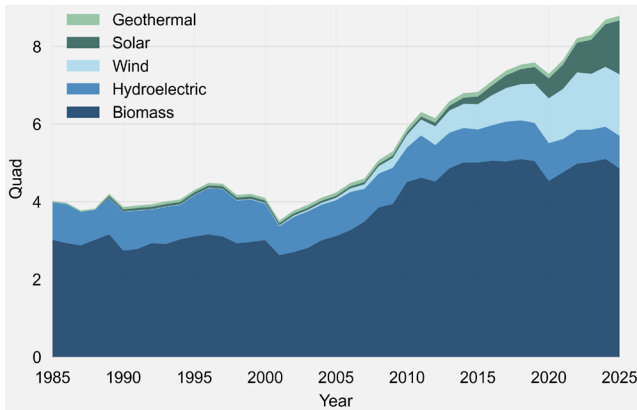


U.S. Renewable Energy

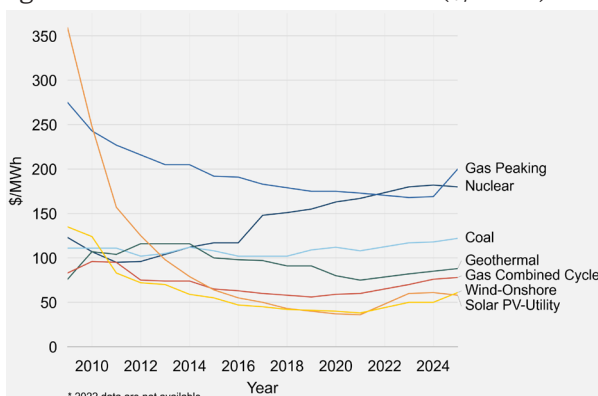
While energy is essential to modern society, most primary sources are non-renewable. The current fuel mix causes multiple environmental impacts, including climate change, acid rain, freshwater depletion, hazardous air pollution, and radioactive waste. Renewable energy can meet demand with a much smaller environmental footprint and improve energy security and other issues through distributed and diversified energy infrastructure.

U.S. Renewable Energy Use (Quad)¹



- 82% of U.S. energy comes from fossil fuels, 8.2% from nuclear, and 9.1% from renewable sources. In 2023, renewables surpassed coal in energy generation.¹
- Wind and solar are the fastest growing renewable sources, but contribute <3.1% of total energy used in the U.S.¹ Wind and solar are used for electricity generation, while renewable biofuels are mostly used for transportation.
- The U.S. has an estimated 463,400 TWh of renewable energy technical potential—over 100 times the electricity consumed in 2020—but less than 1% of this is utilized.²
- Levelized Cost of Energy (LCOE), the cost of electricity from a given power plant, remains lower for utility-scale solar and onshore wind than fossil fuels through 2025, despite slight increases in renewable LCOE during 2023 and 2024.³

Average Unsubsidized LCOE in the U.S. (\$/MWh)³

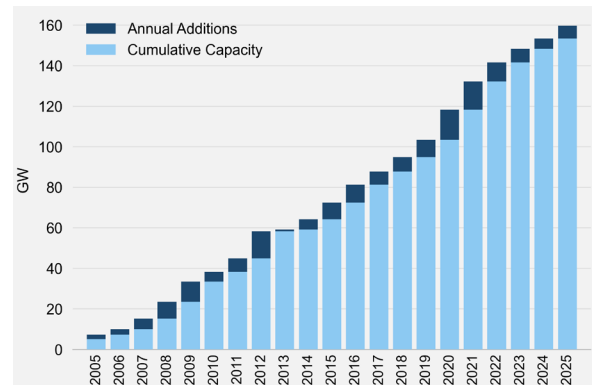


Major Renewable Sources

Wind (See [Wind Energy Factsheet](#))

- U.S. onshore wind resources have 9,124 GW of potential capacity,⁵ and 154 GW currently installed.⁶ Offshore wind resources have 4,249 GW of potential,⁷ with 174 MW installed.⁸
- Global wind additions matched a record 117 GW in 2024, totaling 1,136 GW. The U.S. and Germany both added 5% of China's annual additions.⁶
- U.S. wind installations dropped to 4 GW in 2024, the lowest since 2013.⁶
- Based on the average U.S. electricity fuel mix, a 1.76 MW wind turbine (U.S. average size in 2023) displaces 3,300 t of CO₂ emissions per year.⁹

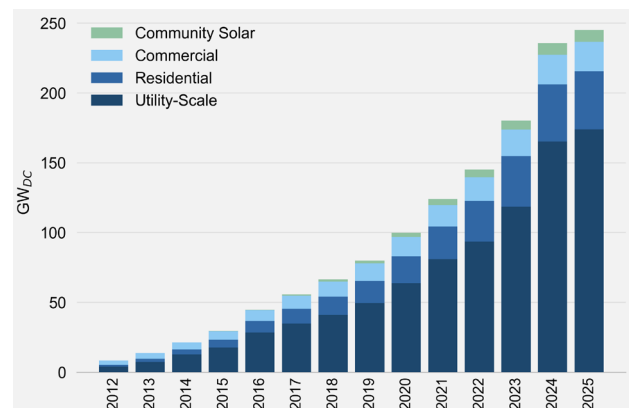
U.S. Wind Capacity (GW)⁴



Solar (See [Solar PV Energy Factsheet](#))

