



IEA Bioenergy
Technology Collaboration Programme



United States of America Country Report Update

IEA Bioenergy Task 39 Task Meeting

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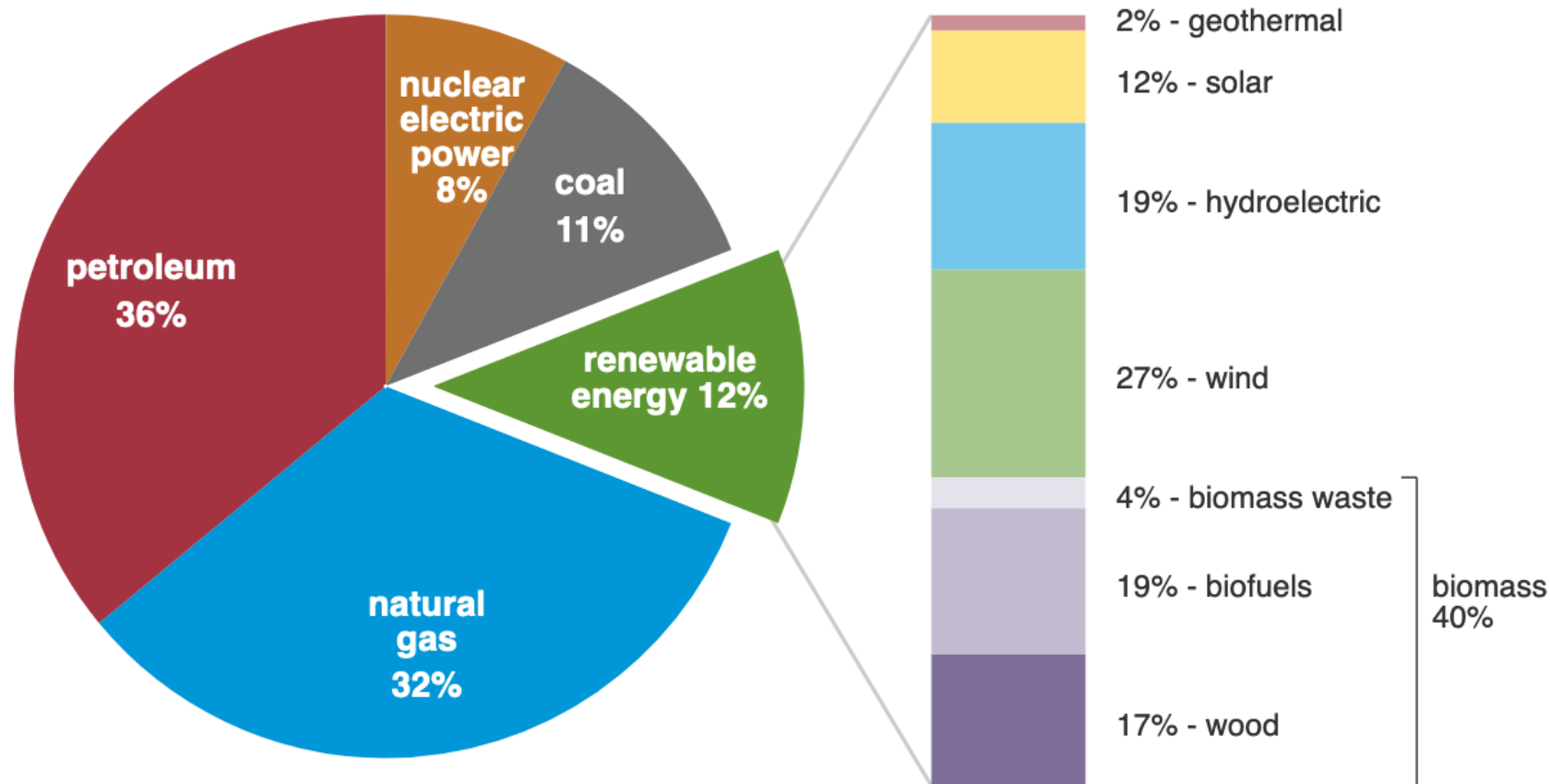
Gävle, Sweden, 12-13 September, 2022

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United States Primary Energy Use by Source in 2021

total = 97.33 quadrillion
British thermal units (Btu)

total = 12.16 quadrillion Btu



Data source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 1.3 and 10.1, April 2022, preliminary data

