

CLEAN ENERGY WORKS FOR US: FIRST QUARTER 2014 REPORT

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From commercial-scale solar developments to energy-efficient recycling projects, clean energy and clean transportation continues to create jobs and drive economic growth. By tracking job announcements from companies, elected officials, the media, and elsewhere, Environmental Entrepreneurs' (E2's) jobs reports show how and where clean energy works in the United States.

For more details, including state-by-state breakdowns and more clean energy jobs stories, visit www.CleanEnergyWorksForUs.org.

CLEAN JOBS FALL IN Q1

Nearly 5,600 clean energy and clean transportation jobs were announced throughout the U.S. in the first quarter of 2014. This is a significant decline from the previous two quarters. The decline stems in part from the expiration of federal tax credits critical to leveling the playing field for renewable energy and energy efficiency technologies,

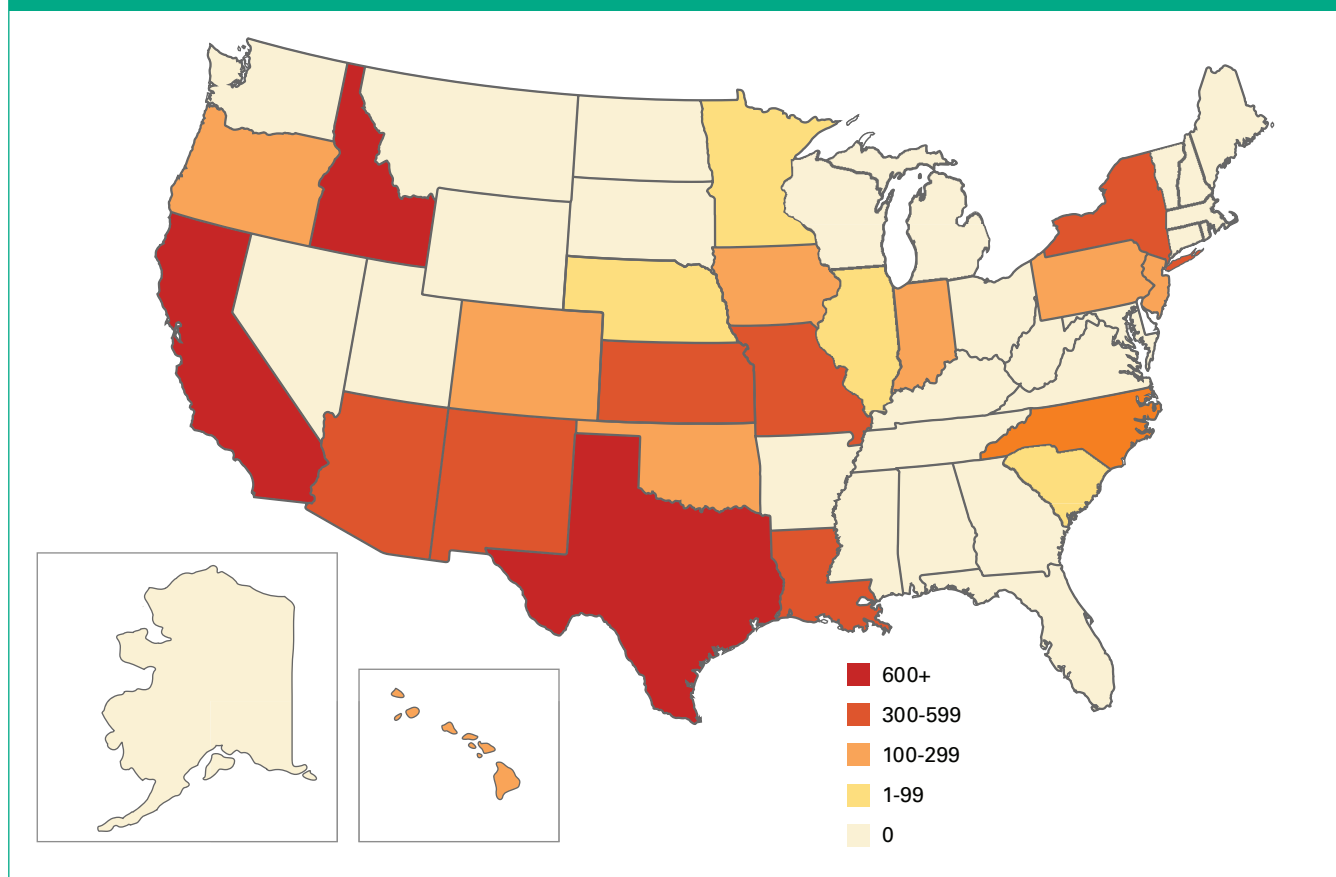
like wind, solar, and energy efficient lighting, continuing attacks on state clean energy policies, and low natural gas prices. Because of ongoing regulatory uncertainty and other energy sector trends, businesses held back investments that would likely have led to more hiring in the clean energy and energy efficiency sectors.^{1,2}



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For more information, please contact Jeff Benzak, communications associate, Environmental Entrepreneurs (E2) at jbenzak@e2.org or 202.513.6248.

