



CLEAN ENERGY WORKS FOR US: 2013 Second Quarter Clean Energy/ Clean Transportation Jobs Report

PHOTO COURTESY OF E. ON

From energy efficiency upgrades to light-rail projects, clean energy and clean transportation continue 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.

2013 SECOND-QUARTER SNAPSHOT

More than 38,600 clean energy and clean transportation jobs connected to at least 58 projects were announced in the second quarter of this year. That was slightly higher than the 37,400 clean energy jobs that E2 tracked in the comparable quarter a year ago.

Power-generation projects from solar, wind, biomass, and other renewable energy sources will create more than 13,300 jobs if the announcements made hold true—more jobs than any other sector tracked by E2 this quarter.

About 9,600 public transportation jobs were announced, while major smart grid and electricity-transmission upgrade projects are projected to create more than 8,200 additional

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jobs. Energy efficiency also posted strong numbers with more than 5,700 jobs announced (see table 2).

Policies such as President Obama's climate change initiative, announced in June of this year, along with the recent extension of renewable energy standards in some states, promise to keep the momentum going.



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| RANK ^a | STATE | PROJECTS TALLIED ^b | TABLE 1. CLEAN ENERGY JOBS ANNOUNCED IN SECOND QUARTER OF 2013 FROM: ^c | | | TOTAL |
|-------------------|------------|-------------------------------|---|----------------------|--------------------|-------|
| | | | PROJECTS IN OPERATION | PROJECTS IN PROGRESS | PROJECTS ANNOUNCED | |
| 1 | California | 12 | 4,383 | 1,050 | 3,736 | 9,169 |
| 2 | Hawaii | 1 | - | - | 5,000 | 5,000 |
| 3 | Maryland | 2 | - | - | 4,400 | 4,400 |
| 4 | Illinois | 2 | 2,700 | - | 700 | 3,400 |
| 5 | Oregon | 2 | - | 3,067 | - | 3,067 |
| 6 | Kansas | 2 | - | - | 2,758 | 2,758 |
| 7 | Missouri | 1 | - | - | 2,750 | 2,750 |
| 8 | Texas | 1 | - | 2,000 | - | 2,000 |
| 9 | Alaska | 1 | 612 | - | - | 612 |
| 10 | Nevada | 3 | - | 44 | 536 | 580 |

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

^b Project announcements spanning multiple states are each counted as one separate project per state with total jobs divided evenly among each state listed if state-by-state job count details were unavailable.

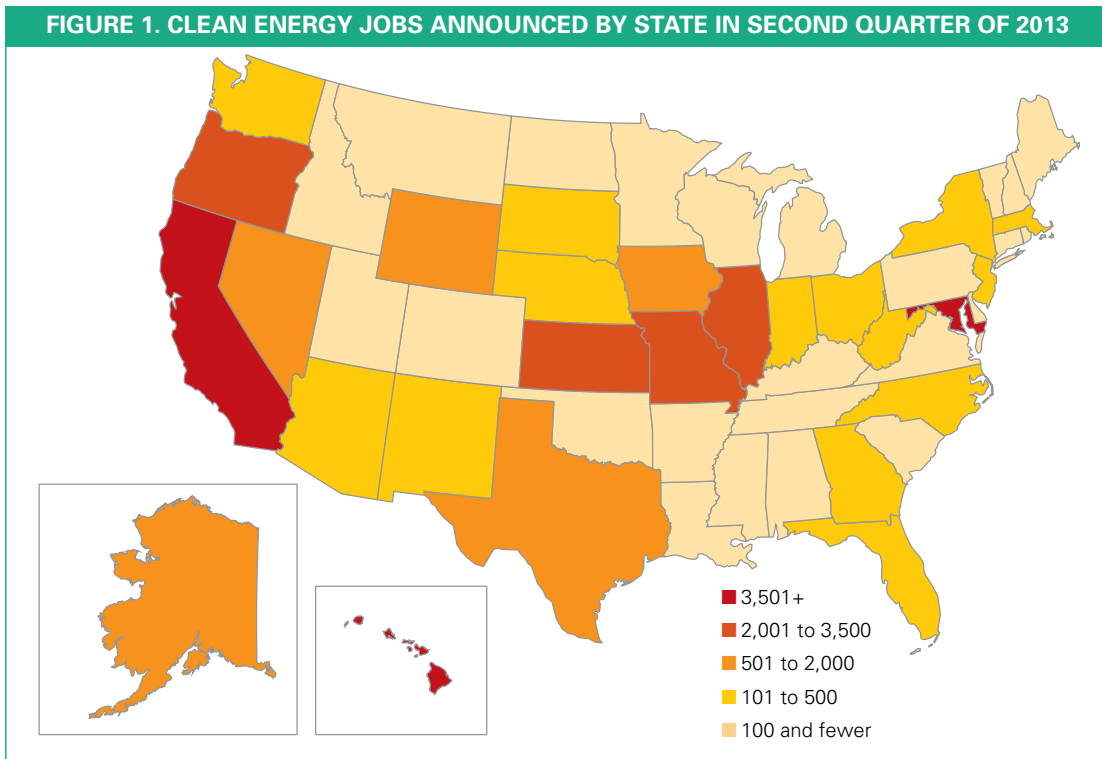
^c "In Operation" denotes that an energy project has gone live or a manufacturing facility is on-line; "In Progress" is for any project in construction or any program that has been initiated; and, "Announced" captures those projects in earlier stages of development.

