2030 and 100% reduction by 2050</li> <li>— Considering methods of calculating Scope 3 emissions</li> <li>— Reduce other air permit deviations 60% by 2025 compared to 2020 baseline</li> </ul>
<b>Energy Use*</b>	<p><b>40%</b> reduction in off-site electricity GHG emissions (kg CO<sub>2</sub>) per gallon of ethanol produced</p> <p><b>12%</b> reduction in on-site natural gas GHG emissions (kg CO<sub>2</sub>) per gallon of ethanol produced</p>	<ul style="list-style-type: none"> <li>— Developing goals to further increase energy efficiency</li> <li>— Clean energy: Contribute to the production of low carbon-intensity renewable diesel via a 50% increase in renewable corn oil yield by 2025 over 2020 baseline</li> <li>— Incorporating additional energy efficiency projects into our Capital Plan, such as Variable Frequency Drives (VFD)</li> </ul>
<b>Water and Effluents*</b>	<p><b>19%</b> reduction in gallons of water used per gallon of ethanol produced</p>	<ul style="list-style-type: none"> <li>— Developing goals to increase total water recycled</li> <li>— Reduce water permit deviations 50% by 2025 compared to 2020 baseline</li> </ul>
<b>Land Stewardship and Environmental Compliance</b>	<p><b>100%</b> US domestic feedstock sourced within trucking distance</p> <p><b>55%</b> of feedstock originated directly from the farmer</p>	<ul style="list-style-type: none"> <li>— Achieve 60% origination from the farmer in 2022, an increase of 5% from 2020</li> <li>— Exploring ways to gain a line of sight from the fields to our facilities<sup>9</sup></li> </ul>

<sup>9</sup> At two of our ethanol plants, we contract with a third-party grain originator to supply the corn necessary for ethanol production. These contracts terminate in November 2023, which, if not renewed, would allow us to further increase direct origination of corn.

\* Emissions and Air Quality, Energy Use, and Water and Effluents metrics are reductions realized (between 2015-2019 for Emissions and Air Quality and Energy use and between 2017-2019 for Water and Effluents) on a per gallon basis at the first three facilities that had Project 24 upgrades completed by June 2020 and assume a full production run-rate. They may not reflect total enterprise environmental data due to reduced run-rates or plant idling (i.e., when a plant is only running at 60% production). See page 24 for more details on Project 24.

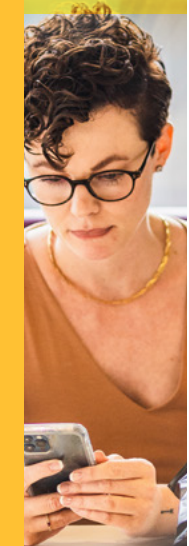
**WHERE WE ARE (2020/2021)  
PROGRESS SINCE 2018**

**WHERE WE ARE GOING  
(2021 AND BEYOND)**

<p><b>Workforce Equality, Diversity and Inclusion</b></p>	<ul style="list-style-type: none"> <li>– Hired <b>new Chief People Officer</b> with extensive experience in diversity and workplace culture</li> </ul>	<ul style="list-style-type: none"> <li>– Increase the number of female employees 25% from 2020 numbers by 2030</li> <li>– Increase the number of employees who add diversity to our workforce by 15% from 2020 numbers by 2030</li> <li>– Enhancing goals and plans on talent management, leadership training, and diversity, equity and inclusion</li> </ul>
<p><b>Employee Health and Safety</b></p>	<ul style="list-style-type: none"> <li>– Safety metric included in executive compensation plan</li> <li>– Occupational Health &amp; Safety Policy adopted in September 2021</li> </ul>	<ul style="list-style-type: none"> <li>– Reduce OSHA TRIR by 35% by 2025 compared to 2020 baseline</li> <li>– Implement cardinal rules of environment, health, safety and security (EHSS)</li> </ul>
<p><b>Customer Health and Safety</b></p>	<ul style="list-style-type: none"> <li>– <b>100%</b> of products are subject to either a Certificate of Analysis process, feed tag with guarantee, and/or other type of Quality Assurance document</li> <li>– Audited by the U.S. Food and Drug Administration (FDA) regarding compliance with the Food Safety Modernization Act (FSMA). None of our facilities received negative findings.</li> </ul>	<ul style="list-style-type: none"> <li>– Implementation of Quality Management System (QMS) and corresponding Quality Procedures at all facilities equipped with Fluid Quip’s MSC™</li> <li>– No findings on FDA Audit for FSMA program.</li> <li>– Quality Deviation Report (QDR) and Corrective Action and Preventative Action (CAPA) program/tools and training for all employees working at facilities equipped with Fluid Quip’s MSC™</li> <li>– Establishment of KPI to track % of shipped products that meets feed tags, Certificate of Analysis (COA) and/or other product specifications</li> </ul>
<p><b>Supplier Relationships</b></p>	<ul style="list-style-type: none"> <li>– <b>100%</b> of non-corn suppliers screened using social criteria</li> <li>– Code of Vendor Conduct adopted in May 2021</li> <li>– Resumed customer appreciation days in 2021</li> <li>– Shipped 68% of biorefinery volume by bulk transport (rail or barge) in 2020, exceeding goal of 50%</li> </ul>	<ul style="list-style-type: none"> <li>– Maintain 50% bulk shipping goal (rail and barge) instead of truck to lower our CI scores and reduce Scope 3 emissions</li> <li>– Find carriers that will use backhauls instead of deadheading (hauling from terminals to our biorefineries) to reduce Scope 3 emissions between 3-20%<sup>10</sup></li> </ul>
<p><b>Communities</b></p>	<ul style="list-style-type: none"> <li>– <b>100%</b> of our operations have implemented environmental impact assessments and ongoing monitoring via EPA’s Risk Management Program and our Process Safety Management policy and procedure</li> <li>– Infused over <b>\$1 billion</b> into local communities near our biorefineries via grain purchases in 2020, including over \$450 million in direct purchases from area farmers.</li> <li>– Donated \$1.6 million in 2020*</li> </ul>	<ul style="list-style-type: none"> <li>– Increase donations and sponsorships by 10-20% from 2021 to 2022</li> <li>– Invest in 10 employee-led new priorities for donations in 2022 (in addition to existing priorities)</li> <li>– Dedicate 2,000 hours of volunteering company-wide in 2022</li> </ul>

10 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.*

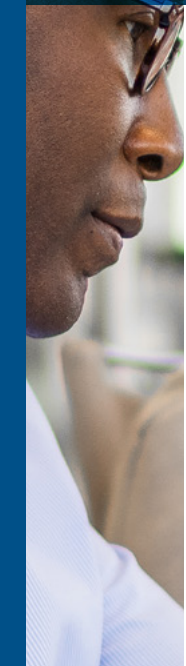
\* Includes \$1.3 million in alcohol donations as noted later in the report.



**WHERE WE ARE (2020/2021)  
PROGRESS SINCE 2018**

**WHERE WE ARE GOING  
(2021 AND BEYOND)**

<p><b>Board Composition And Structure</b></p>	<ul style="list-style-type: none"> <li>– Ongoing Board refreshment and diversity initiative</li> <li>– Appointed first female director</li> <li>– Appointed a Lead Independent Director in September 2021</li> <li>– Adopted new Board Governance Guidelines</li> <li>– Company Bylaw improvements concerning shareholder rights</li> <li>– Adopted a new Diversity &amp; Qualifications Policy</li> </ul>	<ul style="list-style-type: none"> <li>– 2 female board members and one board member who adds diversity by 2022</li> <li>– 33% of Board members gender/ethnically diverse by 2022 annual meeting</li> </ul>
<p><b>Ethics and Compliance</b></p>	<ul style="list-style-type: none"> <li>– Updated and improved Anti-Corruption Policy formalized in May 2021</li> <li>– Human and Labor Rights Policy adopted in May 2021</li> <li>– Initiated a new Vendor Screening program in 2021, screening 7,558 foreign and domestic vendors and suppliers against 63 different watches, sanctions and most-wanted lists, including key human rights list</li> </ul>	<ul style="list-style-type: none"> <li>– By 2022, 100% of Green Plains employees will be trained on Code of Ethics, Anti-Corruption and Human and Labor Rights policies</li> </ul>



# Environmental

We are committed to serving as stewards of the environment, thinking in new ways to make a positive impact on the future.

## Our Key Areas of Impact

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Stewardship and  
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# Environmental

**We are committed to serving as stewards of the environment, thinking in new ways to make a positive impact on the future. Transformation is at the core of our business: Every day, we turn an annually renewable feedstock – corn – into sustainable ingredients. Since distilling our first gallon of renewable biofuel, we have been focused on gaining efficiencies and reducing our carbon footprint. As part of our Green Plains 2.0 transformation, we have formed strategic partnerships and implemented innovative technologies to further reduce our environmental impact.**

The environmental data within this report is limited to the biorefinery production segment of our operations, including our biorefining facilities. The data does not include our fuel terminals, grain elevators, or corporate office, as these facilities have a relatively negligible footprint.

## Emissions and Air Quality

Our products are sourced from annually renewable crops with a low carbon footprint. However, our biorefineries emit CO<sub>2</sub> as a byproduct of fermentation and from the combustion of natural gas. We are taking steps to reduce our GHG emissions through energy efficiency projects, clean energy sourcing and CCS technology.

## GHG Emissions

Since 2018, we've reduced GHG emissions by 22% per gallon of ethanol produced at the six facilities involved in Project 24. In addition, we:

- Have set a carbon neutrality goal of 100% reduction in operational emissions by 2050 and 50% reduction by 2030 from a 2018 baseline.
- Are developing plans to further cut operating emissions intensity.
- Are considering methodologies to estimate, track and reduce our Scope 3 emissions.

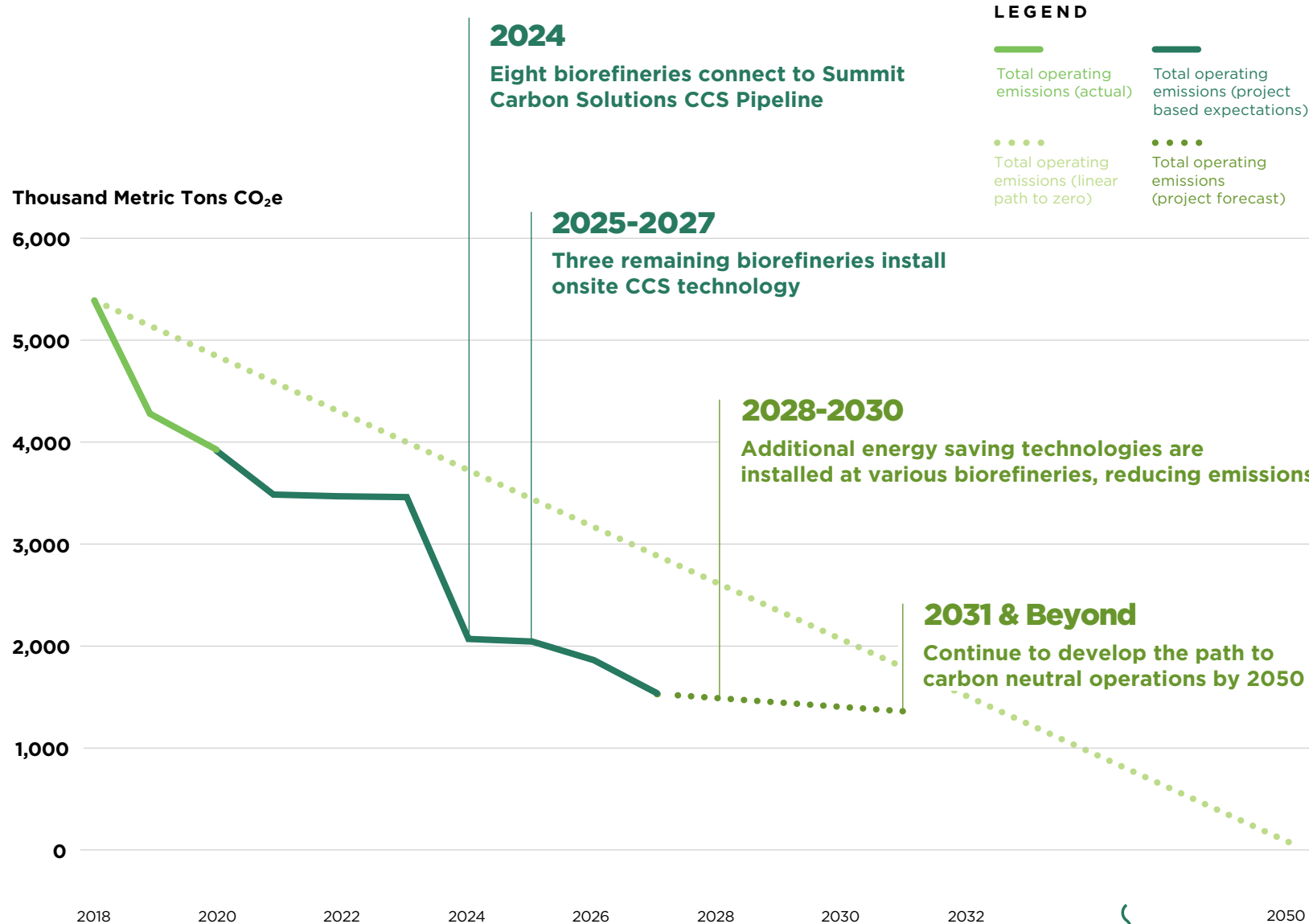
The majority of our operating emissions are released by the ethanol fermentation process. Most of the remaining emissions are from natural gas combustion (Scope 1) for steam generation and drying of distillers grains. There is a very small amount of GHG emissions from gasoline and diesel fuel combustion that occurs on-site related to our mobile equipment, generators, etc.

