

Clean Energy Workforce Analysis

DuPage County Workforce Development Division



About

Lightcast is the world's leading authority on job skills, workforce talent, and labor market dynamics, providing expertise that empowers businesses, education providers, and governments to find the skills and talent they need and enabling workers to unlock new career opportunities. Headquartered in Boston, Massachusetts, and Moscow, Idaho, Lightcast is active in more than 30 countries and has offices in the United Kingdom, Italy, New Zealand, and India. The company is backed by global private equity leader KKR.

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Acknowledgements

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Introduction

The State of Illinois has set ambitious goals to reduce carbon emissions, highlighted by the passage of the Clean Energy Jobs Act (CEJA) in 2021. This landmark legislation aims to develop a statewide workforce capable of driving the transition to clean energy. As part of the Chicago-Naperville-Elgin, IL-IN Metropolitan Statistical Area (Chicago MSA), DuPage County is working to define its role in this transition by identifying opportunities for growth and development within the Clean Energy sector. A critical first step is gaining a clear understanding of the sector's current state in the County and the region, alongside an assessment of its future workforce needs. This will help pinpoint gaps and challenges that must be addressed to build a robust, future-ready workforce for the sector.

To support this effort, the DuPage County Workforce Development Division has engaged Lightcast to deliver comprehensive data and analysis on the Clean Energy sector and its key occupations. This insight will guide strategic decisions around funding and programming, enabling the County to better support the sector's growth and help residents navigate clean energy career pathways effectively.

