

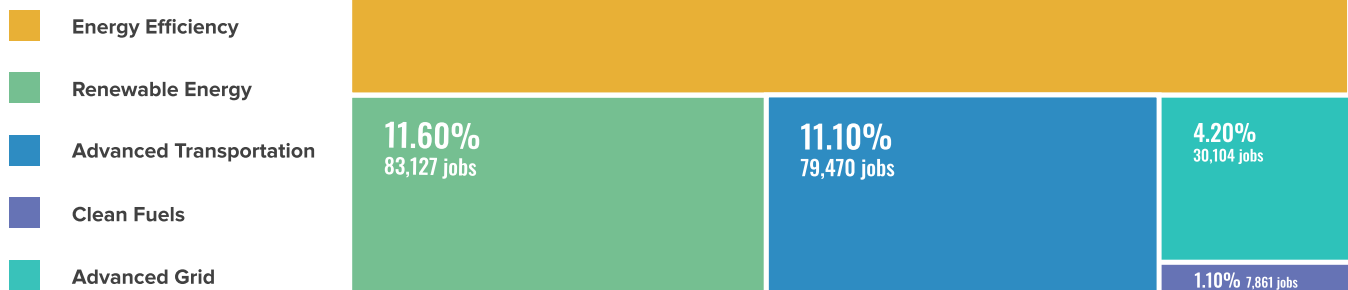
The Midwest is Home to **714,257** Clean Energy Jobs

Renewable Energy and Energy Efficiency Grow Despite Overall Job Declines

Clean energy is a major employer in the Midwest with 714,257 jobs.¹ The two largest clean energy industries – energy efficiency and renewables – experienced strong growth. In fact, led by industries like wind and solar, renewable energy jobs in the Midwest grew 5 percent over the previous year. Given that across the U.S. renewable energy actually lost jobs, the over 3,900 workers added to the Midwest’s renewable energy payrolls are indicative of the sector’s relative health in the region. However, when taking into account all clean energy industries, jobs in the Midwest’s clean energy sector declined by 8,375, or 1.2 percent. Still, Midwestern clean energy employers maintain a positive outlook, projecting over 32,000 jobs will be added this year, a 4.5 percent growth rate.

SECTOR BREAKDOWN

Fig. 1:
Clean Energy Technology Sectors,
2017

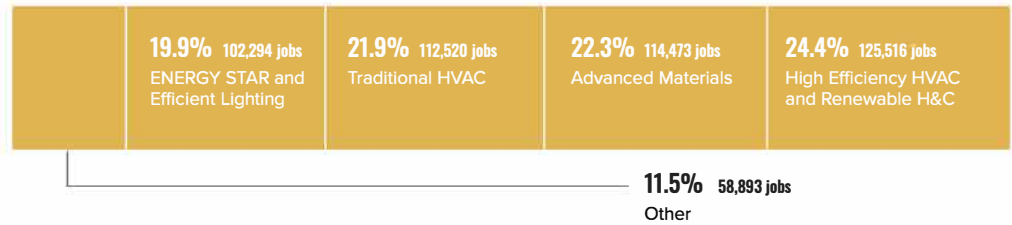


1. Unless otherwise stated, all data is based on the 2018 U.S. Energy and Employment Report (Source: National Association of State Energy Officers; Energy Futures Initiative). The report incorporates an updated methodology that captures more energy efficiency manufacturing jobs than in previous years. Unlike past Clean Jobs Midwest reports, this year’s report does not count fossil fuel industry workers who also spend a portion of their time on renewable energy or energy efficiency as clean energy jobs. See the About section at cleanjobsmidwest.com/about for full details.

Bright Future for Energy Efficiency

More Midwesterners work in energy efficiency (513,695) than any other clean energy sector. Energy efficiency added 7,611 jobs last year in the region, a 1.5 percent growth rate. What do energy efficiency workers do? They manufacture ENERGY STAR-rated appliances and install efficient lighting systems; tweak traditional heating, ventilation, and air conditioning (HVAC) systems; design high-efficiency HVAC units; build renewable heating and cooling systems; and handle advanced building materials. Other jobs employ people who implement software and contractors who diagnose, adjust, and verify HVAC efficiency. While the Midwest's energy efficiency sector grew, it fell short of the nation's overall 3.1 percent growth rate, suggesting potential for future growth.

