



United States Energy & Employment Report 2021



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U.S. DEPARTMENT OF
ENERGY

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Key Findings



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The U.S. Energy and Employment Report (USEER) was first published in 2016 by the U.S. Department of Energy, and the 2021 report represents the sixth installment of the series.

The purpose of the USEER series is to provide a comprehensive overview of the energy labor market, informing policymakers and stakeholders on the importance of the energy sector as a job creation engine in the U.S. economy. The USEER offers unique insights into the individuals who meet the nation's energy needs, identifies important trends and skillsets for the 21st century energy workforce, and provides longitudinal data on employment trends in five major energy sectors — Electric Power Generation; Transmission, Distribution, and Storage; Fuels; Energy Efficiency; and Motor Vehicles. In addition to employment data, the reports provide details on energy sector demographics, industry composition, employer projections, occupational distribution, and some key wage statistics.

Data collection for this report was completed in the fourth quarter of 2020; annual comparisons reference the fourth quarter of each year.

OVERVIEW

The energy sector was deeply impacted in 2020 by COVID-19 and its resulting economic fallout.

There were more than **7.5 million** individuals employed in the energy, energy efficiency, and motor vehicles sectors in the United States in the last quarter of 2020—down nearly 840,000 jobs (10%) from the end of 2019.



Critical investments in infrastructure can reignite job growth in the energy sector.

Prior to the pandemic, energy sector job growth outpaced the overall economy. Key investments that modernize our electric grid, fuels infrastructure, buildings, and transportation can recoup the job losses from 2020 and return the sector to positive growth rates.

Energy investments pay dividends, as workers are more likely to be unionized and paid wages that are significantly higher than the overall median wage.

A recent study demonstrated that energy jobs pay about 34% higher wages on average than the median pay across all industries in the U.S.

The 2021 USEER analyzes the following sectors of the U.S. economy:

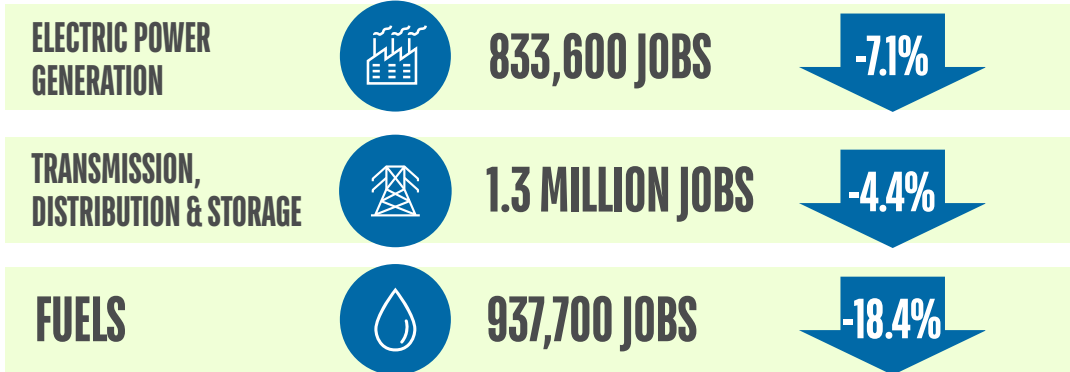


ELECTRIC POWER GENERATION, TRANSMISSION, DISTRIBUTION & STORAGE, AND FUELS

3.1 MILLION

JOBS AT THE END OF 2020

-9.8%



ENERGY EFFICIENCY

2.1 MILLION

JOBS AT THE END OF 2020

-11.4%



MOTOR VEHICLES + COMPONENT PARTS

2.3 MILLION

JOBS AT THE END OF 2020

-9.0%

EMPLOYMENT TRENDS

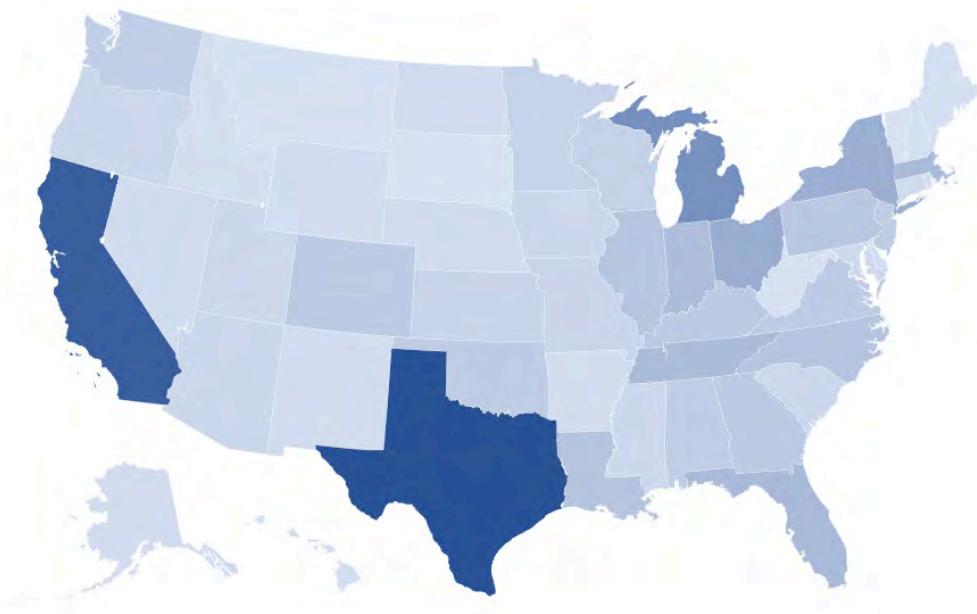


Energy, Energy Efficiency and Motor Vehicles sectors in 2020 employed approximately

7.5 MILLION AMERICANS

-10%
Net decline of 10 percent in total energy employment compared to the last quarter of 2019

IMPACT OF COVID-19



States with the greatest number of energy job losses from 2019 to 2020:

Texas	110,018
California	100,308
Michigan	61,672
Ohio	40,057
New York	38,456



ELECTRIC POWER GENERATION



The Electric Power Generation sector employed

833,600

a loss of

63,300 JOBS

-7.1%

ALL SUB-TECHNOLOGIES WITH THE EXCEPTION OF WIND DECLINED FROM 2019 THROUGH 2020

WIND



Wind energy companies saw an increase in jobs, adding an additional **2,000** employees, an increase of 1.8 percent.

+2,000 JOBS

+1.8%

THE GREATEST PERCENTAGE DECLINE WAS IN CONCENTRATED SOLAR, WHICH DECLINED BY 11.5 PERCENT, A LOSS OF 3,000 JOBS

SOLAR PV



Solar photovoltaic firms saw the greatest overall decline in jobs, shedding a net 25,700 workers through 2020—a decline of 8.1 percent.

-8.1%

-25,700 JOBS

NATURAL GAS



Natural gas electric power generation lost the next-highest number of jobs, with a total 12,300 jobs lost (a 10.1 percent decline).

-10.1%

-12,300 JOBS

COAL



Following solar PV, coal electric power generation firms shed the third-highest number of jobs (8,300 jobs lost or a 10.4 percent decline).

-10.4%

-8,300 JOBS

TRANSMISSION, DISTRIBUTION, AND STORAGE



Transmission, Distribution, and Storage (TDS) employed more than

1.3
MILLION



a decrease of 61,500 jobs

Nearly all sub-technologies within the transmission, distribution, and storage sector experienced job losses, with the exception of battery storage.