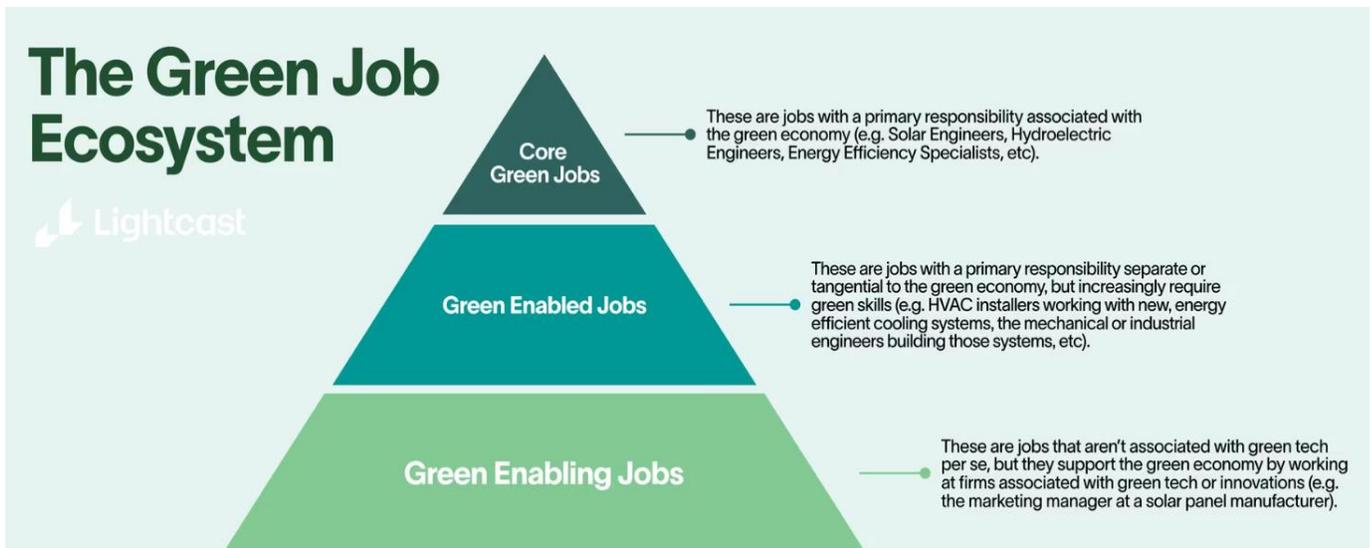


Methodology

Defining Clean Energy

Lightcast has developed a comprehensive database of online job postings, which can be queried to reveal trends in the Clean Energy sector related to in-demand skills, credentials, and occupations. Lightcast's spidering technology extracts information from more than 50,000 online job boards, newspapers, and employer sites daily and de-duplicates postings for the same job, whether it is posted multiple times on the same site or across multiple sites. Lightcast extracts employer name, job title, requested degrees and certifications, and skills referenced in job postings, among other information. Lightcast then maps extracted information to standardized taxonomies for industry (NAICS), occupation (SOC), and educational programs (CIP).

Lightcast collaborated with [Working Nation](#) to understand the breadth of clean jobs across the country. This work resulted in a series of reports viewing the national landscape for clean jobs, as well as in individual states (including Illinois): [Green Jobs Now](#). Through this work, Lightcast tagged job postings within the clean jobs space. By tagging clean jobs, communities and researchers can explore the demand for Clean jobs in their own region, or within specific industries. Historic postings have been tagged, enabling a look at how the sectors have changed over the years. Clean jobs have been split into three categories: Core Green jobs; Green Enabled jobs; and Green Enabling jobs. This universe of job postings, with a few adjustments to reduce false positives, forms the basis of the analysis in this project.



Defining Clean Energy Sectors

The Illinois Department of Commerce & Economic Opportunity defines six key Clean Energy sectors of focus for the state (listed below). In order to understand the unique opportunity in DuPage County and the surrounding region, Lightcast developed custom definitions for querying each sector using a set of O*NET occupation codes from the Illinois Clean Energy Jobs Report, as well as recommended additions by the Lightcast team. Sector definitions can be found in the Appendix.

- Automotive (EV focus)
- Building Maintenance
- Electrical
- Green Building and Construction
- Manufacturing Clean Energy Technologies
- Solar & Wind

Clean Energy Employment



Clean Energy Employment

The Clean Energy Sector in DuPage County, Illinois has grown to nearly 8,500 employees and over the past five years, has been growing at a faster rate than that of the Chicago MSA. Lightcast estimates this employment number by first measuring the percentage of each O*NET's job vacancies in the Chicago MSA that are tagged as clean jobs. We then assume that each O*NET's historical percentage of clean jobs coincides with the percent of employment that is green in that O*NET. For example, 5.2% of Project Management Specialist (13-1082.00) job vacancies in the Chicago MSA request green skills historically. As such, we classify 5.2% of employment of Project Management Specialists as green employment.

Figure 1: Clean Energy O*NET Employment in DuPage County (2010-2023)

