EIA's Energy Outlooks

For
Club Español de la Energía
February 11, 2021 | Webinar

By
John Staub, Senior Advisor for Energy Analysis

Overview

- Introduction to EIA
  - Our unique role
  - Data, tools, maps, analysis, discussions, forecasts, projections
- *Short-Term Energy Outlook* monthly
- *International Energy Outlook* 2020 October
- *Annual Energy Outlook* 2021 January
- Q&A

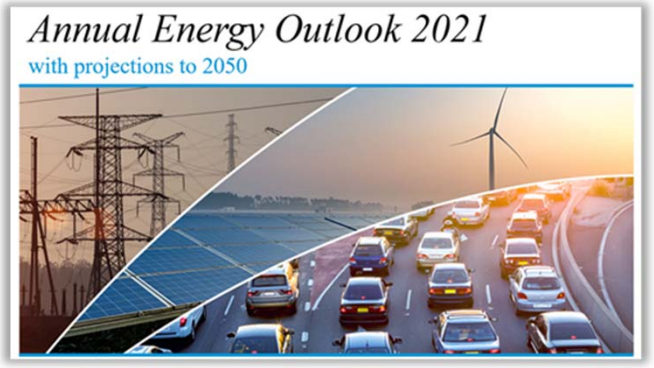
Independent Statistics & Analysis

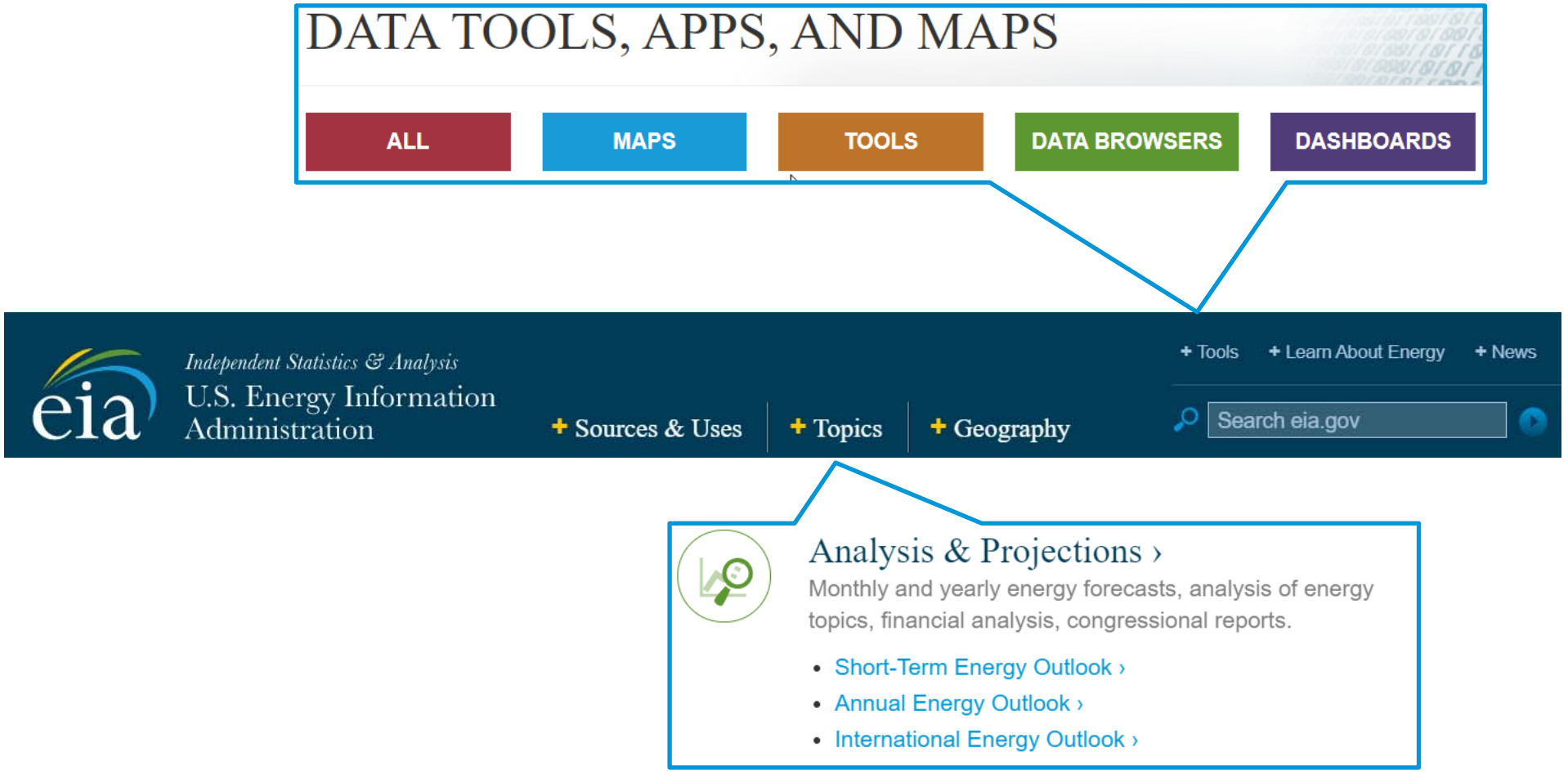
U.S. Energy Information Administration

The U.S. Energy Information Administration (EIA) collects, analyzes, and disseminates independent and impartial energy information to promote sound policymaking, efficient markets, and public understanding of energy and its interaction with the economy and the environment.

EIA's role is unique — by providing an unbiased view of energy markets, EIA increases transparency and promotes public understanding of important energy issues.

EIA has expanded its program in recent years to provide a growing customer base with coverage of increasingly complex and interrelated energy markets.



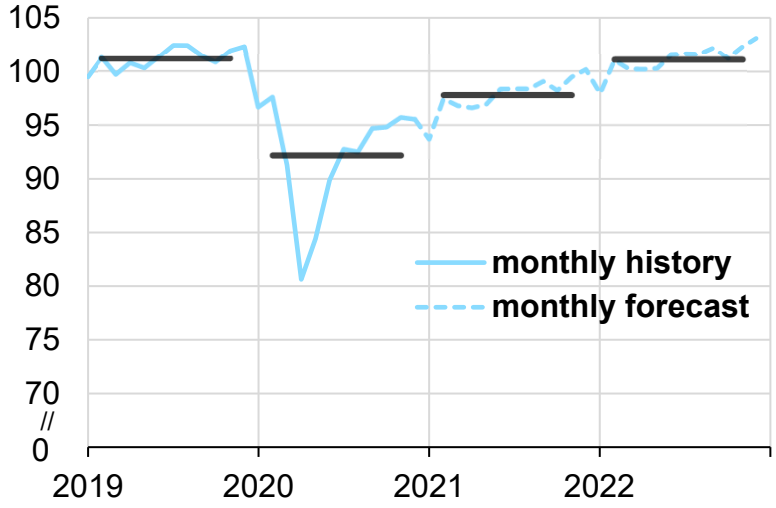

DATA TOOLS, APPS, AND MAPS
ALL
MAPS
TOOLS
DATA BROWSERS
DASHBOARDS
eia
Independent Statistics & Analysis
U.S. Energy Information Administration
+ Sources & Uses
+ Topics
+ Geography
+ Tools
+ Learn About Energy
+ News
Search eia.gov
Analysis & Projections ›
Monthly and yearly energy forecasts, analysis of energy topics, financial analysis, congressional reports.
Short-Term Energy Outlook ›
Annual Energy Outlook ›
International Energy Outlook ›