We have joined forces with SCS to sequester the CO<sub>2</sub> released during our fermentation process. When completed, this project will reduce the carbon intensity of the biofuel, Ultra-High Protein feed ingredients and renewable corn oil we produce. This groundbreaking project, one of the largest of its kind in the world, puts us on a path toward carbon neutrality related to our operational emissions. For more information, see page 22.



# Carbon-Free Future

## Path to Carbon-Neutral Operations by 2050



GREEN PLAINS PERFORMANCE DATA*	UNIT OF MEASUREMENT	2018	2019	2020
Direct GHG Emissions (Scope 1)	Thousand Metric Tons (MT) CO <sub>2</sub> e	1,688	1,316	1,179
CO <sub>2</sub> from Combustion	Thousand MT	1,686	1,315	1,178
Methane (CH <sub>4</sub> )	Thousand MT CO <sub>2</sub> e	0.795	0.620	0.557
Nitrous Oxide (N <sub>2</sub> O)	Thousand MT CO <sub>2</sub> e	0.947	0.739	0.677
Indirect GHG Emissions (Scope 2)	Thousand MT CO <sub>2</sub> e	655	527	348
CO <sub>2</sub>	Thousand MT	652	524	345
CH <sub>4</sub>	Thousand MT CO <sub>2</sub> e	0.267	0.215	0.910
N <sub>2</sub> O	Thousand MT CO <sub>2</sub> e	3,230	2,599	1,567
Biogenic GHG Emissions (CO <sub>2</sub> from Fermentation)	Thousand MT	3,100	2,444	2,225
Total GHG Emissions	Thousand MT CO <sub>2</sub> e	5,443	4,287	3,752
Emissions Intensity	MT of CO <sub>2</sub> e/ Raw Material MT	0.569	0.566	0.538

\* Scope 1 emissions reflect publicly reported data submitted to regulatory agencies as part of the annual air emission inventory reporting. Emission factors are derived through stack testing or through the use of commonly accepted emissions factors. The Scope 2 emissions we are currently reporting is purchased electricity. They are calculated using utility billing statements and the EPA GHG Emissions Calculator.<sup>11</sup> We use a grid/location-based method of converting purchased electricity into GHG emissions.

We have built and acquired biorefineries that are strategically located close to grain supplies, so we face fewer obstacles acquiring the resources we need while also reducing the Scope 3 GHG emissions from trucking corn across long distances. We are currently evaluating Scope 3 calculation methods and will consider reporting and tracking Scope 3 emissions in the future.

<sup>11</sup> <https://www.epa.gov/climateleadership/simplified-ghg-emissions-calculator>

**Non-GHG Emissions**

Biorefineries such as ours produce some level of volatile organic compounds (VOCs), hazardous air pollutants (HAPs) and particulate matter (PM) in the production of our ingredients. To reduce these emissions, we employ thermal oxidizer (TO) and regenerative thermal oxidizer (RTO) emissions systems to remove up to 98% of the VOCs, HAPs and PM caused by the manufacturing process. For example, we upgraded the environmental controls for the dryers at our Madison biorefinery in 2020 to reduce VOCs, HAPs and PM. We expect these upgrades to also lower the biorefinery’s natural gas consumption, reducing our Scope 1 GHG emissions.<sup>12</sup>

<sup>12</sup> As of the publication of this report, we have not been able to confirm the GHG emissions reduction at Madison.

**RISK MITIGATION APPROACH**

**100%**

of biorefineries equipped with:

- Leak Detection and Repair (LDAR) programs
- Mechanical Integrity Program
- Continuously monitored critical emission control systems (scrubbers, oxidizers)



**100%**

of biorefineries subject to:

- Scheduled and unscheduled emission inspections by State and Federal environmental agencies

**100%**

of emission control systems subject to:

- Daily, monthly and annual inspection and testing

**Enterprise-Wide Air Emissions (Excludes GHGs)**

GREEN PLAINS PERFORMANCE DATA	UNIT OF MEASUREMENT	2018	2019	2020
Sulfur Dioxide (SO <sub>2</sub> )	Thousand Metric Tons	0.122	0.099	0.098
Nitrogen Oxides (NO <sub>x</sub> )	Thousand Metric Tons	0.826	0.634	0.551
VOC Emissions	Thousand Metric Tons	0.746	0.583	0.563
Carbon Monoxide Emissions	Thousand Metric Tons	0.489	0.377	0.354
Particulate Matter Emissions	Thousand Metric Tons	0.452	0.397	0.379

Investments in emissions control systems exceed local environmental regulations.

**OPERATIONAL ACHIEVEMENTS**

**99%**

of ethanol and other organic vapors removed by scrubbers on process vent streams

**95%**

reduction of emissions by use of low NOx burner

**98%**

reduction of organic emissions from dried distillers grains dryer exhaust by use of Thermal Oxidizers

**95%**

reduction of PM by use of dust control systems



**AIR QUALITY PERMITS, STANDARDS AND REGULATIONS**

**1,532**

Incidents of Non-Compliance (2020)



# Energy

We continue to focus on ways to reduce energy use and increase efficiency across our platform. Since 2018, we've reduced our off-site electricity GHG emissions by 40% and natural gas emissions by 12% per gallon of ethanol produced at our facilities that have completed their Project 24 upgrades and resumed full production.<sup>13</sup> We are developing goals to further increase energy efficiency.

GREEN PLAINS PERFORMANCE DATA	UNIT OF MEASUREMENT	2018	2019	2020
Electricity Use	Thousand Megawatt Hours	924	735	661
Energy Intensity	Kilowatt Hours (KWh) / Raw Material MT	96.585	97.038	94.846
Natural Gas	Metric Million British Thermal Unit (MMBtu)	30,874,334	24,778,741	22,158,963
Natural Gas Intensity	MMBtu / Raw Material MT	3.226	3.271	3.179



## PROJECT 24

Three of our 11 biorefineries were built by Fagen Inc. with technology that ensures peak energy efficiency during round-the-clock operations. Of the current one billion gallons of ethanol capacity we own and operate, over half of those gallons are not produced with this technology. To reduce operating expense at all of our biorefineries and to improve energy efficiency, we accelerated our operating expenditures (OPEX) equalization plan in 2019, later renamed Project 24. This effort also decreased our carbon footprint and environmental impact through a reduction in natural gas, electricity and water usage.

Using a phased approach, we are implementing these upgrades across our biorefinery platform. Eight of our facilities qualified for Project 24 upgrades, and we have since completed upgrades at six of them.

Project 24 upgrades have reduced off-site electricity GHG emissions (kg CO<sub>2</sub>) by 40%, on-site natural gas GHG emissions by 12%, total GHG emissions (kg CO<sub>2</sub>) by 22% and water usage per gallon of ethanol produced by 19%.<sup>14</sup>

<sup>13</sup> Reduction estimates are based on a sample of results analyzed in June 2020 from the first three completed upgrades and compared to data from 2015-2019.

<sup>14</sup> Reduction estimates are based on a sample of results analyzed in June 2020 from the first three completed upgrades and compared to data from 2015-2019 for Emissions and Air Quality and Energy Use and from 2017-2019 for Water and Effluents.





# ENERGY EFFICIENCY

is embedded in everything we do. From our capital projects to our strategic partnerships and transportation and distribution decision making.

## Syngenta Partnership

In addition to our Project 24 initiative, we have made other changes in operations in order to reduce energy usage. In December 2017, we began using Enogen® corn from Syngenta across most of our production platform. Using Enogen® corn as a portion of the feedstock enables alpha amylase to be delivered to the production process directly in the grain, eliminating the need to add a liquid form of the enzyme. This significantly reduces the viscosity of the corn mash while increasing throughput and yield, thereby reducing energy usage. For example, a 100 million gallons per year (MMgy) ethanol plant using Enogen® corn can save 450,000 gallons of water, 1.3 million kWh of electricity and 244 billion British thermal units

(BTUs) of natural gas annually according to a 2008 study.<sup>15</sup> That amount of power is enough to heat several thousand homes while simultaneously reducing GHG emissions by 102 million pounds.

Syngenta partnership resulted in:

- Lower input costs
- Reduced energy usage
- Higher yields from corn grown on fewer acres using less water, fertilizer and other chemicals
- Eliminated need to use enzymes as a separate input, reducing shipping-related GHG emissions

## Product Transportation & Infrastructure

According to the Association of American Railroads, moving freight by rail instead of trucks lowers GHG emissions up to 75%.<sup>16</sup> Today we move 68% of our biorefinery output via rail or barge, and our goal is to maintain at least 50% in bulk transport in 2022 in order to keep our CI scores low.

Additionally, we have an established network of biofuel storage facilities at or near our 11 biorefineries, allowing fuel and other value-added products to efficiently be loaded into railcars and tanker trucks. Each location features fuel storage tanks and access to major rail lines for transportation.

Through our controlling stake in Green Plains Partners, a master limited partnership, we manage a wide array of transportation assets, including a leased railcar fleet with an aggregate capacity of 85 million gallons dedicated to transporting end products. Further, Green Plains Partners' wholly owned subsidiary BlendStar LLC, through its network of eight rail accessible fuel terminals with a combined storage capacity of approximately seven million gallons, puts us in a position to reach southern markets that previously did not have efficient access to renewable fuel, reducing the need to truck ethanol long distances.

<sup>15</sup> Jessen, Holly. (February 14, 2011). "Syngenta corn increases ethanol yield, reduces natural gas use." Ethanol Producer Magazine, <http://ethanolproducer.com/articles/7481/syngenta-corn-increases-ethanol-yield-reduces-natural-gas-use>.

<sup>16</sup> <https://www.aar.org/wp-content/uploads/2020/06/AAR-Sustainability-Fact-Sheet.pdf>

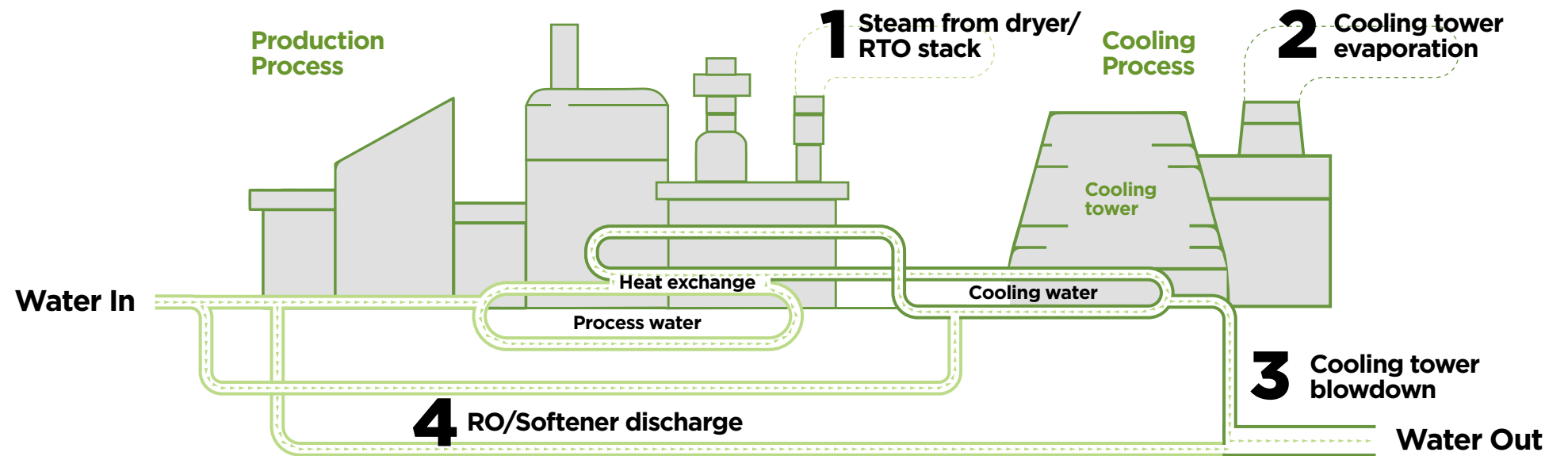
## Water and Effluents

Green Plains uses water in connection with our processing of ingredients. We source water primarily through pumping of groundwater and, to a lesser extent, receipt from third-party providers. We understand that efficient water use in production minimizes local water disruption and pollution.

Each of our biorefineries requires a significant supply of water, but much of the water used is recycled back into our biorefinery processes. Since 2018 we have reduced our water usage by 19% per gallon of ethanol produced at our Project 24 facilities that resumed full production after completion of upgrades.<sup>17</sup> We are developing goals to further reduce water consumption and increase total water recycled.

There are two streams of water used in our processes – cooling water and process water – and neither come in contact with each other. As a result, the majority of our cooling water and nearly all of our process water can be recirculated. Water is lost through water treatment discharge (RO reject & softener regeneration), 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

GREEN PLAINS PERFORMANCE DATA	UNIT OF MEASUREMENT	2018	2019	2020
Groundwater Withdrawal	Thousand Cubic Meters	9,366	9,328	8,861
Municipal Water Withdrawal	Thousand Cubic Meters	1,897	1,458	1,239
Reclaimed Water Withdrawal	Thousand Cubic Meters	290	317	313
Saltwater Withdrawal	Thousand Cubic Meters	0	0	0
Surface Water Withdrawal	Thousand Cubic Meters	0	0	0
<b>Total Water Withdrawal</b>	Thousand Cubic Meters	11,553	11,103	10,413
<b>Total Water Discharged</b>	Thousand Cubic Meters	5,102	4,151	3,966
<b>Total Water Use</b>	Thousand Cubic Meters	6,451	6,952	6,447
<b>Total Water Intensity</b>	Cubic Meters Water / Raw Material MT	0.674	0.918	0.925



<sup>17</sup> Reduction estimates are based on a sample of results analyzed in June 2020 from the first three completed upgrades and compared to data from 2017-2019.

blowdowns (i.e., the continuously recirculating cooling water eventually builds up dissolved solids to the point where it needs to be replenished with fresh water). Process water vapor coming out of our dryer stacks can be condensed into liquid and recycled, saving both water and heat. We are considering technologies from Fluid Quip Technologies and other companies to further improve our water recycling.