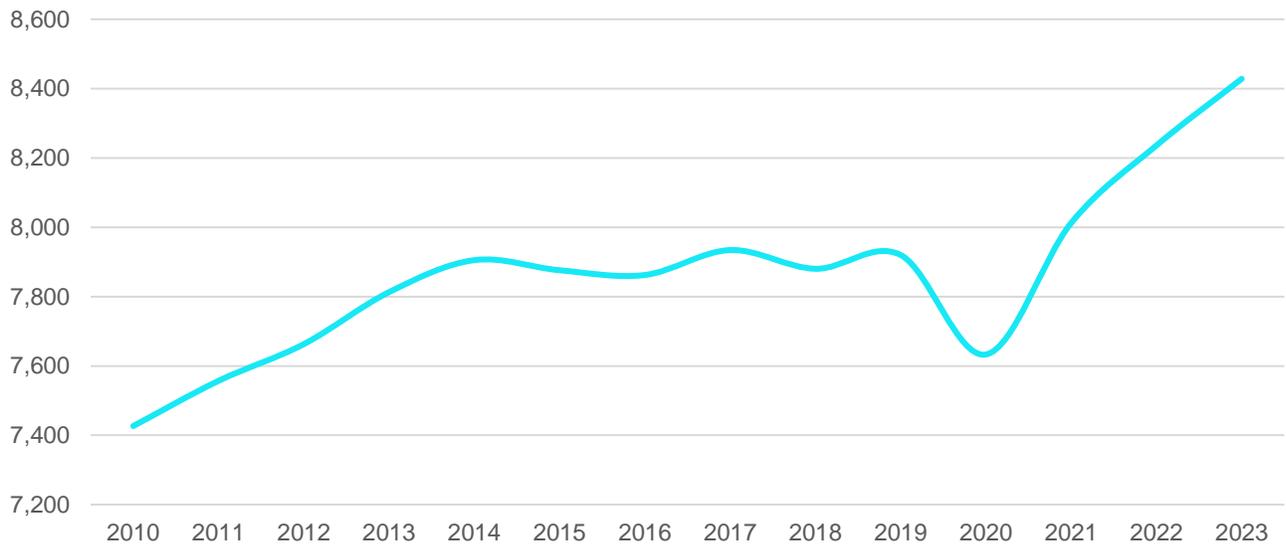
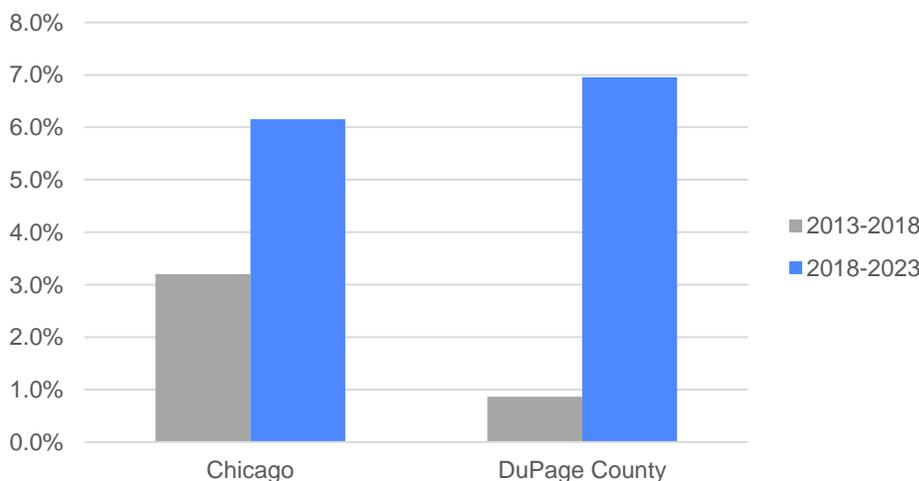


Figure 2: Clean Energy O*NET Employment Growth Rates



Within the Clean Energy economy in DuPage County, most jobs are not concentrated in a single sector but rather span the broader Clean Energy landscape. Among specific sectors, **Green Building and Construction** accounts for the largest share of Clean Energy jobs in the County and has experienced the most significant growth since 2010. Additionally, the **Manufacturing** and **Building Maintenance** sectors have shown consistent growth over the same period. These sector-level trends align closely with those observed across the Chicago MSA.

