



WORLD
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INSTITUTE

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July 31, 2018

The Honorable Fred Upton, Chairman, Subcommittee on Energy
Committee on Energy and Commerce
2125 Rayburn House Office Building
Washington, DC 20515-6115

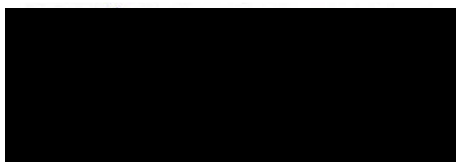
Dear Chairman Upton:

I would like to express my thanks for the opportunity to appear before the Subcommittee on Energy to testify at the June 26th hearing on “The Shifting Geopolitics of Oil and Gas.”

I would also like to thank Congressman McNerney for his question regarding the relative employment for renewables versus oil and gas when considered against the amount of energy produced. While I did not have that information available at the hearing, I have attached my response based on data from the 2018 installment of the U.S. Energy and Employment Report (USEER), along with a fact sheet World Resources Institute produced in early 2017.

I would be happy to follow-up further if you or other members of the committee have questions or are looking for additional information.

Sincerely,



Kevin M. Kennedy
Deputy Director, U.S. Climate Initiative

cc: The Honorable Bobby L. Rush, Ranking Member, Subcommittee on Energy
The Honorable Jerry McNerney
Ms. Kelly Collins, Legislative Clerk, Committee on Energy and Commerce
Christina DeConcini, Director, Government Affairs, World Resources Institute

Attachments

Additional information for the record of the June 26th, 2018, hearing of the Energy Subcommittee of the U.S. House Committee on Energy and Commerce on “The Shifting Geopolitics of Oil and Gas,” from Kevin Kennedy of the World Resources Institute:

Congressman McNerney asked about the relative employment for renewables versus oil and gas when considered against the amount of energy produced. The 2018 installment of the U.S. Energy and Employment Report (USEER) contains data that address this question.

The U.S. Department of Energy (DOE) released the USEER in 2016 and 2017 to survey and quantify energy jobs across the domestic economy. As the DOE elected not to produce a 2018 iteration of the Report, the Energy Futures Initiative (EFI) and the National Association of State Energy Officials (NASEO) opted to publish an updated report applying the same survey methodology as previously used by the DOE. This report can be found at <https://www.usenergyjobs.org/>.

The 2018 USEER finds that in 2017, wind and solar accounted for over 450,000 jobs combined, as seen in Table 1, copied below. Looking at renewable energy more broadly, nearly 35% (approximately 650,000) of Americans employed in the overall Electric Power Generation and Fuels sectors were working in wind, solar, geothermal, hydroelectricity and bioenergy. (These sectors include “the entire range of business activities that support both fuel extraction and production, as well as utility-scale and distributed electric power generation.”) Employment in the U.S. renewables industry is disproportionately high relative to other energy sources, as these technologies supplied only 10% of U.S. primary energy consumption in 2016, as seen in Appendix B of the 2018 USEER. Meanwhile, oil/petroleum and natural gas each employed fewer workers than did renewable energy, although they accounted for 37% and 29% of the nation’s energy supply, respectively.

Energy efficiency, often regarded as a source of renewable energy, employed 2.25 million Americans in 2017, more than double the number of Americans employed in traditional fossil fuels. In fact, the conclusion of the Report states, “The growth of energy efficiency jobs and the penetration of energy efficiency technologies continues to be an important indicator of economic development opportunities and increasing competitiveness for American industries.”

As wind and solar generation continues to grow and burgeoning technologies such as battery storage and offshore wind begin to take off, there is tremendous potential for increased employment in the renewable energy sector.

I have also attached a fact sheet that WRI produced in early 2017 that provides additional information on clean energy employment in the U.S.

Table 1.
Generation and Fuels Employment by Major Energy Technology Application and Detailed Technology Application

	Electric Power Generation	Fuels	Total
Solar	349,725	-	349,725
Wind	107,444	-	107,444
Geothermal	7,927	-	7,927
CHP	27,239		27,239
Bioenergy	12,385	104,446	116,831
Corn Ethanol	-	34,522	34,522
Other Ethanol/Non-Woody Biomass, Including Biodiesel	-	20,083	20,083
Woody Biomass Fuel for Energy and Cellulosic Biofuels	-	31,428	31,428
Other Biofuels	-	18,414	18,414
Low Impact Hydroelectric Generation	11,531	-	11,531
Traditional Hydropower	55,341	-	55,341
Nuclear	64,743	8,962	73,705
Coal	92,843	74,180	167,023
Natural Gas	66,385	312,364	378,749
Oil/Petroleum	12,407	510,015	522,422
Advanced Gas	41,034	-	41,034

³⁷ It is important to note that these figures include all employees who spend some portion of their time on a specific technology.

³⁸ The Solar Foundation has been producing annual solar reports since 2010, using a substantially similar methodology to this report. See <https://tsfcensus.org> for more information. The Solar Foundation 2017 National Solar Jobs Census/BW Research Partnership

Source: Energy Futures Initiative and the National Association of State Energy Officials, *U.S. Energy and Employment Report*, May 2018. Available at <https://www.usenergyjobs.org/>.



CLEAN ENERGY JOBS GROWTH IN THE UNITED STATES

The clean energy economy in the United States—including wind, solar, and efficiency industries—is putting more and more Americans to work. Solar and wind energy are among the most dynamic industries in the nation, employing hundreds of thousands of Americans. Energy efficiency efforts employ millions, while saving money for both companies and consumers. This fact sheet gathers the latest data on how many Americans are working in clean energy and where the jobs are located.