Water utilization at our facilities follows all local and federal appropriation, pollution and permitting requirements, and all but one of our facilities are zero liquid process water discharge facilities. There are no known significant water related impacts identified from local authorities or other stakeholders. All of our facilities are regulated for effluent standards via various state and federal regulatory agencies. Each state or federal authority is able to apply specific standards to meet the needs of local area water bodies receiving effluents. Green Plains works with these authorities to ensure proper standards are applied. Our water release is managed through Stormwater Monitoring Planning & National Pollutant Discharge Elimination System (NPDES) Permitting, Monitoring and Reporting.



Did you know?  
**Our Fairmont, Minnesota, facility discharges absolutely no liquid water, and our Shenandoah, Iowa, facility utilizes recycled city water in its cooling tower.**

**Water Management in Manufacturing**

**BEST AVAILABLE CONTROL SYSTEMS**

**100%**

of biorefineries equipped with:

- Storm water containment ponds
- Boom systems



**100%**

of biorefineries subject to:

- Scheduled and unscheduled water inspections by State and Federal agencies

**100%**

- of hazardous chemicals stored inside containment structures

**RISK MITIGATION APPROACH**

**10 of 11**

biorefineries discharge zero liquid process water

- Process water discharge at one remaining biorefinery to be eliminated during Project 24 implementation



**Recycled water goal**

- Process water, internal recycling/zero liquid discharge by design
- Heat/cooling efficiencies by design
- Process efficiency measures (energy use)
- Recycled water for evaporative cooling
- Evaporative re-use
- Scrubbing efficiency
- Utility efficiency (offset by environmental)

**WATER QUALITY PERMITS, STANDARDS AND REGULATIONS**

**41**

Incidents of Non-Compliance (2020)





## Land Stewardship and Environmental Compliance

We are committed to land stewardship, the protection of natural resources and compliance with all related laws and regulations, including around waste prevention and management.

By using locally sourced corn, much of which is sustainably farmed, we are eliminating the need to deforest land for agricultural purposes and reducing the environmental impact from long-haul transportation. In fact, through corn yield enhancements and conservation practices, the amount of corn we processed in 2020 can be grown on 225,000 fewer acres than in 2007. Further, we only purchase U.S. corn from non-deforested sources in compliance with RFS regulations related to renewable biomass. Each of our biorefineries utilizes approximately 17 to 42 million bushels of corn annually. To obtain a steady supply, we rely on our strong relationships with area farmers and endeavor to purchase directly

from the producer whenever possible. In an effort to boost operational excellence and improve relationships with corn suppliers, we developed our customer relationship management (CRM) system. Through direct relationships with local farmers, grain elevators and cooperatives, we are able to source 100% of feedstock locally (U.S.-based and within trucking distance of one of our biorefineries) and 55% directly from farmers. We are aiming to achieve 60% corn origination directly from the farmer in 2022, an increase of 5% from 2020. Our commitment to buying local keeps farms in business while ensuring we are not contributing to deforestation around the globe.

Farmers in our supply chain use sustainable farming techniques like precision agriculture and split application of nutrients in order to increase yields while lowering the levels of traditional inputs needed (land, water, fertilizer, herbicides

and insecticides)<sup>18</sup> Many are also using cover crops and conservation tillage practices for feedstock management to reduce the risk of land degradation, along with enrolling marginal ground in conservation programs.

We are currently assessing our broader biodiversity and other nature-related impacts with our suppliers. In addition, we are evaluating a possible project involving the use of dormant land at our Iowa biorefineries to create native species habitats.

Throughout our operations, we seek to comply with all applicable environmental laws and regulations, including with regard to the management of hazardous chemicals.<sup>19</sup>

ENVIRONMENTAL COMPLIANCE	UNIT OF MEASUREMENT	2018	2019	2020
<b>Number of Sites</b>	Count	17	14	14
<b>Number of Reportable Spills<sup>20</sup></b>	Count	0	1	1
<b>Weight of Reportable Spills</b>	Thousand Metric Tons	0	0.023	0.01
<b>Number of Environmental Fines</b>	Count	2	1	1
<b>Amount of Environmental Fines</b>	USD	\$11,570	\$2,720	\$25,000

<sup>18</sup> See <https://sustainableamerica.org/blog/what-is-precision-agriculture/> and <https://nutrientstewardship.org/implementation/split-fertilizer-application-helps-optimize-nutrient-management/>.

<sup>19</sup> GPRE complies with environmental laws and regulations from the following U.S. based agencies: NDEE, DHHS, IDNR, MPCA, MNDNR, MDH, EIPA, IDEM and TDEC.

<sup>20</sup> As defined by the U.S. EPA, a reportable spill is an uncontrolled release of material to the ground in excess of the reportable quantity. Ethanol facilities are classified as Very Small Quantity Generators (VSQGs) per U.S. EPA HazWaste Requirements (40 CFR Part 262.14), disposing of hazardous materials or waste according to authorized HazWaste haulers (Categories of Hazardous Waste Generators | US EPA).

# Social

Relationships are valuable, whether they be among associates, customers and suppliers or between these groups and our products and processes.

## Our Key Areas of Impact

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Employees

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Communities

# Social

**Relationships are valuable, whether they be among associates, customers and suppliers or between these groups and our products and processes. The success of our company depends on the vital relationships we nourish with our stakeholders, including our agricultural and industry partners.**

For example, we encourage fresh perspectives and innovative thinking in our employees, encouraging them to implement new sustainable best practices and ideas. At the same time, we pay the utmost attention to their safety, health and well-being. We are committed to furthering workforce equality, diversity and inclusion. And we give back to the communities where we live and work.

## Employees

From our seasoned leadership team to each employee at every level of the company, we have highly trained people whose expertise in their specific area allows us to find better ways to do business. It is undoubtedly our people, who put in their best efforts each and every day, that make Green Plains an exceptional place to work. We work diligently to provide a safe and secure working environment and continue to seek ways to support our employees. We encourage clear and responsive communication throughout the company, and welcome healthy debate.

### DOING OUR PART TO FIGHT COVID-19

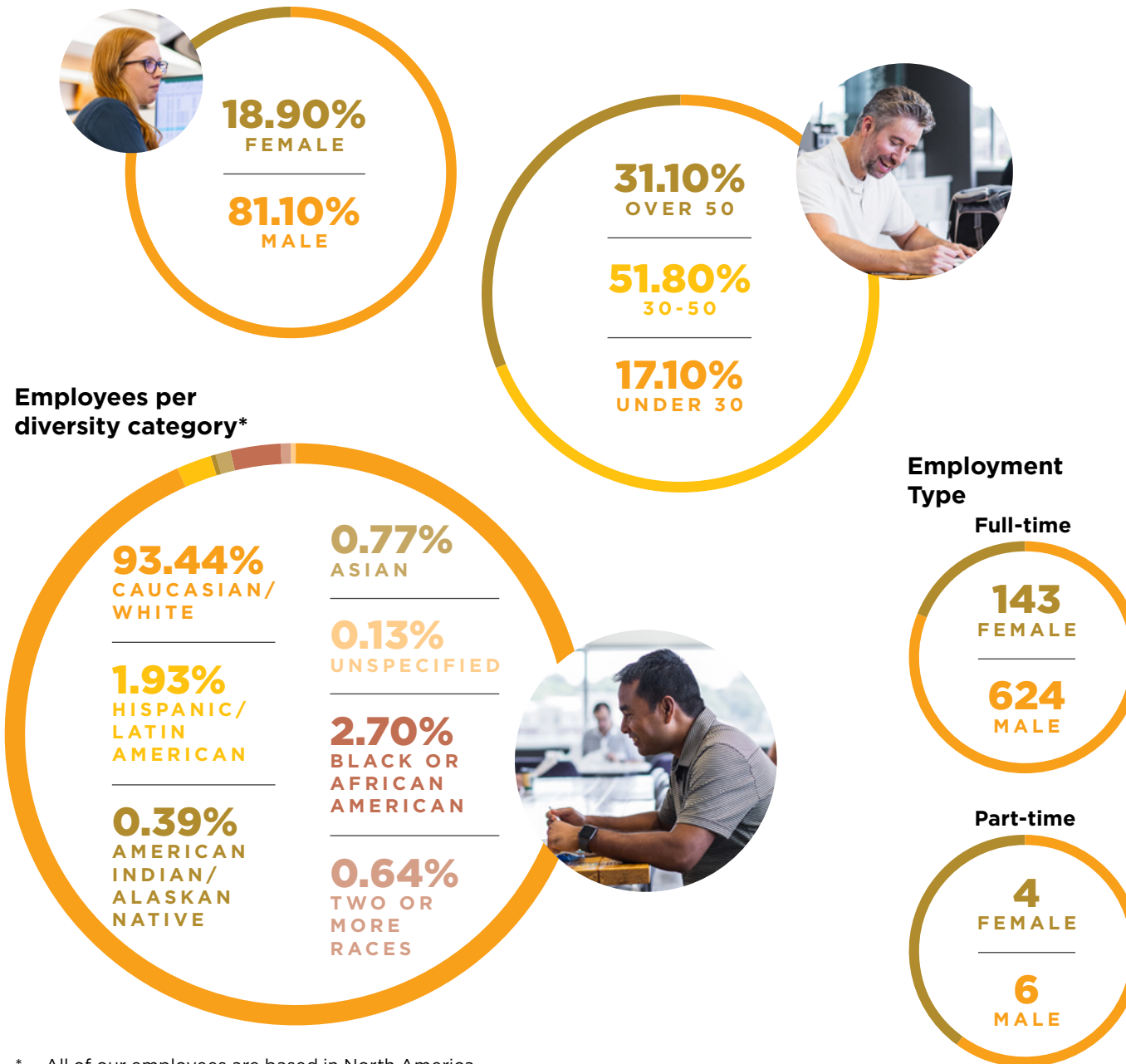
As we found ourselves confronting the global COVID-19 pandemic in early 2020, we took swift action, utilizing our expertise to fill gaps in the supply of high-purity alcohol for hand sanitizers. With limited supply of hand sanitizer during the early stages of the pandemic, our donations of this alcohol to produce sanitizers in Nebraska and Iowa helped to mitigate the spread of the disease at a crucial juncture, helping businesses and hospitals remain open.

Across our facilities we expanded deep cleaning, implemented social distancing, put up dividers, altered shift work to increase distancing and purchased hundreds of thousands of dollars worth of masks and other personal protective equipment (PPE) for our employees in order to slow the spread of the virus. Corporate headquarters employees began working from home, and we established a food delivery system for all of our employees and their families. We are proud to share that we had no layoffs, pay cuts or furloughs during these unprecedented times.

## Workforce Diversity, Equity and Inclusion

Green Plains values the importance of a diverse workforce focused on our CHART values of safety, collaboration, sound judgment and innovation. In 2021, we enhanced our recruiting strategies to emphasize diverse hiring of workers. Our goals are to increase female employees by 25% and employees who add diversity to our workforce by 15% from 2020 levels company-wide by 2030. Our Chief People Officer, Negil McPherson Jr., has extensive experience in diversity and workplace culture and is already leading these efforts.

All employees have access to the same training opportunities within their respective departments and roles. In addition, we are rolling out a talent management program that will include tracking diversity metrics in recruitment. We also will implement a paid internship program in 2022 to help improve generational diversity.



\* All of our employees are based in North America.

## Employees per diversity category\*

	2020
Male	630 (81.10%)
Female	147 (18.90%)
Under 30	133 (17.10%)
30-50	403 (51.80%)
Over 50	241 (31.10%)
Caucasian/White	726 (93.44%)
Hispanic/Latin American	15 (1.93%)
American Indian/Alaskan Native	3 (0.39%)
Asian	6 (0.77%)
Black or African American	21 (2.70%)
Two or More Races	5 (0.64%)
Unspecified	1 (0.13%)
<b>Total Employees</b>	<b>777 (100%)</b>

\* All of our employees are based in North America.

## Employment Type

	Male	Female
<b>Full-Time</b>	624	143
<b>Part-Time</b>	6	4
<b>Total Employees</b>	<b>630</b>	<b>147</b>

## Employee Health & Safety

Operational safety is one of our core values, and we work tirelessly to promote the health and safety of our employees. We evaluate and continually improve our Health and Safety program via our Program Review and Enterprise Implementation program, which includes policies, controls, elimination of hazards and safety training. The program conducts regular safety training, inspections, incident reporting, incident investigation, and internal and external audits. Health and Safety committees exist at all covered facilities and meet monthly. All employees are invited to participate in the meetings, which include multifunctional panel decision-making.

All employees at our 11 biorefineries are covered under our Process Safety Management (PSM) policy and procedures covering regulated, highly hazardous chemicals and non-regulated chemicals, as well as other safety protocols.

All of the previously described Occupational Safety and Health Administration (OSHA) and PSM program policies and procedures, as well as our Contractor Management System and Emergency Response

Planning & Training, are intended to prevent or mitigate significant negative occupational health and safety impacts linked to our operations.



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

- Occupational Safety and Health Administration (OSHA)
- Process Safety Management (PSM)
- American National Standards Institute (ANSI)
- National Fire Protection Association (NFPA)
- Steel Tank Institute (STI)

## Cardinal Rules of Environmental, Health, Safety and Security

We enhanced the safety culture this past year by implementing many new processes, including our Cardinal Rules of EHSS. Protecting the health and safety of our employees and care of the environment is a core value of Green Plains Inc. and its related subsidiaries. We believe that all incidents, injuries and environmental harm are preventable. All employees have a personal responsibility to identify, communicate and address workplace hazards that can lead to employee or environmental harm.

All employees, contractors and visitors of Green Plains and its related subsidiaries are expected to understand and adhere to the Cardinal Rules of Environmental, Health, Safety and Security and have a Stop Work Authority if a Cardinal Rule is being ignored or an unsafe condition or hazard is present in the workplace.