Figure 3: DuPage County Clean Energy Employment by Sector

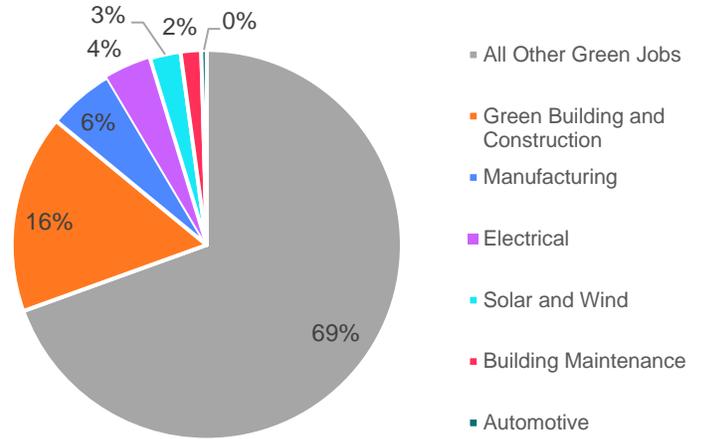
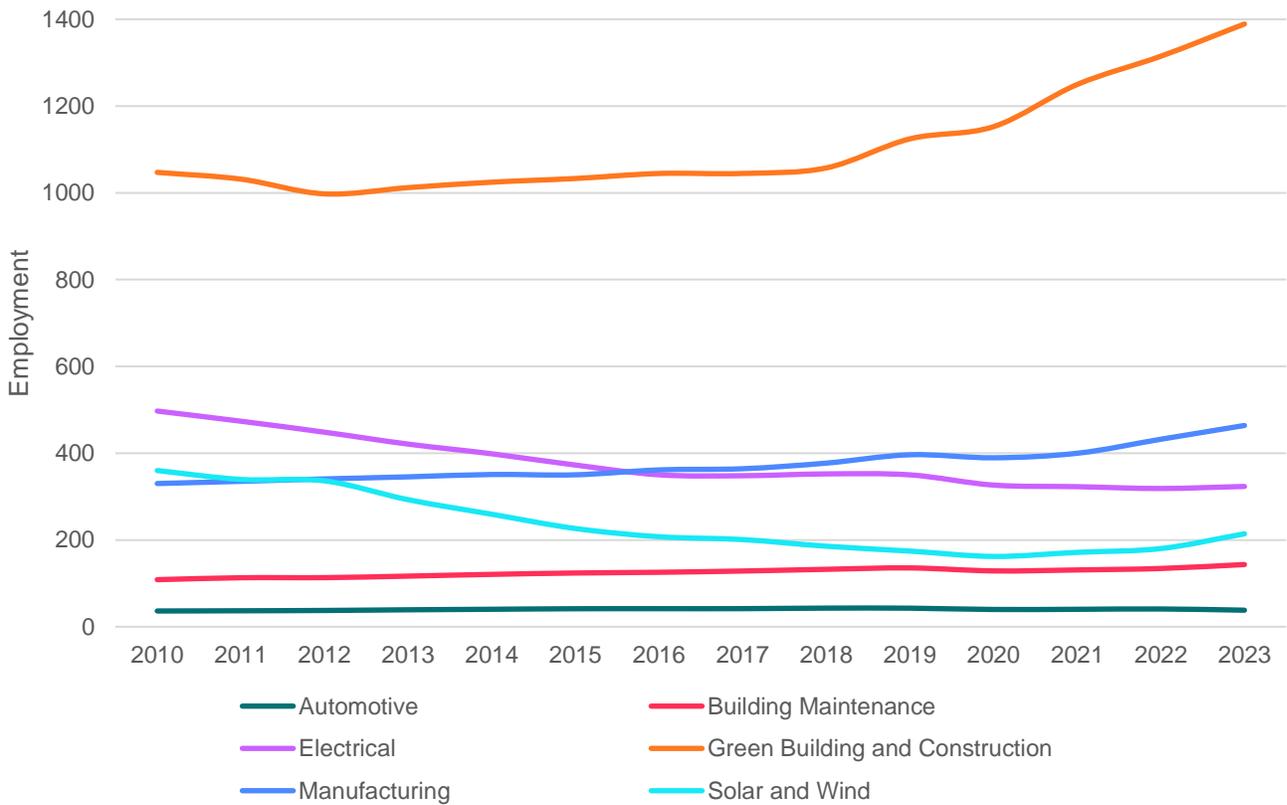


Figure 4: Clean Energy Sector Employment - DuPage County (2010-2023)



Clean Energy Demand



Clean Energy Demand

This section of the report highlights employer demand for Clean Energy Jobs as identified through job postings in DuPage County and the Chicago MSA. Clean Energy demand has grown in both regions over the past 15 years, peaking in 2022 and slowing slightly over the past two years.

