In every region and every state in America, clean energy is creating jobs and careers. Nationwide, more than 110,000 net new clean energy jobs were created in 2018, bringing the total number of Americans who work in clean energy to 3.26 million.

While jobs in solar declined in part because of tariffs on steel and solar panels, wind energy jobs grew by nearly 4 percent and now compete with fossil fuels in many markets. Energy efficiency continues to lead the clean energy sector in total number of jobs, growing 3.4 percent to 2.3 million jobs.

But the big story in 2018 was around clean vehicles and storage. Driven by growing consumer demand, the number of jobs in clean vehicles manufacturing increased by 16 percent. About 254,000 Americans now work at companies building hybrid, electric and other clean vehicles, while another 486,000 Americans work in companies that manufacture parts that make vehicles more efficient.

Energy storage saw a 14 percent increase in jobs as utilities, businesses and consumers deployed more batteries in EVs and with solar and wind installations, while grid modernization jobs grew by 3.3 percent.

Smart state policies continue to drive much of the growth in clean energy and the jobs and investments that come with it. But with a new Congress comes new opportunities to pass meaningful legislation on a federal level to keep these jobs growing nationwide. See sidebar for more.

### Top 10 States for Clean Energy Jobs

<table>
<thead>
<tr>
<th>RANK</th>
<th>STATE</th>
<th>TOTAL*</th>
<th>SOLAR</th>
<th>WIND</th>
<th>ENERGY EFFICIENCY</th>
<th>CLEAN VEHICLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>California</td>
<td>512,934</td>
<td>126,507</td>
<td>5,785</td>
<td>318,542</td>
<td>22,389</td>
</tr>
<tr>
<td>2</td>
<td>Texas</td>
<td>233,447</td>
<td>11,433</td>
<td>25,386</td>
<td>162,816</td>
<td>17,800</td>
</tr>
<tr>
<td>3</td>
<td>Florida</td>
<td>158,652</td>
<td>10,528</td>
<td>4,461</td>
<td>118,412</td>
<td>9,360</td>
</tr>
<tr>
<td>4</td>
<td>New York</td>
<td>156,059</td>
<td>11,603</td>
<td>3,491</td>
<td>123,292</td>
<td>8,624</td>
</tr>
<tr>
<td>5</td>
<td>Michigan</td>
<td>126,081</td>
<td>5,419</td>
<td>8,706</td>
<td>89,469</td>
<td>10,417</td>
</tr>
<tr>
<td>6</td>
<td>Illinois</td>
<td>123,247</td>
<td>5,341</td>
<td>1,080</td>
<td>81,676</td>
<td>16,646</td>
</tr>
<tr>
<td>7</td>
<td>Massachusetts</td>
<td>116,491</td>
<td>16,527</td>
<td>1,983</td>
<td>86,473</td>
<td>3,184</td>
</tr>
<tr>
<td>8</td>
<td>Ohio</td>
<td>112,486</td>
<td>8,108</td>
<td>1,050</td>
<td>81,676</td>
<td>16,646</td>
</tr>
<tr>
<td>9</td>
<td>North Carolina</td>
<td>110,913</td>
<td>8,912</td>
<td>908</td>
<td>86,559</td>
<td>7,280</td>
</tr>
<tr>
<td>10</td>
<td>Virginia</td>
<td>95,158</td>
<td>4,241</td>
<td>1,628</td>
<td>78,670</td>
<td>5,436</td>
</tr>
</tbody>
</table>

* Total includes renewable energy, energy efficiency, clean vehicles, battery storage, advanced biofuels, low-impact hydro and other sectors.

### Clean Energy Growth in Perspective

- **110,000**
  - Clean energy jobs grew 3.6 percent in 2018, adding jobs in nearly every state and combining to add over 110,000 net new clean energy jobs nationally.

- **12**
  - Number of states that have or are considering policies that get 100 percent of their electricity from clean energy sources.

- **3X**
  - Clean energy jobs outnumbered fossil fuel jobs nearly 3 to 1 in 2018.

- **10**
  - The number of states that generate more than 20 percent of their electricity from wind and solar—Kansas, Iowa, Oklahoma, North Dakota, South Dakota, Vermont, California, Maine, Colorado, and Minnesota.

- **156 GW**
  - Combined capacity of installed solar and wind surpassed 150GW in 2018. Wind energy is the largest source of renewable generating capacity. A new solar project is installed in America every two minutes.† ‡
CLEAN JOBS AMERICA

WANTED: FEDERAL ACTION ON CLEAN ENERGY

To continue creating tens of thousands of new jobs for Americans across the country, Congress should:

// Make sure any infrastructure bill includes policies to modernize the grid and expand electric vehicle charging infrastructure to keep grid and storage jobs growing.

// Stop rollbacks to fuel economy (CAFE) standards that are saving business and consumers money with every visit to the pump and also are driving jobs and American innovation in the clean vehicles sector.

