Liquid Fuels Outlook And Challenges

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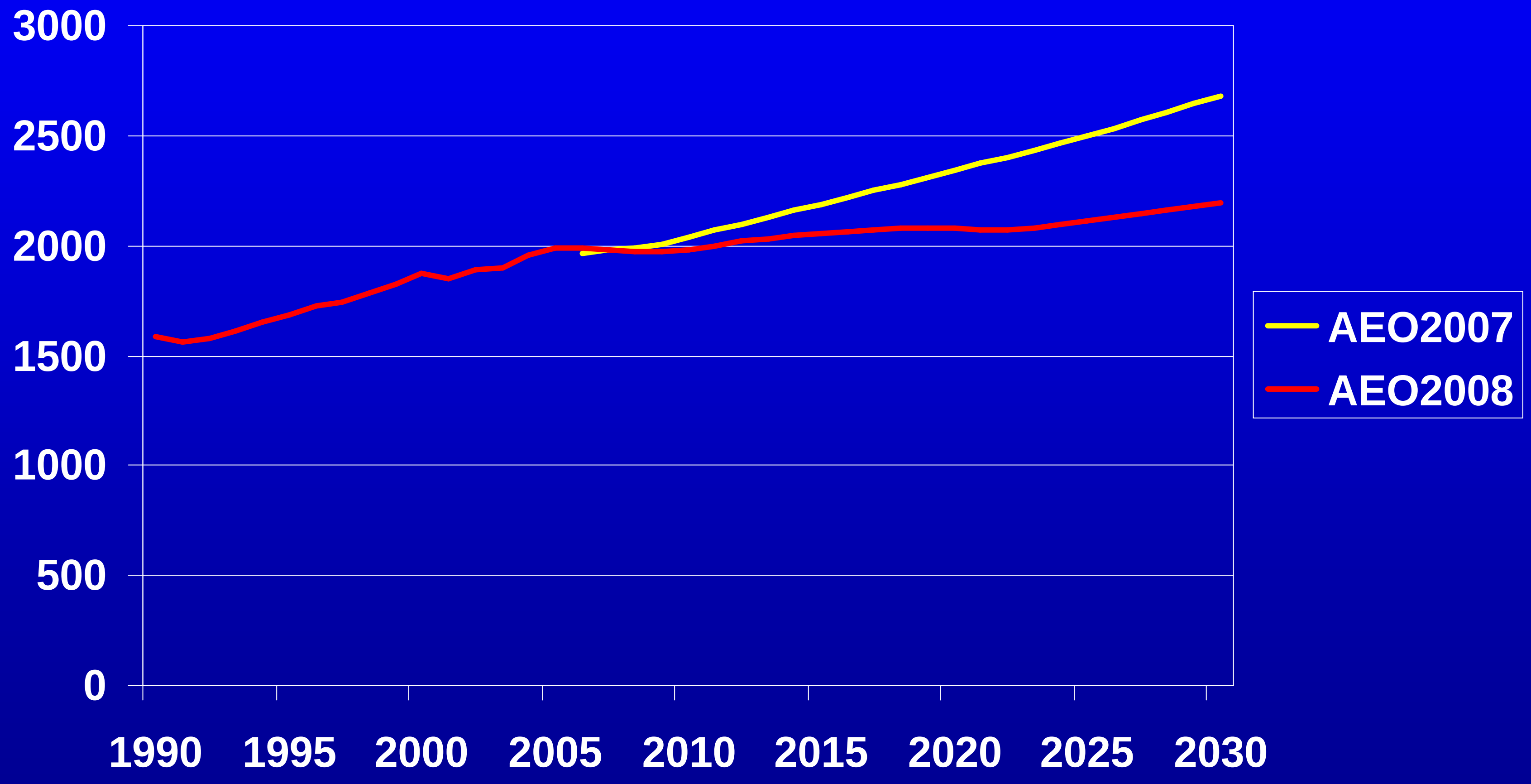
Liquid Fuels Outlook Affected By Energy Independence and Securities Act of 2007

EISA 2007 has brought two major changes to transportation fuels:

- Increased Corporate Average Fuel Economy (CAFE).
  - Light Duty Vehicle fuel economy standard of 35 miles per gallon by 2020.
- Increased and Diversified the Renewable Fuels Standard (RFS)
- These changes will have a significant impact upon U.S. liquid fuel production and consumption.

CO2 Emissions in Transportation Sector Lower with EISA

(million metric tons carbon dioxide equivalent)



