



# BIOFUELS IN MINNESOTA

Minnesota is currently the fourth largest producer of ethanol in the nation. With 18 ethanol plants, Minnesota's ethanol industry has contributed positively to the state's rural economy, reduced prices at the pump, cut CO2 emissions and played a significant role in reducing our nation's dependence on foreign oil.



## THE ECONOMY

Despite the COVID-19 pandemic, Minnesota's ethanol industry produced 956 million gallons of ethanol, contributing \$1.5 billion to the state's GDP in 2020, according to a recent study by ABF Economics<sup>1</sup>. In addition, the industry contributed \$964 million in household income and paid \$131 million in state and local taxes in 2020.



## JOBS

From agriculture to ethanol plants to fuel distributors, the ethanol industry supported nearly 14,500 jobs in the state in 2020, according to a study by ABF Economics<sup>2</sup>. Among the industries that benefit from the ethanol industry are agriculture, construction, manufacturing, transportation, public utilities, wholesale and the services sector.



## ENERGY RATIO

Over the last two decades, improved efficiencies in farms and at ethanol plants have made ethanol a net energy gain. According to a 2016 USDA<sup>3</sup> study, ethanol produces twice the amount of energy that is used for ethanol production. This includes energy used in ethanol plants, energy used to produce corn, farm machinery, transportation and energy used to produce distillers grains.



## ENERGY INDEPENDENCE

When the RFS was first enacted, it was envisioned as a means of weaning America off its dependency on foreign oil. Even with domestic crude oil production, ethanol still displaces foreign oil with a cleaner alternative. In 2020, according to the Renewable Fuels Association<sup>4</sup>, if not for domestic ethanol production, the US would have had to import nearly 500 million additional barrels of crude oil.



## THE ENVIRONMENT

With all gasoline sold in Minnesota containing 10% ethanol, 715,000 metric tons of CO2 emissions are reduced annually, according to an analysis by the University of Illinois<sup>5</sup>. This is the same as removing 150,526 cars<sup>6</sup> annually from Minnesota's roads. If all fuel sold contained 15% ethanol, a further 358,000 metric tons of CO2 emissions would be reduced annually. This is the equivalent of removing an additional 75,368 cars from the road.



## ADVANCED BIOFUELS

Corn ethanol has played an integral part in developing large scale production of cellulosic biofuels. Corn ethanol producers have begun producing cellulosic biofuels with more corn ethanol producers expected to follow suit. A study by the Third Way<sup>7</sup> states that the corn ethanol industry is vital to the development of cellulosic biofuels.



## CO-EXISTING WITH FOOD

According to the USDA<sup>8</sup>, corn use for ethanol this year will amount to 4.95 billion bushels (total supply :16.12 billion bushels). But only 69% of a bushel of corn is used to produce ethanol while 16.5 lbs and 0.6 lbs are returned as dried distiller's grains with solubles (DDGS) and corn oil respectively. In 2020, the 2.6 million tons of DDGS produced by Minnesota's ethanol industry was sufficient to meet the annual feed requirements for 85% of the state's entire inventory of cattle and calves.<sup>9</sup>



## MEETING RFS TARGETS

To meet the goals in the RFS, E15 should replace E10 as the new regular and there are 384 stations offering E15 in Minnesota. The number of brands offering E15 included Casey's, ARCO, Sinclair, Holiday, Kwik Trip, Minnoco, Winner, Little Dukes, Hy-Vee and Clark. In terms of consumption, 74.4 million gallons of E15 was sold in 2020<sup>10</sup>.



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<sup>1</sup>Contribution of the Ethanol Industry To The Economy Of Minnesota in 2020 by ABF Economics, February 2021

<sup>2</sup>Contribution of the Ethanol Industry To The Economy Of Minnesota in 2020 by ABF Economics. February 2021

<sup>3</sup> 2015 Energy Balance For The Corn-Ethanol Industry by the USDA, February 2016

<sup>4</sup>2021 Ethanol Industry Outlook by The Renewable Fuels Association. February 2021

<sup>5</sup>According to Steffen Mueller, Principal Research Economist, Energy Resources Center, University of Illinois at Chicago, each gallon of E15 saves 1.26g CO<sub>2</sub>e / MJ over E10 on a life cycle basis. Letter, February 2015.

<sup>6</sup>U.S. EPA Greenhouse Gas Equivalencies Calculator.

<sup>7</sup>Cellulosic Ethanol Is Getting A Big Boost From Corn, For Now by Ryan Fitzpatrick (Third Way). April 2015.

<sup>8</sup>USDA World Agricultural Supply and Demand Estimates. February 2021.

<sup>9</sup>Contribution of the Ethanol Industry To The Economy Of Minnesota in 2020 by ABF Economics, February 2021

<sup>10</sup>2020 Minnesota E85 + Mid-Blends Station Report by the Minnesota Department of Commerce. February 2021



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