Clean energy and clean transportation jobs were announced in at least 27 states in the second quarter of this year (see figure 1). For the first time, Kansas and Missouri each made the top-10 list of states to announce clean energy projects in the second quarter of 2013, thanks in large part to the Clean Line Energy Partners LLC announcement of the "Grain Belt Express Clean Line" transmission-upgrade project (see table 1). The project will transmit more than 3,500 megawatts (MW) of wind energy from Kansas and Missouri east to other states. The \$2 billion project is scheduled for completion by

2018. Clean Line Energy Partners estimates that the project could create 5,500 jobs to plan, construct, and manage the new line.¹

Also for the first time, both Hawaii and Alaska ranked in the top-10 states to announce clean energy projects in the second quarter of 2013 (see table 1).

California led the way in quarterly announcements with 12 wind, solar, biofuels, and transportation projects that could cumulatively create more than 9,000 jobs.



These data cover job announcements from April 2013 through June 2013 media reports, official announcements, and other sources and are not an exhaustive tally of job creation in the clean economy.

Hawaii ranked second in total clean energy and clean transportation jobs announced, while Maryland rounded out the top three with a \$2.6 billion, 20-station, and 14-mile expansion to the Baltimore light-rail system's Red Line, which

will reduce carbon pollution as well as traffic. The project is expected to need more than 4,200 construction workers to lay new tracks and build new stations, and is slated to be completed by 2021.²

| SECTOR | PROJECTS TALLIED | TABLE 2. CLEAN ENERGY JOBS ANNOUNCED IN SECOND QUARTER OF 2013 FROM: | | | TOTAL |
|--|------------------|--|----------------------|--------------------|---------------|
| | | PROJECTS IN OPERATION | PROJECTS IN PROGRESS | PROJECTS ANNOUNCED | |
| Power Generation | 31 | 4,708 | 3,468 | 5,133 | 13,309 |
| Solar Power | 18 | 4,708 | 2,850 | 2,861 | 10,419 |
| Wind Power | 11 | - | 618 | 1,906 | 2,524 |
| Biogas Power | 1 | - | - | 200 | 200 |
| Geothermal Power | 1 | - | - | 166 | 166 |
| Other ^a | - | - | - | - | - |
| Manufacturing | 15 | 414 | 636 | 495 | 1,545 |
| Advanced Vehicles ^b | 2 | - | 100 | 100 | 200 |
| Solar | 5 | 133 | - | 107 | 240 |
| Wind | 3 | 31 | 250 | - | 281 |
| Energy Storage | 2 | - | 86 | - | 86 |
| Energy Efficiency | 1 | - | - | 288 | 288 |
| Other ^c | 2 | 250 | 200 | - | 450 |
| Energy Efficiency | 4 | 778 | - | 5,000 | 5,778 |
| Public Transportation | 4 | - | 2,749 | 6,900 | 9,649 |
| Biofuels | 1 | - | - | 100 | 100 |
| Electric Vehicles | - | - | - | - | - |
| Smart Grid/Transmission^d | 2 | 2,700 | - | 5,500 | 8,200 |
| Other^e | 1 | - | 30 | - | 30 |