- |           |  |                                      |  |
|-----------|--|--------------------------------------|--|
| <b>1</b>  |  | <b>Stop Work Authority</b>           | Do not work or knowingly allow anyone to work in an unsafe manner or cause harm to the environment.  |
| <b>2</b>  |  | <b>Reporting</b>                     | Immediately report all injuries, property damage, near misses, unsafe conditions and unauthorized or uncontrolled releases to the environment.             |
| <b>3</b>  |  | <b>Confined Space</b>                | Never enter a designated confined space without proper training, permits, equipment and authorization.   |
| <b>4</b>  |  | <b>Personal Protective Equipment</b> | Always wear approved risk protection equipment such as fall arrest, respiratory, electrical or chemical safety equipment as required.                      |
| <b>5</b>  |  | <b>Equipment Operation</b>           | Never use any equipment in a manner that could cause injury or without the proper authorization and training.  |
| <b>6</b>  |  | <b>Lockout/Tagout/Tryout</b>         | Follow all lockout, tagout and tryout policies at all times.   |
| <b>7</b>  |  | <b>Equipment Alteration</b>          | Never remove, alter or circumvent any machine guarding, safety device or pollution control equipment without proper written authorization.                 |
| <b>8</b>  |  | <b>Personal Responsibility</b>       | Do not participate in activities or take actions that may endanger your health and safety or that of another person, or be detrimental to the environment. |
| <b>9</b>  |  | <b>Hot Work</b>                      | Follow all hot work policies and procedures at all times.  |
| <b>10</b> |  | <b>Environmental Compliance</b>      | Strictly adhere to and follow the requirements of all environmental permits and regulations.   |



## Hazards & Incident Reporting

We use the following tactics to identify and prevent work-related hazards and assess risks on both a routine and non-routine basis:

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

Green Plains employees are able to report work-related hazards and hazardous situations through our Incident Reporting System, Employee Concerns Reporting, and GP Alert Line System. Employees may also participate in Safety and PSM committees and meetings. We utilize an Incident Investigation Policy & Procedure and Incident Investigation Teams to investigate work-related incidents and determine corrective actions and needed improvements.

Our Globally Harmonized System (GHS) of Classification and Labeling of Chemicals Hazard Communication Program has been recognized by multiple government agencies as a leader across biofuel, petroleum and chemical industries. Each applicable facility with hazardous chemicals has implemented a Hazard Communication Policy, which includes program management responsibilities, maintenance of chemical listing and applicable documentation such as safety data sheets (SDS), container labeling and pictogram requirements, and employee training. This policy is updated and reviewed annually.

## Incident Tracking

We further emphasize safety by linking executive compensation to our safety goals. The plant safety goal in our annual incentive bonus plan is comprised of 11 different leading and lagging safety and environmental metrics: OSHA and Lost Time Injury (LTI) rate, safety training, completion of safety drills, environmental plan review and training, environmental incident, third-party audit closeouts, and process safety management compliance.

## Safety Training

Green Plains utilizes a Safety Training Program Matrix, meeting all OSHA covered and applicable topics. The program includes monthly online training, quarterly classroom training, and on-the-job training for all production employees. We require 25 hours per year of safety training for our production employees at our 11 biorefineries.



## Occupational Health & Safety Management System

### OCCUPATIONAL HEALTH & SAFETY POLICY

**PROGRAM REVIEW AND ENTERPRISE IMPLEMENTATION**  
• Cardinal Rules

**HEALTH AND SAFETY COMMITTEES**

**PROCESS SAFETY MANAGEMENT (PSM) PROGRAM POLICY**

**OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) POLICIES**  
• Industrial Hygiene Testing  
• Audiometric Surveys  
• Hearing Conservation  
• Respiratory Fit Testing

**RISK MANAGEMENT STANDARDS**  
• American National Standards Institute (ANSI)  
• National Fire Protection Association (NFPA)  
• American Petroleum Institute (API)  
• Steel Tank Institute (STI)

**INCIDENT REPORTING SYSTEM**  
• Incident Investigation Policy and Procedure  
• Incident Investigation Teams  
• Corrective Actions

**HAZARD ASSESSMENT AND IDENTIFICATION**  
• Process Hazard Analysis  
• Inspections  
• Audits

**HAZARD COMMUNICATION PROGRAM**  
• Globally Harmonized System (GHS) of Classification and Labeling of Chemicals

**SAFETY TRAINING**  
• Program Matrix  
• Emergency Response Planning and Training

**CONTROLS**  
• Hierarchy of Controls  
• Contractor Management System (FirstVerify)

### GREEN PLAINS PERFORMANCE DATA

### UNIT OF MEASURE

### 2020

<b>Employee fatalities as a result of work-related injury</b>	Total Number (Rate)	1 (0.12*)
<b>Employee Days Away From Work (DAFW) injuries</b>	Total Number (Rate)	10 (1.17*)
<b>Employee total recordable work-related injuries and rate (TRIR)</b>	Total Number (Rate)	30 (3.51*)

\* per 200,000 hours worked.

### RATIO OF AVERAGE ENTRY-LEVEL WAGE TO THE FEDERAL MINIMUM WAGE (2020)

**3.197x**

### EMPLOYEE HOURS WORKS (2020)

**1,710,636**

### EMPLOYEE BENEFITS

#### 401(k)

Green Plains offers a defined contribution 401(k) plan that matches up to 6% of eligible employee contributions and offers immediate 100% vesting.

#### HEALTH BENEFITS

All full-time employees have the opportunity to enroll in our medical insurance coverage. We also offer dental coverage, vision coverage, Health Flexible Spending Accounts and Dependent Care Flexible Spending Accounts, and short-term and long-term disability benefits.

#### EMPLOYEE WELLNESS PLAN

Our Employee Wellness Plan includes online health surveys for lifestyle changes and annual biometric health screenings. Corporate employees have access to an on-site wellness facility and are offered free weekly fitness classes.

#### EMPLOYEE ASSISTANCE PLAN

Our Employee Assistance Plan is available to all full-time employees and their dependents and allows for counseling in many facets of life. Legal counsel is also provided if needed.

#### WORKERS COMPENSATION RETURN TO WORK POLICY/PROCEDURE

We are committed to providing opportunities for employees injured on the job to return to their regular job as soon as medically possible. In the event the injured employee is not capable of returning to their normal job right away, the program will provide opportunities for the employee to perform temporary modified work duties. We may elect to use a third-party vendor, ReEmployAbility, to further expand the modified duty job assignments available to our employees. Re-EmployAbility partners with local non-profit organizations to connect employers who need light duty work for their injured employees with organizations that need the extra help.

## Employees

### Compensation & Benefits

It takes dedicated and knowledgeable employees to navigate the volatility inherent in our society today, and we offer competitive pay to ensure that everyone is properly compensated for their hard work and commitment. We are in the process of enhancing our compensation structure and will continue to analyze credible salary data guides and resources to be competitive in total compensation packages and top tier benefits for all employees. We adjust compensation according to the state/municipalities in which we operate. All of our hourly employees are paid well above the federal minimum wage, and we have alerts set up in our system to monitor local minimum wages to ensure we are in compliance and paying above the higher applicable wage rate.

### Training and Career Development

We have a number of training and career development initiatives in the works, including:

- A **Learning Management System (LMS)** for training in safety, ethics, legal policies and procedures, information technology (IT) and cybersecurity, and other topics
- **Leadership training** for two groups: vice president (VP) positions and above and director positions and below. VP and above leaders will have a two-day off-site retreat covering topics like developing the leader within, emotional intelligence, effective communication and communication

styles, conflict management and change management. Leaders in these training programs will learn through small group discussions, large group discussions, team presentations and brainstorming. The strategy and scope of training for director positions and below is being developed.

- Every employee receives an **annual performance review** and has the opportunity to provide their supervisor with feedback then as well as throughout the year. Beginning in 2022, we will be boosting our annual performance review process by incorporating a Performance Management System (PMS) as a tool to enhance the dialogue between employees and their supervisors.



## Customers

Because of our value chain model, operational excellence, focus on risk management and relationship building with industry partners, we are well-suited to meet the needs of our customers regardless of their size, order volume or location. We are fortunate to work with a diverse market of customers, from individual farmers to international corporations. We also serve integrated energy companies, jobbers, retailers, traders and resellers. Whether we're selling a barge of distillers grains, a tanker of corn oil or a unit trainload of renewable biofuel, our commitment is the same: deliver the best product at the highest value as safely and efficiently as possible.

Delivery to almost anywhere in the country is fast, efficient and convenient because many of our facilities are in the Midwest. We deliver to local markets by truck and use major U.S. rail carriers to ship to other parts of the country. The BlendStar LLC facilities also allow us to deliver to blenders in previously underserved regions, further expanding our customer base.

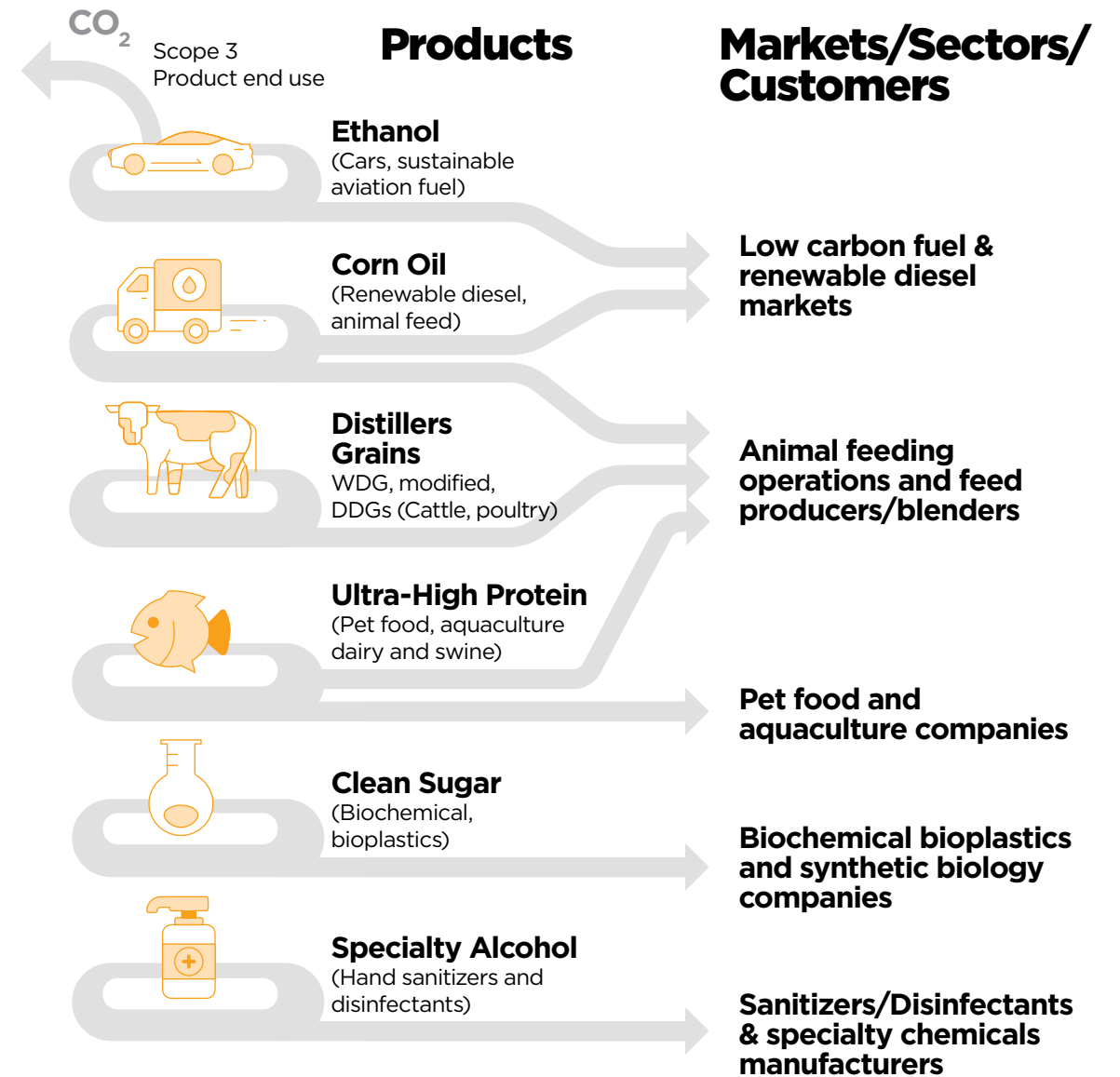
International markets we serve include Brazil, Canada, China, India, Indonesia, Japan, Mexico, Peru, South Korea, Thailand, Turkey, Vietnam, as well as the European Union and others.