Figure 5: Total Clean Energy Postings Over Time by Region

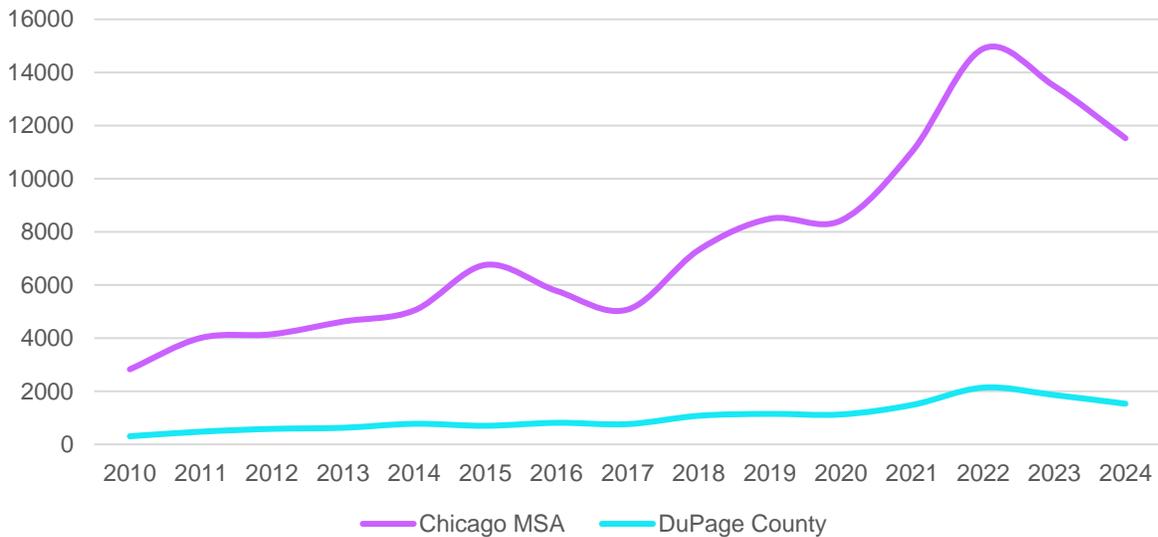
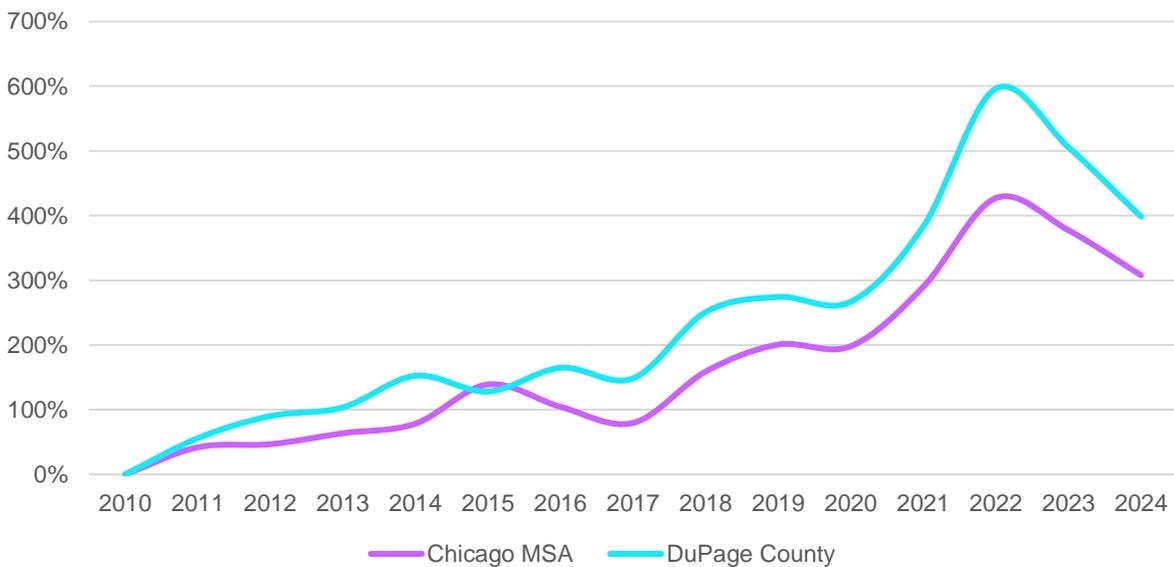