^a"Power Generation - Other" includes ocean thermal and ocean wave and tidal power generation projects. ^b"Manufacturing - Advanced Vehicles" includes electric and hybrid vehicle manufacturing and vehicle fuel-efficiency manufacturing projects. ^c"Manufacturing - Other" includes public transportation and smart grid manufacturing projects. ^dSmart Grid/Transmission includes smart grid, fuel cell and storage deployment as well as transmission connecting to clean, renewable energy sources. ^e"Other" includes public investment programs for clean energy manufacturing and job training and placement.

E.ON CLIMATE AND RENEWABLES NORTH AMERICA

Chicago, IL

Rural America Is Experiencing Wind Energy's Economic Benefits



PHOTO COURTESY OF E.ON

E.ON Climate and Renewables North America (E.ON) is one of the world's largest owners of renewable power projects. The Chicago-based subsidiary of E.ON SE—the largest investor-owned utility in the world—develops, builds, owns, and operates utility-scale wind farms and other renewable energy

systems throughout North America.^a With 18 wind farms on-line in the United States, E.ON's wind portfolio has gone from zero to more than 2,500 megawatts (MW) of capacity in just four years.^b E.ON SE has invested more than \$10 billion in renewable energy projects and plans to invest an additional \$9 billion in renewables and environmental protection projects over the next five years.^c

E.ON built three wind farms in 2012 and brought them all on-line on schedule by the end of the year. The Magic Valley Wind Farm, a 200-MW project in Willacy County, Texas, began commercial operations in September. The Anacacho project, representing a \$100 million investment in Kinney County, Texas, and 100 MW of output, went on-line in December. And the Wildcat Wind Farm, a 200-MW, \$400 million project in Tipton and Madison counties,

Indiana, just 45 miles northeast of Indianapolis, also began producing wind-powered electricity in December. Together, the three wind farms' construction created approximately 600 jobs and their operation and management will require an additional 30 permanent positions. The projects produce enough combined electricity to power more than 150,000 homes and to date have put nearly \$1 billion in local economies.^d

"Wind farms create jobs, and provide an economic shot in the arm to farmers, ranchers, and rural communities across America," said E.ON CEO Steve Trenholm.^e In fact, the domestic wind industry has invested more than \$60 billion in the United States in the last four years and is responsible for 75,000 jobs on our shores. The Production Tax Credit (PTC) has been a significant factor in igniting the industry's rapid growth and, with the PTC's eleventh-hour extension, E.ON and other major players in domestic wind energy can further expand renewable energy production with financing certainty through 2013.

^a E.ON Climate & Renewables North America (E.ON), *Generating Tomorrow's Energy Today*, <http://eoncna.com/contentCompany.html>.

^b E.ON, *E.ON Climate & Renewables Celebrates First Wind Farm in Indiana: 17th Wind Farm in Portfolio Puts Company Over 2,500 Megawatt Mark*, October 9, 2012, <http://eoncna.com/>

^c See note a above, <http://eoncna.com/contentCompany.html>.

^d Personal correspondence with Matthew Tulis, communications manager for E.ON, December 5, 2012.

^e See note b above, http://eoncna.com/contentNews_10.09.12.html.