50 STATE BREAKDOWN: WHERE WERE THE ANNOUNCEMENTS?



These data cover job announcements from January 2014 through March 2014 media reports, official announcements, and other sources and are not an exhaustive tally of job creation in the clean economy.

As a result of the decline in job announcements, a lone geothermal project was enough to propel Idaho, which had not ranked in the Top 10 in any previous quarter, to the top spot. Idaho was immediately followed by more traditional top performers. The remaining states in the Top 10 were: TX, CA, MO, NY, KS, AZ, HI, NM, and LA.

Texas ranked 2nd with four announcements, including two wind and one solar farm announcement with a combined capacity of 249 MW. Louisiana was a newcomer to the Top 10, thanks to recycled plastic railroad tie maker IntegriCo Composites' new manufacturing facility in Webster Parish.

Looking at individual sectors, geothermal had one of its strongest showings since E2 began tracking job announcements in 2011. E2 tracked more than 1,000 job announcements from the geothermal sector in Q1, including 800 planned jobs from Aguacaliente's 25 MW project near Malta, Idaho. This was one of three

geothermal projects announced this quarter to take advantage of the Production Tax Credit (PTC) revised construction eligibility rules, despite its expiration in December.

Looking ahead, the Environmental Protection Agency's anticipated rollout of carbon pollution standards for existing power plants in June could offer more certainty and opportunities for growth in the clean energy industry. By ensuring carbon is regulated from these power plants for the first time, clean, renewable sources of energy like sun, wind, and geothermal and energy efficient technologies, like more efficient lighting and appliances, insulation, and system controls, could play a significant role in helping states to cost effectively meet the standards and potentially lead to substantial increases in the number of clean jobs announced in the coming years.

SECTOR	PROJECTS TALLIED	TOTAL
Renewable energy		
Solar Power	14	1,654
Wind Power	9	1,612
Biogas/Biomass	4	285
Biofuel	2	106
Geothermal Power	3	1,010
Building Efficiency	2	325
Recycling	6	603

SOLAR GROWTH SHIFTS FROM UTILITY TO RESIDENTIAL MARKET

2013 was a record year for utility-scale solar as more than 2,800 MW of generation was installed, a roughly 60 percent increase from the previous year. However, in Q1 2014, the sector accounted for just 1,400 jobs announced – a significant decline from previous quarters. This finding reinforces previous E2 analyses from last year, projecting a slowdown in announcements as a result of policy uncertainty.³

One of the main reasons for the slowdown is that utilities in solar-rich Western states like California and Nevada are currently exceeding their mandated targets under their respective state Renewable Portfolio Standards.



A SunEdison engineer lays a solar panel in Colorado.

PHOTO: DENNIS SCHROEDER/NREL

Additionally, the looming 2016 expiration of the Investment Tax Credit (ITC) has led large-scale projects that require long lead times to be reconsidered. The first round of the Department of Energy’s loan guarantee program – which created an estimated 7,200-plus jobs⁴ in the utility-scale solar sector – is also sunseting. The Department plans to shift its financing support from large-scale wind and solar projects to grid integration, energy storage, and efficiency initiatives moving forward.⁵

RANK ⁱ	STATE	PROJECTS TALLIED	TOTAL
1	ID	1	802
2	TX	4	791
3	CA	4	660
4	MO	3	449
5	NY	3	435
6	KS	2	355
7	AZ	2	342
8	HI	2	340
9	NM	2	328
10	LA	1	300

ⁱ States have been ranked by the total number of jobs announced in media reports and company press releases over the past 3 months.

DoD'S LARGEST SOLAR ARRAY GOES ONLINE, CREATES JOBS

During the hottest part of 2013, about 170 workers installed a 16-megawatt solar array on dusty, underutilized fields of creosote and mesquite near Davis-Monthan Air Force Base's runways in Tucson, Ariz.