SHORT-TERM ENERGY OUTLOOK

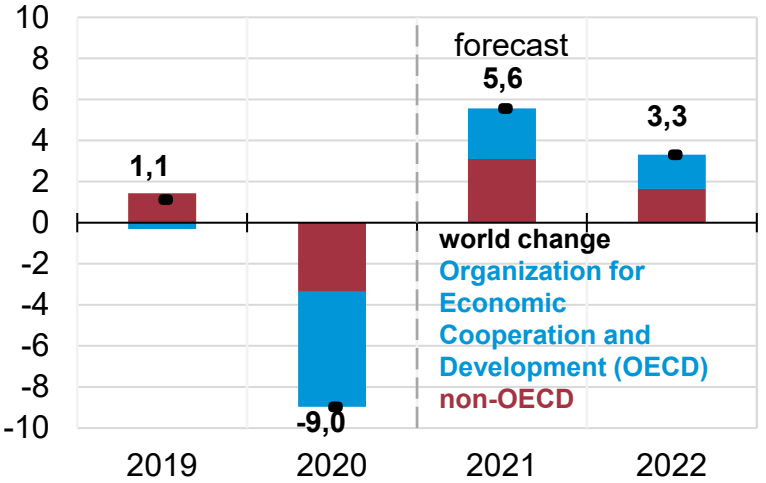
Release Date: January 12, 2021 | **Forecast Completed:** January 7, 2021 | **Next Release Date:** February 9, 2021 | Full Report | Text Only | All Tables | All Figures

Because of responses to COVID-19, the near-term projections in AEO2021 are more uncertain than in previous AEOs

World liquid fuels consumption
million barrels per day



Components of annual change
million barrels per day



Source: U.S. Energy Information Administration, Short-Term Energy Outlook, January 2021

INTERNATIONAL ENERGY OUTLOOK 2020

Release date: October 14, 2020 | **Next release date:** October 2021

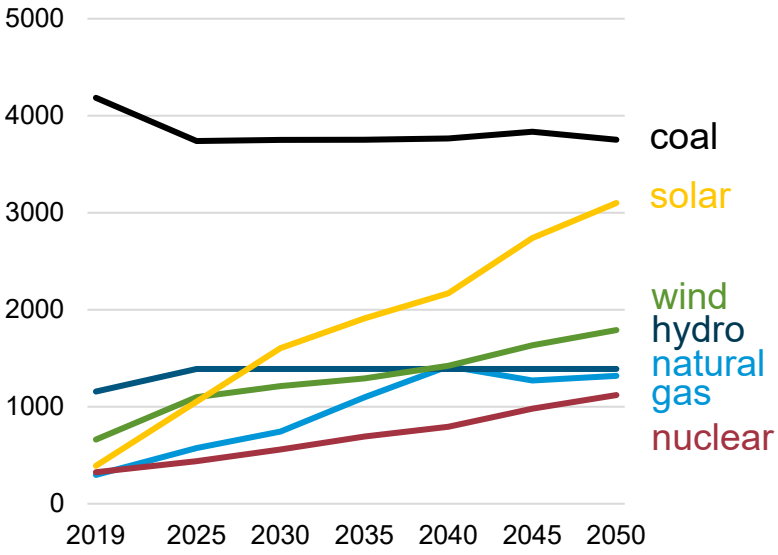
IEO2020 Issues in Focus:

Electricity generation fuel-mix trends and uncertainties

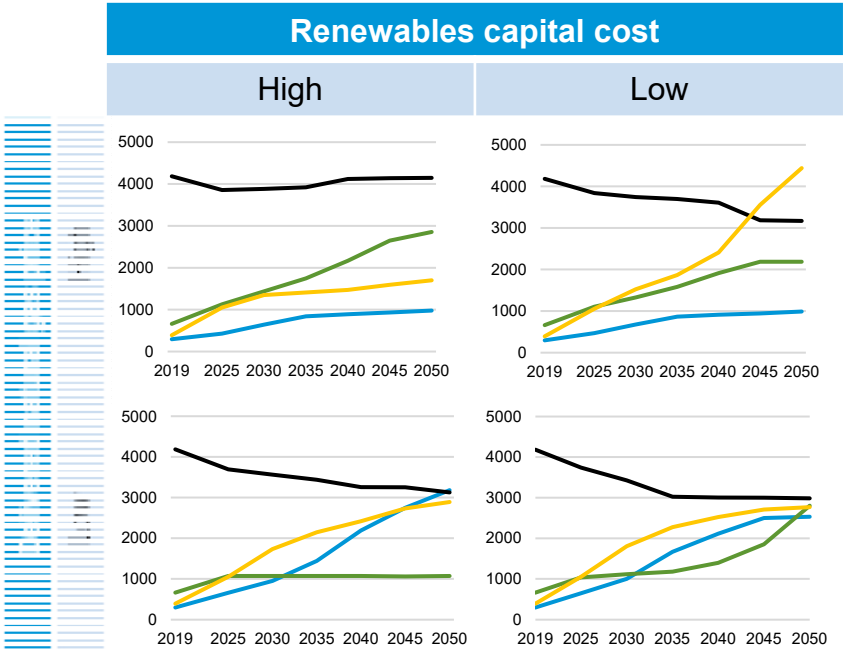
- **Asia: Impact of natural gas prices and renewables capital costs**
- **India: Impact of interregional electricity trade**
- **Africa: Impact of off-grid electricity development**

In China, economics of competing technologies and emissions policies drive decreases in coal generation

Electricity generation by fuel, China
Comparative Reference case
billion kilowatthours



Electricity generation by select fuels, China
billion kilowatthours



Note: Other fuels representing a small percentage of generation are not shown
Source: Energy Information Administration, International Energy Outlook 2020

Independent Statistics & Analysis
U.S. Energy Information Administration

+ Sources & Uses | + Topics | + Geography

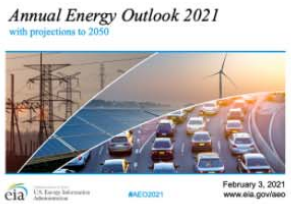
+ Tools | + Learn About Energy | + News

Search eia.gov

ANNUAL ENERGY OUTLOOK 2021

Release date: February 3, 2021 | **Next release date:** January 2022 | AEO Narrative

OVERVIEW | DATA | NARRATIVE | CHART LIBRARY



Annual Energy Outlook 2021

The *Annual Energy Outlook* presents an assessment by the U.S. Energy Information Administration of the outlook for energy markets through 2050.