Figure 6: Growth in Clean Energy Postings Over Time by Region



As described in the methodology section, Lightcast categorizes clean jobs into one of three types: Core, Enabled, and Enabling. Core Clean Jobs are those primarily associated with the green economy and the creation and management of green technologies and policies; Enabled clean jobs are those tangential to the green economy that require skills associated with the green economy; and Enabling clean jobs are any jobs at companies operating in a clean energy industry. Figures 7 and 8 display trends in the distribution of job postings by these three green job categories in the Chicago MSA and DuPage County, respectively. In each region, an increasing percentage of clean jobs are Enabled clean jobs, suggesting that a higher percentage of the labor market tangential to the clean economy is required to have some green skills. While Core clean job vacancies have broadly trended upwards in total volume in each region since 2010, growth in these sectors has not matched growth in Enabled clean jobs.

Figure 7: Percent of Chicago Vacancies by Clean Job Category

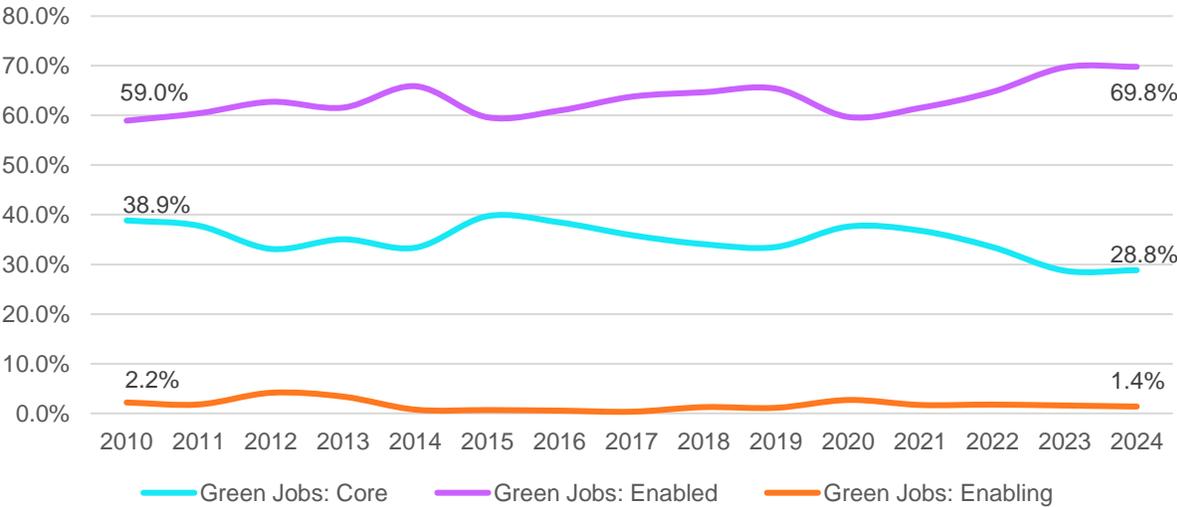
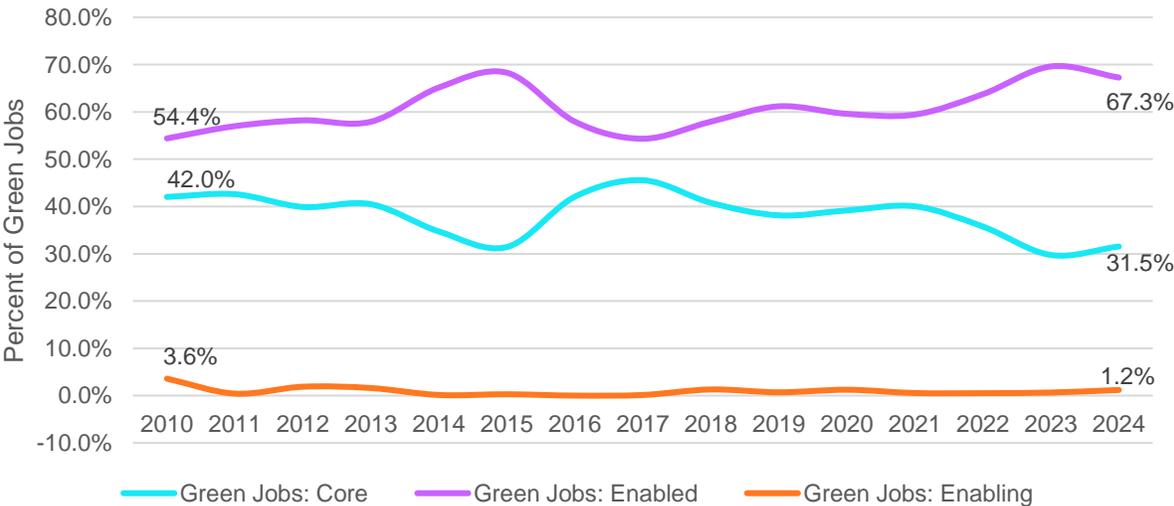