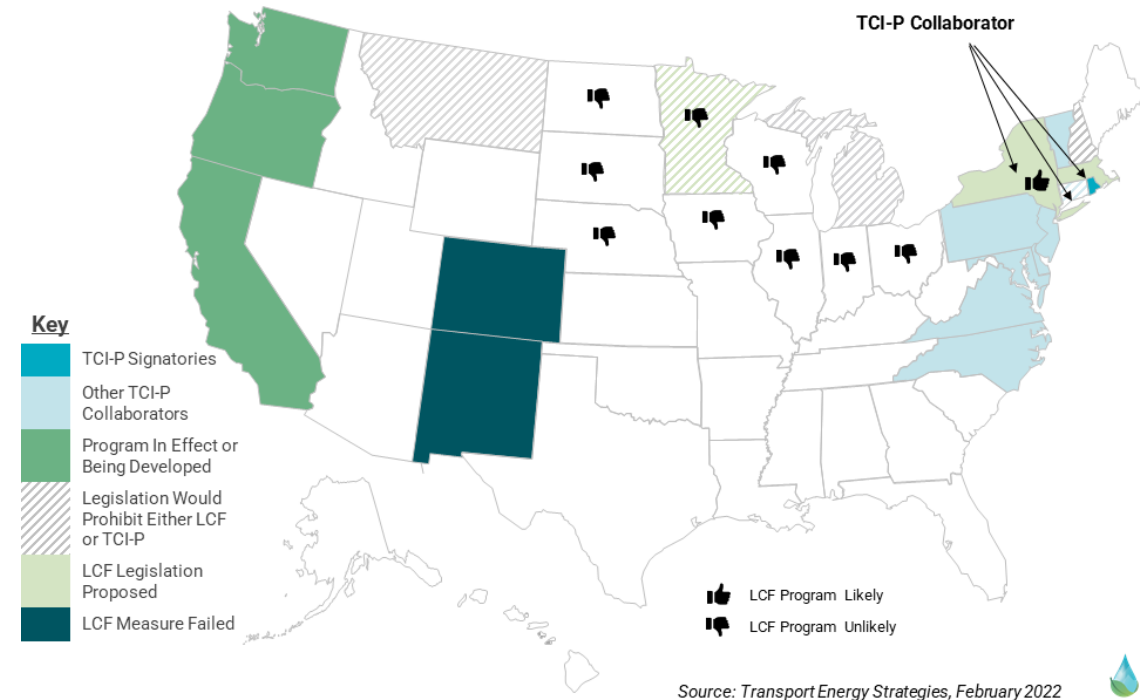


Note: Sum of components may not equal 100% because of independent rounding.