Press Presentation PDF PPT

The Annual Energy Outlook narrative

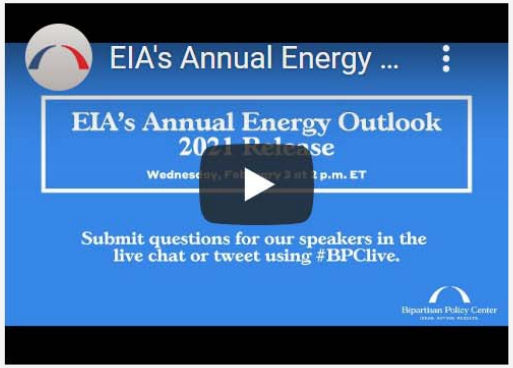
The *Annual Energy Outlook* narrative is the primary discussion of the *Annual Energy Outlook*:

- Introduction
- Consumption
- Electricity
- Production

The Annual Energy Outlook chart library

The *Annual Energy Outlook* chart library is a curated set of charts that you can use to review and analyze selected *Annual Energy Outlook* data. You can access chart data by right-clicking the chart in the pptx files.

Webcast of release



TIE articles

February 3, 2021

EIA's AEO2021 explores the impact of COVID-19 on the U.S. energy mix through 2050

AEO2021 Highlights

- A return to 2019 levels of U.S. energy consumption will take years; energy-related carbon dioxide emissions fall further before leveling off or rising.

- Renewable energy incentives and falling technology costs support robust competition with natural gas as coal and nuclear power decrease in the electricity mix.

- Continuing record-high domestic energy production supports natural gas exports but does not necessarily mean growth in the U.S. trade balance in petroleum products.

AEO2021 examines a range of conditions from 2020 to 2050

Assumptions

- Current laws and regulations as of September 2020 remain unchanged
- Current views on economic and demographic trends, and technology improvements
- Compound annual growth rate for real U.S. gross domestic product (GDP) is 2.1% (Reference case)
  - High Economic Growth case (2.6%) and Low Economic Growth case (1.6%)
- The Brent crude oil price by 2050 is $95 per barrel (b) in constant 2020 dollars (Reference case)
  - High Oil Price case ($173/b) and Low Oil Price case ($48/b)
- Oil and natural gas supply cases
  - High: more accessible resources and lower extraction technology costs than the Reference case
  - Low: fewer accessible resources and higher extraction technology costs than the Reference case
- Renewables cost cases
  - High: no cost reductions in renewable technologies
  - Low: renewables achieve 40% lower overnight capital costs by 2050 compared to Reference case

AEO2021 cases vary technical and macroeconomic assumptions

Technical and macroeconomic assumptions	Policy assumptions: Current laws and regulations as of September 2020	Policy assumptions: Potential new laws
Higher	High Economic Growth case High Oil Price case High Oil and Gas Supply case High Renewables Cost case	
Expected	Reference case	
Lower	Low Economic Growth case Low Oil Price case Low Oil and Gas Supply case Low Renewables Cost case	

Note: EPA's Affordable Clean Energy (ACE) rule (84 FR 32520) was vacated after AEO2021 case were run. See AEO2021 Narrative for more discussion.

AEO2021 Highlights

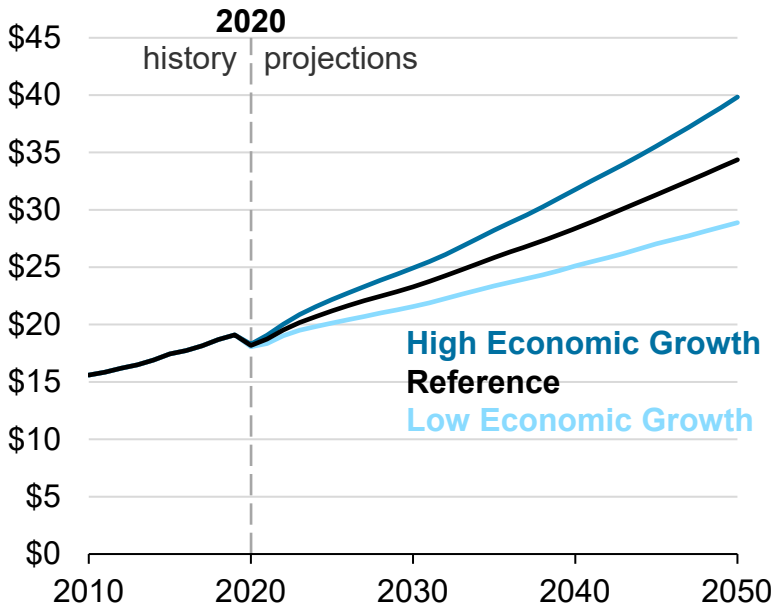
- A return to 2019 levels of U.S. energy consumption will take years; energy-related carbon dioxide emissions fall further before leveling off or rising.

- Renewable energy incentives and falling technology costs support robust competition with natural gas as coal and nuclear power decrease in the electricity mix.

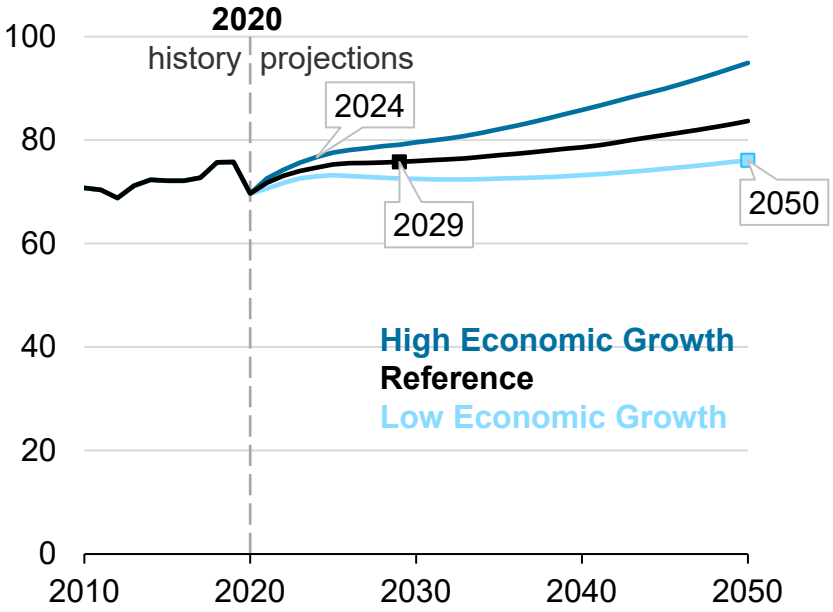
- Continuing record-high domestic energy production supports natural gas exports but does not necessarily mean growth in the U.S. trade balance in petroleum products.