GLOBAL BLADE TECHNOLOGY (GBT)

Evansville, IN

Indiana Facility Manufactures Molds for Wind Turbine Blades



PHOTO COURTESY OF GBT

In May of this year, Global Blade Technology's (GBT) new molds, tooling, and blade production plant went on-line in Evansville, Indiana, bringing back to life the million-square-foot Park 41 facility, formerly a Whirlpool factory before it shut down in 2010. GBT was incorporated in the Netherlands in 2009 and is steadily increasing its

share of the U.S. wind market. Its Evansville facility currently has 11 full-time employees and, with new projects lined up since January 2013, the company plans to boost its labor force by up to 35 highly skilled workers.

GBT sets itself apart from other domestic manufacturers by focusing on building the molds and tools for turbine blades, says general manager Dan Oberle. The company has plans to build a larger turbine production facility in southern Indiana, but has not committed to a time line for expansion.

While GBT follows a business model that does not rely on government assistance to remain profitable, local and state incentives including training and dislocation grants, low-interest loans, and enterprise zones have helped the company establish itself in Evansville. And the PTC is a crucial mechanism underlying the domestic wind industry. The incentive has enabled the wind industry to get off the ground and remain competitive with heavily subsidized fossil fuels.

"Wind energy," says Oberle, "can be competitive on its own merits, with or without the PTC. The real problem is the uncertainty."^a At the last minute, Congress extended the PTC for another year, making all wind projects begun in 2013 eligible to receive the credit. Investors view market potential over decades-long intervals, and fickle tax policies will lead them to look for surer bets, like fossil fuels, which have subsidies that are protected by powerful lobbies in Washington, D.C. Despite feeling the headwinds of the PTC's uncertainty in 2012, GBT is moving ahead in 2013, creating skilled jobs in Indiana.

^aPersonal correspondence with Dan Oberle, general manager for GBT, December 2012.

SOLAR ENERGY REACHES NEW MILESTONE

Solar generation projects accounted for more than 10,400 jobs announced this quarter, which equaled 75 percent of the jobs announced in the power-generation sector and 25 percent of the total number of jobs tracked across all clean energy sectors in the second quarter (see table 2). The growth in solar power jobs is happening all across the country from California to North Carolina.

The United States surpassed 10 gigawatts (GW) of installed solar power in the first half of 2013, which is enough to power around 2 million homes, joining the ranks of Germany, Italy, and China with double-digit GWs of solar capacity.³

WIND ANNOUNCEMENTS REGAIN STRENGTH

Jobs from wind-power generation projects saw an uptick from the first quarter of 2013. More than 2,500 wind-power generation jobs were announced in the second quarter, compared with about 800 wind jobs in the first quarter. This

uptick is likely due to the extension of the Production Tax Credit (PTC). However, this trend could be short-lived as the PTC is again scheduled to expire at the end of the year.

The cycle of short-term sunset dates for the PTC, coupled with last-second renewals, has become commonplace for the renewable PTC. This has negatively affected growth prospects for the domestic wind industry.

ENERGY EFFICIENCY INVESTMENTS COULD CREATE THOUSANDS OF JOBS

Major energy efficiency projects in Hawaii and Alaska could create thousands of new clean energy jobs. Hawaii's 5,000 job announcements come from a \$300 million initiative to upgrade government buildings—including airports, universities, prisons, and wastewater treatment plants—with money-saving energy efficient appliances, lighting, and air-conditioning units. The investment is part of the state's commitment to reduce energy use by 30 percent by 2030.⁴

Meanwhile, Alaska's state legislature recently voted to add \$51.5 million to the Alaska Housing Finance Corporation's Home Energy Rebate and Weatherization Program. According to the University of Alaska Anchorage Institute of Social and Economic Research, 12 permanent jobs are created with every \$1 million of public investment in the program, thus yielding more than 600 total expected jobs from the program's funding increase.⁵ Jobs created through energy efficiency include direct work from efficiency firms, construction and trades. Additionally, indirect jobs are created by ongoing utility cost savings that allow businesses and local governments to invest additional dollars toward other business expansion investments and community economic development activities.



