Clean Energy Growth Proves Resilient Through a Turbulent 2020

COVID-19 Causes Significant Challenges to U.S. Economy

COVID-19 led to changes in the lives of all Americans and dramatically impacted business operations in 2020. The U.S. economy contracted 3.5%, and thousands of jobs in clean energy sectors were lost or furloughed. Primary energy use plummeted 7.8%, electricity demand declined 3.8%, and energy demand from the transportation sector fell the hardest, dropping 14%.

Despite major headwinds, the ongoing transformation in how the U.S. produces, delivers, and consumes hydrocarbons, electrons and heat marched onward.

U.S. GREENHOUSE GAS EMISSIONS

Total U.S. greenhouse gas emissions sank 9% in 2020, a massive reduction driven by the declines of energy-related emissions by 10% and transportation-related emissions by 14%. The overall drop puts U.S. emissions at 20% below 2005 levels and temporarily on track to meet the original Paris Agreement pledge of a 26-28% cut by 2025.

U.S. ELECTRICITY MIX

In 2020, the U.S. generation mix continued its progress toward clean energy. Natural gas and renewable energy together accounted for 61% of all electricity generation in 2020, up from 38% in 2011. Renewables’ contribution to the power grid set another record, rising 11% over 2019 levels.

U.S. ENERGY PRODUCTIVITY

The energy productivity of the U.S. economy — the ratio of U.S. GDP to energy consumed — rose 4.6% in 2020 over 2019 levels, due largely to pandemic-induced economic contractions and lower energy demand. Prior to 2020, U.S. economic growth continued to be broadly “decoupled” from energy use, reflecting investments in efficiency and technological innovation.

CLEAN ENERGY INVESTMENT

Global investment in the clean energy transition hit $500 billion for the first time in 2020, a 9% increase over 2019. The U.S. accounted for $85 billion or nearly 20% of this global total, but U.S. investment was 11% below its 2019 level.

Renewables represented 58% of U.S. clean energy investment in 2020, and nearly $100 million went to hydrogen to support the sale of fuel cell vehicles.

For source information of above graphs, please see the 2021 Sustainable Energy in America Factbook pages 10 (energy productivity) and 19 (emissions).
INDUSTRY HIGHLIGHTS

ENERGY EFFICIENCY

- Total U.S. spending on energy efficiency through formal frameworks — such as utilities, energy savings performance contracts and property assessed clean energy (PACE) — reached $14.8 billion in 2019.
- In 2019, utility spending on energy efficiency kept pace at $6.84 billion for electricity and $1.53 billion for natural gas, with combined spending up 4% from 2018.
- Local benchmarking and disclosure policies for energy use in commercial buildings jumped from 9% in 2017 to 13% in 2020, covering around 11 billion square feet.
- In 2020, nearly two-thirds of the U.S. population lived in jurisdictions with modern building energy codes, with 69% of the population covered by residential codes and 74% by commercial codes.

NATURAL GAS

- Natural gas is the number-one source of power in the U.S., contributing 41% of the electricity mix in 2020 and producing a record 1,641 terawatt-hours (TWh), up 2.9% over 2019.
- Investment in natural gas infrastructure grew to $601 million in 2019, including $282 million on transmission systems and $258 million on distribution systems.
- Liquefied natural gas (LNG) exports grew 29% in 2020, to 6.2 billion cubic feet per day.
- Renewable natural gas production capacity grew 8% in 2020, and its share of natural gas-powered vehicles jumped from 32% in 2018 to 34% in 2019.

RENEWABLE ENERGY

- The U.S. installed 33.6 gigawatts (GW) of renewable energy capacity in 2020, an increase of 61% over 2019, to mark the highest year on record.
- Wind enjoyed its best year ever with 17.1 GW constructed, while solar exceeded its previous record with 16.5 GW completed.
- Biogas, biomass, geothermal and waste-to-energy together represented 16.6 GW of U.S. capacity in 2020. While these technologies can provide renewable power around-the-clock, policy support has been less consistent.
- Hydropower generation rose by 14 TWh or 41% of the electricity mix in 2020 and producing a record 1,641 terrawatt-hours (TWh), up 2.9% over 2019.
- Utility-scale projects combining solar photovoltaics with energy storage are growing in popularity. For example, Texas has 2 GW of solar + 3.5 GW of storage installed.

SUSTAINABLE TRANSPORTATION

- Sales of electric vehicles stayed steady at 325,000 units sold in 2020, while total U.S. car sales fell sharply overall.
- By the end of 2020, 8,900 light-duty fuel cell vehicles had been sold or leased in the U.S., powered by a network of 42 hydrogen stations. More than 40,000 fuel cell systems were deployed in material handling equipment that year, supporting nearly 30% of U.S. retail food distribution.
- Natural gas use in vehicles jumped 16% in 2020 to reach 60 billion cubic feet, and has grown steadily over the past decade at an annual average rate of 11%.