SMART GRID

Smart grid firms shed **2,500 jobs**, for a

-9.9% decline

Microgrid firms shed **2,200 jobs**, for a

-10.5% decline



TRANSMISSION, DISTRIBUTION, AND STORAGE (TDS)

Traditional transmission and distribution shed the highest number of jobs—**52,400 jobs lost**, for a

-5.3% decline



HYDROPOWER

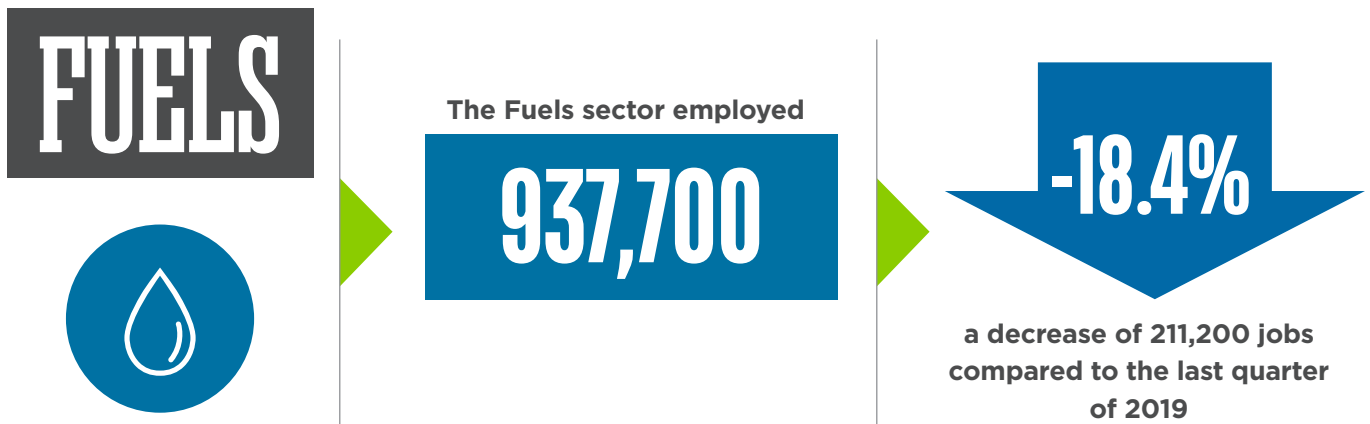
Pumped hydropower employment declined the most within the storage sector, losing 700 jobs, for a

-8.5% decline

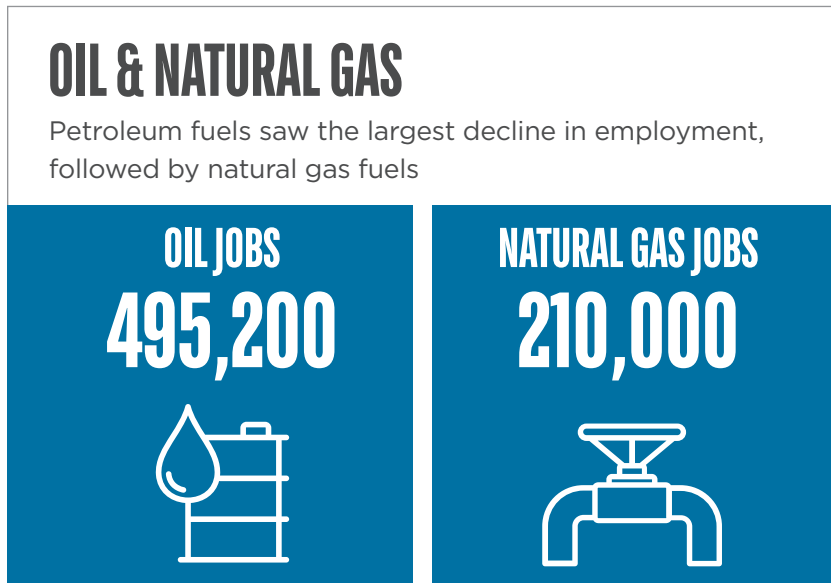


BATTERY STORAGE EMPLOYMENT GREW BY 850 JOBS (+1.3%)

Although the energy workforce experienced widespread losses, continued investments prevented declines in some areas. Wind generation increased by 2,000 jobs (2 percent) and battery storage by 800 jobs (1 percent). Hybrid electric vehicles increased by 6,000 jobs (6 percent), while electric vehicles also increased by 6,000 jobs (8 percent).



