



2019 Clean Energy Industry Report



NYSERDA

Report Overview

- Measures, characterizes, and analyzes clean energy industry jobs in New York State
- Builds on previous state and national labor and workforce analysis
- Source of insights into how New York's push toward ambitious climate goals is creating jobs and economic opportunity
- Presents indicators of job growth across five clean energy technology categories



What is a Clean Energy Job?

All employees from **qualifying clean energy firms** that spend **any portion** of their time supporting **clean energy products and services** through:

- **Research**
- **Development**
- **Production**
- **Manufacturing**
- **Distribution**
- **Installation**

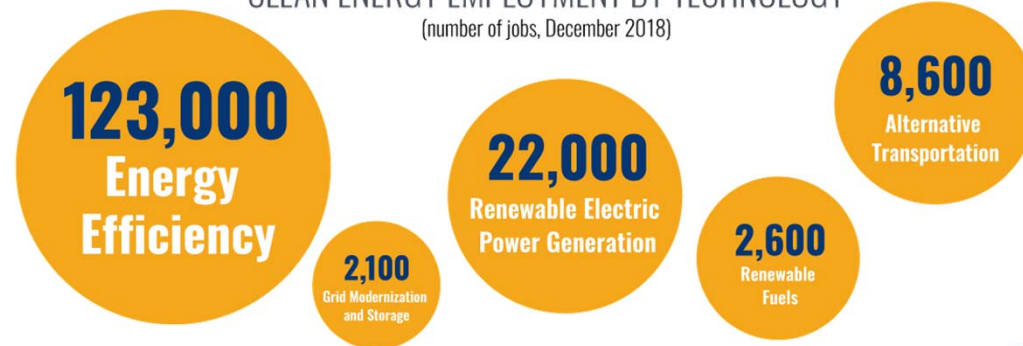
* Employment totals in this 2019 Clean Energy Industry Report should not be equated to full-time equivalents.

Employment Overview

nearly
159k clean energy jobs in 2018
across New York State

7.2k new clean energy jobs in 2018
employers expect to hire 12,000 more in 2019

CLEAN ENERGY EMPLOYMENT BY TECHNOLOGY (number of jobs, December 2018)



Employment by Technology Category



123k Energy Efficiency - **Largest Sector**

Energy efficiency technologies are commercially available throughout the State. Includes lighting, ENERGY STAR® appliances (including HVAC), insulation, advanced building materials, renewable heating and cooling, and other efficient technologies.



22k Renewable Electric Power Generation - **Backed by Solar Market**

Includes solar, wind, geothermal, low-impact hydropower, and other renewable generation technologies.



8.6k Alternative Transportation - **Growing Rapidly**

Includes electric, hybrid, plug-in hybrid, and fuel cell/hydrogen vehicles, natural gas and other alternative fuel buses, and transportation storage.



2.6k Renewable Fuels - **2.5% Growth**

Includes biofuels such as wood pellets and ethanol.



2.1k Grid Modernization and Storage - **Fastest Growing at 35%**

Includes smart grid, microgrid, demand response management, and energy storage.

Technology - Highlights



Energy Efficiency: Largest number of jobs by technology category; work includes installing, manufacturing, and selling energy efficiency technologies like high-efficiency HVAC and LED lighting systems



Renewable Energy: Growth in the number of workers who spend a “majority of their time” and “all of their time” working on renewables projects: from 81.8% to 85.3% for the former and 77.8% to 82.1% for the latter. Likely to be bolstered further by growing solar market.