// Upgrade and extend expired energy efficiency tax credits for commercial and residential buildings; clarify the Investment Tax Credit (ITC) to apply to energy storage and offshore wind and lift the cap on the electric vehicle tax credit to create more jobs in these sectors.

// Properly fund R&D investments in clean energy innovation and efficiency at the U.S DOE’s Office of Energy Efficiency and Renewable Energy, the Loan Programs Office, and programs such as ARPA-E, and the Advanced Technology Vehicles Manufacturing (ATVM) program.

INDUSTRY BREAKDOWN: JOBS

CLEAN JOBS BREAKDOWN BY VALUE CHAIN

Professional Services: 14.8%
Utilities: 0.4%
Agriculture: 0.6%
Trade: 9%
Construction: 49.8%
Manufacturing: 16.8%
Other: 8.6%
CLEAN JOBS AMERICA

CLEAN VEHICLES 255,000 JOBS

// Clean vehicles now account for about 13 percent of all the jobs in the motor vehicles industry
// 15.4 percent nationwide job growth in 2018
// 42 states saw double-digit job growth in 2018, with 15 seeing above 20 percent growth
// 486,000 additional employees in the motor vehicle industry work with parts making vehicles more fuel efficient

GRID & CLEAN STORAGE 139,000 JOBS

// Grid modernization industries added over 2,000 jobs, a 3.3 percent growth rate.
// California and Texas lead the U.S. in Grid & Clean Storage jobs again, but Nevada saw biggest rise in rankings—jumping from 25th to 4th thanks to a 380 percent job surge in 2018.

SOLAR + WIND 446,000 JOBS

335k SOLAR JOBS
// Solar provides the largest share of electric power generation in the U.S., 100,000 more than the next two sectors combined.
// Solar jobs fell 4.2 percent in 2018—after nearly a decade of growth—but employers are projecting job growth of over 8 percent in 2019.
// 89 percent of solar job losses were in maturing in states of MA and CA. In 18, solar jobs increased.
// 66 percent of solar jobs (224k) are involved in manufacturing and construction.

111k WIND JOBS
// Wind provides the 3rd largest share of electric power generation jobs, about 1,500 fewer employees than natural gas.
// Jobs grew 3.5 percent last year, with employers projecting job growth of nearly 5 percent for 2018
// All but five states (and D.C.) saw job growth in wind energy in 2018
// 56 percent of wind jobs (63k) are involved in manufacturing and construction.

ENERGY EFFICIENCY 2.3 MILLION JOBS

76,000
The number of new jobs added by energy efficiency companies in 2018—accounting for over half of all new energy jobs

7.4%
Expected job growth in 2019 by employers, the highest across the entire energy sector

1.4 M
The number of energy-efficiency jobs in construction

321,000
The number of manufacturing jobs in energy efficiency, an increase of 2 percent

1 in 3
More than one out of every three employees working in the energy sector (from traditional energy to motor vehicles) is involved in energy efficiency

1 in 4
In 2018, ENERGY STAR appliances employed more than 1 out of every 4 energy efficiency workers, largest category of employment
CLEAN JOBS AMERICA

3.26 MILLION CLEAN ENERGY JOBS: HOW DO THEY STACK UP?

3.04 M
That’s the number of teachers in elementary, middle & secondary schools.

2.25 M
That’s how many waiters & waitresses work in America’s bars and restaurants.

211,000
The number of jobs in coal mines, gas fields and oil patches combined.

1.15 M
The number of jobs in the entire U.S. fossil fuel industry.

AMERICANS OVERWHELMINGLY WANT MORE CLEAN ENERGY

// More than 85 percent of Americans—over two-thirds of Republicans (71%)—support requiring utilities in their state to produce 100 percent of electricity from clean energy sources by 2050.

// Between 2013 and 2018, support for renewable energy research increased from 73 percent to 88 percent among registered voters, including a 30 percent shift among conservative Republicans.

// A majority of Americans (58%) say they think policies to transition from fossil fuels to clean energy will improve economic growth and create new jobs.

WHY SUCH STRONG SUPPORT?
CLEAN ENERGY = JOBS

// Wind technicians and solar installers are predicted to be the top two fastest-growing jobs over the next seven years.

// The fastest-growing jobs in 12 states were in renewable energy in 2018.

// 66 percent of new power capacity in 2019 is projected to come from solar, wind, other renewables, and battery storage.

GROWTH ACROSS THE COUNTRY

CLEAN STORAGE

Solar + storage broke records last year, in 2019... 
// The record is projected to be broken yet again because of falling solar and battery prices and continuation of the federal ITC for solar.

The U.S. is projected to regain its spot as the world’s largest storage market... 
// thanks to residential solar-storage, state incentives, and increased utility-scale storage due to increased market certainty.

Led by increase EV adoption and home installations, lithium-ion battery installations are projected to... 
// increase by 800 percent from 2018-2022.

