Green Plains

Ingredients that matter

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Low Carbon Biofuels and the Climate Smart Agriculture Revolution

April 5, 2023

Forward-Looking Statements

This presentation 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.

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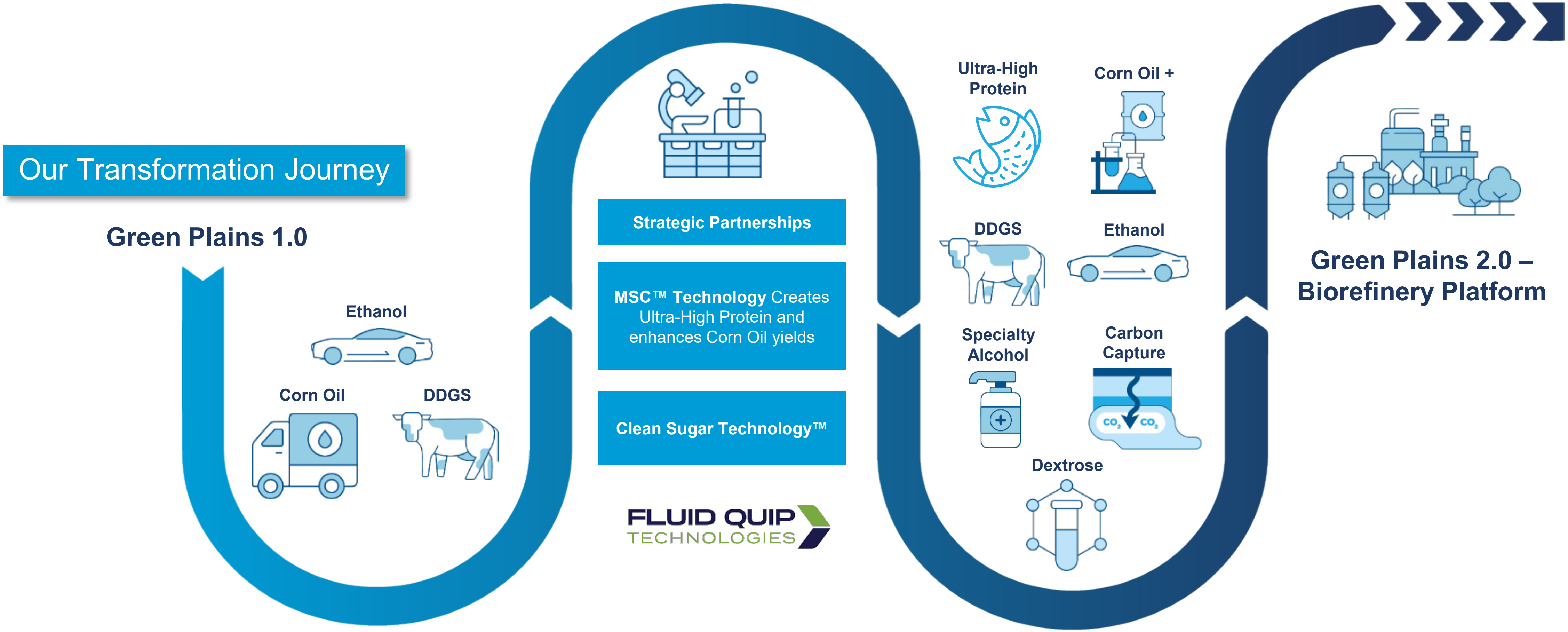
Certain of the information contained herein may be derived from information provided by industry sources. While the company believes that such information is accurate and that the sources from which it has been obtained are reliable, it has not independently verified data from these third-party sources.

