

New report: California has five times more clean energy jobs than fossil fuel jobs

Four in 10 U.S. solar jobs are in California, as environmental laws continue to ramp up

By PAUL ROGERS | progers@bayareanewsgroup.com | Bay Area News Group

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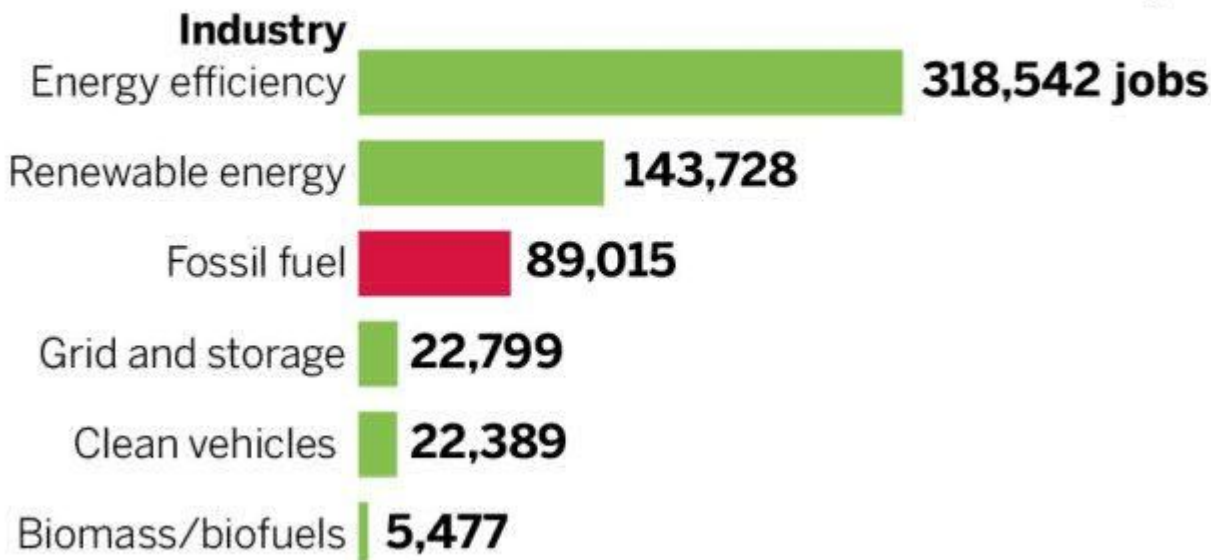


Clean energy jobs in California now outnumber jobs in the fossil fuel industry five to one, a new study has found, an increase driven by the state's ever-expanding renewable energy and climate laws.

More than 512,000 people are employed in jobs related to clean energy — from installing solar panels to building electric cars — making the state home to 1 in 7 such jobs in the United States, the study found. Those numbers are expected to grow further in the coming years, as California further ramps up efforts to address climate change.

OUTPACING FOSSIL FUEL JOBS

In California, more than 512,000 people work in clean energy industries — about five times more than the fossil fuel industry.



Source: e2.org

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“The clean energy industry is a large and growing part of our economy, certainly here in California, but nationally as well,” said Bob Keefe, executive director of Environmental Entrepreneurs, a non-profit group with offices in San Francisco and San Diego that compiled the data.

“With the right policies, we can keep these clean energy jobs growing in red states, blue states, purple states,” Keefe said, “and in every county in California from Humboldt to San Diego.”

Studies like the one released Tuesday are often controversial because experts disagree about how clean energy and fossil fuel jobs should be defined.

[The study](#) was based on an annual survey of businesses called the [2019 U.S. Energy and Employment Report](#), a snapshot of the energy industry that in the past was put out by the U.S. Department of Energy.

But the survey was discontinued after President Trump took office in 2017. In recent years, the report has been compiled instead by two non-profit groups using the same methodology, the Energy Futures Initiative, and the National Association of State Energy Officials.

Among the study's findings for California:

- Statewide, there were 512,934 jobs in the clean energy industry in 2018. Those included jobs in renewable energy, like installing solar and wind power, building electric and hybrid vehicles, doing energy efficiency work in buildings, manufacturing clean fuels and building battery storage projects.
- That same year, there were 89,059 jobs in fossil fuel industries, including drilling jobs at oil and gas fields and offshore platforms, oil refinery work and mining jobs, but not attendants who work at gas stations or the stations' convenience stores.
- Nearly four in 10 solar jobs in America are in California.
- The only state with more clean vehicle jobs than California is Michigan.
- The top counties ranked by total clean energy jobs are Los Angeles, Orange, Santa Clara, San Diego, San Francisco and Alameda.

Growth was largely flat last year compared to the year before, the study found.

California's 2018 clean jobs total was just slightly up from its 2017 total of 512,233 clean jobs. The reason was a 7.5 percent dip in solar industry jobs, which industry officials say was in part a result of tariffs imposed by the Trump administration on Chinese-made solar panels, which increased the costs for U.S. homeowners considering installing solar on their roofs.

