U.S. electricity generation and share from selected fuels and renewable sources

U.S. electricity demand

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

[Graph showing electricity growth rate from 1990 to 2050 with projections for 2020.]

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

[Graph showing electricity use by sector with projections for 2020.]

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


U.S. electricity generation levels from selected fuels and renewable sources

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

[Graph showing electricity generation from various sources with projections for 2020.]

Note: Renewables category includes electricity generation from wind, solar, hydroelectric, geothermal, wood, and other biomass sources.

U.S. electricity generation levels from selected fuels and renewable sources

U.S. electricity generation, AEO2021 renewables cost cases

Reference case

Low Renewables Cost case

High Renewables Cost case

Note: Renewables category includes electricity generation from wind, solar, hydroelectric, geothermal, wood, and other biomass sources.


U.S. retiring and new generating capacity

Annual electricity generating capacity additions and retirements

AEO2021 Reference case

Source: Form EIA-860M, Monthly Update to the Annual Electric Generator Report, July 2020

U.S. cumulative retiring and new generating capacity

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

<table>
<thead>
<tr>
<th></th>
<th>Reference case</th>
<th>Low Oil and Gas Supply case</th>
<th>High Oil and Gas Supply case</th>
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Electricity prices by components and long-term average electricity prices

Components of U.S. Electricity Prices
AEO2021 Reference case
2020 cents per kilowatthour

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U.S. average electricity price
AEO2021 selected cases
2020 cents per kilowatthour

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Hybrid versus stand-alone solar photovoltaic (PV) and energy storage systems

U.S. solar PV generating capacity, all sectors
AEO2021 Reference case
gigawatts

U.S. storage energy capacity, power sector
AEO2021 Reference case
billion kilowatthours

Hybrid versus stand-alone solar photovoltaic (PV) and energy storage systems

Renewable capacity by source and region

Total renewables capacity in all sectors, 2019 and 2050
AEO2021 selected side cases
gigawatts

Northeast          PJM          Southeast          Mid-Continent        ERCOT        CAISO        West

solar photovoltaic, power sector
solar photovoltaic, end use
onshore wind
offshore wind

stand-alone energy storage
other
hydro

HC: High Renewable Cost; LC: Low Renewable Cost; HOGS: High Oil & Gas Supply; LOGS: Low Oil & Gas Supply; other: geothermal, biomass, municipal waste

Economic cost competitiveness of generating technologies

Levelized avoided cost of electricity (LACE) and levelized cost of electricity (LCOE) by technology, 2026 online year, AEO2021 Reference case

2020 dollars per megawatthour

Economically attractive builds are shown above the diagonal breakeven line for each technology.

The solid, colored circles on the figure indicate that projects tend to be built in regions where revenue (LACE) exceeds costs (LCOE).

Note: CCGT = natural gas combined cycle, PV = solar photovoltaic


U.S. renewable portfolio standards

Total qualifying renewables generation required for combined state renewable portfolio standards and projected total generation from compliant technologies

AEO2021 Reference case

billion kilowatthours

U.S. nuclear capacity and annual capacity changes

U.S. nuclear electricity generating capacity
AEO2021 oil and gas supply cases
gigawatts

Year-over-year nuclear capacity changes
AEO2021 Reference case
gigawatts


U.S. coal-fired generation, capacity, and capacity factors

U.S. electric generating capacity
AEO2021 oil and gas supply cases
gigawatts

U.S. total electricity generation
AEO2021 oil and gas supply cases
billion kilowatthours

U.S. capacity factor for coal-fired generation
AEO2021 oil and gas supply cases
percentage

U.S. coal-fired generating capacity relative to natural gas prices

Average delivered natural gas prices to the electric power sector
2020 dollars per million British thermal units

Coal production by U.S. region

U.S. fossil fuel-fired plant capacity factors

Capacity factor for U.S. fossil fuel-fired plants
AEO2021 Reference case

Note: New combined-cycle (natural gas) plants are assumed to come online in 2023. New builds as shown are multi-shaft combined-cycle units. Existing combined cycle units include both multi-shaft and single-shaft; 12 gigawatts of new single-shaft combined-cycle units are included in existing.