HIGHWAYS
// More than 1 million EVs are on the road in America, with nearly 50,000 sold nationwide in December 2018 alone.

HOMES
// 10x: Residential energy storage deployments led the way in 2018, growing tenfold from 2017 to 2018.

MANUFACTURING JOBS
// Tesla’s Gigafactory in Storey County near Reno, Nevada brought more than 7,000 jobs to the state in 2018 alone. That made Storey the top county in the nation for clean jobs per capita with more than 1,950 jobs per 1,000 residents, attracting workers and new residents from outside the county just to fill all the new jobs.

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MORE CLEAN ENERGY = MORE CONSTRUCTION JOBS

More than 1 out of 6 of all U.S. construction jobs are in energy efficiency (17%)\(^1\)

Wind and solar account for nearly 2 out of every 5 construction jobs in the electric generation sector

Nearly 6 out of 10 of energy efficiency’s 2.3 million employees work in construction (1.29 million)

Expected construction of renewable energy projects accounts for the majority of the electric power generation sector’s projected 7.1 percent job growth for 2019

CLEAN ENERGY INVESTING A TRILLION DOLLAR MARKET WAITING TO BE UNLEASHED

With the right support and policies, U.S. investors could turn clean energy into an economic powerhouse and unlock a market with near unlimited potential.

A TURNING POINT OPPORTUNITY:

FASTEST-GROWING

Roughly 18 percent of U.S. energy generation is now supplied by renewable sources, up from 11 percent in 2009.\(^2\)

$1 TRILLION

Financial institutions in the U.S. (including banks, asset managers, and private-equity firms) are expected to double planned investments in renewable energy, with the potential to mobilize $1 trillion in cumulative private capital by 2030.\(^3\)

13.4 GW

Corporate contracts for clean energy technology more than doubled in 2018 to 13.4 GW (up from 6.1GW in 2017), totaling now more than 32 GW since 2008—the generation capacity of the Netherlands.\(^4\)

GOOD JOBS FOR VETERANS:

Clean energy employs a greater percentage of veterans than most industries—including oil and gas. Percentage of veterans in the workforce of:

10% WIND

9% SOLAR PV

10% ENERGY EFFICIENCY

8% CONCENTRATED SOLAR POWER

6% NATIONAL AVERAGE

6 to 9% FOSSIL FUEL AND NUCLEAR

2035

By the year 2035, renewable energy is expected to become the world’s dominant power source. And by 2050, renewables are expected to supply 75 percent of the world’s energy.\(^5\)

60%

The U.S. is beginning to dominate a new global market, accounting for 60 percent of global corporate clean energy purchases in 2018.
ENDNOTES

1  Unless otherwise stated, the data and analyses presented in Clean Jobs America E2 (Environmental Entrepreneurs) are based on data collected for the 2019 U.S. Energy Employment Report (2019 USEER), produced by the Energy Futures Initiative (EFI) in partnership with the National Association of State Energy Officials (NASEO) and collected and analyzed by BW Research Partnership (BWRP). See Pages 9-13 for methodology questions. For more questions regarding methodology, visit https://www.e2.org/clean-jobs-america-faq.


3  https://www.eia.gov/todayinenergy/detail.php?id=37233


5  https://www.seia.org/solar-industry-research-data

6  https://www.bls.gov/iag/tgs/iag61.htm

7  https://www.bls.gov/iag/tgs/iag722.htm

8  By sector, fossil fuel jobs from electric power production are: coal (86,200), natural gas (43,500), advanced natural gas (69,100) and oil and petroleum (12,500).


10  https://www.bls.gov/emp/tables/fastest-growing-occupations.htm

11  http://www.projectionscentral.com/Projections/ShortTerm

12  https://www.eia.gov/todayinenergy/detail.php?id=37852

13  Clean Jobs America, 2017 USEER, 2018 USEER, 2019 USEER


15  https://www.woodmac.com/reports/power-markets-the-future-of-lithium-ion-batteries-demand-technologies-and-investments-29646


17  https://www.woodmac.com/research/products/power-and-renewables/us-energy-storage-monitor


20  https://www.eia.gov/todayinenergy/detail.php?id=38053

21  http://www.bcse.org/factbook/


24  https://about.bnef.com/blog/corporate-clean-energy-buying-surge-new-record-2018

E2 is a national, nonpartisan group of business leaders, investors and others who advocate for smart policies that are good for the environment and good for the economy.

Clean Jobs Count is a campaign to raise awareness of the economic importance of the clean economy. Visit www.cleanjobscount.org to join thousands of business leaders, workers and others to tell lawmakers and policymakers that clean jobs count.

E2 wishes to express its appreciation to the National Association of State Energy Officials (NASEO), the Energy Futures Initiative (EFI) and BW Research Partnership (“BWRP”) who made this report possible by producing the USEER and its underlying data.