Grid Modernization and Storage: Tremendous job growth in 2018 (35%)



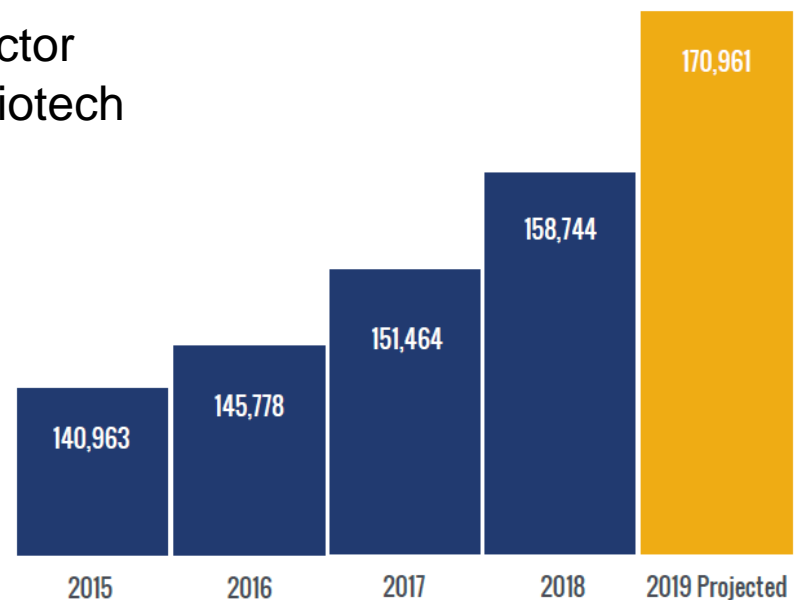
Alternative Transportation: Almost 10% growth over the past year attributed in part due to a 25% increase in plug-in hybrid employment.

Overview of Findings

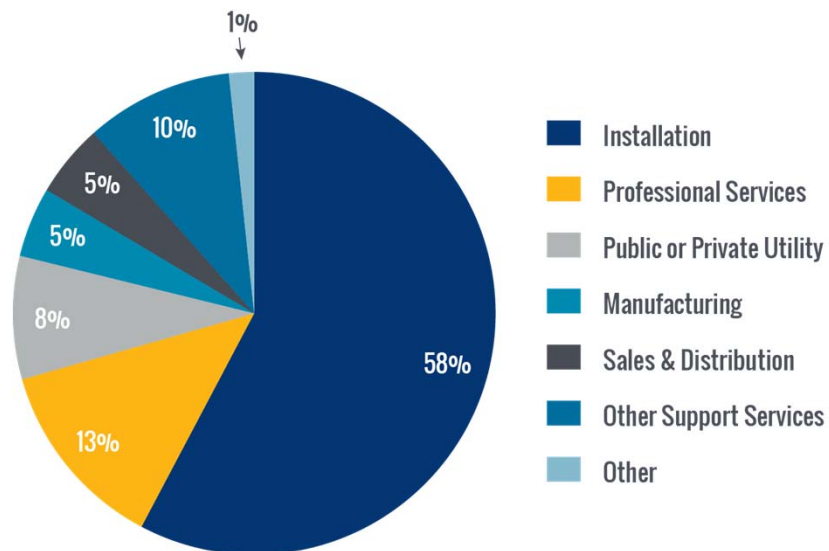
Nearly 159,000 Jobs: The clean energy sector now employs more workers than the thriving biotech and agriculture industries.

Job Growth: New York's clean energy economy continues to see stronger job growth than the State's economy overall

- Clean energy employment grew by 8.9% from 2016 to 2018
- Overall NY employment grew 3.4% in that time