FACT **The U.S. Department of Energy estimates that about 800,000 Americans were employed in low-carbon-emission generation technologies in early 2016, including renewables, nuclear, and advanced/low-emission natural gas.** By comparison, 160,000 Americans worked in coal in early 2016. (DOE)¹

FACT **Solar jobs are among the fastest growing employment sectors in the nation.** In 2016, the U.S. solar industry created jobs 17 times faster than the overall economy. One out of every 50 new jobs added in the United States in 2016 was created by the solar industry.² The solar workforce grew 25 percent from 2015 to 2016, reaching 374,000. (Solar Foundation)³

FACT **Wind jobs are also a rapidly expanding job sector in the U.S.** Wind employment grew 32 percent between 2015 to 2016, reaching 102,000. The Bureau of Labor Statistics predicts that wind-turbine technicians will be the fastest-growing occupation over the next 10 years. (Dept. of Energy)⁴

FACT **In early 2016, 2.2 million Americans were employed, in whole or in part, in the design, installation, and manufacture of energy efficiency products and services.** Of these, more than half, 1.4 million are in the construction industry. (BLS)⁵

FACT **The share of the auto industry working with alternative fuels and fuel-efficient vehicles is growing.** Of the 2.4 million workers in the industry in early 2016, more than 259,000 work with alternative-fuel vehicles (including natural gas, hybrids, plug-in hybrids, all electric, and fuel cell/hydrogen vehicles) and at least 710,000 jobs are focused on improving fuel economy or transitioning to alternative fuels. (DOE)⁶

CONTACTS

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World Resources Institute Fact Sheets bring together data and content from WRI's research as well as other respected organizations to provide a basis for informed discussion and decision making on urgent issues at the nexus of environment, economic growth and human well-being.

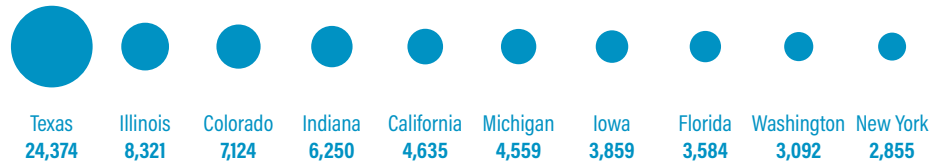
find other fact sheets in this series at:
wri.org/powering-america-forward

FACT **Manufacturing jobs from renewables exist all over the country.** More than 500 factories build wind-related parts and materials in 43 states, making everything from major wind turbine components such as nacelles, blades, towers, and gearboxes to internal components like bearings, slip rings, fasteners, and power converters. They are especially concentrated in the Midwest, the Northeast, and Appalachia.⁷

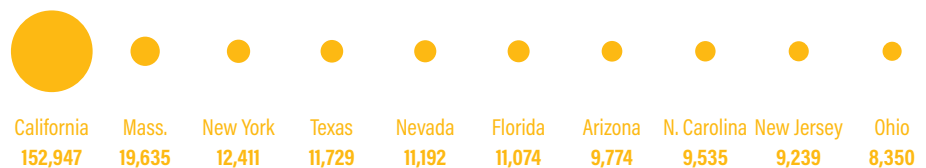
FACT **Texas is the top state for wind jobs and California is the top state for solar and energy efficiency jobs.** Florida, Illinois, Massachusetts, Michigan, New York, North Carolina, and Ohio also rank in the top 10 in multiple categories of clean energy jobs (see figure at right).

WHERE ARE CLEAN ENERGY JOBS LOCATED?

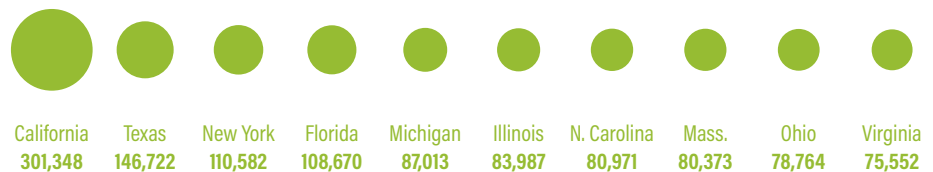
Top Ten States for Wind Jobs



Top Ten States for Solar Jobs



Top Ten States for Energy Efficiency Jobs



Data from the state charts⁸ in the Department of Energy's 2017 National Energy and Employment Report⁹ can be used to provide a ranking of the top 10 U.S. states for wind, solar, and energy efficiency jobs.

NOTES AND REFERENCES

- Department of Energy, National Energy and Employment Report, January 2017, p. 8. https://energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf.
- The 2016 data refer to Q1 (January to March). The 2015 data refer to Q2 (April to June).
- The Solar Foundation, National Solar Jobs Census 2016, <http://www.thesolar-foundation.org/solar-accounts-1-50-new-u-s-jobs-2016/>.
- Department of Energy, National Energy and Employment Report, January 2017. https://www.energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf
- Bureau of Labor Statistics, Fastest Growing Occupations. https://www.bls.gov/emp/ep_table_103.htm.
- Department of Energy, National Energy and Employment Report, January 2017, p. 8. https://energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf.
- The 2016 data refer to Q1 (January to March).
- Department of Energy, National Energy and Employment Report, January 2017, p. 9. https://energy.gov/sites/prod/files/2017/01/f34/2017%20US%20Energy%20and%20Jobs%20Report_0.pdf.
- American Wind Energy Association, U.S. Wind industry 2015 Annual Market update, p. 1. <http://awea.files.cms-plus.com/Annual%20Report%20Manufacturing%202015.pdf>.