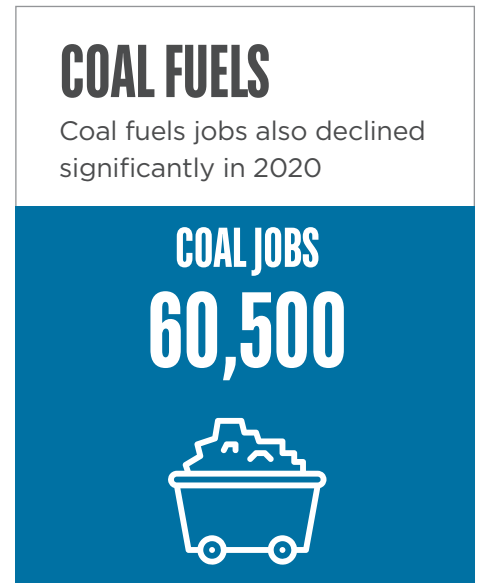
ALL SUB-TECHNOLOGIES WITHIN THE FUELS SECTOR LOST JOBS THROUGHOUT 2020



a loss of **120,300 JOBS**



a loss of **66,000 JOBS**



a loss of **15,000 JOBS**

ENERGY EFFICIENCY

Energy Efficiency employed

2.1
MILLION

in the design, installation,
and manufacture of Energy
Efficiency products and
services.



Energy Efficiency
employers lost 271,700 net
jobs in 2020—the **largest**
total sum of job losses
across each of the five
sectors.

-271,700

-11.4%

TRADITIONAL HVAC

Traditional HVAC firms shed the highest number of jobs,
losing 66,700 workers (for an 11.2 percent decline):



a loss of

66,700 JOBS

ENERGY STAR HVAC



a loss of

34,300 JOBS

ENERGY STAR-CERTIFIED APPLIANCES



a loss of

16,300 JOBS

EFFICIENT LIGHTING TECHNOLOGIES

Efficient lighting technologies, including LED, CFL, and ENERGY
STAR-certified lighting, lost 42,000 jobs, for a decline of 11 percent.



a loss of

42,000 JOBS

MOTOR VEHICLES



Motor Vehicles (including component parts) employed over

2.3 MILLION



a loss of

231,200 JOBS

ALL MOTOR VEHICLES SUB-TECHNOLOGIES SHED JOBS WITH THE EXCEPTION OF ELECTRIC AND HYBRID ELECTRIC VEHICLES

ELECTRIC VEHICLES



Employment in the **electric vehicle sector** grew by 7.8 percent in 2020 (6,100 jobs).



GASOLINE + DIESEL VEHICLES



Gasoline and diesel vehicles declined by 9.9 percent—a loss of 200,700 jobs.



HYBRID ELECTRIC VEHICLES



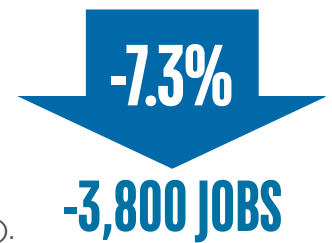
Employment in the **hybrid electric vehicle sector** grew by 5.5 percent (6,300 jobs).



PLUG-IN HYBRID VEHICLES



Employment in the **plug-in hybrid vehicles** sub-sector declined by 7.3 percent (3,800 jobs).



CROSS CUTS: RENEWABLE ENERGY



RENEWABLE ELECTRIC POWER GENERATION

industry employs
517,000
 down 6 percent
 or 33,000 jobs

Number of jobs:

Solar
317,000



Solar breakdown:
 Construction 165,000
 Pro Services 49,700
 Manufacturing 41,900



Traditional Hydropower
51,900

Hydro breakdown:
 Utilities 17,400
 Manufacturing 13,000
 Construction 7,800



Wind
116,800

Wind breakdown:
 Construction 42,300
 Pro Services 29,500
 Manufacturing 23,900



RENEWABLE FUELS

industry employs
103,000
 down 4.6 percent,
 or 5,000 jobs

Number of jobs:

Corn Ethanol
33,500



Corn Ethanol breakdown:
 Agriculture 15,600
 Manufacturing 9,000
 Wholesale Trade 6,200



Woody Biomass
32,400

Woody Biomass breakdown:
 Agriculture 17,900
 Pro Services 9,400
 Manufacturing 4,200



Other Ethanol
19,500

Other Ethanol breakdown:
 Pro Services 9,100
 Wholesale Trade 5,200
 Manufacturing 2,600

CROSS CUTS

The 2021 USEER provides four cross-cutting analyses that look at the interrelations of jobs across the entire value chain of the natural gas, petroleum, coal and nuclear industries that were previously segregated in the Fuels, Electric Power Generation, and Transmission, Distribution and Storage chapters.