Source: EIA, <https://www.eia.gov/energyexplained/us-energy-facts/>

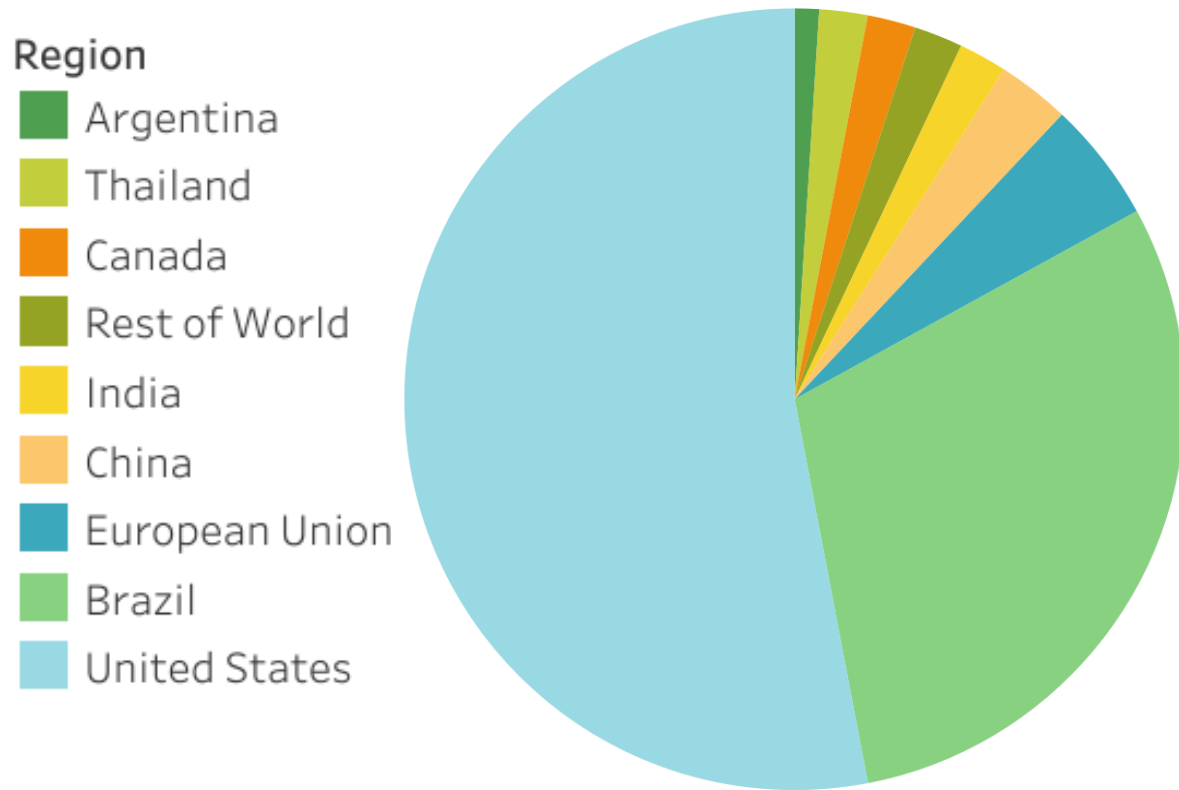
Overview of Transport Biofuels in the United States

- The main policies supporting advanced biofuels in the US are the federal level Renewable Fuel Standard (RFS) and the state level Low Carbon Fuel Standards (LCFS) being implemented in several states, i.e., California, Oregon and Washington (the figure shows some of the other US states considering LCFS policies)
- The major transport biofuels remain ethanol (mostly as E10 or E15) and blended diesel biofuels (FAME and HEFA); some renewable methane is also produced but its use for transport is small relative to liquid biofuels
- Federal level policy reform remains largely stalled by political gridlock and the outlook for the RFS beyond 2023 is unclear
- The US administration has re-committed to fighting climate change and decarbonizing society (however it is also increasing fossil fuel production)
- The US Department of Energy (and other US government agencies) continues to support biofuels RD&D [through various funding opportunities](https://www.transportenergystrategies.com/2022/02/23/u-s-state-low-carbon-fuel-initiatives-in-the-slow-lane/), with increasing emphasis on production that meets stringent sustainability metrics, especially carbon intensity / GHG mitigation ability, targeting biofuels for the hardest to decarbonize sectors (freight and aviation). Recent funding shifting towards biojet (a.k.a. Sustainable Aviation Fuel, SAF) - follow embedded hyperlink to list of recent funding calls.

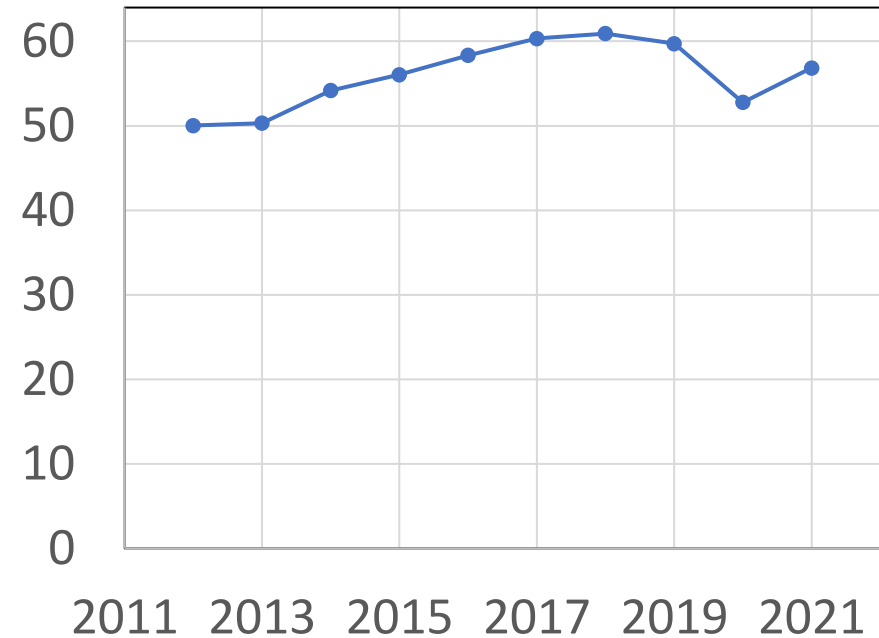


Status of US State Level LCFS Programs

US Remains World's Largest Producer of Transport Biofuels



(Billion liters)