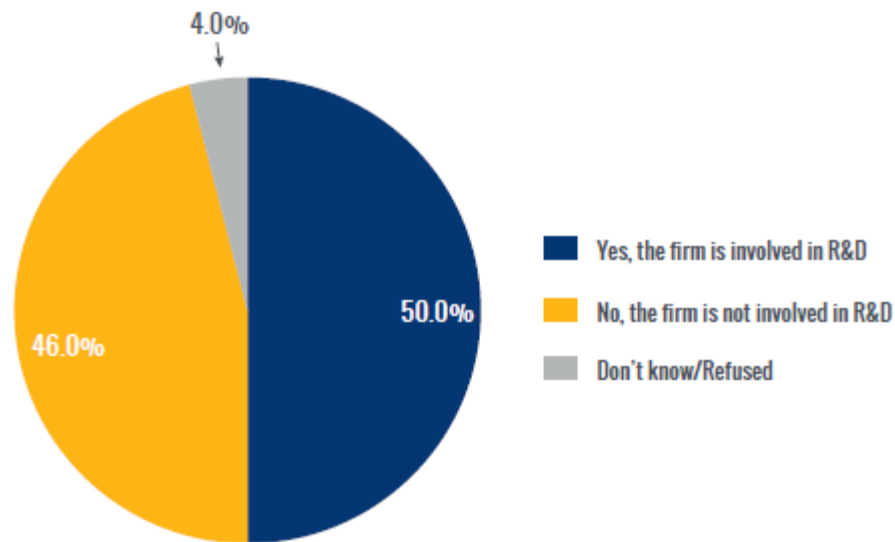
Employment by Job Function



Highlights:

- Nearly 75% of workers have job functions focused on installation, repair and maintenance services, or manufacturing clean energy technologies
- Job growth patterns indicate a maturing clean energy market

Key Findings - R&D



Highlights:

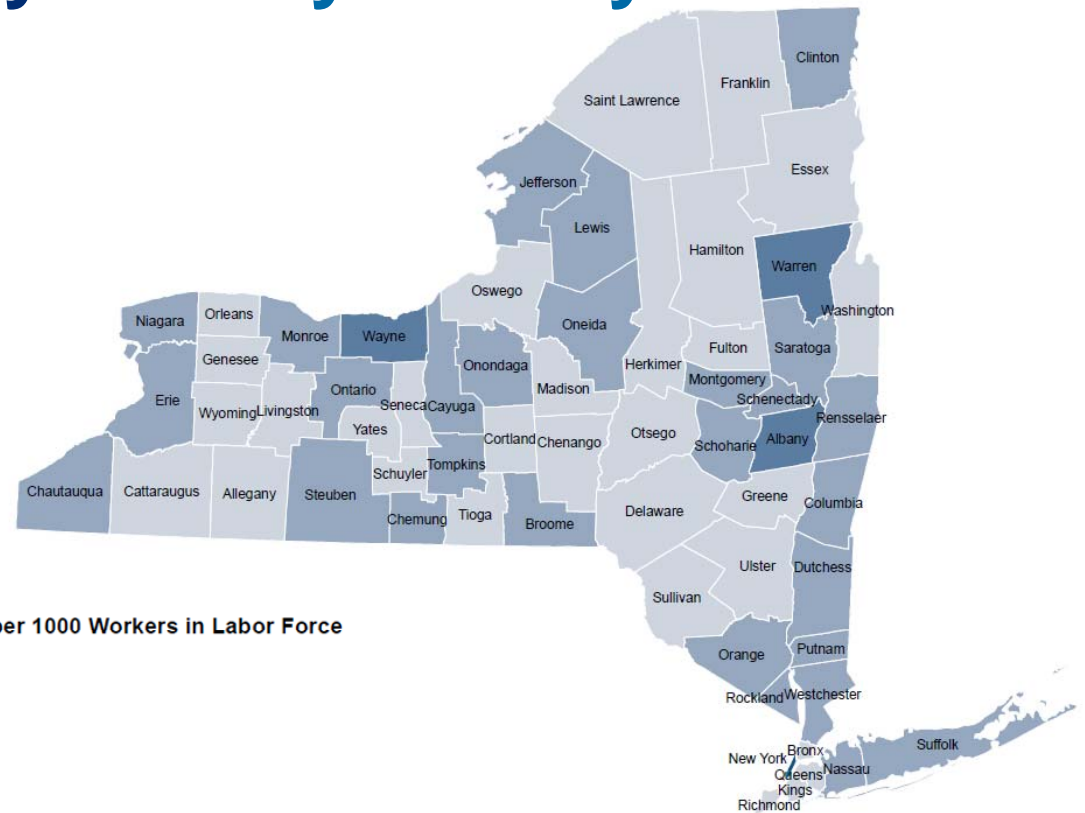
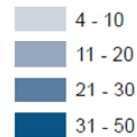
Half of energy efficiency and solar energy firms surveyed did some form of R&D

Clean Energy Employment by County

The counties with the highest concentrations of clean energy workers, in rank order, are:

- New York
- Warren
- Wayne
- Albany

Clean Energy Jobs per 1000 Workers in Labor Force



Clean Energy Wages

Clean energy workers enjoyed **wage premiums of 12%–32%** for entry-level and mid-range skill levels as compared to other industries. About **70%** of clean energy employees **received healthcare, retirement, and paid vacation.**

Workforce Needs: Hiring

Reasons for Hiring Difficulty Reported by Employers



- Employers see plenty of applicants, but often not with desired qualifications
- The occupations that employers find hardest to hire for are:
 - Technicians or mechanical support
 - Sales, marketing or customer service
 - Management (directors, supervisors, vice presidents)

Resources

2019 NEW YORK CLEAN ENERGY INDUSTRY REPORT

New York's clean energy economy is continuing to expand and drive job growth through Governor Andrew M. Cuomo's Green New Deal—the most aggressive climate change program in the nation. With nearly 55,000 clean energy jobs across the State and 8.9% job growth since 2016, New York's nation leading climate policies will continue to drive investment in clean energy solutions like wind, solar, energy efficiency, and energy storage, and transform the State's energy economy for generations to come.

Year	Clean Energy Jobs
2015	162,963
2016	163,718
2017	164,464
2018	165,144
2019 Projected	165,800

Report analyses:

- clean energy jobs
- geographic distribution
- employer needs
- worker sentiment

CLEAN ENERGY EMPLOYMENT BY TECHNOLOGY
(number of jobs, December 2018)

- 123k Energy Efficiency - Largest Sector**
Energy efficiency technologies are commercially available throughout the State, include lighting, ENERGY STAR appliances (washing machines, refrigerators, air conditioning units, and other efficient technologies), energy efficient building materials, renewable heating and cooling, and other efficient technologies.
- 22k Renewable Electric Power Generation - Backed by Solar Market**
Includes solar, wind, geothermal, low impact hydropower, and other renewable generation technologies.
- 8.6k Alternative Transportation - Growing Rapidly**
Includes electric, hybrid, plug-in hybrid, and fuel cell high-pass vehicles, natural gas and other alternative fuel buses, and transportation storage.
- 2.6k Renewable Fuels - 2.5% Growth**
Includes biofuels, both in landfills and ethanol.
- 2.1k Grid Modernization and Storage - Fastest Growing at 35%**
Includes smart grid, energy storage, demand response management, and energy storage.

Key Statistics:

- nearly 159k clean energy jobs in 2018** across New York State
- 7.2k new clean energy jobs in 2018** (employers report hiring 12,000 more in 2019)
- 8.9% growth of clean energy jobs since 2016** (made the statewide average)

CLEAN ENERGY JOB GROWTH IS OCCURRING STATEWIDE

Clean energy jobs exist in various types of companies, many of which are small businesses that serve local communities and pay competitive wages. Workers from all counties across the state are involved in clean energy activities. New York, Albany, Warren and Wayne counties showed the highest concentration of clean energy workers in the labor force.

2018 Clean Energy Jobs per 1,000 Workers in Labor Force

Energy Efficiency accounts for 78% of the clean energy jobs across the State.

68% of clean energy jobs are in small businesses (fewer than 50 employees).

1.2 GW of solar generation projects in development (over 100,000 jobs).

Clear energy job training programs support operating industries.

Job growth patterns indicate a maturing clean energy market.

In 2018, grid modernization and energy storage led the highest growth (35-39%) of clean energy jobs.

Clean energy workers report wage premiums of 12%-32% for solar heat and solar energy jobs as compared to other industries. About 78% of clean energy employees received healthcare, retirement, and paid vacation.