NATURAL GAS

industry employs

537,300

down 15.5 percent,
or 98,700 jobs lost

Number of jobs:

Utilities

175,700

-4.3 percent



Mining and Extraction

107,900

-34.8 percent



Construction

86,800

-20.8 percent



Natural gas consumption declined by 2 percent between 2019 and 2020.



PETROLEUM

industry employs

681,500

down 17.3 percent,
or 142,800 jobs lost

Number of jobs:

Mining and Extraction

218,300

-30.4 percent



Wholesale Trade, Distribution, and Transport

167,400

-3.1 percent



Manufacturing

143,000

-9.5 percent

Petroleum consumption declined by 12.6 percent between 2019 and 2020.

Important investments can reverse these results. The critical nature of investments to modernize our electric grid, fuels infrastructure, buildings, and transportation can return the energy sector to positive growth rates.

CROSS CUTS



NUCLEAR

industry employs
66,800

down 5.1 percent
or 3,600 jobs

Number
of jobs:

Utilities

42,800

-3.6 percent



**Professional
and Business
Services**

13,700

-7.0 percent



Manufacturing

4,500

-9.3 percent

Nuclear electric power
consumption declined
by 2.4 percent between
2019 and 2020.



COAL

industry employs
164,700

down 11.3 percent,
or 21,000 jobs

Number
of jobs:

**Mining and
Extraction**

42,300

-24.0 percent



Utilities

34,000

-10.7 percent



**Wholesale
Trade,
Distribution,
and Transport**

39,600

+5.2 percent

Coal consumption
declined by 18.9
percent between
2019 and 2020.

ENERGY WAGES

Historical data demonstrates that energy jobs pay significantly more than the average wage in the United States



Premium of energy job wages over the retail and accommodation and food service sectors, which have been hard-hit by the COVID-19 pandemic

\$41.08

Median wage for energy utility employees, the highest of all industry segments and 115% above the national median. Mining and extraction jobs are next highest at \$36.32.

UTILITY WORKERS

The utilities industry supports the highest hourly wage of all industries compared to the national median. Electric power generation and transmission, distribution, and storage are the only sectors with utilities jobs.

UNIONIZATION

Across sub-technologies, natural gas generation, coal generation, nuclear generation and traditional transmission and distribution had the highest unionization rates.

	Percent Union Membership
Natural Gas Generation	15.1%
Nuclear Generation	19.5%
Coal Generation	14.7%
Other Renewable Generation	8.8%
Solar Generation	9.6%
Wind Generation	9.5%
Oil Generation	6.7%
Petroleum Fuels	5.6%
Coal Fuels	9.8%
Nuclear Fuels	5.5%
Natural Gas Fuels	4.9%
Renewable Fuels	4.1%
Traditional Transmission and Distribution	17.0%
Grid Modernization	9.9%
Storage	9.6%
Advanced Transportation	4.3%

OCCUPATIONAL EMPLOYMENT

Within each sector, there are specific occupations; these could include welders, electricians, sales representatives, or lawyers.



ELECTRIC POWER GENERATION

32.1%

Installation and repair

20.8%

Administrative positions



TRANSMISSION, DISTRIBUTION, AND STORAGE

32.0%

Installation and repair

22.1%

Administrative positions



FUELS

33.0%

Production and manufacturing

20.8%

Management or Professional



ENERGY EFFICIENCY

32.1%

Installation and repair

23.5%

Administrative positions



MOTOR VEHICLES

36.9%

Production and manufacturing

29.0%

Installation and repair



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