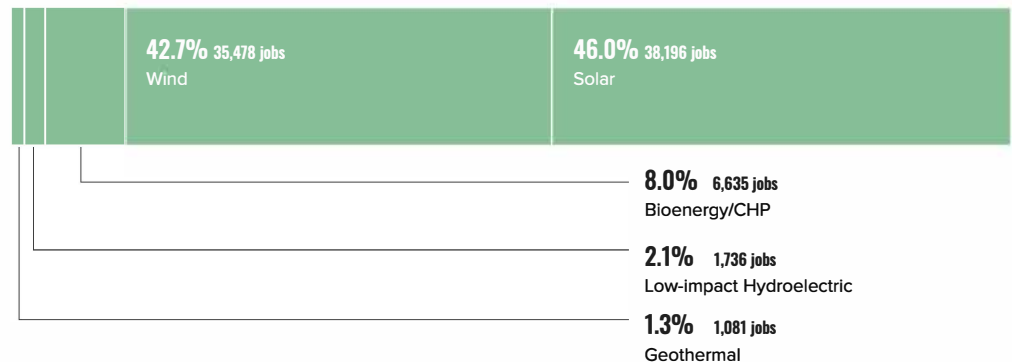
Fig. 2:
Energy Efficiency Subsectors,
2017



Renewables Overcome Solar's Sluggish Year

Renewable energy employs over 83,127 workers, second-highest in the Midwest's clean energy sector and over 3,900 more than the previous year (a 5 percent growth rate). Zooming in on specific industries, there are 35,478 wind workers and 38,759 solar workers. While wind grew 4.3 percent (adding 1,504 jobs), solar moved in a different direction. The solar industry lost 1.4 percent of its workers, or 562 jobs. This came as companies rushed to complete projects in 2016 to qualify for expiring tax credits, then cut jobs in 2017. Solar also struggled with uncertainties around tariffs at the federal level. Jobs in renewables encompass diverse industries including geothermal, bioenergy, and low-impact hydroelectric power. Despite solar's performance, the Midwest's renewables sector appears strong compared to the rest of the U.S., which shed 3,800 renewables jobs overall.

Fig. 3:
Renewable Energy Subsectors,
2017



18-Percent Decline in Advanced Transportation – But EV Jobs Rev Up

Advanced transportation is the Midwest's No. 3 clean energy sector with 79,470 jobs. The sector includes jobs building and developing hybrid and plug-in electric vehicles (EVs), alternative fuels vehicles, and fuel cell vehicles. Competition from Japanese and European automakers in advanced transportation is fierce, and in the Midwest this sector lost 17,363 jobs, an 18 percent decline that included job losses in hybrid-electric, plug-in hybrid electric, natural gas, and hydrogen and fuel-cell vehicles. EVs were a bright spot, however: the industry grew 28 percent, to 20,080 jobs.

Advanced Grid Employs over 30,000

Advanced grid jobs employ 30,104 Midwesterners. As the fourth-largest clean energy employer in the region, the sector includes jobs in energy storage, smart grid, microgrid, and other grid modernization work. In 2017, there were 18,174 energy storage jobs – a nearly 4 percent decline. Advanced grid jobs fell by 2.9 percent overall, with Michigan alone losing 1,299 jobs, more than any other Midwestern state.

Nearly 8,000 Clean Fuels Jobs

7,861 Midwesterners work in clean fuel jobs. The clean fuels sector encompasses non-corn ethanol, non-woody biomass, and other technologies not yet in wide commercial production, including algal biofuel, syngas, bioheat blends, landfill gas, and advanced biofuels. Clean fuel jobs declined in all Midwestern states. Overall across the region, the sector experienced a 16.8-percent decline.