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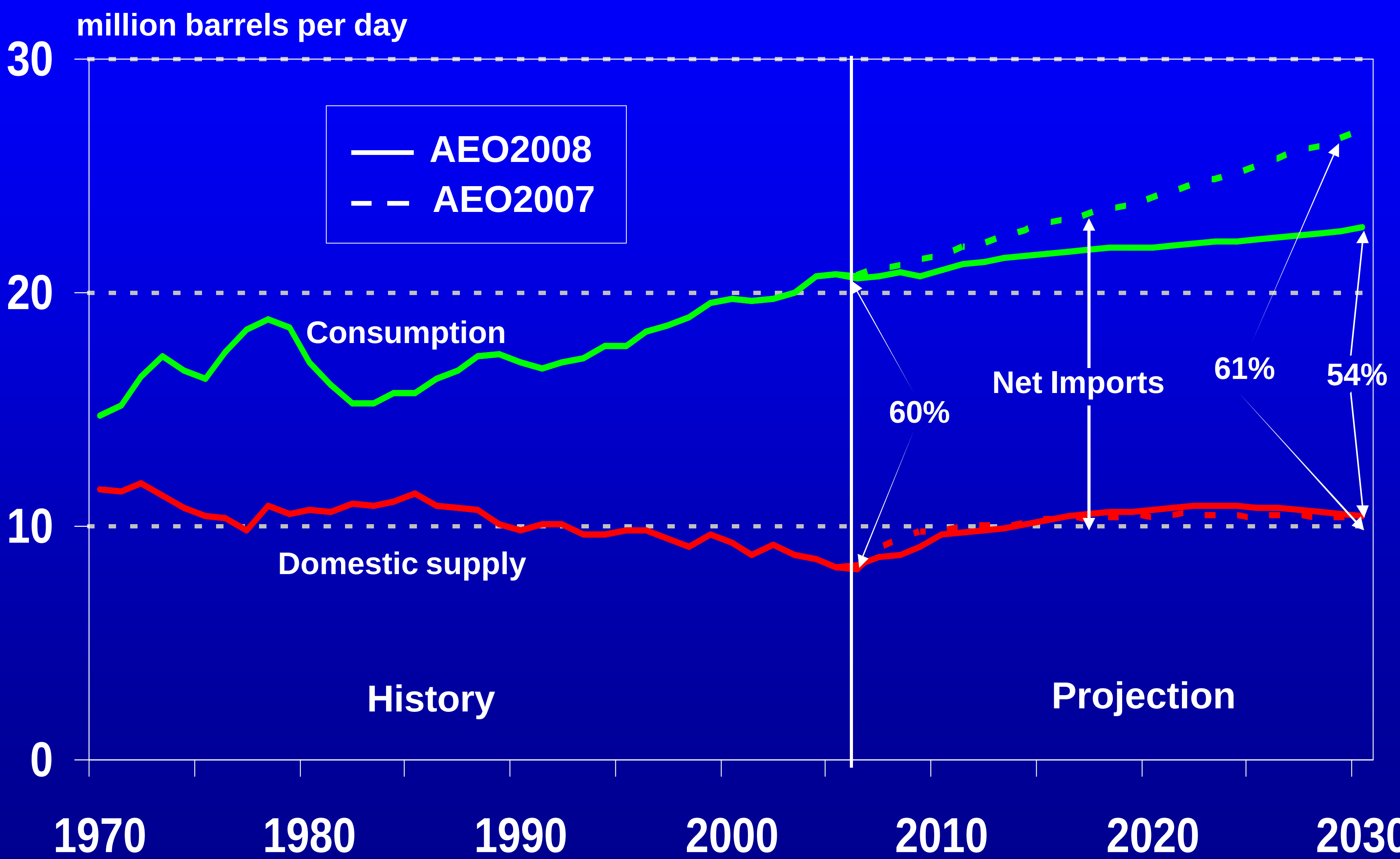
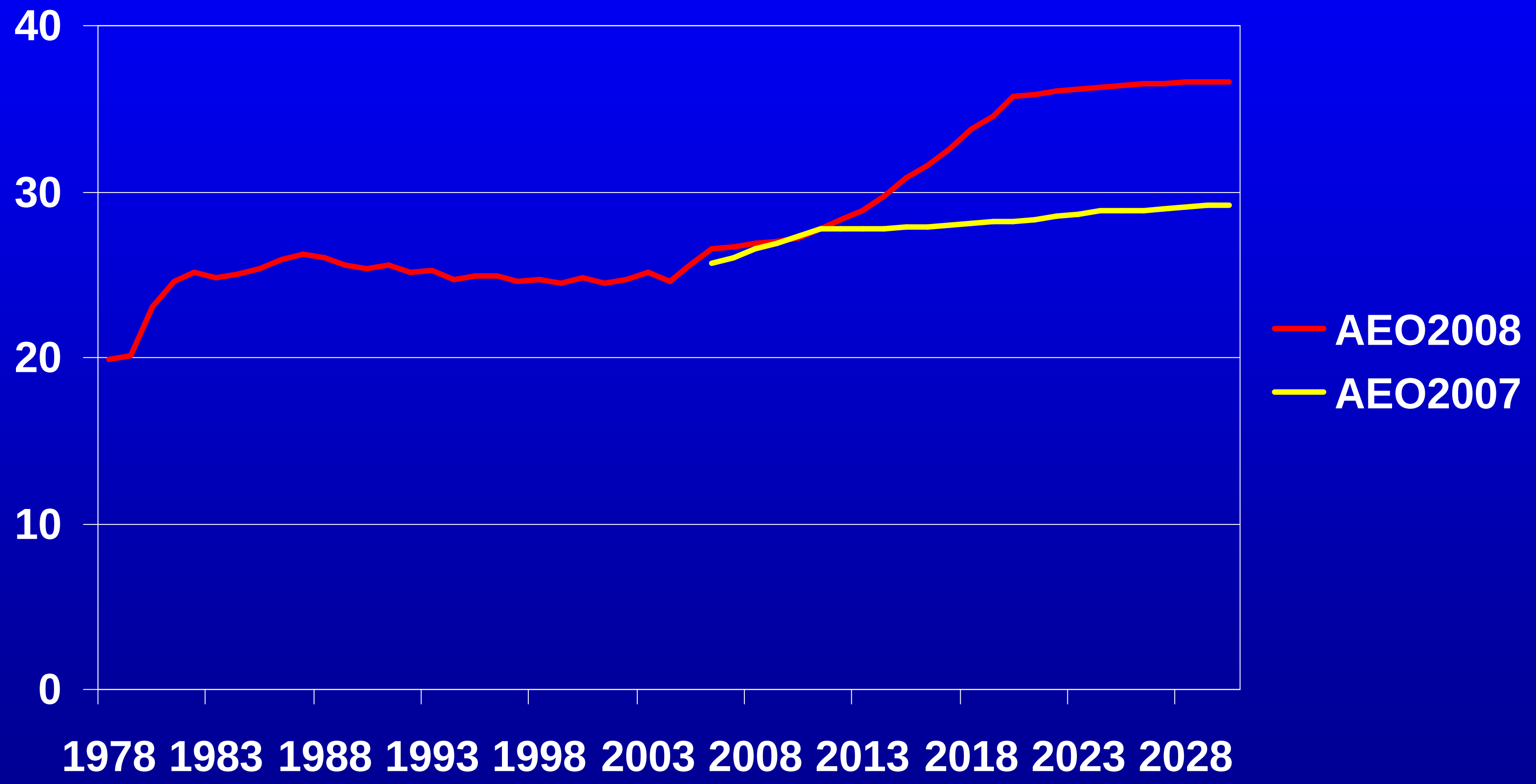
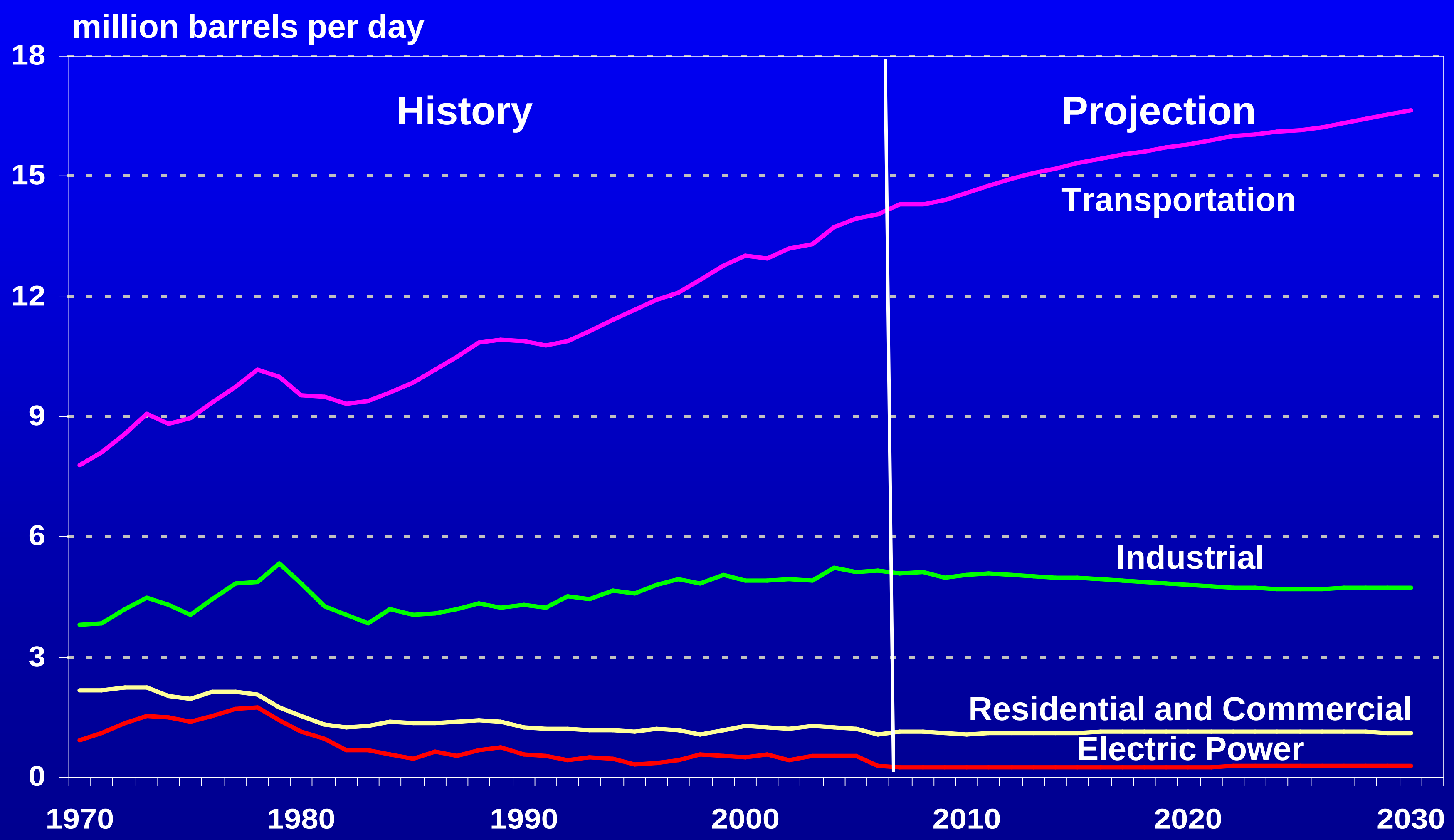
Liquid Fuels Consumption and Domestic Supply