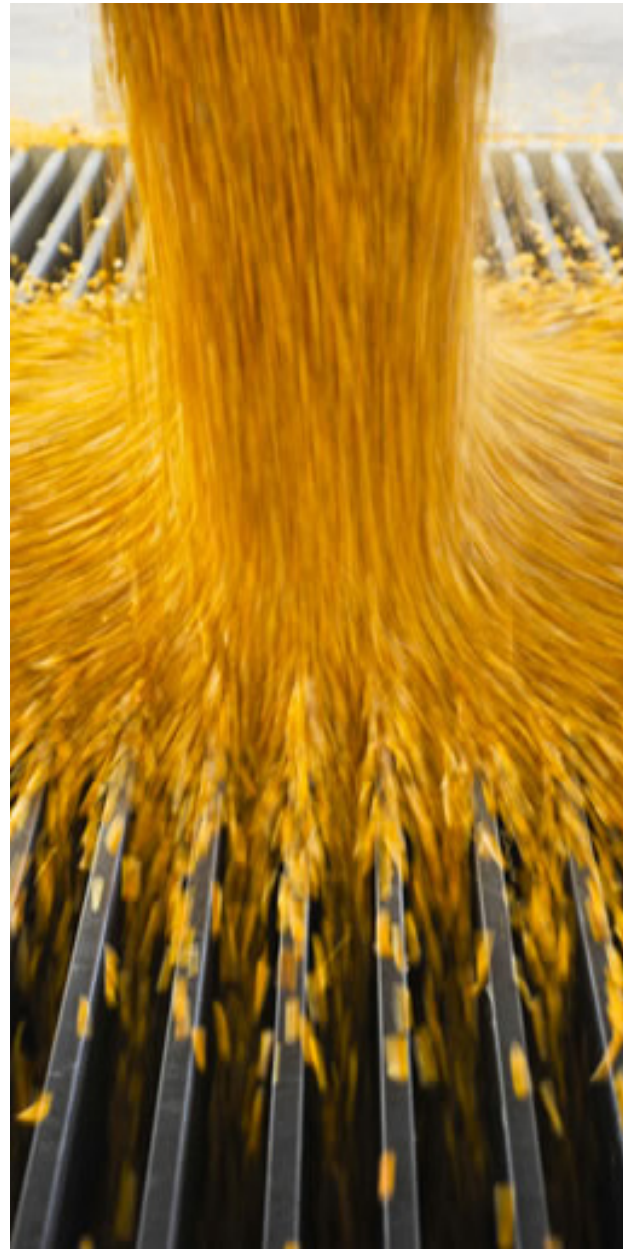
We are dedicated to the health and safety of our customers. All of our products are subject to either a Certificate of Analysis process,

feed tag with guarantee, or another type of Quality Assurance document. Our facilities have performed well during audits by the FDA regarding compliance with the Food Safety Modernization Act (FSMA) regulation. All of our products have Safety Data Sheets (SDS) that include information on sourcing of components, substances that might produce an environmental impact, safe use and disposal. In addition, our customer safety goals include:

1. Implementation of Quality management system (QMS) and corresponding Quality Procedures at all MSC™ operational facilities.
2. No findings on Internal Audit and FDA Audit of FSMA program.
3. Implementation of QDR and CAPA program/tools and training to all employee at MSC™ operational facilities.
4. Establishment of KPIs to track percentage of shipped products that meets feed tags, Certificate of Analysis (COA) and/or other product specifications.

**Green Plains Trade Group, our marketing and distribution segment, sells and distributes our ingredients that matter from our 11 biorefineries, bringing 1 billion gallons of renewable biofuel, 2.5 million tons of distillers' grains and 276 million pounds of renewable corn oil to the market each year.**





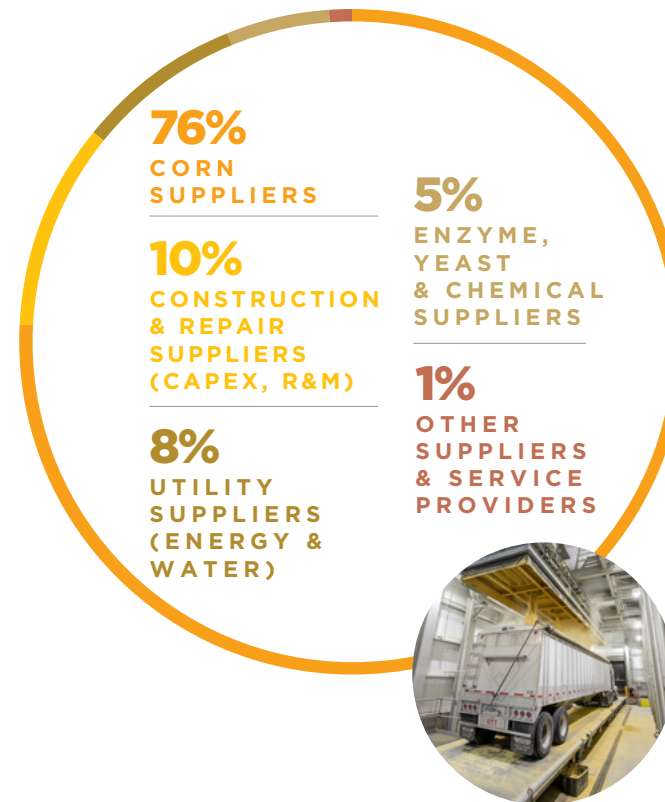
## Suppliers

We consider it a privilege to work with a dedicated group of vendors and suppliers whom we depend on to keep our operations running smoothly. Whether on the production side with our corn, utilities, enzymes, yeast and chemicals, or for supplies and parts for our facilities, our vendors and suppliers continue to deliver what we need on time at the right price and help us distribute our products to our customers throughout the country and beyond. As we continue to expand, we appreciate the exceptional service we consistently receive from our preferred suppliers and vendors. All of our suppliers are based in North America and we do not outsource any significant part of our activities.

In 2021, we introduced a Code of Vendor Conduct to monitor our suppliers' compliance with our sustainability goals. Over 7,500 vendors were assessed and screened across 63 different watchlists including criminal, sanctions, corruption and human rights.

## Our Suppliers and Service Providers

We rely on our strong relationships with suppliers, vendors and local municipalities for the following:



### CORN

Each of our biorefineries requires approximately 17 to 42 million bushels of corn annually depending on production capacity. We spend 80% of our procurement budget on local corn suppliers, many of whom are family farms.



### NATURAL GAS

Our biorefineries use approximately 26,000 to 30,000 BTUs 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.



### WATER

Our biorefineries use well water for operations and use a filtration system for potable water. Drinkable water is also obtained from the city. Local municipalities supply the necessary water to biorefineries without on-site wells.



### ELECTRICITY

Local utilities supply 0.5 to 1.6 kilowatt hours of electricity per gallon of production to all of our biorefineries.



### OTHER SUPPLIES

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

## Communities

Since our founding in 2004, Green Plains has been committed to the people and communities we serve. We understand that each community where we operate is directly impacted by our actions and believe it is our responsibility to be an excellent corporate citizen.

### Operations-Related Engagement

As a major processor of corn, our grain purchases from local farmers infuse capital into the economy and have a positive indirect impact on rural communities throughout the U.S. Midwest.

In 2020, we've significantly helped rural communities and the nation's economy in the following ways:

- We directly infused over \$450 million into local communities near our biorefineries via grain purchases from area farmers.
- Our industry indirectly supported more than 242,600 jobs in the country.<sup>21</sup>
- Our industry added more than \$34.7 billion to the U.S. Gross Domestic Product (GDP) through annual operations, transportation and new project construction.<sup>22</sup>
- Ethanol production provided an additional \$18.6 billion for U.S. households.<sup>23</sup>
- We celebrate record years with individual local growers and host annual events to thank the growers who provide us with the feedstock for our processes.

### Philanthropic Activities

Our philanthropic efforts reach beyond the agricultural sector. In 2020, we donated \$1.6 million, of which \$1.3 million was our specialty alcohol donation to create hand sanitizer and combat COVID-19. We also form partnerships that help educate our youth interested in agriculture, make charitable donations, and encourage our employees to participate in sponsorships and volunteer events.

#### EDUCATING OUR YOUTH

As an ag-tech company, we find value in partnering with programs that are fostering passion for agriculture in young people. Two such partnerships are the local FFA and 4-H Clubs. FFA is a non-profit career and technical student organization promoting agricultural education for middle and high school students. 4-H is America's largest youth development organization providing kids with mentorship and learning opportunities to develop the skills they need to create positive change in the world.

Additionally, at one of our biorefineries, we are partnering with the area school district to give educators access to plant tours and information surrounding career opportunities for students of all education levels.



WE HAVE  
A LONG HISTORY  
of good corporate  
citizenship and  
it remains an  
important part of our  
transformation into  
Green Plains 2.0

## OUTREACH BEYOND AGRICULTURE

In addition to the biofuel we produce and the work we do to lower our own GHG emissions and other air pollutants, we also help promote air quality by giving to the American Lung Association, a leading non-profit advocating for healthy lungs and air. In Omaha, we are the presenting sponsor of the American Lung Association Corporate Cup. The annual event raises over \$300,000 for education, lung disease research, support programs and services.

From day one of the COVID-19 pandemic, we stepped up our response. We donated hundreds of thousands of gallons of high-purity alcohol for conversion to hand sanitizer – to the State of Iowa, the State of Nebraska, including the University of Nebraska at Lincoln – which was then distributed to schools, hospitals and state office buildings. We chose to donate all they could take, even though we could have sold it at a premium, because it was the right thing to do. That is who we are at Green Plains. We did this to help keep essential workers and children safe during the first months of the pandemic.

We also donate to local food banks and veterans' organizations and sponsor state and county fairs, school district events, career fairs, booster clubs, local safety campaigns, volunteer firefighter appreciation events and high school proms. Finally, we adopt highways and do our part to help keep them clear of litter and hazards.



## WE KNOW OUR NEIGHBORS

Green Plains can only be as successful as the communities where we live and operate. We strive to support and strengthen each and every one through sponsorships, donations and volunteer work.



## MAKING A DIFFERENCE

We take our corporate social responsibility seriously and hold ourselves accountable as good stewards and good neighbors.



## COMMITMENT TO CLEAN AIR

Since 2017, Green Plains has been the presenting sponsor of the American Lung Association Corporate Cup in Omaha. As a biofuel producer, Green Plains knows the value of clean air, and the important role we play in reducing the devastating effects of air pollution on human and animal health.



# Governance

As part of our transition to our Green Plains 2.0 business model, we are evolving board oversight and management processes to fully integrate sustainability into our development, risk management and operations. Our strong corporate governance structure, policies and practices provide accountability and responsiveness to our employees, customers, shareholders, vendors and stakeholders.

## Our Key Areas of Impact

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Compliance



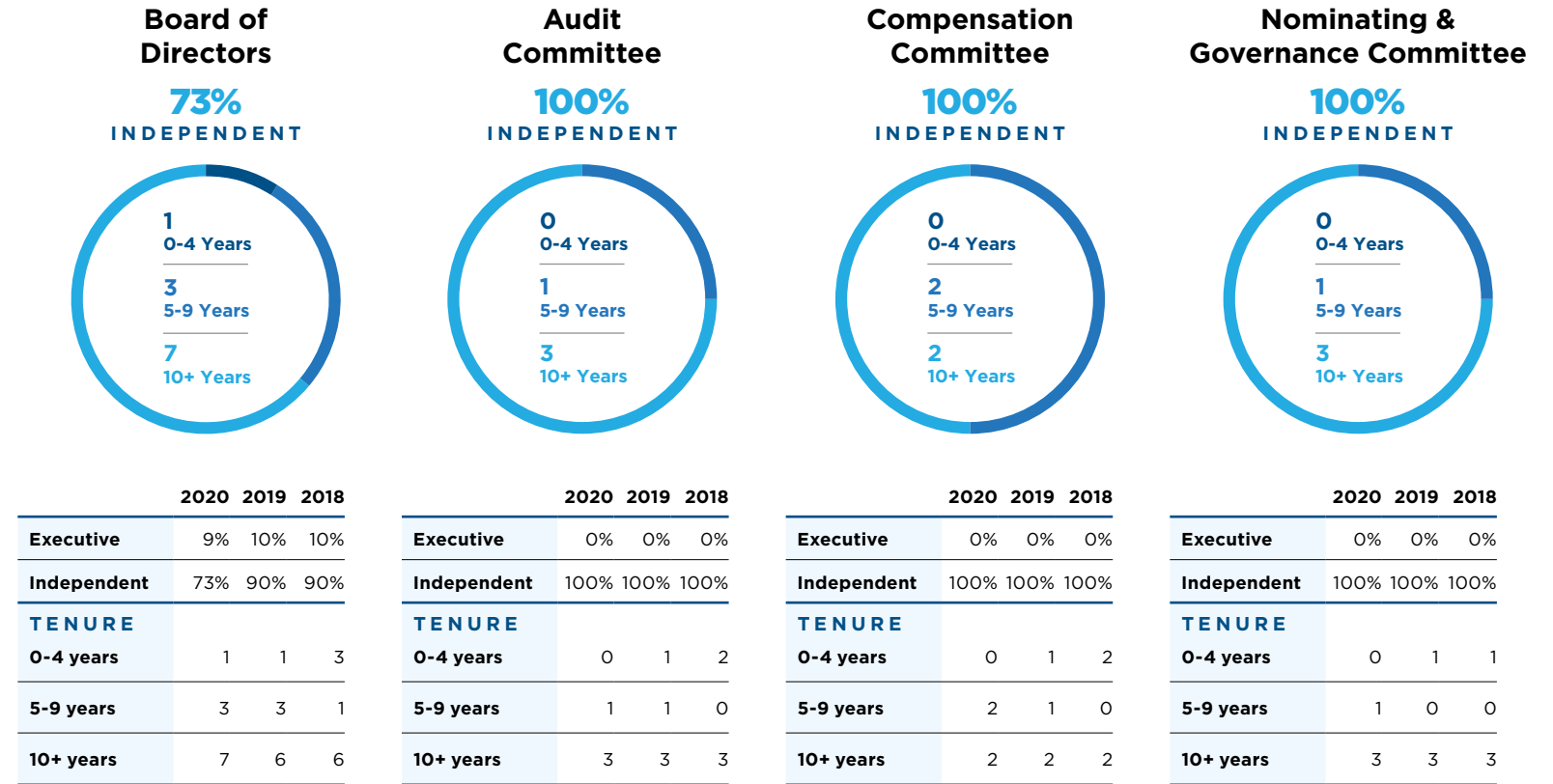
# Board Composition and Structure

## Board Overview

The Green Plains Board consists of nine members with qualifications, qualities and skills that we believe support our near and long-term strategies, including our transformation to Green Plains 2.0.