The pace of recovery for gross domestic product (GDP) and energy consumption remains highly uncertain

U.S. gross domestic product assumptions
AEO2021 economic growth cases
trillion 2012 dollars

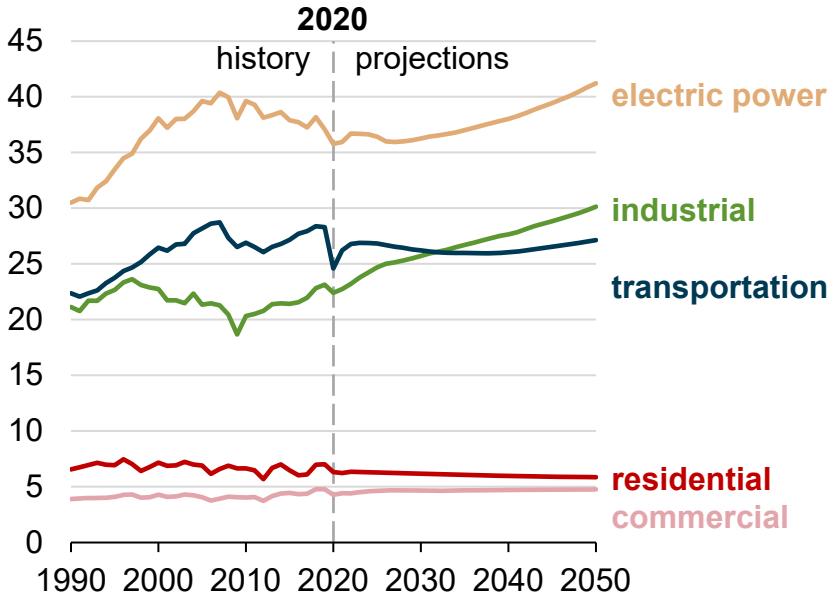


U.S. delivered energy across end-use sectors
AEO2021 economic growth cases
quadrillion British thermal units

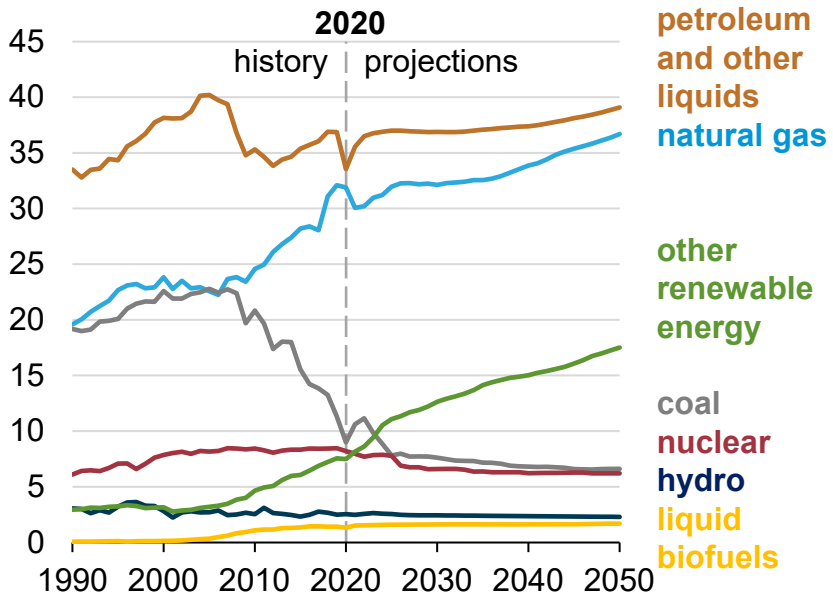


Industrial and electric power drive most of the increases in U.S. energy consumption in the Reference case

U.S. energy consumption by sector
AEO2021 Reference case
quadrillion British thermal units

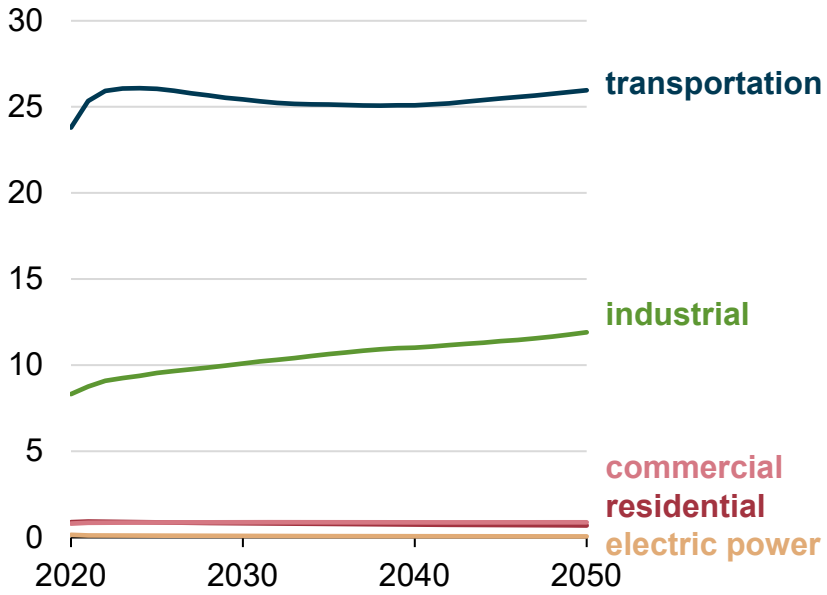


U.S. energy consumption by fuel
AEO2021 Reference case
quadrillion British thermal units

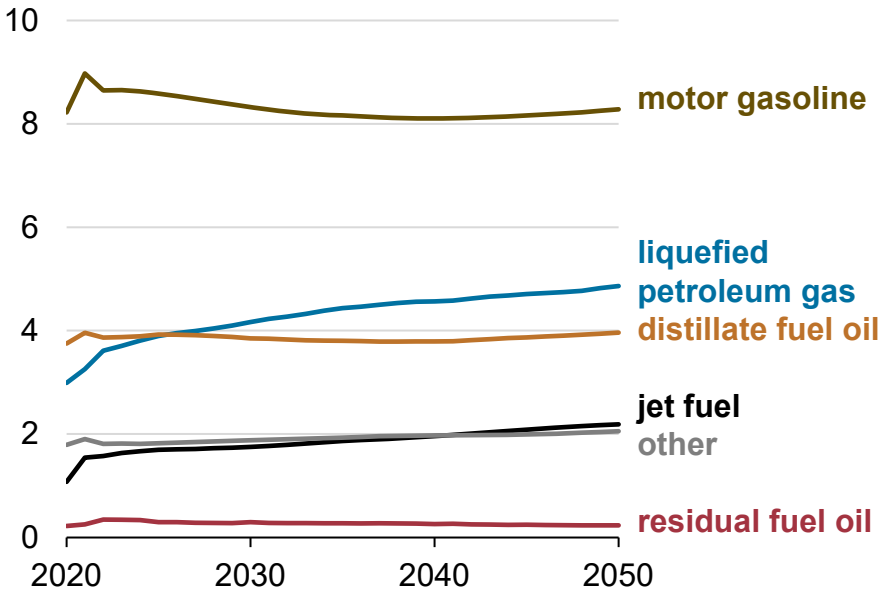


The majority of petroleum consumption growth occurs in industrial sector use of liquefied petroleum gas