New Light-Duty Vehicle Fuel Efficiency (miles per gallon)



The Transportation Sector Dominates Liquid Fuels Consumption.



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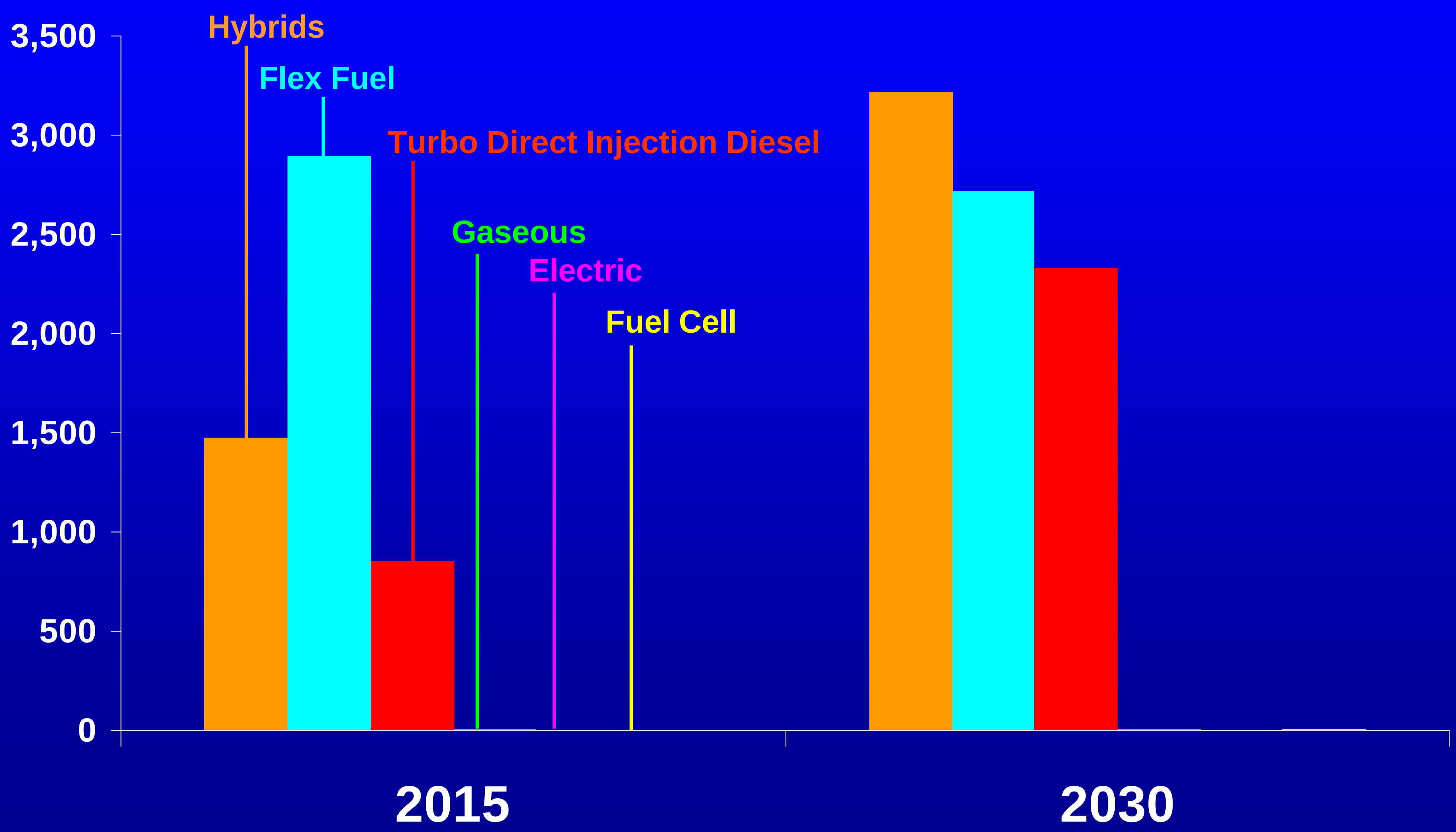
U.S. Sales of Unconventional Light-Duty Vehicles, 2015 and 2030 (thousand vehicles sold)