Read the 2019 New York Clean Energy Industry Report at nyserda.ny.gov/clean-energy-jobs

The New York Clean Energy Industry report tracks and analyzes data on clean energy jobs, geographic distribution, and employer needs, to provide useful policy recommendations that meet New York State's climate goals and create jobs and economic opportunity across the State.



nyserda.ny.gov/clean-energy-jobs

NYSERDA Workforce Development to Support Clean Energy Worker Hiring and Training

NYSERDA has initiated programs that will benefit more than 33,000 New Yorkers

- Energy Efficiency & Clean Technology Training — **28,500 to be trained**
- Building Operations & Maintenance — **4,810 to be trained**
- Energy Efficiency & Clean Technology On-the-Job Training — **126 hired/trained**
- Clean Energy Internship Program — **159 Interns hired/supported**

Energy Efficiency & Clean Technology Training (PON 3981)

- Projects to develop and deliver training, provide hands-on experience and job placement assistance to ensure that new and existing clean energy workers have the skills businesses need
- Training activities eligible for funding include: developing, modifying or implementing curriculum; delivering training (on-line, classroom, on-site, etc.); equipment purchase for hands-on training; hiring and training trainers; marketing; internships; job placement services; pre-apprenticeships; and apprenticeships
- Proposers can include unions, colleges and universities, manufacturers, distributors, trade associations, community-based organizations, technical high schools, training and job placement intermediaries, etc.
- Maximum proposal \$250,000, 30% cost share required
- Preference for proposals to support Priority Populations
- Example: Green City Force with its partners will deliver an energy boot camp, a pre-apprenticeship training model with career support, peer mentorship, and job placement coordination for up to 45 graduates of their AmeriCorps program
- Apply: <https://on.ny.gov/2Sa2jiZ>

Energy Efficiency & Clean Technology On-the-Job Training (PON 3982)

- Up to \$100,000 per business, to eligible businesses on a first-come, first-served basis
- Funding for businesses to hire and provide on-the-job training (OJT) for workers for energy efficiency and clean technology jobs
- Businesses with 100 employees or less, NYSERDA pays 50% of a new employee's hourly wage for 16 weeks. Incentives cover 50% of the wage for 24 weeks for a worker from a priority* population
- Businesses with over 100 employees, incentives for workers from the priority populations only
- Example: Halco Inc. has hired 12 new employees and provided on-the-job training for high-efficiency HVAC positions ranging from auditors to insulations installers—Halco has targeted its hiring efforts to recruit priority populations
- Apply: <https://on.ny.gov/2tarBnh>

* **Priority Populations** include veterans, disabled workers, low-income individuals, formerly incarcerated, Native Americans, dislocated power plant workers, and 18-24 year-old trainees in energy related job preparation programs.



Clean Energy Internship Program (PON 4000)

- \$10.5 million available to eligible businesses on a first-come, first-served basis
- Creating a talent pipeline for clean energy businesses by reimbursing employers who offer paid internship opportunities to college students or 18- to 24-year-olds that have completed or are enrolled in technical high schools, energy training or certificate programs
- NYSERDA will reimburse interns' salaries based on the size of the business:
 - For businesses with 20 or fewer employees, reimbursement of 90% of intern wages
 - 21 to 100 employees, reimbursement of 75% of intern wages
 - 100 or more employees, reimbursement of 50% of intern wages
- Internships funded for a maximum of 12 weeks, business can apply for a maximum of five interns per session and a maximum of 12 interns over the course of the program
- Example: Kinetic Communities Consulting — hired two interns for Summer 2019 to assist with NYCHA energy efficiency project. Interns also job-shadowed clean energy leaders weekly
- Apply: <https://on.ny.gov/2Scqj0X>

Building Operations and Maintenance (PON 3715)

- \$10 million available, up to 50% of the cost for eligible projects, with a cap of \$400,000 per application
- This program is designed to help employers and building owners develop training projects that create the educational strategy, on-site training framework, and tools needed to advance the skills of building operations and maintenance workers and prepare new workers beyond conventional classroom training
- Proposals must be for buildings or groups of buildings—including partnerships between businesses with common training needs—with annual energy expenditures of \$1 million or more
- Example Partners: FS Energy, LLC, Memorial Sloan, Kettering Cancer Center, Ridgewood Bushwick Senior Citizens Council, NYS School Facilities Association, Association for Energy Affordability (AEA), New York University, Robert E. Hill, Inc., Steve Winters Associates, Inc., Smith Engineering, Housing Works, NYU Medical Center, SUNY Brockport, Urban Green Council and SUNY ESF
- Apply: <https://on.ny.gov/2nfMzlh>