Fig. 4:
Top 3 MSAs in Clean Energy
Employment, 2017

Metro Area (MSA)	Clean Energy Employment	Renewable Energy Employment	Energy Efficiency Employment
Chicago-Naperville-Joliet, IL-IN-WI MSA	95,288	14,262	68,016
Detroit-Warren-Livonia, MI MSA	53,477	5,208	36,520
Minneapolis-St. Paul-Bloomington, MN-WI MSA	36,813	5,549	27,200

CLEAN ENERGY INDUSTRY OUTLOOK

2. 2017 Bureau of Labor Statistics
Current Employment Statistics (CES)

Challenges to Clean Energy Growth

Clean energy jobs are nearly 2.1 percent of all jobs in the region. However, clean energy jobs declined 1.2 percent while the overall Midwestern job market grew by 0.8 percent.² The clean energy industry faced several headwinds including hiring difficulties and federal policy uncertainty. In 2017, more than three-quarters of Midwestern clean energy businesses reported difficulty hiring qualified employees; about a third said hiring was “very difficult.” One reason hiring may be difficult right now is the tight national labor market due to relatively low unemployment.

Other headwinds include federal policy uncertainty caused by the potential expiration of the 179D Commercial Building Energy Efficiency Tax Deduction, the U.S. EPA's attempt to roll back fuel economy standards in the auto industry, and the anticipation of a tariff levied on solar panels. Together, these factors created general market uncertainty for many clean energy businesses in the Midwest. But even with these headwinds, business owners predict industry growth next year and project a 4.5 percent growth in Midwestern clean energy jobs.

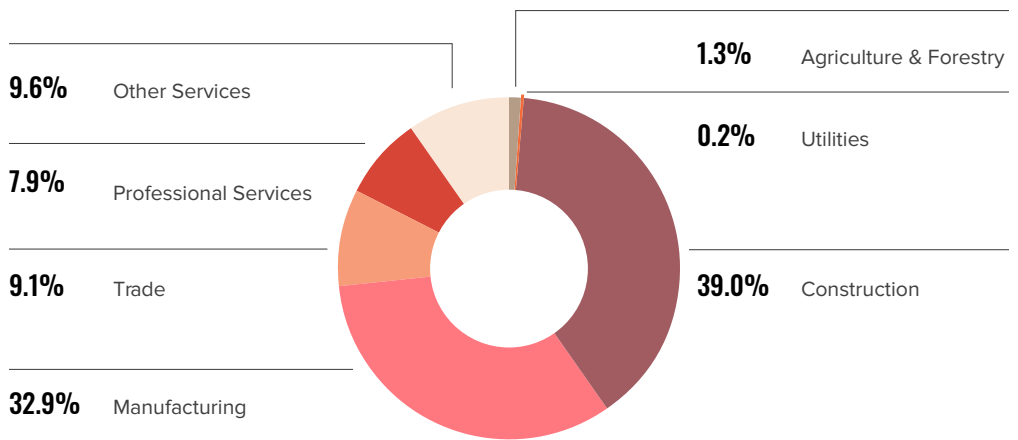
Comparing Clean Energy Jobs to Fossil Fuel Jobs

In 2017, about 179,000 Midwesterners worked in fossil fuel energy jobs in industries like coal, natural gas, and oil.³ Electric power generation jobs using fossil fuels employed 65,000 people, while there were 83,120 jobs in renewable energy generation. While coal jobs dropped by 3.8 percent, renewable energy jobs grew by 5 percent.

VALUE CHAIN

Clean energy jobs can also be categorized by the role they play in the value chain. This report divides the clean energy jobs value chain into the following categories: agriculture, utility, construction, manufacturing, trade, professional service, and other service jobs. Each category captures jobs from multiple different clean energy sectors. For example, construction jobs can include energy efficiency jobs and renewable energy jobs.

Fig. 5:
Clean Energy Jobs Value Chain,
2017



When Midwestern clean energy jobs are broken down by their placement in the value chain, construction is home to 39 percent of the jobs while manufacturing is home to 33 percent.

SUMMARY

Business Optimism, Policy Uncertainty Will Shape Future For Midwest

Clean energy workers in the Midwest do much more than just install solar panels on rooftops. Broad and diverse, the sector encompasses workers who develop software for smart grids, install ultra-efficient boilers in high school basements, and fix broken wind turbine gearboxes hundreds of feet above a cornfield in Michigan's Gratiot County. There are more than 714,000 clean energy jobs in the Midwest. In the two largest sectors – energy efficiency and renewable energy – these jobs are growing. However, policy uncertainty and macroeconomic trends have triggered modest job losses in the sector overall. Still, employers remain optimistic and project 4.5 percent clean energy job growth in the next year in the Midwest.