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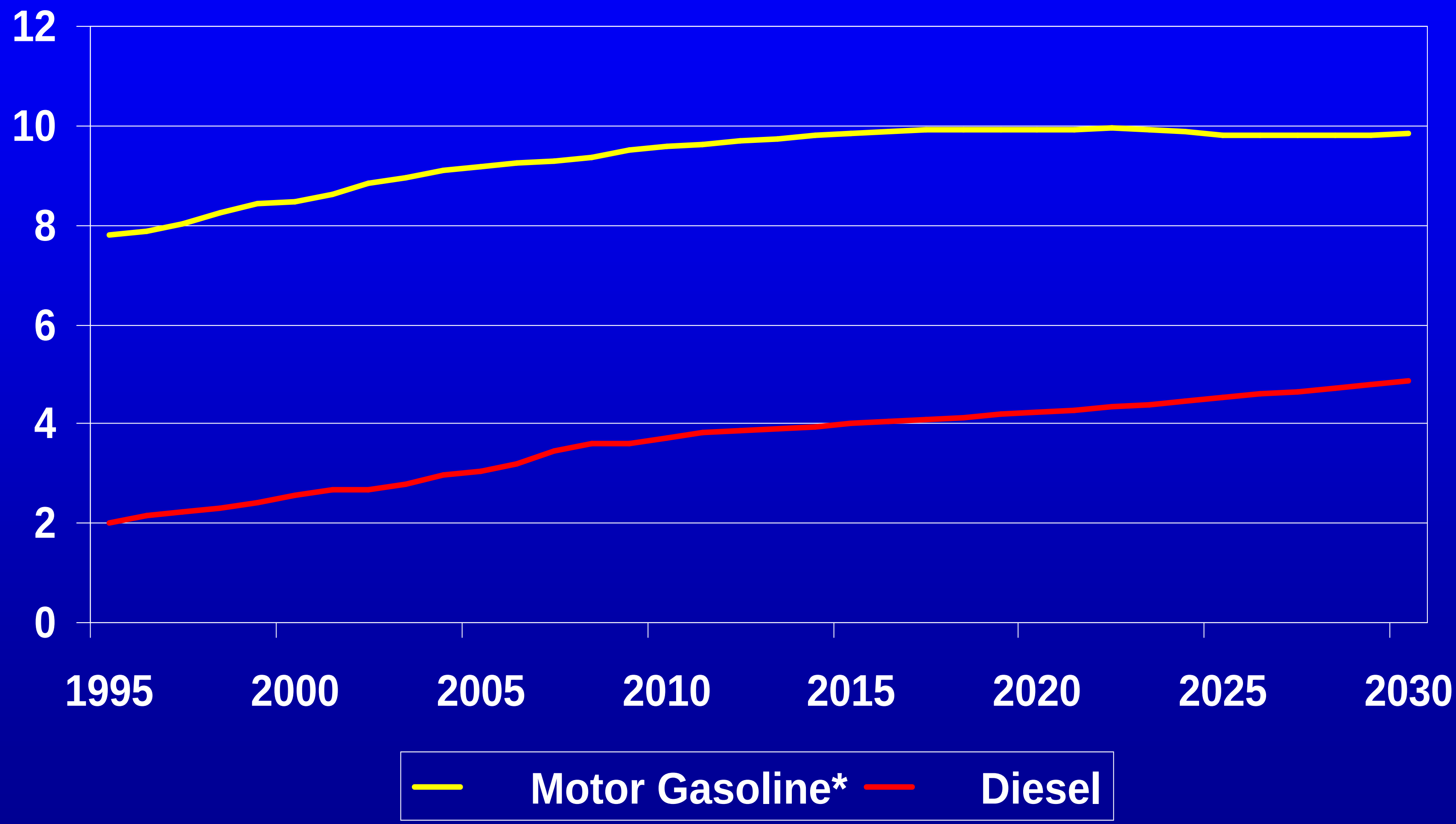
Motor Fuels Demand
(million barrels per day)