- Solar technology generated 6.7% of U.S. electricity in 2025.¹ Solar capacity reached 287.7 GW nationwide: enough to power over 48M houses.¹¹

U.S. Solar Capacity (GW_{DC})¹⁶



- Solar PV uses 3.2% of the land as corn ethanol does to produce the same amount of energy.¹⁰
- The U.S. has 3.2 GW of solar cell manufacturing capacity.¹²
- In 2025, a new U.S. solar project was installed every 59 seconds.¹²

- Solar and storage represented 91% of new capacity in the first quarter of 2026.¹³
- 481.3 GW of new solar capacity is estimated to be installed by 2035.¹²
- The Inflation Reduction Act of 2022 provided a 30% Investment Tax Credit and Production Tax Credit of 2.75¢/kWh for qualified solar systems through 2027.^{14,15}

Biomass (See Biofuels Factsheet)

- Biomass is derived from plant materials, including agriculture residues, forest resources, purpose-grown energy crops, urban wood waste, and food waste, that can be converted into fuels, energy, or chemicals.¹⁷
- In 2025, 39% of U.S. biomass energy use was from wood, mostly as pulp, paper, and paperboard industry waste products. Municipal solid waste, landfill gas, sludge, and agricultural byproducts and other biomass, supplied an additional 7%.¹
- Biomass has low net CO₂ emissions compared to fossil fuels. At combustion, it releases CO₂ it pulled from the atmosphere to grow. Emissions are associated with processing, and biomass can have high land use intensity. Willow biomass requires 121 acres of land to generate 1 GWh of electricity per year, higher than other renewable energy sources.¹⁸
- U.S. ethanol production is projected to decrease 1.9% annually from 2025 to 2050.¹⁹

Hydroelectric

- U.S. electricity generation from conventional hydropower peaked at 356 TWh in 1997, representing 10.2% of net electricity generation.²⁰ Conventional hydropower produced 247 TWh in 2025, accounting for 5.6% of U.S. net electricity generation.¹
- Hydroelectricity is virtually emission-free, but CH₄ and CO₂ are emitted from decomposition of vegetation in reservoirs.²¹ Decomposition in hydroelectric reservoirs has been estimated globally at 312 - 936 Mt CO₂e per year.²² The U.S. has been decommissioning small dams.²²
- Other environmental concerns include fish mortality, habitat degradation, and water quality impairment. “Fish-friendly” turbines and smaller dams mitigate some of these problems.²³

Geothermal (See Geothermal Energy Factsheet)

- Hydrothermal resources (steam and hot water reservoirs) provide geothermal energy for electricity generation, primarily in California and Nevada.⁴⁰ Ground source heat pumps (GSHPs) can be used almost anywhere to extract heat from shallow ground.¹⁸
- GSHPs have the potential to provide heating and cooling for 28M households by 2050.²⁵
- As of 2022, the U.S. has over 23 geothermal district heating

and cooling systems that supply buildings and industries through a local distribution network,²⁶ with the economic potential for 17,500 systems by 2050.²⁵

- The U.S. led the world in geothermal electricity capacity in 2025 with 4 GW installed, 24% of the global total.⁴⁰ U.S. geothermal electricity generation is projected to reach 56 TWh by 2050, up from 16 TWh in 2025.^{1,27}

Advancing Renewable Energy

- Renewable Portfolio Standards (RPS) and voluntary markets support 351 TWh and 319 TWh, respectively.²⁸ Voluntary markets comprise 8% of retail electricity sales and are used by 1 in 17 customers. See [U.S. Energy System Factsheet](#) for a U.S. map of these policies by state.
- State governments also provide renewable energy incentives including rebate, grant, and loan programs; building energy and permitting standards; corporate tax deductions, property tax incentives, personal tax credits, and sales tax exemptions; and feed-in tariff (FIT), net metering, and property assessed clean energy (PACE) programs. Check the [DSIRE database](#) or contact your state energy agency to access these benefits.²⁹
- Net metering—offered in 27 states, D.C., and 4 territories—allows customers to sell excess electricity back to the grid.³⁰ Some states are changing rate structures to credit solar energy producers differently.³¹
- Feed-in tariffs (FIT) set minimum prices per kWh that utilities must pay renewable electricity generators.³² As of 2026, three states (CA, NY, and IN) have a FIT.³³
- The Farm Bill’s Rural Energy for America Program (REAP) funded grants and loan guarantees for agricultural producers and rural small businesses to install renewable energy systems,³⁴ until it was suspended by a recent executive order.³⁵
- PACE programs allow property owners to finance solar installations through voluntary property tax assessments.⁴¹ There are residential PACE programs in three states (CA, MO, and FL).³⁶ Commercial PACE programs are active in 40 states.³⁶ Green banks—public, quasi-public, or nonprofit financing entities—leverage capital to support clean energy projects.³⁷ As of 2026, there were 54 green banks in 44 states.³⁸

Renewable Energy Generation by State³⁹