Petroleum and other liquids consumption by sector
AEO2021 Reference case
quadrillion British thermal units

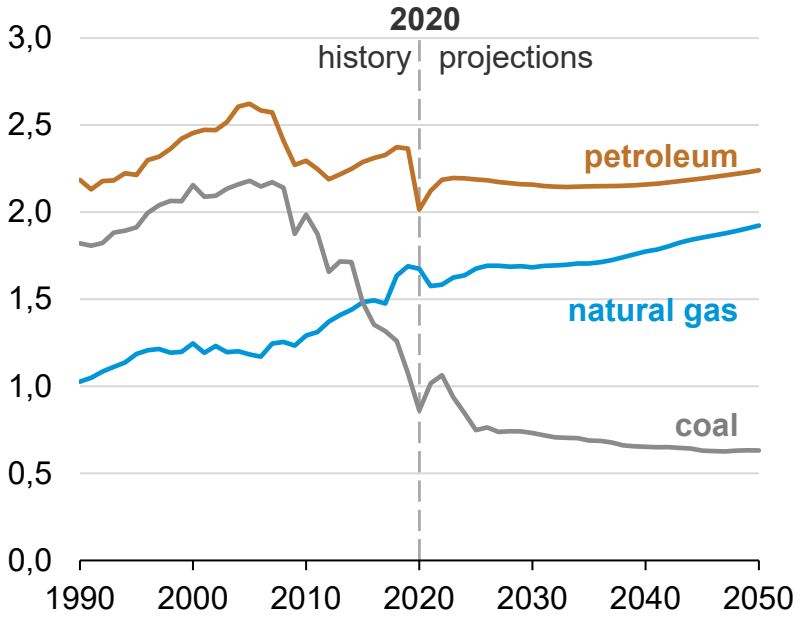


Petroleum and other liquids consumption by fuel type
AEO2021 Reference case
million barrels per day

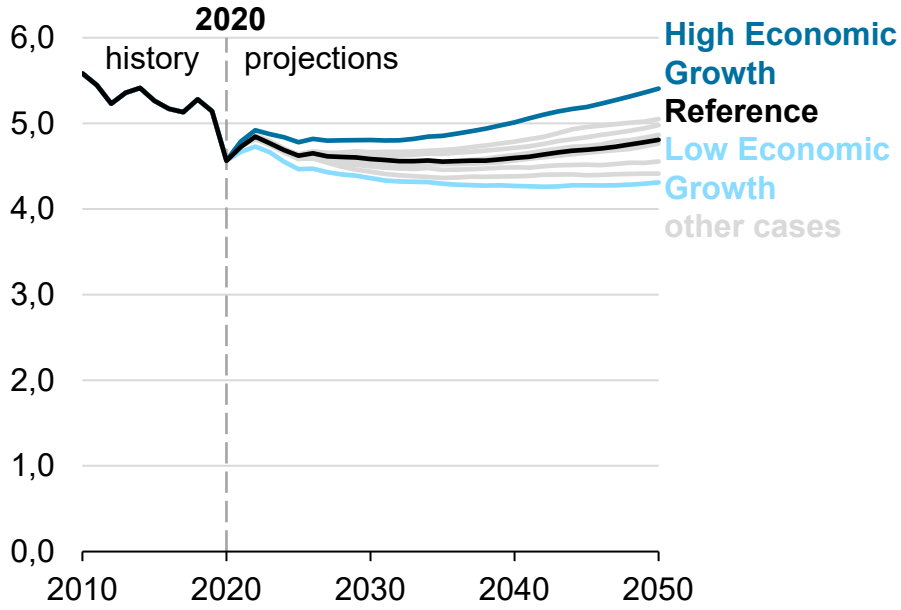


U.S. energy-related carbon dioxide emissions continue to decrease, but they start growing after 2035 in the Reference case

U.S. energy-related carbon dioxide emissions by fuel
AEO2021 Reference case
billion metric tons



U.S. energy-related carbon dioxide emissions
AEO2021 economic growth cases
billion metric tons



AEO2021 Highlights

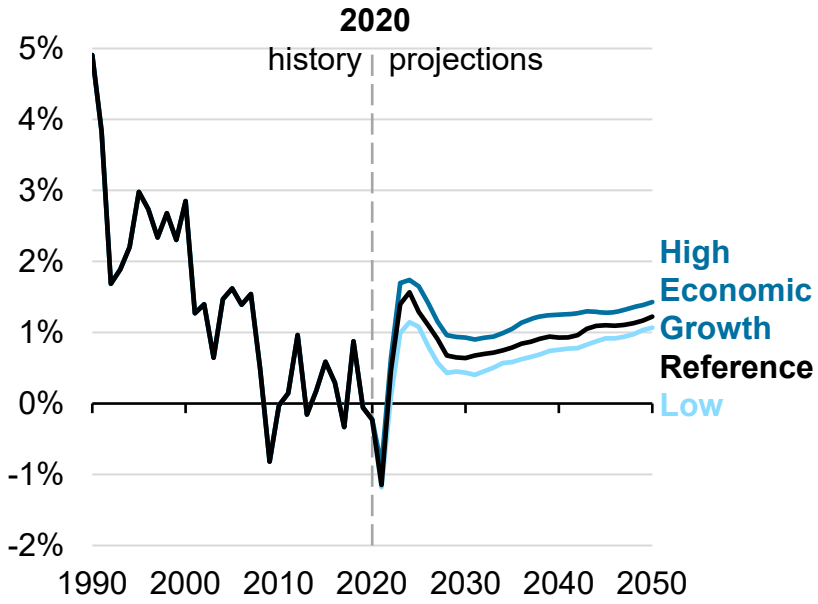
- A return to 2019 levels of U.S. energy consumption will take years; energy-related carbon dioxide emissions fall further before leveling off or rising.

- Renewable energy incentives and falling technology costs support robust competition with natural gas as coal and nuclear power decrease in the electricity mix.