2021 Key Skills and Experience		Jim Anderson	Farha Aslam	Todd Becker	Wayne Hoovestol	Einar Knudsen	Brian Peterson	Martin Salinas, Jr.	Alain Treuer	Kimberly Wagner
INDUSTRY	Industrial Manufacturing & Ingredient Production	●	●	●		●	●		●	●
	Commodity Markets/ Marketing	●	●	●	●	●	●	●	●	
STRATEGIC	Strategy Development	●	●	●	●	●		●	●	●
	International Business	●	●	●		●			●	●
	M&A / Partnerships	●	●	●	●	●		●	●	●
	Capital Markets	●	●	●		●		●	●	
	Audit / Risk / Cybersecurity	●	●	●		●	●	●	●	●
LEADERSHIP	Legal / Regulatory / Govt. Relations	●	●	●						●
	Public Company / Corp. Governance / ESG	●	●	●				●	●	●
	Executive Leadership	●	●	●	●	●	●	●	●	●
	Executive Compensation	●	●	●	●			●	●	

## 2020 Board Composition and Participation



**97%**  
Results of Annual Say on Pay Vote

**96%**  
Board Meeting Attendance Rate

	Unit of Measurement	2020	2019	2018
Board Meeting Attendance Rate	%	96%	96%	96%
<b>Executive Compensation</b>				
Annual Total Compensation ratio of highest paid individual to median employee	Ratio	42/1	70/1	66/1
Annual Say on Pay Vote	Yes/No	Yes	Yes	Yes
Results of Annual Say on Pay Vote	%	97%	93%	98%

## Commitment to Board Diversity

Our Nominating and Governance Committee considers diversity as one of a number of factors in identifying director candidates. A policy we adopted in 2017 dictates that each time a vacancy arises on the Board of Directors (Board), the Nominating and Governance Committee will ensure the candidate pool contains at least one female or otherwise gender diverse candidate. Our Nominating and Governance Committee also views diversity broadly to include diversity of experience, skills and viewpoint, as well as traditional diversity concepts such as race, national origin and gender.

In October 2020, as part of its ongoing Board refreshment and diversity initiative, the Green Plains Board appointed its first female director, Kimberly Wagner. In addition to adding fresh perspective to the boardroom, Ms. Wagner also brings competencies related to environmental sustainability from serving on the boards of several not-for-profit organizations with agricultural, sustainability and/or educational missions.

Green Plains Inc. is actively recruiting more diverse board representation, with a goal of one board member who adds diversity by 2022. In addition, by 2022 Green Plains envisions 33% of its board members will be gender and ethnically diverse. As four tenured board members announced their resignations and retirements in 2021, Green Plains retained Korn Ferry to lead the search for a qualified, diverse pool of candidates to fulfill its commitment to board diversity. Also, the company intends to reduce the size of its Board to eight members by the 2023 annual shareholders meeting.

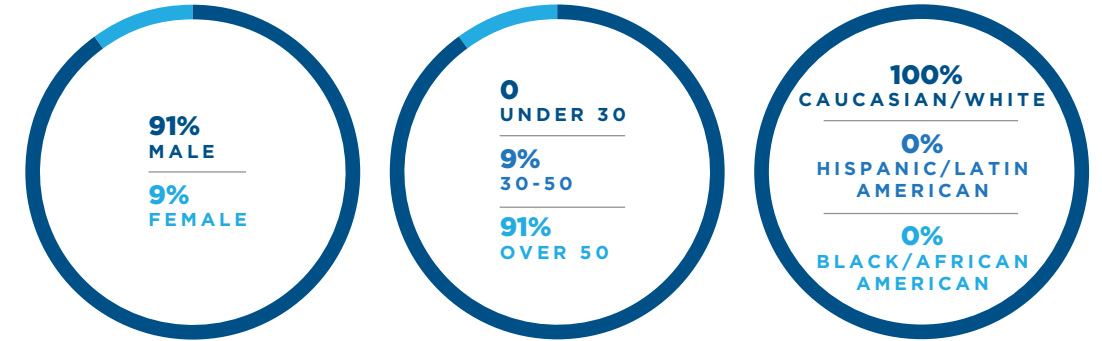


Photo taken: November 2021

As part of the refreshment initiative in 2021, the Board has also rotated the leadership and adjusted the composition of its key committees. Martin Salinas, Jr. will serve as Audit Committee chair. Kimberly Wagner will serve as the Nominating and Governance Committee chair and Brian Peterson will serve as the Compensation Committee chair.

On October 26th, 2021, Farha Aslam was appointed as the newest director to the Green Plains Board. She is an experienced agribusiness public company director and former leading industry analyst on Wall Street, who will bring investor perspective and financial expertise to the Board.

## 2020 Board Diversity



Percentage of individuals within our highest governance body in each of the following diversity categories

Unit of Measurement	2020	2019	2018
Gender			
Male	91%	100%	100%
Female	9%	0%	0%
Age			
Under 30	0%	0%	0%
30-50	9%	20%	20%
Over 50	91%	80%	80%
Race/Ethnicity			
Caucasian/White	100%	100%	100%
Hispanic/Latin American	0%	0%	0%
Black/African American	0%	0%	0%

**ESG Oversight**

The Nominating and Governance Committee of the Board is tasked with primary oversight of Green Plains' ESG initiatives and monitoring progress as set forth in the committee's charter, including reviewing ESG topics on a quarterly basis. The Board's other committees provide support by overseeing certain key areas of impact. In addition to committee charters, we list corporate governance policies on our [website](#).



**Audit Committee**

The **Audit Committee** is responsible for monitoring compliance with the company's Code of Ethics and regulatory requirements, along with reviewing and assessing conflicts of interest and related-party transactions. The Audit Committee is also responsible for reviewing and discussing risks related to information systems, information security and cyber security and the steps taken to mitigate those exposures, including policies and procedures for managing information and security incidents.

**Compensation Committee**

The **Compensation Committee** is responsible for determining remuneration policies with assistance from third-party compensation consultants. The Compensation Committee holds our executives accountable for our ESG priorities by incorporating performance measures that align with our goals. Since 2012, we have included a safety metric in our annual incentive award program and recently adopted a compensation recovery policy that goes beyond legal requirements and emphasizes a commitment to ethics and compliance. Further, our 2021 compensation program incorporates ESG performance criteria.

**Nominating and Governance Committee**

The **Nominating and Governance Committee** is responsible for ESG topics, including the development, approval and updating of the organization's purpose, value or mission statements, strategies, policies and goals. The Nominating and Governance Committee is responsible for reviewing and approving our ESG reporting, including this inaugural Sustainability Report.

The Nominating and Governance Committee oversees sustainability strategy and progress. A cross-functional work group of subject matter experts, led by Chief Legal & Administration Officer, reports into the Nominating and Governance Committee. Each subject matter expert develops their own policies and approaches and tracks metrics relative to goals over time to the extent possible.

The day-to-day identification and management of ESG topics and their impacts, risks, and opportunities are performed by an internal ESG work group made up of associate, management, and executive level employees. To further focus our commitment to sustainability, we created and filled ESG Program Manager and Senior Vice President (SVP), Sustainability positions in 2021. The ESG work group, through the ESG Program Manager and SVP, Sustainability, reports directly to the Chief Legal & Administration Officer (CLAO), who then reports to the Nominating and Governance Committee of the Board. The internal ESG work group is also responsible for facilitating the consultation process between stakeholders and the Board. The group uses various means to consult with stakeholders and report back through the CLAO to the Board.

Performance tracking related to ESG is continuously monitored via analysis from ESG rating agencies (including but not limited to Sustainalytics, MSCI™, ISS, and S&P), stakeholder engagement processes, Q&A during quarterly earnings calls, annual shareholder meetings, feedback from our 24/7 ethics hotline and feedback from proxy advisory services.

## Stakeholder Engagement

We believe that ongoing dialogue with our various stakeholders is critical to relationship building and helps align our priorities. We use feedback from stakeholder engagement to inform our ESG key areas of impact. Our key stakeholder groups include employees, customers, vendors/suppliers (including farmers), local communities, government agencies, business partners, lenders and shareholders.

In 2020 we made financial and in-kind political corporate contributions in the amount of \$101,000 and political action committee (PAC) contributions in the amount of \$41,200. We did not receive any tax relief, tax credits or subsidies from any government during the reporting period.

### STAKEHOLDER ENGAGEMENT

<b>Employees</b>	<ul style="list-style-type: none"> <li>— Press releases</li> <li>— Town halls</li> <li>— Company announcements</li> <li>— Social media</li> <li>— 24/7 ethics hotline</li> </ul>	<ul style="list-style-type: none"> <li>— Charitable-events</li> <li>— Weekly newsletter</li> </ul>
<b>Customers, Vendors, Suppliers &amp; Business Partners</b>	<ul style="list-style-type: none"> <li>— Press releases</li> <li>— Social media</li> <li>— 24/7 ethics hotline</li> </ul>	<ul style="list-style-type: none"> <li>— Customer appreciation days</li> </ul>
<b>Local Communities</b>	<ul style="list-style-type: none"> <li>— Press releases</li> <li>— Company announcements</li> <li>— Social media</li> </ul>	<ul style="list-style-type: none"> <li>— 24/7 ethics hotline</li> <li>— Charitable-events</li> </ul>
<b>Lenders</b>	<ul style="list-style-type: none"> <li>— Press releases</li> <li>— Social media</li> <li>— Publicly accessible quarterly earnings conference calls</li> </ul>	<ul style="list-style-type: none"> <li>— Loan compliance and reporting</li> </ul>
<b>Shareholders</b>	<ul style="list-style-type: none"> <li>— Annual shareholder meetings</li> <li>— Press releases</li> <li>— Social media</li> </ul>	<ul style="list-style-type: none"> <li>— Publicly accessible quarterly earnings conference calls</li> </ul>
<b>Government Agencies</b>	<ul style="list-style-type: none"> <li>— Earnings releases</li> <li>— Financial filings</li> </ul>	<ul style="list-style-type: none"> <li>— Regulatory reporting</li> </ul>

## Ethics and Compliance

We abide by our [Code of Ethics](#) (Code) and strive to operate at the highest levels of integrity and good corporate citizenship. The Board is responsible for the Code and has empowered our management team to implement the policy in satisfaction of Section 406 of the Sarbanes-Oxley Act of 2002. The Code:

- Prohibits employees 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 employees and directors. It outlines expectations and requirements, including mandatory reporting. Employees must report any potential conflict of interest; they cannot personally take opportunities or achieve personal gain through the use of company property, information or position. Employees and directors may not compete with the company in any manner.
- In addition to summarizing certain government laws and regulations, our Code provides advice about ethical and lawful behavior and offers various methods for seeking additional information.

We operate a Compliance Hotline for employees for reporting concerns about unethical or unlawful behavior both by telephone (844.957.2596) and via our [online portal](#). This hotline is managed by a third party and is completely confidential. All complaints are investigated by the CLAO and reported to the Audit Committee. Both the Code of Ethics and Code of Business Conduct are part of the employee handbook, which must be attested to by every employee upon hire. All new hires are required to participate in our New Employee Legal Orientation where we highlight our corporate policies and procedures, including the Code of Ethics.

# IN 2021, WE ADOPTED

a **Code of Vendor Conduct** setting forth our expectations for our suppliers in the following key areas: **human rights, working conditions and the rights of vendor employees, environmental stewardship, and ethical and lawful business practices. Our Compliance Hotline is also available to our suppliers. Failure to comply with the requirements of the Code of Vendor Conduct may result in termination of the relationship.**



## Anti-Corruption Policy

Green Plains and our employees abide by our [Anti-Corruption Policy](#), formalized in May of 2021. We make every effort to conduct our business in accordance with the highest ethical standards in order to merit and maintain the complete confidence and trust of our consumers, shareholders and the public. We expect every employee, officer and director to carry out the performance of their business responsibilities ethically.

To date, there have been no legal cases regarding corruption brought against the organization or its employees, and no legal actions pending or completed during the reporting period regarding anti-competitive behavior and violations of antitrust and monopoly legislation in which the organization has been identified as a participant.



## Human and Labor Rights Policy

We are committed to respecting all human rights where we operate. This includes protecting and promoting labor rights of our employees and providing a safe work environment. We are also committed to respecting the rights of disadvantaged people, monitoring suppliers and customers for human rights violations and creating a positive impact in our communities.

We adhere to our [Human and Labor Rights Policy](#) and Code of Vendor Conduct, both of which strictly prohibit child and forced labor at Green Plains or with vendors, suppliers and customers. All vendors are screened on an annual basis for human rights abuses, and any flags or discrepancies are immediately reported to management and investigated. Formal training relating to our Human and Labor Rights Policy is required for any security personnel that the company hires.



## Cybersecurity

We have a comprehensive Information Security Program in place that utilizes the latest technologies to keep our systems secure and training resources to keep our users informed. In 2020, we have not had any identified leaks, thefts, or losses of customer data.

# 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 Securities and Exchange Commission. 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 this 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: disruption caused by health epidemics, such as the COVID-19 outbreak; 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 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 upon 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 under "Risk Factors" sections 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 passed upon 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 of the information contained herein may be derived from information provided by industry sources. While the company believes that such information is accurate and that the sources from which it has been obtained are reliable, it has not independently verified data from these third-party sources.

# Reporting Frameworks

This report references certain Global Reporting Initiative (GRI) 2016 standards. We also disclose under the Biofuels Standard from the Sustainability Accounting Standards Board (SASB).