Global Ethanol Production 2020

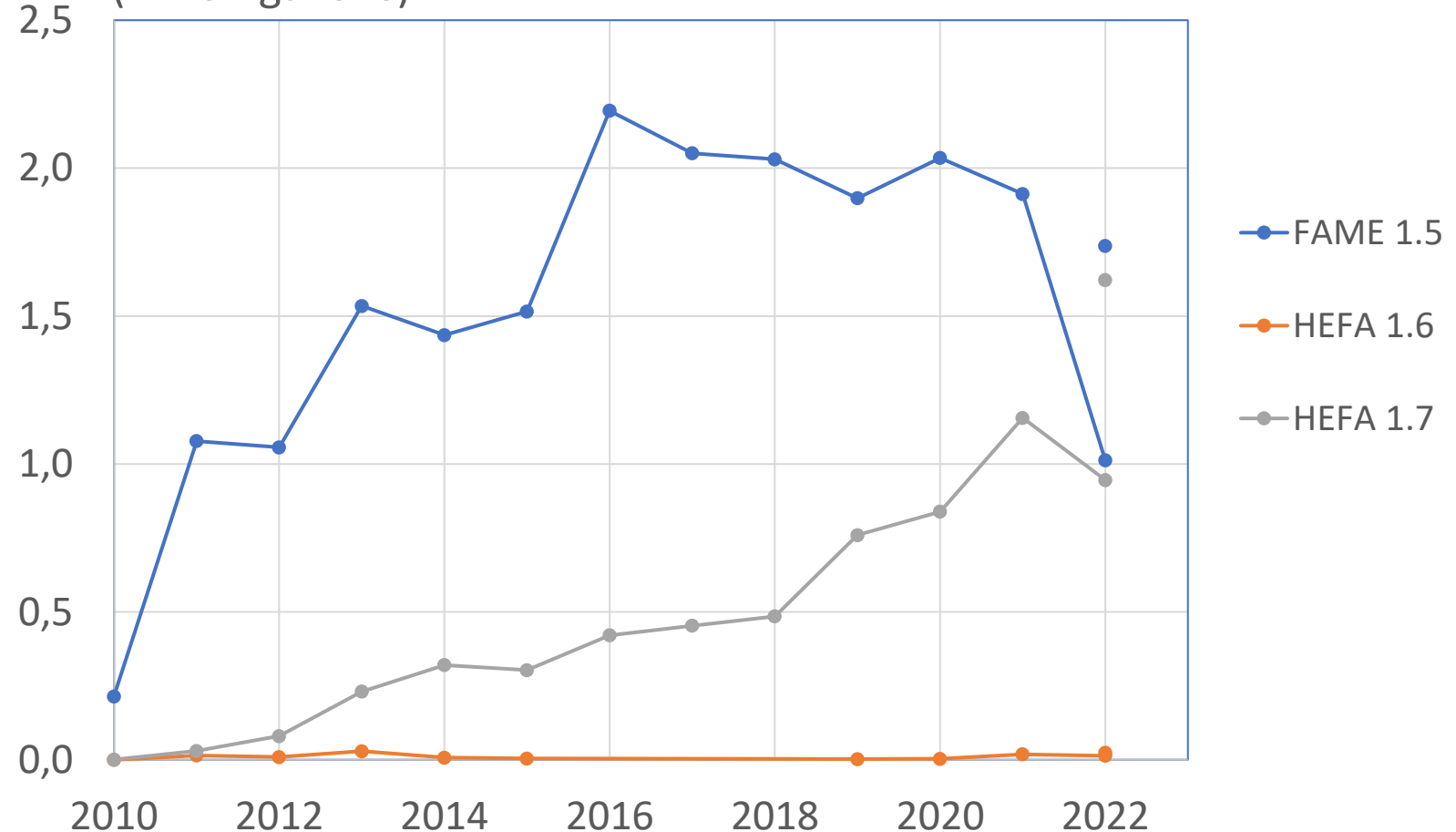
US Ethanol Production

Source: RFA, <https://ethanolrfa.org/markets-and-statistics/annual-ethanol-production>