Transforming to the Biorefinery Platform of the Future

Green Plains (GPRE) is transforming from traditional ethanol into a **sustainable biorefinery platform**, innovating through ag technology to produce higher-value products with stable cash flows, for tomorrow's sustainable economy



Investments in essential technology, infrastructure and strategic partnerships are creating our
AgTech platform for sustainable ingredients

Renewable Fuel Standard

- The Renewable Fuel Standard (RFS), codified in 2005 and expanded in 2007, sets annual biofuel volume requirements for petroleum refiners, blenders and importers to include in finished fuels
- Requires all feedstock to come from existing cropland, and imported feedstock must meet sustainability requirements equivalent to or better than U.S. production
- Fuel categories are based on GHG reduction and feedstock type; cellulosic biofuels and biomass based diesel comprise the advanced biofuels portion, and must meet a 50% GHG reduction threshold. Conventional fuels (primarily corn and sorghum based ethanol) must meet a 20% GHG reduction threshold
- Arguably one of the most successful climate and farm policies ever implemented:
  - Decreases our reliance on imported oil
  - Reduces greenhouse gas emissions
  - Improves air quality by replacing the dirtiest burning part of the gasoline gallon
  - Improves the ag / rural economy immeasurably
  - Reduces Farm Bill Title 1 program costs – saving taxpayer funds
  - Saves consumers money by decreasing prices at the pump
  - Reduces food inflation by bringing down the cost of transportation fuel

Low Carbon Fuel Standards

- State and national Low Carbon Fuel Standard (LCFS) programs provide additional incentives to the biofuels industry to de-carbonize
- Provide a more granular analysis of each biorefinery's carbon intensity (CI), and lower CI scores translate into higher value for fuels sold in these markets
  - Coupled with the new 45Z credits (following slide), they have spurred a veritable arms race in the biofuels industry to reduce CI, extract more distillers corn oil and expand soybean crushing capacity to meet growing demand for renewable diesel
- Sustainable Aviation Fuel (SAF) is another exciting new market, and we are investing in alcohol-to-jet (ATJ) SAF pathways to turn low-CI ethanol molecules into SAF
- Consistent with the administration's strategy to utilize biofuels in hard to decarbonize sectors such as aviation and marine, as the surface transportation fleet begins to convert to electric vehicles
  - Low CI-ethanol ATJ pathways are dependent on Treasury rulemaking allowing for suitable Life Cycle Analysis (LCA) modeling, such as the Department of Energy's Argonne GREET model, which provides the most up to date GHG analysis of on farm production practices

IRA Created the 45Z Clean Fuel Production Credit

- New $1/gallon "technology-neutral" fuel production tax credit from 2025-2027
  - $0.02 per point of carbon intensity (CI) reduction below a 50 kg CO2/mmBTU CI threshold, utilizing the Argonne GREET model for all fuels except SAF, which specifies an international model (ICAO CORSIA), or similar model
- Average dry mill ethanol plant in the U.S. today is around 55-60 CI, and these aggressive incentives are driving investments in carbon capture & sequestration (CCS), cogeneration power systems, biodigesters, wind and solar
  - Approx. 25 CI points is attributed to agricultural feedstock production (corn)
- Over 1/3 of the U.S. corn crop goes into ethanol production today - over 30 million acres
- Rulemaking is underway at Treasury, and depending on the granularity allowed, this could provide a new incentive for voluntary climate smart ag practices
  - Congressional intent was to spur investments in decarbonization of all facets of the energy landscape, and included specific funding ($20 billion) for working lands conservation programs

Embracing Climate Smart Ag – Farmer Perspective

- Historically, some farmers have been hesitant to adopt climate smart ag practices on a large scale for various reasons:
  - Lack of adequate monetary incentives to change practices which could negatively impact yields in the short term
  - Opposition to mandatory requirements and new regulations on their practices
  - Trepidation about sharing their on farm data
  - Not receiving credit for practices implemented in years past
- 45Z CFPC could address three of the four (all but data concerns)
- One (1) bushel of corn produces approx. three (3) gallons of ethanol, so the 25 CI points on farm, translates to $0.50/gal, or $1.50/bushel for the value chain to pursue
- On a per acre basis, using a 180 bushel average yield, there is $270 per acre upside – dramatically more than the current incentives for cover crops and other practices
  - This is before accounting for RFS and LCFS values

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Thank you

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