* Motor Gasoline includes E85

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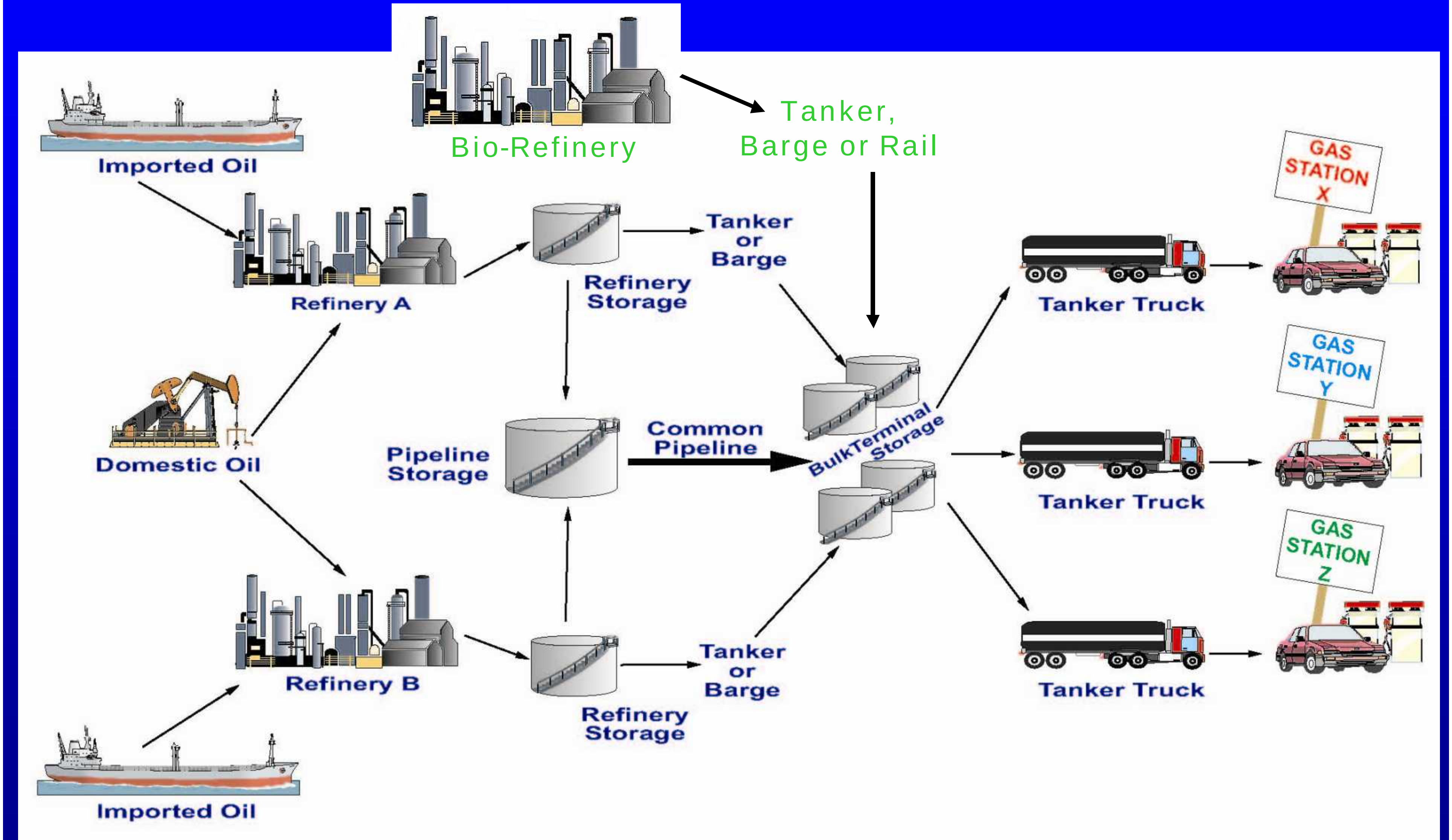
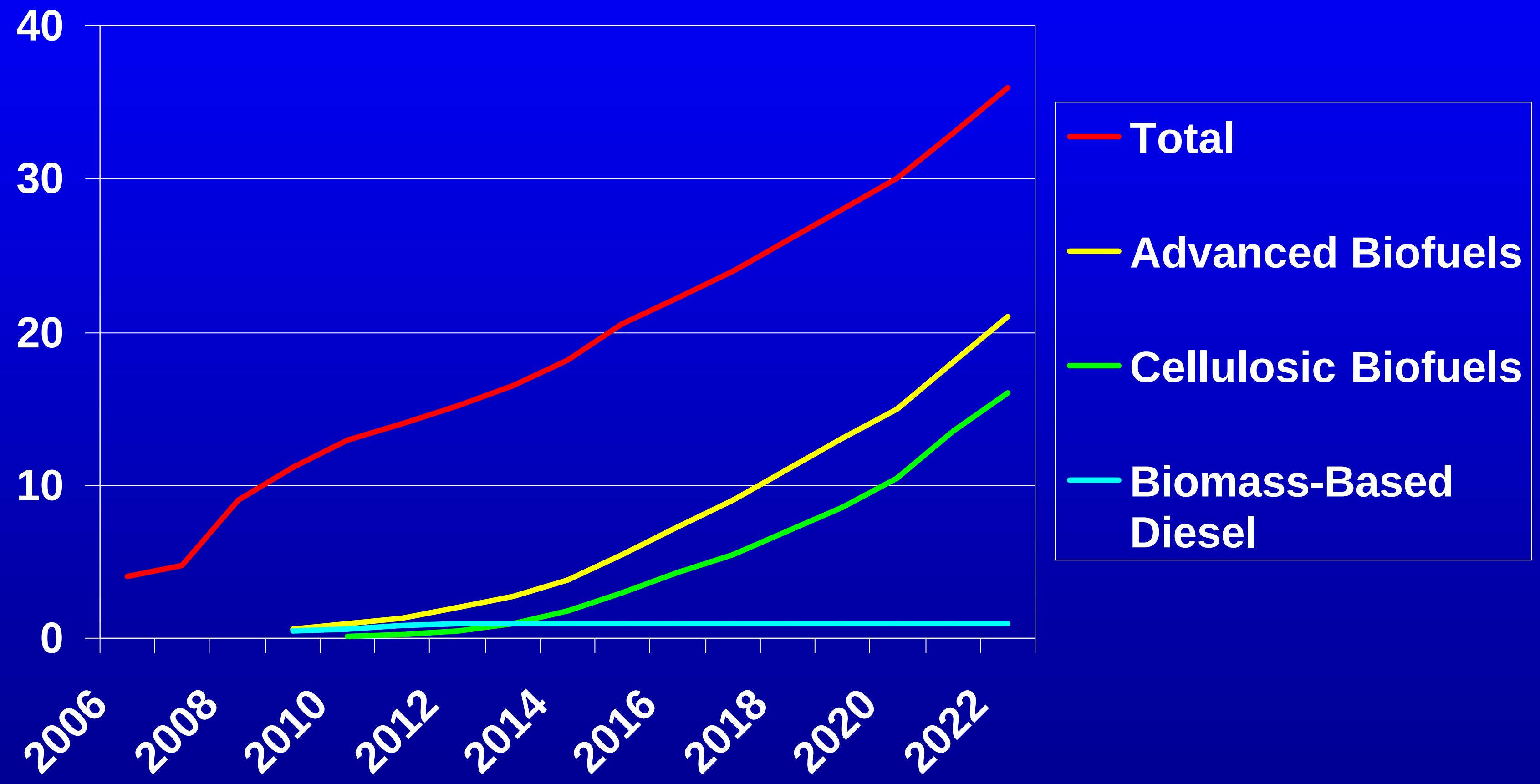
Bringing Liquid Fuels to Market



EISA 2007 Expands the Renewable Fuel Standard (RFS) Mandate

(billion credits, ethanol equivalent gallons)