These workers – senior construction managers, electricians, installers, and pneumatic equipment operators – built what's now the largest photovoltaic solar energy array within the Department of Defense – about 57,000 panels, or enough to power about 3,000 homes.

It wasn't an easy job.

"There were some days when it was 115 degrees," said Greg Noble, energy manager at Davis-Monthan, home to a fleet of A-10 Warthog jet planes. "They were drinking chilled bottled water hour after hour after hour. Around here, you can drop from heat exhaustion in no time."

While the workers, whose shifts lasted from 6 a.m. to 3 p.m. to take advantage of the coolest part of the day, struggled with sun exposure, the arrays they installed are perfectly suited for the Sonoran desert. Every 15 minutes, the array tilts to track the sun, leading to a 4 percent performance increase.

Missouri-based Sun Edison financed, designed, installed, monitors, and maintains the array. The Air Force had no capital cost outlays, saves \$500,000 annually on its electric bills, and agreed to purchase power from the array, which went online in January 2014, for the next 25 years.

A few miles away but still on base, about 900 homes for enlisted personnel and their families use rooftop solar to generate electricity. According to Soaring Heights, which manages the housing units, about 100 workers were required to install the panels.

— *Environmental Entrepreneurs*



Greg Noble, right, energy manager at Davis-Monthan Air Force Base in Tucson, Ariz., describes the base's new 16 MW solar array.

PHOTO: EZ

While utility-scale solar project announcements are shrinking, residential solar is growing rapidly – and not just in the traditional hotbed of California. For example, in Q1 Vivint Solar announced it was opening three offices in New Jersey. The company is hiring 200 sales employees, installers, electricians and other staff. Solar City announced it will employ an additional 15 staff in Long Island, N.Y., tripling the size of its regional office. Both companies cited that state policies in New York and New Jersey are providing transparency and long-term certainty to invest in the region. Specific policies include strong net metering and grid integration standards, which empower consumers to sell electricity they generate back to the grid.

Looking ahead, distributed solar generation appears poised for continued growth as traditional financing barriers evaporate; solar module prices drop from further economies of scale; and innovative financing models such as vertical integration, solar securitization, and crowd-funding gain a foothold in the market.

NO WIND PTC = NO JOBS

The PTC is a federal incentive offering a per-kilowatt hour tax credit to developers of renewable generation, including wind, geothermal, and certain forms of biogas and hydropower. Without policies that account for the social cost of carbon, the PTC helps level the playing field for wind energy and other technologies to compete with natural gas and other fossil fuel technologies that receive permanent federal subsidies.⁶ In 2012 alone, this



Wind turbines at the Forward Wind Energy Center in Fond du Lac and Dodge Counties, Wisc.

PHOTO: RUTH BARANOWSKI/NREL



Siemens employees work on the nacelle of a 2.3 MW wind turbine in Boulder County, Colo.

PHOTO: DENNIS SCHROEDER/NREL

tax credit helped the wind industry drive \$25 billion in private investment into the economy.⁷ But at the end of 2013, Congress let the PTC expire, halting the momentum of a rapidly growing industry. The American Wind Energy Association reported 30,000 job losses in 2013 as a result of uncertainty over the extension of the PTC. This past quarter, wind turbine manufacturer Gamesa announced the closure of its facility in Edensburg, PA, eliminating 62 jobs.⁸

As long as federal tax extenders remain in limbo, renewable technologies will remain stuck in a boom-bust cycle dictated by the whims of Washington and investors will likely be cautious to direct capital to new projects in the U.S.

BUILDING-EFFICIENCY JOB ANNOUNCEMENTS SLUGGISH, BUT POTENTIAL REMAINS

Since 2011, E2 has tracked an average of 1,900 announced jobs in the building efficiency sector each quarter. However, in Q1 2014, only two companies made announcements. Combined, these businesses plan to hire 325 workers. This drop may be attributed to the recent expiration of federal tax credits supporting commercial and residential construction and retrofits, including three provisions of the 2005 Energy Policy Act:

- Tax deduction for the construction of efficient commercial buildings (Section 179D)
- Tax credit for the construction of efficient homes (45L)
- Tax credit for investment in residential efficiency improvements (25C)

With ongoing uncertainty over Congressional extension of these tax credits, businesses and municipalities are hesitant to make investments in building efficiency. Earlier this year, the National Association of Energy Service Companies urged the Senate to extend the 179D provision, noting “incremental energy efficiency projects enabled by the availability of Section 179D create and sustain much needed jobs in the construction, engineering, manufacturing and design sectors.”