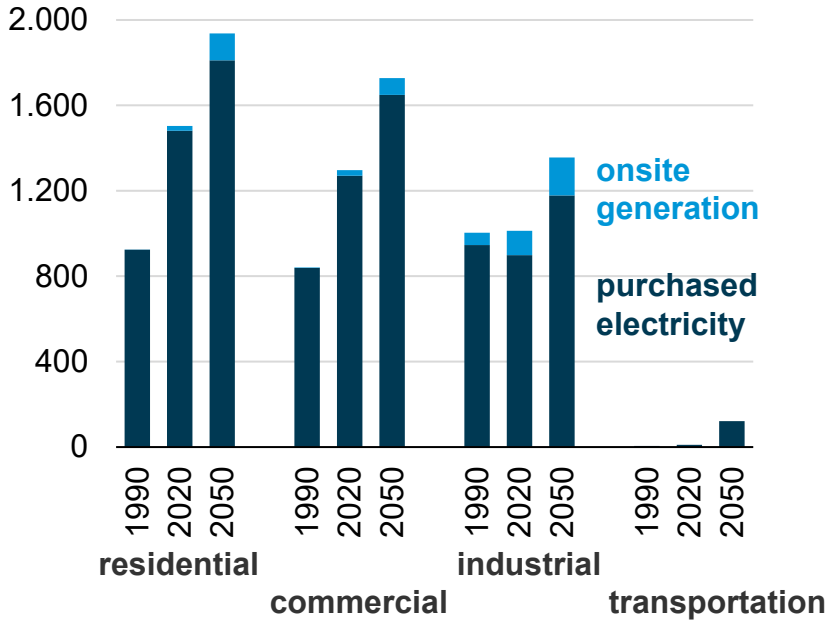
- Continuing record-high domestic energy production supports natural gas exports but does not necessarily mean growth in the U.S. trade balance in petroleum products.

Electricity demand grows modestly throughout the projection period

U.S. electricity use growth rate, three-year rolling average
AEO2021 economic growth cases
percentage growth



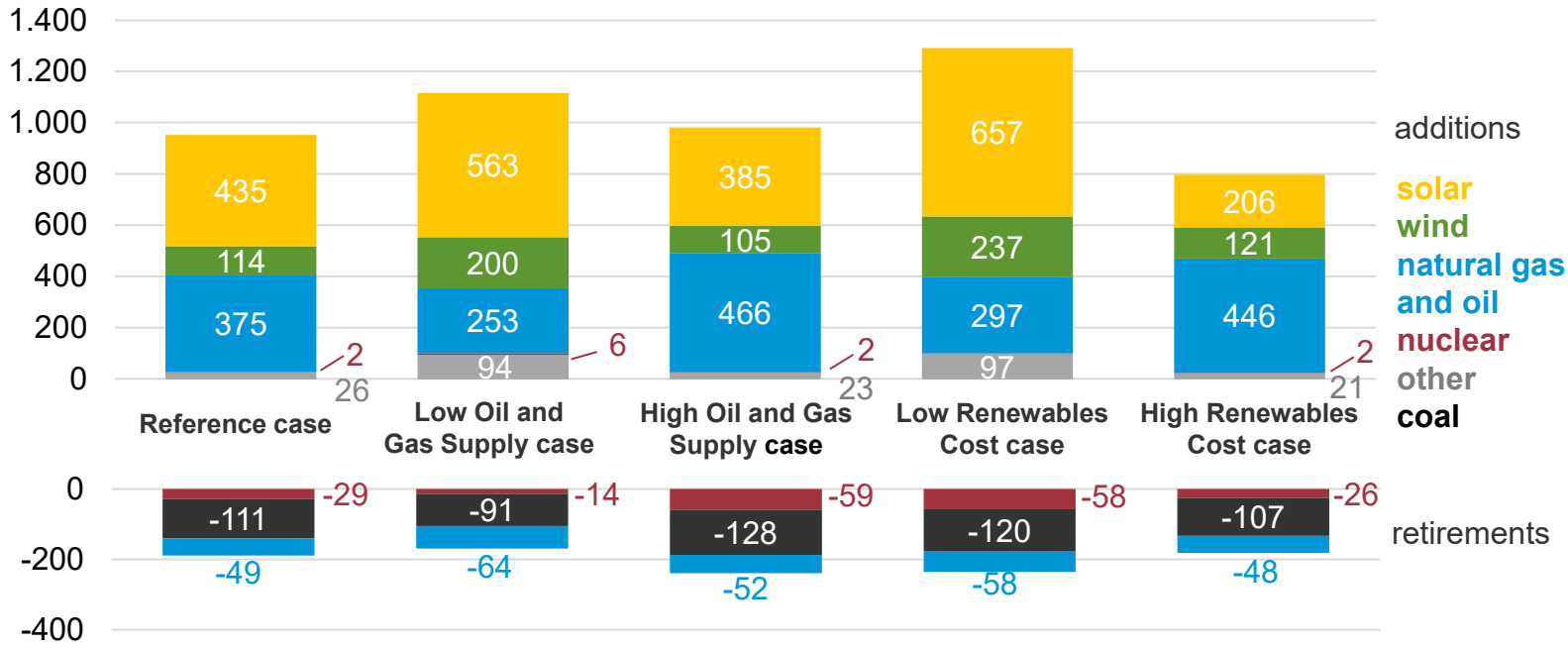
U.S. electricity use by end-use sector
AEO2021 Reference case
billion kilowatthours



Note: Onsite generation is electricity produced onsite for own use.

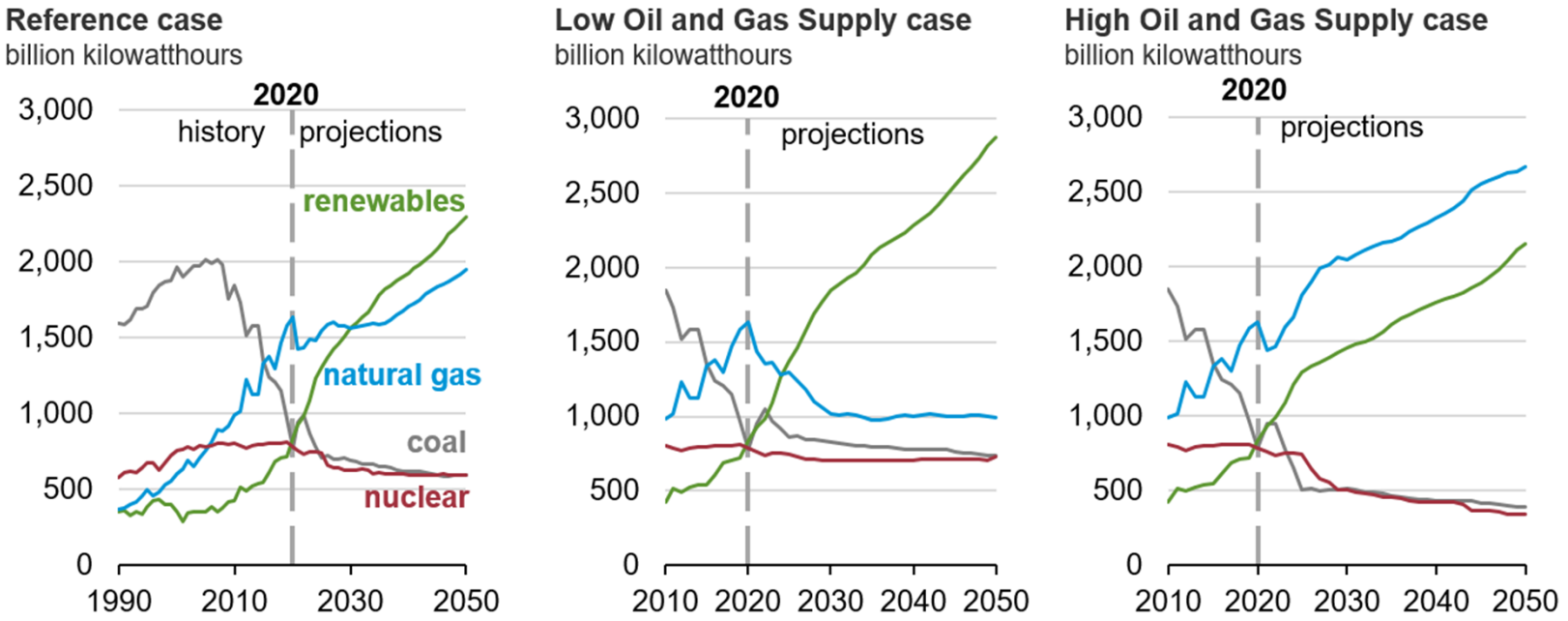
Electricity generating capacity increases 52% to 84% across AEO cases; additions come mostly from solar, wind, and natural gas