PHOTO COURTESY OF LAUREN KUBIAK

JOHNSON CONTROLS

Milwaukee, WI

Energy Efficiency Company Has 170,000 Employees

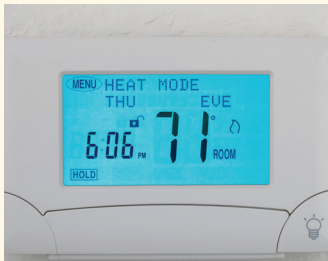


PHOTO: ISTOCK

In 1883, when Warren Johnson invented the thermostat, few could have predicted that it would serve as the foundation of a company that would grow to Johnson Controls, Inc., a 170,000-employee company driving energy savings at a global scale. Through its building efficiency business, Johnson Controls reaches more than 1 million customers, from

almost 700 offices in more than 150 countries. Since 2000, Johnson Controls has achieved more than 19 million metric tons of carbon reduction through

guaranteed energy savings projects, saving its customers \$7.5 billion through more efficient equipment, heating, cooling, refrigeration, and other technologies.

One savings-generating project that Johnson Controls completed was the construction of Ave Maria University in Ave Maria, Florida. By converging information technology, facility operations, and other systems onto one internet protocol system, Johnson Controls helped Ave Maria save approximately \$1.5 million in infrastructure costs from unnecessary cabling that had been part of the original design. The school projects annual savings of \$950,000 from reduced systems operations, as well as savings in utility costs.

CLEAN ENERGY SEES JOB GROWTH IN REPUBLICAN AND DEMOCRATIC DISTRICTS

Clean energy and clean transportation jobs were announced in both Republican and Democratic congressional districts across the country in the second quarter (see table 3). Several congressional districts saw more than one major clean energy announcement in the April through June period. Several large project announcements—including major transmission lines, statewide energy efficiency programs, and public transit lines that potentially span multiple districts—were not accounted for due to lack of specificity in geographic information of potential jobs. At least nine multi-district projects were announced this quarter, which could result in more than 21,400 jobs, or about 55 percent of the total number of jobs announced.

In Nevada's 3rd District, represented by Joseph Heck (R), the opening of a new battery plant by the company K2 in Henderson, Nevada, could add at least 200 jobs.⁶ In addition,

a second project announcement in the same district of a 350-MW solar-photovoltaic generation plant, capable of powering 105,000 homes, will yield as many as 370 jobs to construct, operate, and maintain the facility.⁷

In Indiana's 6th District, represented by Luke Messer (R), as many as 288 jobs could be created in Muncie by DD Danner LLC, a heavy-equipment manufacturing company that specializes in energy efficient equipment that uses alternative, clean technology for power. The Indiana Economic Development Corporation offered DD Danner up to \$2.6 million in conditional tax credits and \$25,000 in training grants should the company meet its workforce development goals.⁸ The second announced project in the district came via EDP Renewables North America, which will construct more than 90 wind turbines in Randolph County, Indiana. The 200-MW project will supply enough electricity to power more than 55,000 homes and will bring as many as 70 jobs.⁹

| REPRESENTATIVE | STATE | DISTRICT | PROJECTS TALLIED ^a | TABLE 3. CLEAN ENERGY JOBS ANNOUNCED IN SECOND QUARTER OF 2013 FROM: | | | TOTAL |
|----------------------|----------------|----------|-------------------------------|--|----------------------|--------------------|-------|
| | | | | PROJECTS IN OPERATION | PROJECTS IN PROGRESS | PROJECTS ANNOUNCED | |
| Juan Vargas (D) | California | 51 | 2 | - | - | 901 | 901 |
| Joseph Heck (R) | Nevada | 3 | 2 | - | 44 | 370 | 414 |
| Luke Messer (R) | Indiana | 6 | 2 | - | - | 358 | 358 |
| Jim Jordan (R) | Ohio | 4 | 2 | - | 100 | 80 | 180 |
| Richard Hudson (R) | North Carolina | 8 | 2 | - | - | 170 | 170 |
| Marcy Kaptur (D) | Ohio | 9 | 2 | 60 | - | 60 | 120 |
| Louise Slaughter (D) | New York | 25 | 3 | 25 | 30 | 27 | 82 |

^a If geographic details of projects were not provided in the announcements, they were excluded in this job count table.

