

# BIOENERGY UPDATE: A U.S. OUTLOOK

## Key Takeaways

The 2023 Billion Ton Report identified capacity for production of up to 1.5 billion tons of biomass and unutilized waste material annually without compromising current and anticipated requirements for food, feed, fiber, and export demand.

### 1.5 billion tons

The production of 1.5 billion tons of biomass could provide annual energy supplies equivalent to 28% of US primary energy production or 75% of natural gas derived energy.

In 2000, biomass energy represented about 73% of all renewable energy production in the United States; but by 2024 biomass represented only 60%. During the same time period, solar rose from 1% to over 11% and wind from 1% to nearly 18%.

2000		2023
73%	Biomass ↓	60%
1%	Solar ↑	11%
1%	Wind ↑	18%

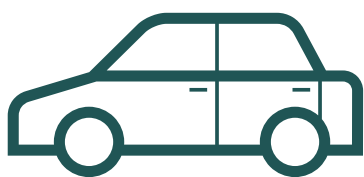
Produced from a full suite of bioresources, including: starch, vegetable oil, agricultural wastes, forest biomass, energy crops, municipal solid waste and wastewater organics,

### 100%



Biofuels could provide 100% of the combined fuel needs of the aviation, maritime, and rail sectors by 2050.

With improvements in production, today's ethanol has 39% less GHG emissions than gasoline.



### ↓39%



Ethanol has 43% lower GHG emissions than natural gas.

Jet fuel is highly refined kerosene, and it turns out that liquid fuels made from biomass are almost chemically identical to kerosene.



Liquid fuels from biomass are a drop-in substitute for conventional fuel requiring little adaptation by the airline industry.

It is possible for biomass to replace fossil fuels for almost all industrial chemicals and polymers.

### 90 million bio-based

### 330 million fossil-based



Current global production of bio-based chemical and polymer production is at 90 million metric tons, compared to 330 million metric tons from petrochemicals.