Cumulative electricity generating capacity additions and retirements (2021–2050)
AEO2021 selected cases
gigawatts



Electricity generation increases by a third; natural gas prices influence competition with renewables

U.S. electricity generation, AEO2021 oil and gas supply cases

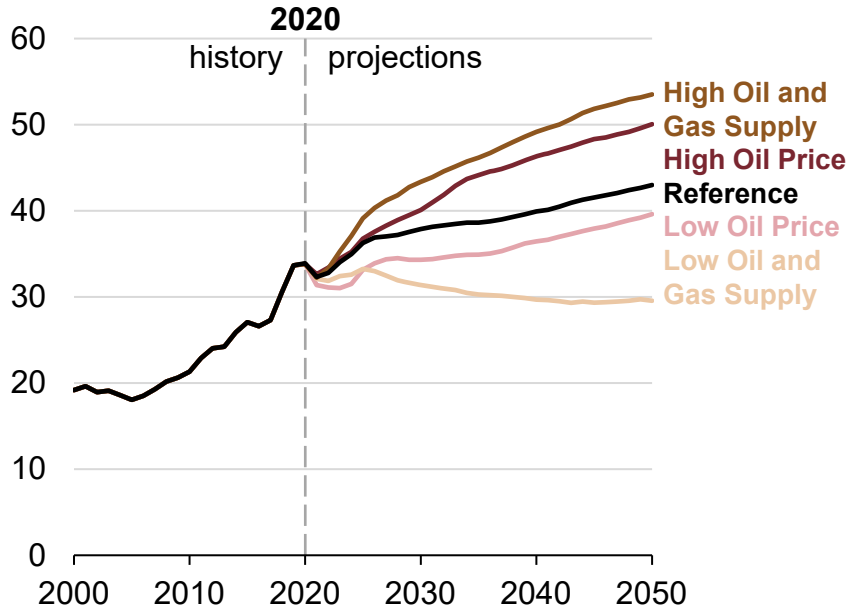


AEO2021 Highlights

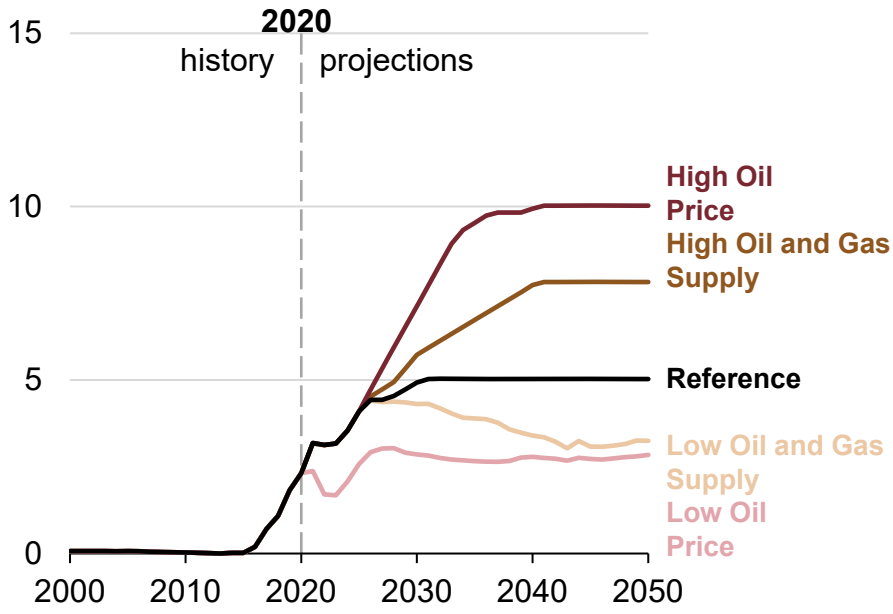
- A return to 2019 levels of U.S. energy consumption will take years; energy-related carbon dioxide emissions fall further before leveling off or rising.
- Renewable energy incentives and falling technology costs support robust competition with natural gas as coal and nuclear power decrease in the electricity mix.
- Continuing record-high domestic energy production supports natural gas exports but does not necessarily mean growth in the U.S. trade balance in petroleum products.

Natural gas production grows significantly in most cases but with a wide range of outcomes

U.S. dry natural gas production
AEO2021 oil and gas supply and price cases
trillion cubic feet



U.S. liquefied natural gas exports
AEO2021 supply and price cases
trillion cubic feet