Addressing building energy use can lead to big energy savings – and big job gains. An Institute for Market Transformation analysis estimated the creation of a national building energy rating and disclosure policy could create up to 59,000 jobs and save building owners \$18 billion through 2020. The same study indicated the energy savings gained would take the equivalent of 3 million cars off the road.⁹ Energy efficiency is popular: Nine in 10 likely voters support energy efficiency as a key part of the solution addressing our energy challenges.¹⁰

STATE RENEWABLE PORTFOLIO STANDARD NEWS



REPEALED In 2012, then-Gov. Mitch Daniels (R) launched the Energizing Indiana Program, which consisted of a small “public benefits charge” to conduct energy audits, weatherization, and offer rebates on energy-efficient appliances. The program resulted in vast energy savings; administrators estimated the program saved enough energy to power 78,000 homes. According to ACEEE, the program saved Hoosiers over \$49 million on their energy bills in 2011 alone. A bill repealing Energizing Indiana passed both chambers of the state legislature; on March 27 Gov. Pence (R) indicated he would not sign the legislation, effectively making the repeal become law. The program’s schedule termination at the end of 2014 is estimated to result in a loss of 400 Indiana jobs.¹¹



THREATENED A bill recently passed in the Ohio Senate (S.B. 310) that would freeze the 2014 efficiency and renewable energy targets. This would have a crippling effect on the state’s energy efficiency industry and renewable energy manufacturing base. Ohio ranks first nationally in wind-related manufacturing facilities, supporting between 2,000 and 3,000 jobs.¹² The Solar Energy Industry Association, meanwhile, estimates 3,800 Ohioans are directly employed in the solar supply chain.¹³ And E2 found that Ohio businesses announced 2,600 clean jobs the past two years. Utility investment in energy conservation and renewables is bolstered by the state’s energy efficiency and renewable energy portfolio standards, which require utilities to reduce electricity use by 22 percent by 2025, and generate 12.5 percent of their electricity from renewable sources like wind and solar energy.



DEFENDED Lawmakers in Kansas yet again attempted to repeal, and later weaken in a second attempt, the state’s Renewable Portfolio Standard, which requires state utility companies to source 20 percent of their electricity from renewables like wind and solar by 2020. A close vote in the House kept the state’s law in place, which likely will continue the local industry’s rapid growth. In Q1, for instance, OwnEnergy announced development

of the 50 MW Alexander wind farm in Rush County, expected to create 150 construction jobs and 5 permanent positions. According to new report from the American Wind Energy Association, wind capacity in Kansas has doubled the past two years; the industry currently supports more than 3,000 jobs and \$5.5 billion in capital investment.¹⁴



STRENGTHENED Governor Cuomo created the NY-Sun Initiative in 2012 with the intention of building a scalable solar market in New York. In early 2014, he followed through on his intention by announcing that he would expand and extend the program with nearly \$1 billion in incentives to grow solar at least ten fold by 2023, which would be enough to power nearly half a million New York homes. The program is expected to add more than 10,000 new jobs in the solar industry.¹⁵



STRENGTHENED While Western states were defending attacks on net metering, Vermont Gov. Peter Shumlin (D) on April 1 raised the state’s net metering cap from 4 percent of a utility’s peak load to 15 percent, and enabled greater consumer participation in the net-metering program. A 2013 report from the Vermont Public Service Commission found net metering is “cost-effectively advancing the state’s renewable energy goals... [enabling] the growth of numerous small businesses.”¹⁶ Gov. Shumlin noted state capacity has tripled since he entered office. Vermont currently ranks first in the nation in per-capita solar jobs.¹⁷



WATCH The Iowa legislature passed two key bills to bring more solar jobs to the Hawkeye State. Provided Governor Terry Branstad (R) signs the legislation, the bills would triple residential tax credits for solar generation, increase credit available for business owners installing solar, and extend tax credits for other renewable generation. The Iowa Environmental Council notes local interest in photovoltaic power is growing rapidly. In 2013, state demand for solar exceeded the cap by nearly 50 percent.

CONCLUSION

To preserve existing jobs and to ensure new ones can be created, Congress must act quickly to enact long-term extensions of federal tax credits for wind, solar and energy efficiency. In the meantime, states can demonstrate the types of clean energy leadership that's absent in Congress

by supporting policies like state-level energy efficiency and renewable portfolio standards and net metering. States can also help create clean jobs within their own borders by leveraging their growing energy efficiency and renewable industries to prepare for the Environmental Protection Agency's rollout of carbon pollution standards in June.