US Diesel Biofuels Production, 2010-2022

FAME Biodiesel and HEFA Renewable Diesel
(Billion gallons)

- The primary diesel biofuels are FAME biodiesel and HEFA renewable diesel, which compete for oleaginous feedstocks
- Production data indicates total (combined) annual production exceeded 3 billion gallons (11 billion liters) in 2021 and should again in 2022.
- Production capacity levels are close to 2 billion gallons per year for both, however HEFA growing faster as this route produces a more fungible product.



Source: EPA, <https://www.epa.gov/fuels-registration-reporting-and-compliance-help/spreadsheet-rin-generation-and-renewable-fuel-0>

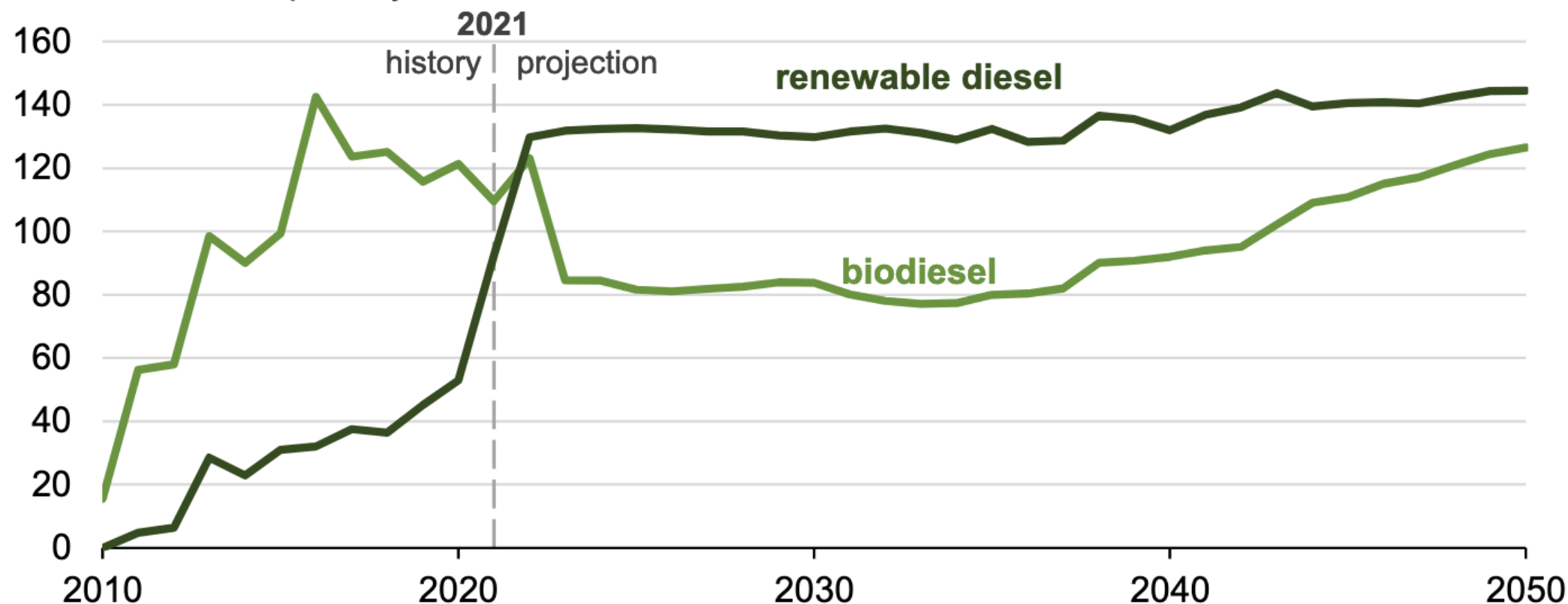
Renewable Diesel (HEFA/HVO) is Growing, Projected to Become Dominant to Biodiesel (FAME) in Coming Years

Biomass-based diesel supply: domestic production and net imports (2010–2050)

AEO2022 Reference case



thousand barrels per day



Source: EIA, <https://www.eia.gov/todayinenergy/detail.php?id=51778#>

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