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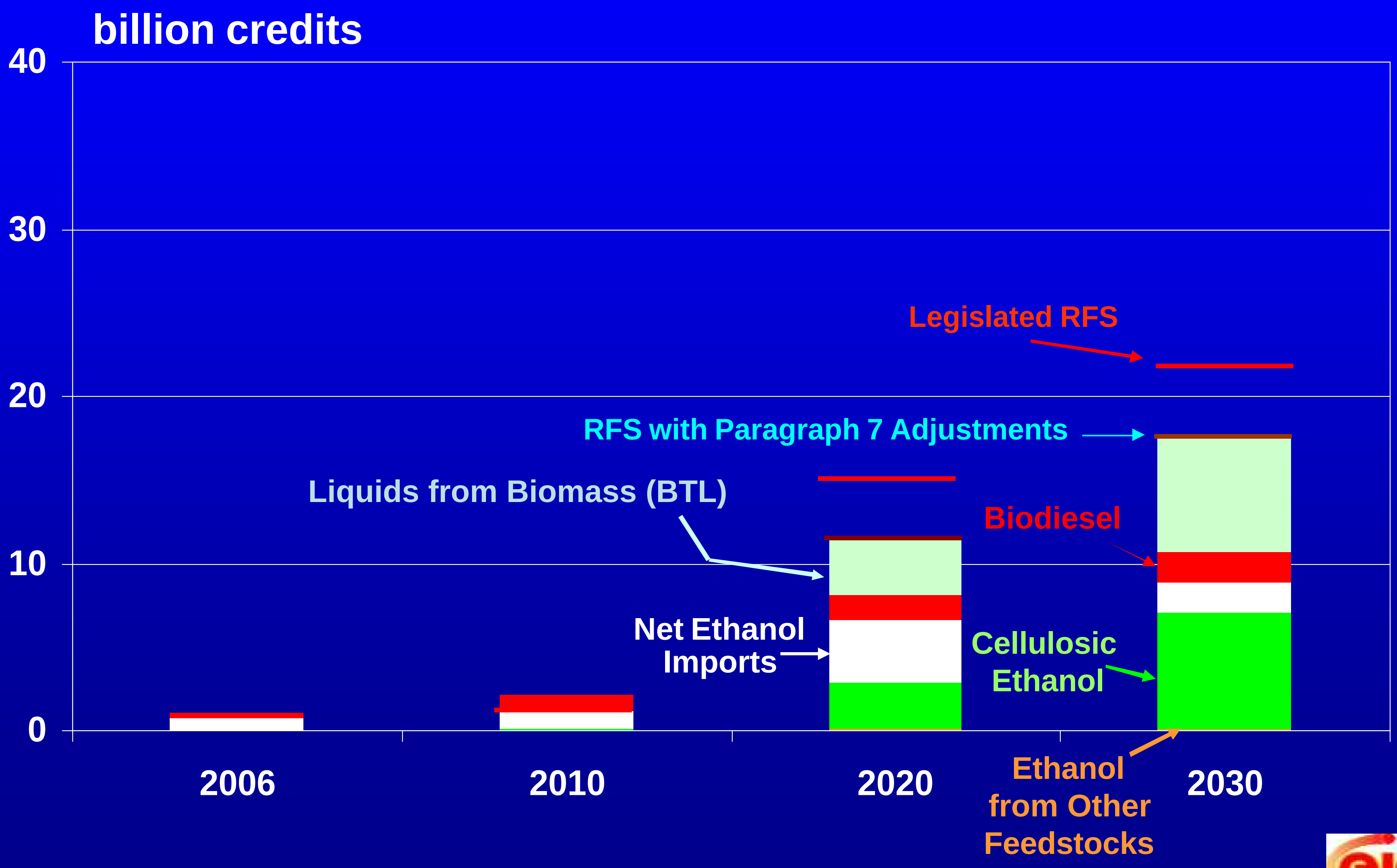
Advanced Biofuels Mandate



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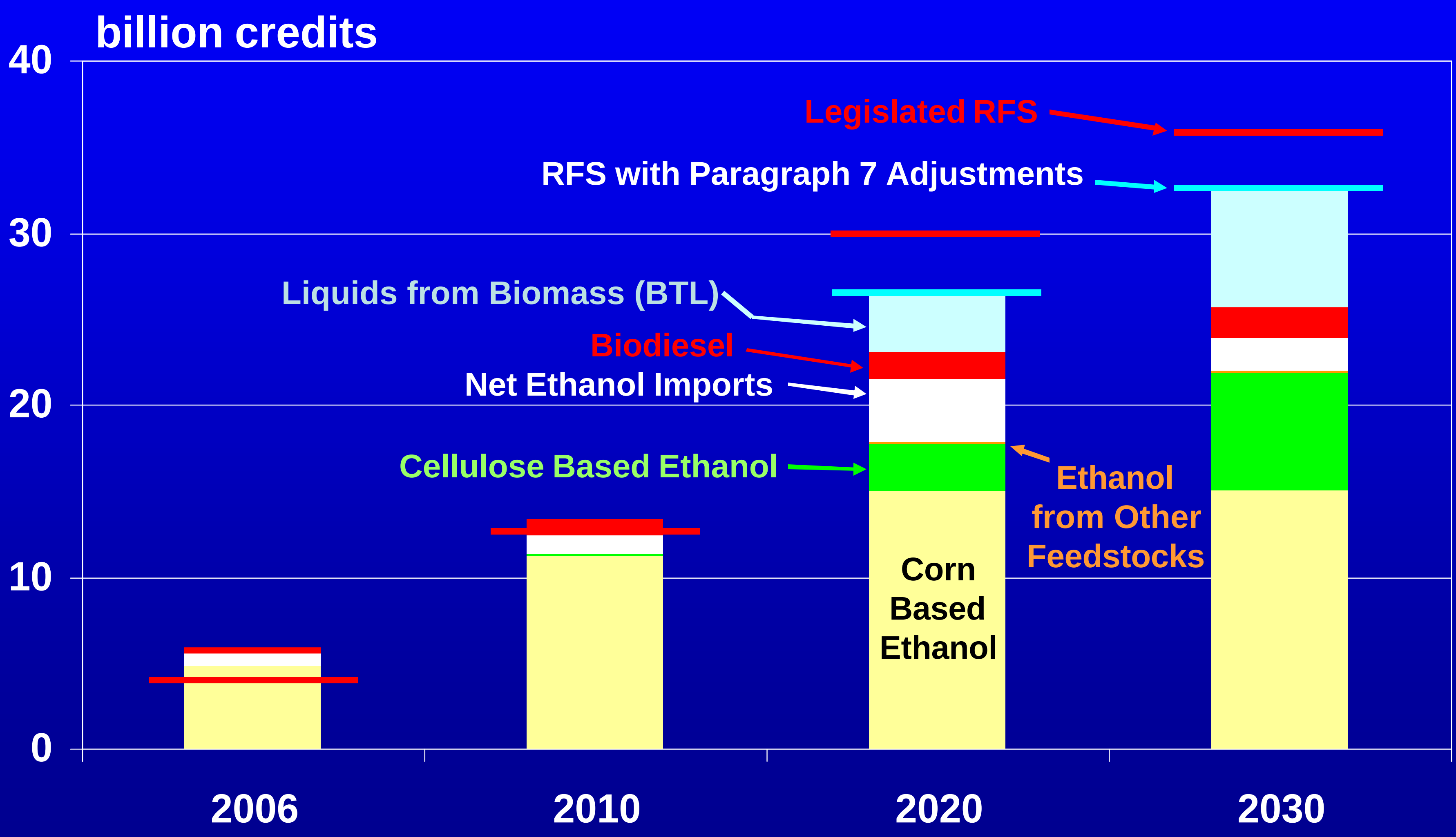
Meeting the Renewable Fuels Standard