Endnotes

- 1 <http://cleanenergyworksforus.org/businesses-tell-congress-pass-clean-energy-tax-extendors-now/>
- 2 <http://www.bizjournals.com/pittsburgh/print-edition/2014/02/07/gamesa-office-closing-part-of.html?page=all>
- 3 <http://www.e2.org/ext/doc/E2CleanEnergyJobs2013Year-EndandQ4.pdf>
- 4 <http://energy.gov/lpo/projects>
- 5 <http://energy.gov/sites/prod/files/2014/04/f15/Draft-REEE-Solicitation-Fact-Sheet-4-15-14-FINAL.pdf>
- 6 <http://ischool.syr.edu/media/documents/2014/3/PTC32514.pdf>
- 7 http://awea.files.cms-plus.com/images/AWEA_USWindIndustryAnnualMarketReport2012_ExecutiveSummary%282%29.pdf
- 8 <http://www.bizjournals.com/pittsburgh/news/2014/01/30/gamesas-wind-troubles-creates-debate.html?page=all>
- 9 <http://www.imt.org/resources/detail/analysis-of-job-creation-and-energy-cost-savings-from-building-energy-ratin>
- 10 <http://documents.nam.org/comm/Energy-Efficiency-Poll.pdf>
- 11 <http://idsnews.com/news/story.aspx?id=97369>
- 12 <http://www.awea.org/Resources/state.aspx?ItemNumber=5395>
- 13 <http://www.seia.org/state-solar-policy/ohio>
- 14 <http://www.awea.org/Resources/state.aspx?ItemNumber=5223>
- 15 http://switchboard.nrdc.org/blogs/kkenedy/already_rapidly_spreading_acro.html
- 16 <http://www.leg.state.vt.us/reports/2013ExternalReports/285580.pdf>
- 17 <http://thesolarfoundation.org/solarstates/vermont>

METHODOLOGY

OVERVIEW: E2 primarily draws job announcement figures from articles that run in local and national news outlets. The media stories E2 tracks mention specific projects and specific job-hiring data in the renewable energy, energy efficiency, and public transportation sectors. Since E2 began tracking job announcements in 2011, this method of job announcement tracking has been used about 95 percent of the time.

For the roughly 5 percent of occasions when an article mentions a project – but no other job numbers are found – E2 at our own discretion may use job estimates cited on developer Web sites or in publicly available permits.

TIMEFRAME: Job numbers are assigned to quarters based on the publication dates of the news article. Also pegged to publication dates is a four-year total timeframe that determines whether announced jobs can be counted. This timeframe includes jobs created one year prior to the announcement, and it also includes jobs expected to be created at any point within the three years immediately following the announcement. In other words, if a news article that runs on January 1, 2014, cites job numbers that meet our criteria; those announced jobs will be included in our Q1 2014 report – even if the jobs cited were created the previous year. Similarly, if an announcement we track on April 1, 2014 says “Project X will create 250 jobs through 2016,” that announcement will count toward our Q2 2014 report – and will not be counted again.

JOB TYPE: Only direct jobs are counted; E2 does not count indirect or induced jobs. If an article includes indirect or induced job numbers, E2 determines direct job creation estimates.

ESTIMATES: Some announcements are rough estimates, as developers are inclined to make statements like “few hundred,” “couple hundred,” or “thousands.” In each of these instances we count the minimum – such as 200 or 2,000. If more specific numbers, either higher or lower, are released, E2 updates databases accordingly.

SECTORS INCLUDED: Wind, solar, advanced biofuels, geothermal, energy-efficient appliance manufacturing, building retrofits, rail systems, public transportation infrastructure, smart meters, transmission improvements, combined heat and power, clean-tech education centers, recycling facilities, etc.

Note: Because material recycling is a form of energy efficiency, jobs in that sector were added in June 2013. However, E2 did not retroactively add announced recycling jobs to database.

Sectors Excluded: Hydroelectric, nuclear, wood-based biofuel (using whole trees or non-biogenic waste), biofuel from feedstock that competes with food, or utility-scale renewable projects endangering critical habitat.

STATUS: E2 qualifies jobs within three categories:

- Announced: Project received permits/approval, but construction not yet commenced.
- Under Construction: Project in physical development. Construction workers employed, permanent jobs not yet created.
- Operational: This category contains two types of announcements:
 - Project built, permanent jobs being created, construction workers no longer on site.
 - All jobs created. Project developer retroactively examining employment numbers.



For more details, including a state-by-state breakdown and stories that show what's happening in the clean economy near you, check out www.CleanEnergyWorksForUs.org.



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