## Our Key Areas of Impact

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Global Reporting Initiative (GRI)

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Biofuels Standard from the Sustainability Accounting Standards Board (SASB)

## Global Reporting Initiative (GRI)

Disclosure Number	Disclosure Title	Response
<b>GRI 102: General Disclosures</b>		
102-1	<b>Name of the organization</b>	Green Plains Inc.
102-2	<b>Activities, brands, products and services</b>	2020 Sustainability Report, pp. 7 2021 Form 10-K, Overview, pp. 5
102-3	<b>Location of headquarters</b>	1811 Aksarben Drive, Omaha, NE 68106
102-4	<b>Location of operations</b>	2020 Sustainability Report, Employees, pp. 30
102-5	<b>Ownership and legal form</b>	We are a publicly traded company on the NASDAQ Stock Exchange. Our United States Federal Tax Status is C Corporation and our State of Iowa Legal Form is Domestic Profit Corporation. 2021 Form 10-K, Cover, pp. 1
102-6	<b>Markets served</b>	2020 Sustainability Report, Customers, pp. 36
102-7	<b>Scale of the organization</b>	\$1,923,719 Net revenues Total Capitalization (Assets): \$1,578,917 2020 Sustainability Report, About Green Plains, pp. 5-6; Employees, pp. 30 2021 Form 10-K, pp. 37
102-8	<b>Information on employees and other workers</b>	6 temporary employees--- 5 male 1 Female The portion of Green Plains' activities performed by workers who are not employees is not significant No significant variations in disclosures 102-8-a, 102-8-b, or 102-8-c The data was compiled from internal employee records 2020 Sustainability Report, Employees, pp. 30
102-9	<b>Supply chain</b>	2020 Sustainability Report, Customers and Suppliers, pp. 36-37
102-10	<b>Significant changes to the organization and its supply chain</b>	There were no significant changes to our supply chain during the reporting period that can cause of contribute to significant economic, environmental, and social impacts. All of our suppliers are based out of North America and we do not outsource any significant part of our activities. 2020 Sustainability Report, Our Business, pp. 5 2021 Form 10-K, Liquidity and Capital Resources, pp. 54



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## GRI 102: General Disclosures

102-11	<b>Precautionary Principle or approach</b>	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.
102-12	<b>External initiatives</b>	2020 Sustainability Report, About this Report, pp. 3
102-13	<b>Membership of associations</b>	2020 Sustainability Report, Memberships and Awards, pp. 6
102-14	<b>Statement from senior decision-maker</b>	Letter from our Chief Executive Officer 2020 Sustainability Report, pp. 4
102-15	<b>Key impacts, risks and opportunities</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-16	<b>Values, principles, standards and norms of behavior</b>	2020 Sustainability Report, Our Pillars and ESG Values, pp. 7
102-17	<b>Mechanisms for advice and concerns about ethics</b>	2020 Sustainability Report, Ethics and Compliance, pp. 44
102-18	<b>Governance structure</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-19	<b>Delegating authority</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-20	<b>Executive-level responsibility for economic, environmental and social topics</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-21	<b>Consulting stakeholders on economic, environmental and social topics</b>	2020 Sustainability Report, Stakeholder Engagement, pp. 44
102-22	<b>Composition of the highest governance body and its committees</b>	2020 Sustainability Report, Board Composition and Structure, pp. 41
102-23	<b>Chair of the highest governance body</b>	Board Chairman, Wayne Hoovestol is a non-executive director 2021 Proxy Statement, Continuing Directors with Terms Expiring in 2023, pp. 19
102-24	<b>Nominating and selecting the highest governance body</b>	The Board is responsible for approving nominees for election as directors. To assist in this task, the Nominating and Governance Committee is responsible for reviewing and recommending nominees to the Board. This committee is comprised solely of independent directors as defined by the rules of the NASDAQ and the SEC. As part of the nomination process, our Nominating and Governance Committee is responsible for reviewing with the Board periodically the appropriate skills and characteristics required of directors in the context of the current make-up of the Board 2020 Sustainability Report, Commitment to Board Diversity, pp. 42; 2021 Proxy Statement, Director Nomination Process, pp. 17

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## GRI 102: General Disclosures

102-25	<b>Conflicts of interest</b>	From Code of Ethics: Review with management and the chief audit executive the charter, plans, activities, staffing, resources and organizational structure of the internal audit function. 2020 Sustainability Report, ESG Oversight, pp. 43
102-26	<b>Role of highest governance body in setting purpose, values and strategy</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-27	<b>Collective knowledge of highest governance body</b>	Board Skills Matrix 2020 Sustainability Report, Board Overview, pp. 41
102-28	<b>Evaluating the highest governance body's performance</b>	2020 Sustainability Report, ESG Oversight, pp. 43 Corporate Governance Guidelines, pp. 3
102-29	<b>Identifying and managing economic, environmental, and social impacts</b>	2020 Sustainability Report, ESG Oversight, pp. 43
102-30	<b>Effectiveness of risk management processes</b>	2020 Sustainability Report, Our Pillars and ESG Values, pp. 7 2020 Sustainability Report, Governance, pp. 40
102-31	<b>Review of economic, environmental and social topics</b>	2020 Sustainability Report, Nominating and Governance Committee, pp. 43
102-32	<b>Highest governance body's role in sustainability reporting</b>	2020 Sustainability Report, Nominating and Governance Committee, pp. 43
102-33	<b>Communicating critical concerns</b>	2020 Sustainability Report, Ethics and Compliance, pp. 44
102-35	<b>Remuneration policies</b>	2021 Proxy Statement, Compensation of Directors, pp. 44-45
102-36	<b>Process for determining remuneration</b>	2020 Sustainability Report, Compensation Committee, pp. 43 2021 Proxy Statement, Compensation of Directors, pp. 44-45
102-37	<b>Stakeholders' involvement in remuneration</b>	We have held an annual Say on Pay advisory vote at each annual meeting of the shareholders since 2017. The results of the annual Say on Pay advisory vote are published following the annual shareholder meeting. 2021 Proxy Statement, Executive Compensation, pp. 11 2020 Sustainability Report, Board Composition and Structure, pp. 41
102-38	<b>Annual total compensation ratio</b>	42 to 1 2021 Proxy Statement, Chief Executive Officer Pay Ratio, pp. 44

Disclosure Number	Disclosure Title	Response
<b>GRI 102: General Disclosures</b>		
102-40	List of stakeholder groups	2020 Sustainability Report, Stakeholder Engagement, pp. 44
102-41	Collective bargaining agreements	None
102-42	Identifying and selecting stakeholders	We engage with stakeholder groups based on an analysis of our business impacts.
102-43	Approach to stakeholder engagement	2020 Sustainability Report, Stakeholder Engagement, pp. 44
102-44	Key topics and concerns raised	2021 Proxy Statement, Significant Actions Taken in Response to Say on Pay Votes and Investor Feedback, pp. 22
102-45	Entities included in the consolidated financial statements	2021 Form 10-K, Subsidiaries of the Company, pp. 237
102-46	Defining report content and topic Boundaries	2020 Sustainability Report, Our Commitment to Sustainability, pp. 9
102-47	List of material topics	2020 Sustainability Report, Our Commitment to Sustainability, pp. 9
102-48	Restatements of information	There have been no restatements of information as there are no previous reports. This is our inaugural report. 2020 Sustainability Report, About this Report, pp. 3
102-49	Changes in reporting	This is an inaugural report. 2020 Sustainability Report, About this Report, pp. 3
102-50	Reporting period	The reporting period for our inaugural sustainability report is 1/1/2020-12/31/2020. 2020 Sustainability Report, About this Report, pp. 3
102-52	Reporting cycle	We plan to report on an annual cycle. 2020 Sustainability Report, About this Report, pp. 3
102-53	Contact point for questions regarding the report	Inquiries related to the report and its content should be directed to our sustainability team at <a href="mailto:sustainability@gpreinc.com">sustainability@gpreinc.com</a> . More information can also be found at <a href="http://www.gpreinc.com">www.gpreinc.com</a> . 2020 Sustainability Report, About this Report, pp. 3
102-54	Claims of reporting in accordance with the GRI Standards	2020 Sustainability Report, About this Report, pp. 3 and appendices
102-55	GRI content index	This report references certain Global Reporting Initiative (GRI) standards. 2020 Sustainability Report, About this Report, pp. 3 and appendices

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## GRI 102: General Disclosures

102-56	<b>External assurance</b>	<p>Our current policy and practice includes seeking external assurance for certain data in our report through APEX Environmental Services. APEX Environmental Services has assured the data as outlined in their letter.</p> <p>The relationship between Green Plains Inc. and APEX Environmental is limited in scope to ESG disclosure auditing services. There are no known conflicts of interest between Green Plains Inc. and APEX.</p> <p>Senior executives, including the CEO, approved the selection of the external assurance provider.</p>
103-1	<b>Explanation of the material topic and its Boundary</b>	<p>The environmental data within this report is limited to the biorefinery production segment of our operations, including our biorefining facilities. The data does not include our fuel terminals, grain elevators, or corporate office.</p> <p>The social and governance data in this report is enterprise-wide except for employee turnover metrics, which exclude assets divested in 2020 (Green Plains Cattle Company LLC and Green Plains Hereford LLC) as the divestment event artificially increased the turnover rate.</p> <p>2020 Sustainability Report, About this Report, Environment and Social sections, pp. 3 + 20-28 + 29-39</p>
103-2	<b>The management approach and its components</b>	<p>As a company, we are transforming the lens through which we view our impact on the environment, economy and society as a whole. Our sustainability journey started in 2019 by looking inward and gathering information from internal stakeholders via a cross-departmental environmental, social and governance (ESG) work group comprised of associates and executives and overseen by company leadership and the Nominating &amp; Governance Committee of our Board of Directors. We mapped our key areas of impact and set 2018 as our baseline year utilizing feedback from our stakeholders. We then vetted each topic against recognized ESG reporting frameworks. In particular, we considered the four Reporting Principles of the Global Reporting Initiative (GRI): Stakeholder Inclusiveness, Sustainability Context, Materiality and Completeness. We also consider rating agency ESG reviews and surveys.</p> <p>ESG Highlights</p> <p>The Nominating and Governance Committee is responsible for ESG topics, including the development, approval, and updating of the organization's purpose, value or mission statements, strategies, policies and goals. The Nominating and Governance Committee is responsible for reviewing and approving our ESG reporting, including this inaugural Sustainability Report.</p> <p>2020 Sustainability Report, Our Commitment to Sustainability, pp. 9; ESG Highlights, pp. 17-19; ESG Oversight, pp. 43; Environment, pp. 20-28; Social, pp. 29-39; Governance, pp. 40-45</p>
103-3	<b>Evaluation of the management approach</b>	<p>We consider the four Reporting Principles of the Global Reporting Initiative (GRI): Stakeholder Inclusiveness, Sustainability Context, Materiality and Completeness; stakeholder feedback; rating agency ESG reviews and surveys; and information from our safety management system and ethics hotline.</p> <p>As we transition into our Green Plains 2.0 model, we are expanding our capabilities via novel technologies and partnerships to extract additional ingredients from the same annually renewable crops. We are producing a new high-protein ingredient for animal and aquaculture diets to help satisfy a growing global appetite for sustainable protein. At the same time, we are providing less carbon-intensive renewable biofuel options for consumers in the United States and abroad.</p> <p>Our Green Plains 2.0 transformation includes combining the knowledge, resources and world-class technologies of exclusive strategic partners with our years of expertise in fermentation and agricultural technology.</p> <p>2020 Sustainability Report, Our Business, pp. 5; Our Commitment to Sustainability, pp. 9; ESG Highlights, pp. 17-19; Social, Employee Health and Safety, pp. 32-33; Sustainability Governance, pp. 42; Environment, pp. 20-28; Social, pp. 29-39; Governance, pp. 40-45; Stakeholder Engagement, pp. 44</p>

Disclosure Number	Disclosure Title	Response
<b>GRI 205: Anti-corruption</b>		
205-1	<b>Operations assessed for risks related to corruption</b>	Anti-Corruption Policy, Scope , pp. 1
205-2	<b>Communication and training about anti-corruption policies and procedures</b>	Green Plains Board receives annual compliance updates Anti-Corruption Policy, Scope , pp. 1 + 6
205-3	<b>Confirmed incidents of corruption and actions taken</b>	2020 Sustainability Report, Anti-Corruption Policy, pp. 45
<b>GRI 302: Energy</b>		
302-1	<b>Energy consumption within the organization</b>	2020 Sustainability Report, Energy, pp. 24 <a href="https://www.engineeringtoolbox.com/fuels-higher-calorific-values-d_169.html">https://www.engineeringtoolbox.com/fuels-higher-calorific-values-d_169.html</a>
302-3	<b>Energy intensity</b>	2020 Sustainability Report, Energy, pp. 24
302-4	<b>Reduction of energy consumption</b>	2020 Sustainability Report, ESG Highlights, pp. 17; 2020 Sustainability Report, Project 24, pp. 24
<b>GRI 303: Water and Effluents</b>		
303-1	<b>Interactions with water as a shared resource</b>	2020 Sustainability Report, Water and Effluents, pp. 26-27
303-2	<b>Management of water discharge-related impacts</b>	2020 Sustainability Report, Water and Effluents, pp. 26-27
303-3	<b>Water withdrawal</b>	2020 Sustainability Report, Water and Effluents, pp. 26
303-4	<b>Water discharge</b>	2020 Sustainability Report, Water and Effluents, pp. 26
303-5	<b>Water consumption</b>	2020 Sustainability Report, Water and Effluents, pp. 26
<b>GRI 304: Biodiversity</b>		
304-1	<b>Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas</b>	2020 Sustainability Report, Land Stewardship and Environmental Compliance, pp.28