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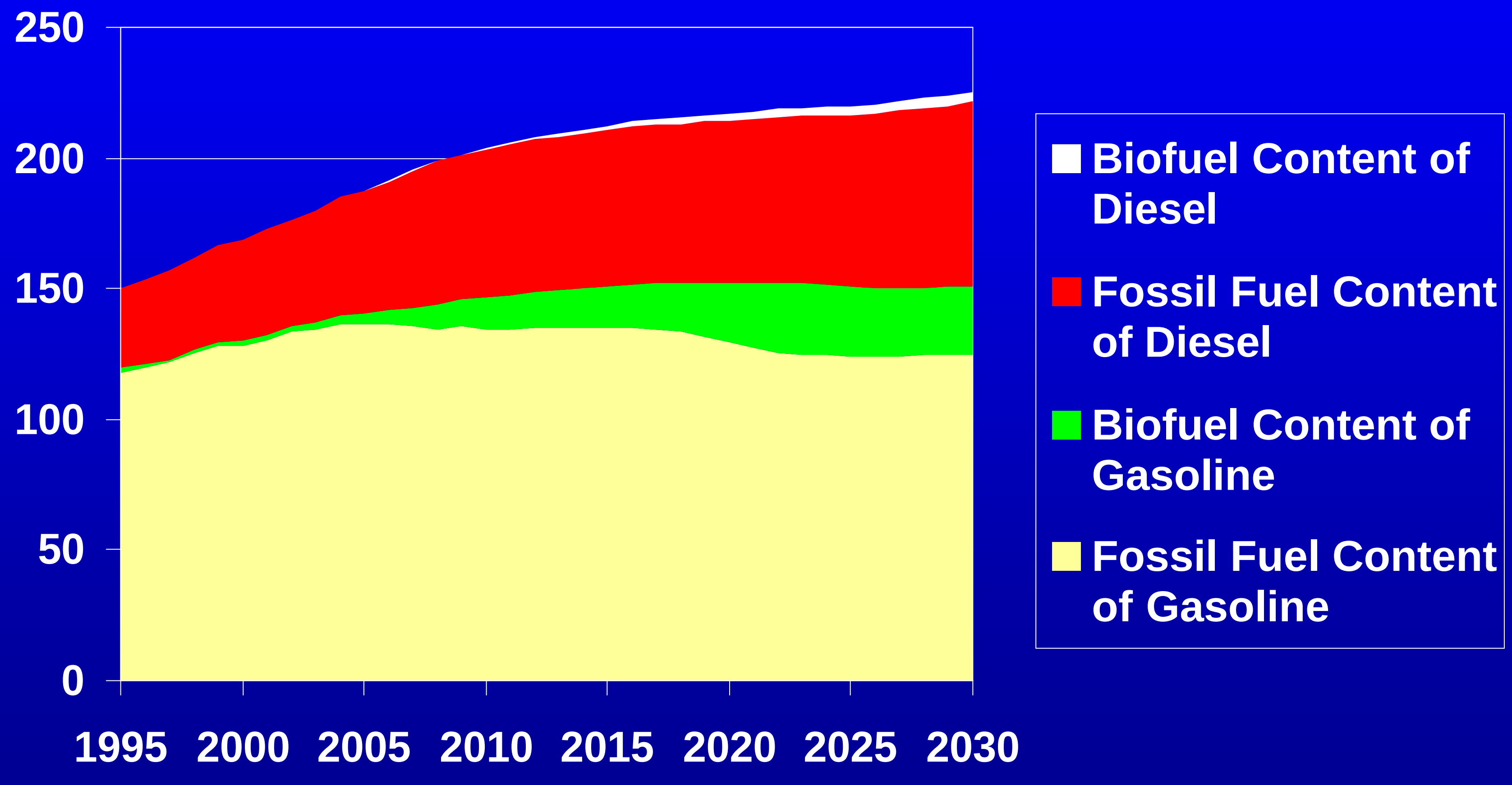
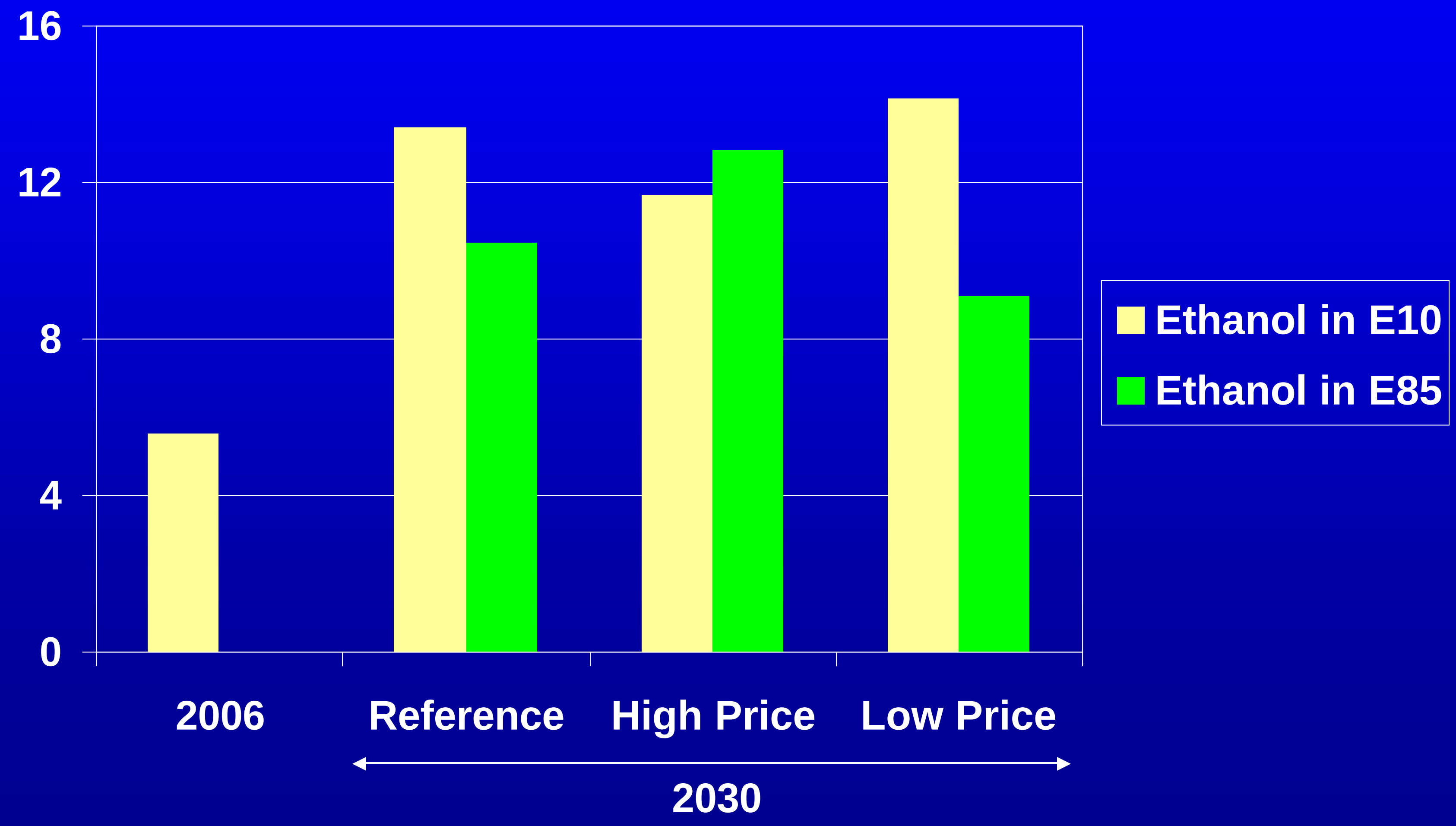
Motor Fuels by Source
(billion gallons)