SAPPHIRE ENERGY, INC

Columbus, NM

'Green' Crude Oil Helps Create Jobs in New Mexico Desert



PHOTO COURTESY OF SAPPHIRE ENERGY, INC.

In the high desert of southwest New Mexico, San Diego-based Sapphire Energy is building the world's first "green crude" farm. The Integrated Algal Biorefinery (IABR), located in Columbus, New Mexico, will combine cultivation, production, and extraction of algal biofuels—or what the company has branded "green crude." Sapphire announced in

November 2011 that it had broken ground on its refinery. In August of 2012, the company completed Phase One of IABR which includes the construction of 1.1- and 2.2-acre ponds for algae cultivation on 100 of the site's 300 acres, along with the installation of the mechanical and processing equipment required to harvest the fuel-producing plants and capture the crude.

The new facility is capable of recycling water for the entire 300-acre site. Sapphire will continue to expand IABR's production and extraction capacity and expects to complete the facility by 2014, with production of the crude nearing 100 barrels per day.

Sapphire has met its expansion goals by leveraging private funding with a \$50 million grant from the U.S. Department of Energy and a \$54.4 million bank

loan guaranteed by the U.S. Department of Agriculture through the American Recovery and Reinvestment Act and the agency's Biorefinery Assistance Program. Drawing on a total of \$350 million from this public-private partnership, Phase One of the crude farm's construction created 634 full-time jobs. Sapphire's expansion boosts employment up- and down-stream among many different industries. The company currently employs 150 people. It will hire up to 30 more workers by 2014—including scientists, algae farm managers, and refinery technicians—to operate its commercial-scale facility.

"Without the government partnership, it's hard to imagine that a project of this magnitude could move forward," says Tim Zenk, vice president of Corporate Affairs for Sapphire Energy.^a Zenk points out that government funding is relatively scarce in the biofuel sector compared to the heavily subsidized oil and gas industries. If the playing field was level, he believes algae biofuels could commercialize much faster than they can now. Zenk sees that research and development are likewise underfunded and that more federal dollars must be allocated to the basic sciences in order to make the technological breakthroughs that will bring renewable energy industries to scale. Sapphire Energy is not waiting, however, for any outside force to push it to commercial-scale fuel production. The company is working every day to trim costs and increase yields by improving its biology and processing efficiencies.^b

^a Personal correspondence with Tim Zenk, vice president of Corporate Affairs for Sapphire Energy, October 17, 2012.

^b Ibid.

CONCLUSION

With Labor Day 2013 upon us and the country focused on jobs and the economy, E2's second-quarter jobs report shows that the clean energy and clean transportation sectors continue to drive economic growth and create jobs across America. Policies such as President Obama's climate change initiative and state renewable energy standards promise to

keep the momentum going. E2's comprehensive new Clean Energy Works for US website breaks down new clean energy jobs announcements by state, sector, and even congressional district, and shows how in every corner of the country, clean energy works for US. For more details, see www.cleanenergyworksforus.org.

Endnotes

- 1 Paul Koeppe, "\$2B Wind Power Transmission Project Promises 5,000 Construction Jobs," *Kansas City Business Journal*, May 2, 2013, <http://www.bizjournals.com/kansascity/news/2013/05/02/2-billion-wind-power-transmission.html>.
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- 3 The NPD Group, "U.S. Reaches Milestone of 10 Gigawatt Solar Photovoltaic Capacity, According to NPD Solar Buzz" July 9, 2013, <http://www.solarbuzz.com/news/recent-findings/us-reaches-milestone-10-gigawatt-solar-photovoltaic-capacity-according-npd-sola>.
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