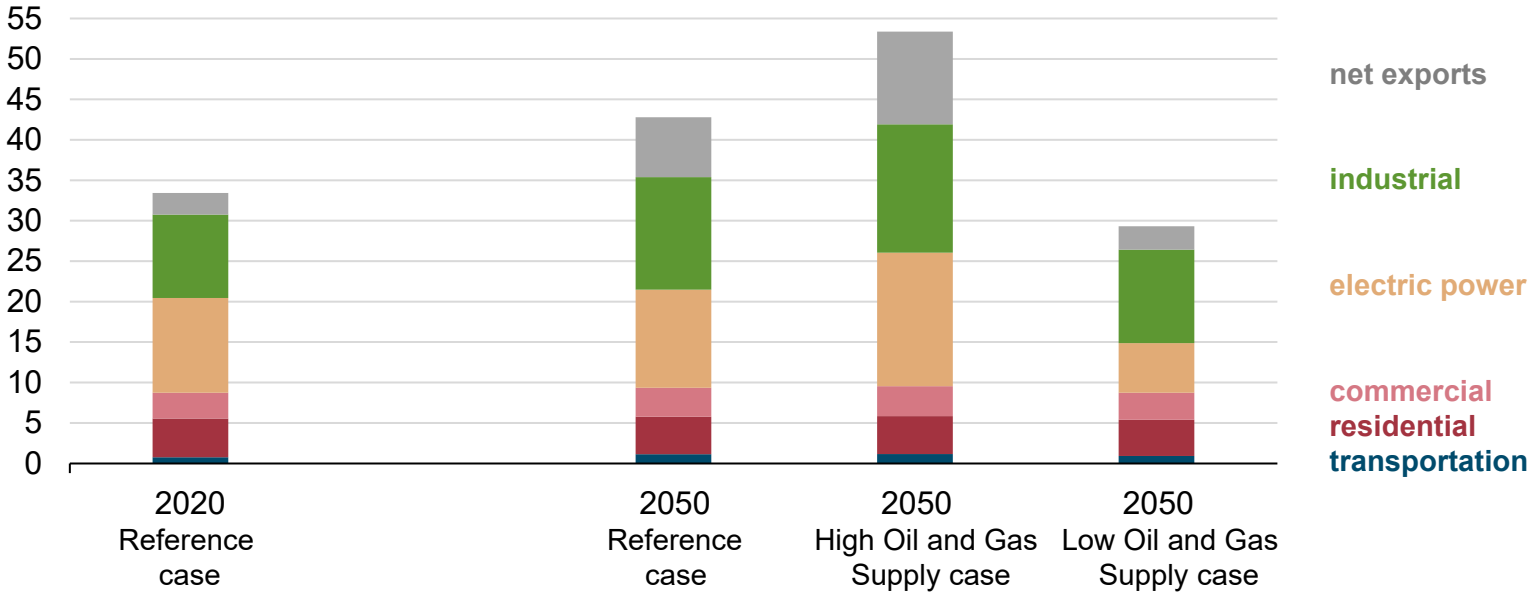


Natural gas consumption in the Reference case grows the most in the industrial sector; electric power and exports are the most sensitive to prices

U.S. natural gas consumption by sector and net exports, 2020 and 2050

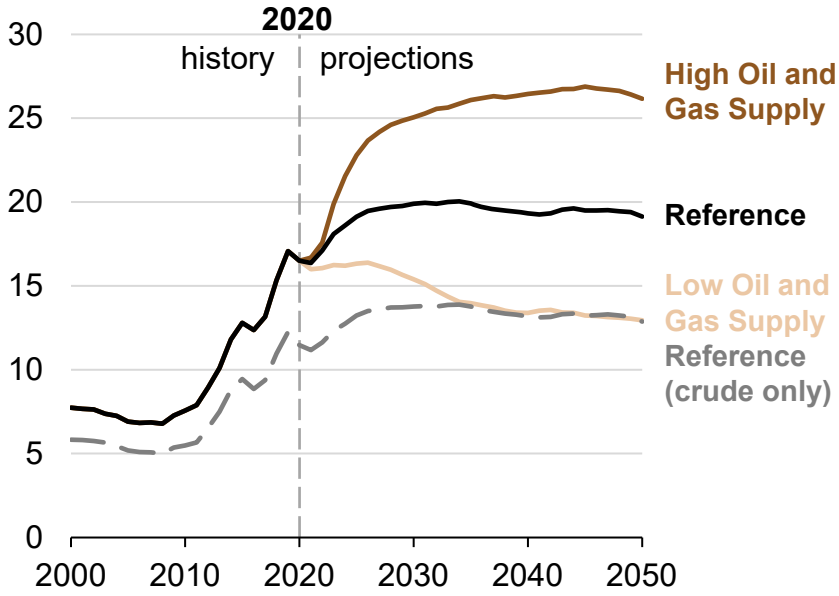
AEO2021 selected cases

trillion cubic feet

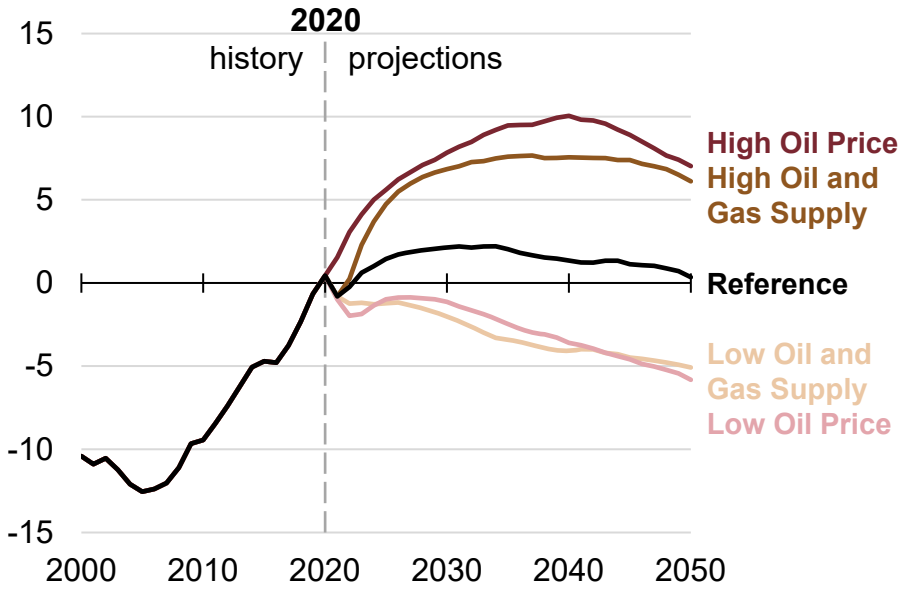


In all cases, the United States continues to be a globally significant producer of crude oil and refined liquids

U.S. crude oil and natural gas plant liquids production
AEO2021 oil and gas supply cases
million barrels per day



U.S. petroleum and other liquids net exports
AEO2021 oil and gas supply and price side cases
million barrels per day



AEO2021 Highlights

- A return to 2019 levels of U.S. energy consumption will take years; energy-related carbon dioxide emissions fall further before leveling off or rising.

- Renewable energy incentives and falling technology costs support robust competition with natural gas as coal and nuclear power decrease in the electricity mix.

- Continuing record-high domestic energy production supports natural gas exports but does not necessarily mean growth in the U.S. trade balance in petroleum products.

For more information

U.S. Energy Information Administration home page | www.eia.gov

Annual Energy Outlook | www.eia.gov/outlooks/aeo/

Short-Term Energy Outlook | www.eia.gov/outlooks/steo/

International Energy Outlook | www.eia.gov/outlooks/ieo/

Today in Energy | www.eia.gov/todayinenergy

International Portal | www.eia.gov/international/overview/country/ESP

Data Tools and Maps | www.eia.gov/tools/

Independent Statistics & Analysis

U.S. Energy Information Administration