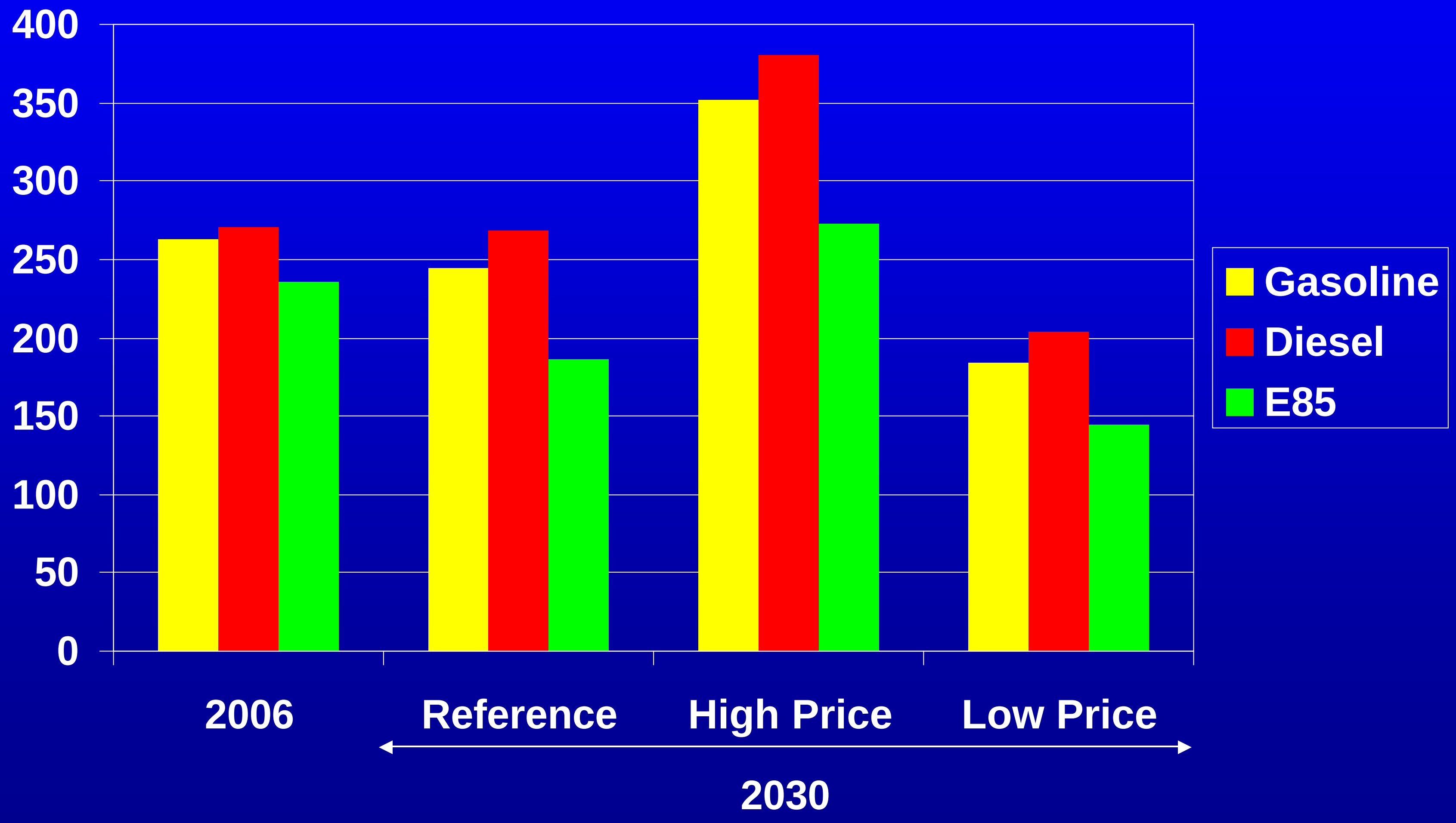


Distribution of Ethanol Volumes Requires E85 Sales (billion gallons)



Motor Fuels Prices Include Costs to Encourage E85 Sales

(2006 cents per gallon)



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Summary

- **EISA 2007 will have a significant impact on liquid fuels production and use.**
  - **Lower petroleum imports**
  - **Lower CO_2 Emissions**
- **The CAFE-induced shift towards diesel will alter demand growth in motor gasoline.**
- **The RFS, made up of four mandates, met by a combination of ethanol, diesel production and imports.**
- **By 2022 the RFS is expected to surpass 32 billion gallons of ethanol-equivalent credits.**
  - **Cellulosic ethanol, as an emerging technology, is projected to be insufficient to meet RFS target – triggering waivers and modifications as provided by law.**
- **RFS implementation is in its early phases and significant uncertainties remain.**

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