Disclosure Number	Disclosure Title	Response
<b>GRI 305: Emissions</b>		
305-1	<b>Direct (Scope 1) GHG emissions</b>	2020 Sustainability Report, GHG Emissions, pp. 21; Our Commitment to Sustainability, pp. 9
305-2	<b>Energy indirect (Scope 2) GHG emissions</b>	2020 Sustainability Report, GHG Emissions, pp. 21; Our Commitment to Sustainability, pp. 9
305-3	<b>Other indirect (Scope 3) GHG emissions</b>	We are currently evaluating Scope 3 calculation methods and will consider reporting and tracking Scope 3 emissions in the future. 2020 Sustainability Report, GHG Emissions, pp. 21
305-4	<b>GHG emissions intensity</b>	2020 Sustainability Report, GHG Emissions, pp. 21
305-5	<b>Reduction of GHG emissions</b>	2020 Sustainability Report, ESG Highlights, pp. 17; 2020 Sustainability Report, Project 24, pp. 24
305-7	<b>Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions</b>	2020 Sustainability Report, Enterprise-Wide Air Emissions (Excludes GHGs), pp. 23
<b>GRI 307: Environmental Compliance</b>		
307-1	<b>Non-compliance with environmental laws and regulations</b>	2020 Sustainability Report, Land Stewardship and Environmental Compliance, pp. 28
<b>GRI 308: Supplier Environmental Assessment</b>		
308-2	<b>Negative environmental impacts in the supply chain and actions taken</b>	2020 Sustainability Report, Land Stewardship and Environmental Compliance, pp. 28
<b>GRI 403: Occupational Health and Safety</b>		
403-1	<b>Occupational health and safety management system</b>	2020 Sustainability Report, Employee Health & Safety, pp. 32-33
403-2	<b>Hazard identification, risk assessment and incident investigation</b>	2020 Sustainability Report, Hazards & Incident Reporting, pp. 33
403-3	<b>Occupational health services</b>	2020 Sustainability Report, Hazards & Incident Reporting, pp. 33
403-4	<b>Worker participation, consultation and communication on occupational health and safety</b>	2020 Sustainability Report, Hazards & Incident Reporting, pp. 33

Disclosure Number	Disclosure Title	Response
<b>GRI 403: Occupational Health and Safety</b>		
403-5	<b>Worker training on occupational health and safety</b>	2020 Sustainability Report, Safety Training, pp. 33
403-6	<b>Promotion of worker health</b>	2020 Sustainability Report, Compensation & Benefits, pp. 35
403-7	<b>Prevention and mitigation of occupational health and safety impacts directly linked by business relationships</b>	2020 Sustainability Report, Employee Health & Safety, pp. 32
403-8	<b>Workers covered by an occupational health and safety management system</b>	2020 Sustainability Report, Employee Health & Safety, pp. 32
403-9	<b>Work-related injuries</b>	2020 Sustainability Report, Occupational Health & Safety Management System, pp. 34
403-10	<b>Work-related ill health</b>	2020 Sustainability Report, Occupational Health & Safety Management System, pp. 34
<b>GRI 405: Diversity and Equal Opportunity</b>		
405-1	<b>Diversity of governance bodies and employees</b>	2020 Sustainability Report, 2020 Board Diversity, pp. 42; 2020 Sustainability Report, Employees per diversity category, pp. 31
<b>GRI 413: Local Communities</b>		
413-1	<b>Operations with local community engagement, impact assessments and development programs</b>	2020 Sustainability Report, ESG Highlights, pp. 18; Operations-Related Engagement, pp. 38
<b>GRI 416: Customer Health and Safety</b>		
416-1	<b>Assessment of the health and safety impacts of product and service categories</b>	2020 Sustainability Report, Customers, pp. 36
416-2	<b>Incidents of non-compliance concerning the health and safety impacts of products and services</b>	2020 Sustainability Report, ESG Highlights, pp. 18

## Biofuels Standard from the Sustainability Accounting Standards Board (SASB)

SASB Macro Industry	SASB Mid Industry	SASB Dimension	SASB General Issue Category	Disclosure Topic	SASB Code	SASB Accounting Metrics	Category	Unit of Measure	Answer, Cross-Reference, Omissions and Explanations	Location
Renewable Resources & Alternative Energy	Biofuels			Activity Metric	RR-BI-000.A	A. Biofuel production capacity	Quantitative	Millions of gallons (Mgal)	Yes, under Our Business	2020 Sustainability Report, pp. 7 2020 Annual Report, pp. 14
Renewable Resources & Alternative Energy	Biofuels			Activity Metric	RR-BI-000.B	B. Production of: (1) renewable fuel, (2) advanced biofuel, (3) biomass-based diesel, and (4) cellulosic biofuel	Quantitative	Millions of gallons (Mgal)	Yes, under Our Business	2020 Sustainability Report, pp. 7 2020 Annual Report, pp. 14
Renewable Resources & Alternative Energy	Biofuels			Activity Metric	RR-BI-000.C	C. Amount of feedstock consumed in production	Quantitative	Metric tons (t)	Each plants requires approximately 17 to 42 million bushels of corn annually and can extract approximately 0.8 pounds of corn oil per bushel of corn used to produce ethanol. Processed 274,442,000 bushels of corn in 2020.	2020 Sustainability Report, pp. 47 2020 Annual Report, pp. 14
Renewable Resources & Alternative Energy	Biofuels	Business Model & Innovation	Product Design & Lifecycle Management	Lifecycle Emissions Balance	RR-BI-410a.1	1) Lifecycle greenhouse gas (GHG) emissions, by biofuel type	Quantitative	Grams of CO <sub>2</sub> e per megajoule (MJ)	Discloses Scope 1 and Scope 2 GHG emissions	2020 Sustainability Report, pp. 28
Renewable Resources & Alternative Energy	Biofuels	Business Model & Innovation	Supply Chain Management	Sourcing & Environmental of Feedstock Production	RR-BI-430a.1	1) Discussion of strategy to manage risks associated with environmental impacts of feedstock production	Discussion and Analysis	n/a	Yes, under Land Stewardship and Environmental Compliance	2020 Sustainability Report, pp.35
Renewable Resources & Alternative Energy	Biofuels	Business Model & Innovation	Supply Chain Management	Sourcing & Environmental of Feedstock Production	RR-BI-430a.2	2) Percentage of biofuel production third-party certified to an environmental sustainability standard	Quantitative	Percentage (%) of gallons	All biorefinery locations are registered as a Renewable Fuel Producer with the EPA and meets the requirements for the Renewable Fuel Standard (Title 40 CFR Part 80). Additionally, 100% of the denatured fuel ethanol we produce is RFS certified.	2020 Sustainability Report, pp. 18
Renewable Resources & Alternative Energy	Biofuels	Environment		Air Quality	RR-BI-120a.1	1) Air emissions of the following pollutants: (1) NO <sub>x</sub> (excluding N <sub>2</sub> O), (2) SO <sub>x</sub> , (3) volatile organic compounds (VOCs), (4) particulate matter (PM <sub>10</sub> ), and (5) hazardous air pollutants (HAPs)	Quantitative	Metric tons (t)	Yes, except (5) hazardous air pollutants (HAPs)	1532; 2020 Sustainability Report, Air and Emissions, pp. 28



SASB Macro Industry	SASB Mid Industry	SASB Dimension	SASB General Issue Category		Disclosure Topic	SASB Code	SASB Accounting Metrics	Category	Unit of Measure	Answer, Cross-Reference, Omissions and Explanations	Location
Renewable Resources & Alternative Energy	Biofuels	Environment	Air Quality			RR-BI-120a.2	2) Number of incidents of non-compliance associated with air quality permits, standards and regulations	Quantitative	Number	1532; 2020 Sustainability Report, Air and Emissions, pp. 32	1532; 2020 Sustainability Report, Air and Emissions, pp. 32
Renewable Resources & Alternative Energy	Biofuels	Environment	Water & Wastewater Management	Water Management in Manufacturing		RR-BI-140a.1	1) (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 (m <sup>3</sup> ), Percentage (%)	Yes, under Water and Effluents, except (2)	2020 Sustainability Report, pp. 32
Renewable Resources & Alternative Energy	Biofuels	Environment	Water & Wastewater Management	Water Management in Manufacturing		RR-BI-140a.2	2) Description of water management risks and discussion of strategies and practices to mitigate those risks	Discussion and Analysis	n/a	Yes, under Water and Effluents Water utilization at our facilities follows all local and federal appropriation, pollution, and permitting requirements, and all but one of our facilities are zero liquid process water discharge facilities. There are no known significant water related impacts identified from local authorities or other stakeholders.	2020 Sustainability Report, pp. 33
Renewable Resources & Alternative Energy	Biofuels	Environment	Water & Wastewater Management	Water Management in Manufacturing		RR-BI-140a.3	3) Number of incidents of non-compliance associated with water quality permits, standards and regulations	Quantitative	Number	41; 2020 Sustainability Report, Water Management in Manufacturing, pp. 38	
Renewable Resources & Alternative Energy	Biofuels	Leadership & Governance	Critical Incident Risk Management	Operational Safety, Emergency Preparedness & Responses		RR-BI-540a.1	1) Process Safety Incidents Count (PSIC), Process Safety Total Incident Rate (PSTIR), and Process Safety Incident Severity Rate (PSISR)	Quantitative	Number, Rate	There were no Process Safety Incidents in 2020.	2020 Sustainability Report, pp. 41
Renewable Resources & Alternative Energy	Biofuels	Leadership & Governance	Management of the Legal & Regulatory Environment			RR-BI-530a.1	1) Amount of subsidies received through government programs	Quantitative	Reporting currency	None	
Renewable Resources & Alternative Energy	Biofuels	Leadership & Governance	Management of the Legal & Regulatory Environment			RR-BI-530a.2	2) 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	Yes, under risk factors section in 10-K and annual report.	2020 Annual Report, pp. 30

**INDEPENDENT LIMITED ASSURANCE STATEMENT**



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 2020 Health and Safety, Energy, GHG Emissions (Scope 1, Scope 2 [location-based], Biogenic), Air Pollutants, Water Withdrawals, Water Discharge, and Social data listed in the following tables. 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 Health and Safety, Energy, GHG Emissions (Scope 1, Scope 2 [location-based], Biogenic), Air Pollutants, Water Withdrawals, Water Discharge, and Social data for the period January 1, 2020 to December 31, 2020 (the 'Subject Matter'). The metrics assured by Apex are included in the attached table.

Data and information supporting Health and Safety, Energy, GHG Emissions (Scope 1, Scope 2 [location-based], Biogenic), Air Pollutants, Water Withdrawals, Water Discharge, and Social data were mostly historical in nature.

**Reporting Boundaries**

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

- Operational Control
- United States

**Reporting Criteria**

The Subject Matter needs to be read and understood together with the 2020 GRI Standards.

**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:

- 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. A materiality threshold of ±5-percent was set for the assurance process.
- ISO 14064-3 Second Edition 2019-04: Greenhouse gases -- Part 3: Specification with guidance for the verification and validation of greenhouse gas statements.

**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. Queried 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.

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.

Joe Winslow, Lead Assuror  
Project Manager  
Apex Companies, LLC  
Atlanta, GA

David Reilly, Technical Reviewer  
Principal Consultant  
Apex Companies, LLC  
Santa Ana, CA

November 18, 2021

Green Plains Inc.	Units	2020
<b>GHG Emissions</b>		
Scope 1	Thousand tCO2e	1,179
Scope 2	Thousand tCO2e	348
Biogenic	Thousand tCO2e	2,225
Total GHG Emissions	Thousand tCO2e	3,752
<b>Production</b>		
Corn Bushels	Metric Tons	6,971,181
<b>Air Emissions</b>		
Sulfur Dioxide	Thousand Metric Tons	0.098
Nitrogen Oxides	Thousand Metric Tons	0.551
Volatile Organic Compounds	Thousand Metric Tons	0.563
Carbon Monoxide	Thousand Metric Tons	0.354
Particulate Matter	Thousand Metric Tons	0.379
<b>Electricity Usage*</b>		
Electricity Usage	Thousand MWh	661.19
Electricity Use Intensity	kWh/ton of raw material	94.846
<b>Natural Gas Usage*</b>		
Natural Gas Usage	MMBTU	22,158,963
Natural Gas Use Intensity	MMBTU/ton of raw material	3.179
<b>Water Usage</b>		
Groundwater Withdrawals	Thousand m <sup>3</sup>	8,861
Municipal Water Withdrawals	Thousand m <sup>3</sup>	1,239
Reclaimed Water Withdrawals	Thousand m <sup>3</sup>	313
Salt Water Withdrawals	Thousand m <sup>3</sup>	0
Surface Water Withdrawals	Thousand m <sup>3</sup>	0
Total Water Withdrawals	Thousand m <sup>3</sup>	10,413
Total Water Discharged	Thousand m <sup>3</sup>	3,966
Total Water Usage	Thousand m <sup>3</sup>	6,447
Total Water Use Intensity	m <sup>3</sup> /ton of raw material	0.925
<b>Environmental Compliance</b>		
Number of Sites	Count	14
Number of Reportable Spills	Count	1
Weight of Reportable Spills	Thousand Metric Tons	0.010
Number of Environmental Fines	Count	1
Amount of Environmental Fines	USD	25,000
<b>Employee Turnover</b>		
All	%	18
Male	%	87
Female	%	13
Under 30	%	34

30-50	%	43
Over 50	%	23
<b>Diversity</b>		
Male	Total Number (%)	630 (81.10%)
Female	Total Number (%)	147 (18.90%)
Under 30	Total Number (%)	133 (17.10%)
30-50	Total Number (%)	403 (51.80%)
Over 50	Total Number (%)	241 (31.10%)
Caucasian/White	Total Number (%)	726 (93.44%)
Hispanic/Latin American	Total Number (%)	15 (1.93%)
American Indian/Alaskan Native	Total Number (%)	3 (0.39%)
Asian	Total Number (%)	6 (0.77%)
Black or African American	Total Number (%)	21 (2.70%)
Two or More Races	Total Number (%)	5 (0.64%)
Unspecified	Total Number (%)	1 (0.13%)
<b>Training and Education</b>		
Male	Average hours/employee	25
Female	Average hours/employee	25
Production	Average hours/employee	25
Corporate	Average hours/employee	0
<b>Health and Safety</b>		
Fatalities	Total Number	1
High-Consequence Work-Related Injuries (Lost Time)	Total Number	10
Recordable Injuries	Total Number	30
Hours Worked	Total Number	1,710,636

\*These values may be impacted by rounding



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