That trend is expected to change this year, Keefe said, because California regulators have passed new rules requiring all new homes constructed after Jan. 1, 2020 to either have solar panels on their roofs or be powered from electricity from a solar farm.

"We'll start to see that swing back in the other direction very soon," he said.

Kara Greene, a spokeswoman for the Western States Petroleum Association, did not dispute the report's employment numbers for fossil fuel companies. But, she noted, oil companies also work in renewable energy, biofuels and industrial plant efficiency.

"Our industry likes clean energy jobs, in fact, we created a whole lot of them included in this report," Greene said.

She cited the Belridge Solar Project, under construction now west of Bakersfield. That project, being built by Aera Energy, which is owned by ExxonMobil and Shell, will use solar thermal power, rather than natural gas, to generate 850 megawatts of electricity to power oil field operations, reducing the greenhouse gas emissions by an amount the company says is equal to 80,000 cars.

As the Earth continues to warm, California has ramped up its clean energy laws. Last year, Gov. Jerry Brown signed a law requiring 60 percent of the state's electricity to come from solar, wind and other renewable sources by 2030 and 100 to come from "carbon-free" sources, which can include nuclear and large hydro-electric dams, by 2045.

This year, 34 percent of the state's electricity is generated from renewable energy, [according to the California Energy Commission](#). The state's greenhouse gas emissions peaked in 2004, and have fallen roughly 15 percent since then. By the end of this year, more than 1 million homes in California will have solar power on their roofs. And the highways are greening. There are now more than 500,000 electric vehicles on the road in California, more than any other state. But that number will have to increase significantly for California to hit its goal of 5 million by 2030.

Jim Sweeney, a professor of management and engineering at Stanford University and former director of Stanford's Precourt Energy Efficiency Center, said the numbers are accurate and the organizations that released it are credible.

But, he said, nearly two-thirds of the jobs described as clean jobs are in energy efficiency, he noted. Many of those jobs, like installing heating and air conditioning systems, are not new jobs, but rather jobs that are changing as technology changes.

"It's not like there are any jobs created because people are installing furnaces, just because some percentage of them are energy efficient," Sweeney said. "It's relabeling existing jobs."

Sweeney said a more "apples to apples" comparison to the fossil fuel industry would be comparing jobs generating and installing renewable energy to jobs producing fossil fuels and operating power plants that run on them. That "supply side" comparison, he estimated, would show about the same number of clean energy jobs as fossil fuel jobs in California.

"There has been significant employment in the renewable energy industry," he said. "That's a good thing. But some of this report exaggerates."



Paul Rogers | Natural resources and environment reporter

Paul Rogers has covered a wide range of issues for The Mercury News since 1989, including water, oceans, energy, logging, parks, endangered species, toxics and climate change. He also works as managing editor of the Science team at KQED, the PBS and NPR station in San Francisco, and has taught science writing at UC Berkeley and UC Santa Cruz.

progers@bayareanewsgroup.com
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6 Comments

- **Mike Smith** • 8 months ago

So Paul is really telling us that clean energy is five times more labor intensive. And given labor is typically the largest cost (esp. in CA) that would explain why our energy is so much more expensive than most other places in the USA. Not sure why this is something to celebrate!

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- **martynWW** • 8 months ago • edited

This is misleading at best. For one thing, "energy efficiency" is something that has been done for years whether the energy comes from traditional or renewable resources, and automatically tacking that all on to "clean energy" isn't accurate. The same issue also applies to "grid and storage."

Efficiency and reducing costs are always goals, no matter what the energy source.

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- **edwinareed** • 8 months ago

The report also ignores all the utility workers who provide gas and electric services, so it's skewed/inaccurate. And as pointed out below, much of the solar/renewable industry is subsidized with taxpayer dollars that will come to an end and is long overdue. Never could appreciate hardworking people subsidizing solar panels etc. for those who are better off than them in the first place. Most people don't even know they're subsidizing people who can afford the higher priced renewable energy infrastructure. Not sustainable.

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- **San Bernardino Nick** • 8 months ago

The report ignores the fact that massive subsidies (mandates are only briefly admitted) are driving this fake economy. Once the federal solar rebates expire at the end of the year, the residential solar

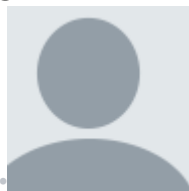
industry will collapse just like the commercial side has done already. Toyota has abandoned the state as most manufacturing has, in part due to Californias soaring en



Chris • 8 months ago • edited

New Report....Ohh the pain as electricity costs 5 to 7 time more than neighboring sane states who view this as exactly whit it is..... RUBBISH

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Candid One • 8 months ago

This has to be the trend regardless of climate change. California has been contending with air quality since the post-WWII industrial booms brought more plants and people and cars and trucks. Big Oil has not been too dense to not see the inevitable depletion of its nonrenewable products, and it's been actually diversifying.

Now, as the implications of wildfire hazards have led to fragmented, sporadic electrical grid shutdowns, along with heat-related rolling brownouts, residential compensations for subsisting through outages will sustain this trend. Of course, the migration to all-electric homes will aid the clean energy trend, more gradually.

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