Figure 8: Percent of DuPage County Vacancies by Clean Job Category



Across all Clean Jobs postings, the tables below show the top posting employers in DuPage County and the Chicago MSA. Many of these firms are large engineering consulting firms with a focus on sustainability and clean energy consulting and/or building construction.

Table 1: Top Posting Clean Jobs Employers by Region

Top Posting Employers, Chicago MSA	Top Posting Employers, DuPage County
Sunrun	Exelon
Invenergy	Regal Rexnord Corp
AECOM	Navistar International
Argonne National Laboratory	Sunrun
University of Chicago	Burns & McDonnell
Jacobs Solutions	Forest Preserve District Of DuPage County
Exelon	Terracon Consultants
Clean Harbors	CDM Smith
Burns & McDonnell	V3 Companies
CBRE	Civil & Environmental Consultants, Inc.

Among the top occupations in demand in the region, the Clean Jobs occupation mix differs slightly between the Chicago MSA and DuPage County. DuPage County has a higher percentage of demand for Project Management Specialists, Environmental Science and Protection Technicians, and Civil Engineers.

Table 2: Top Clean Occupations Posted (O*NET) in Chicago MSA

Occupation (O*NET)	Sector	Number of Postings	Percent of Chicago Clean Jobs Postings
Recycling and Reclamation Workers	All Other	2261	4.4%
Project Management Specialists	All Other	2178	4.3%
Environmental Science and Protection Technicians, Including Health	All Other	1709	3.4%
Occupational Health and Safety Specialists	All Other	1470	2.9%
Environmental Restoration Planners	Green Building and Construction	1427	2.8%
Environmental Scientists and Specialists, Including Health	All Other	1207	2.4%
Civil Engineers	Green Building and Construction	1176	2.3%
Occupational Health and Safety Technicians	All Other	1156	2.3%
Environmental Engineers	Green Building and Construction	1064	2.1%
Food Scientists and Technologists	All Other	993	1.9%

Table 3: Top Clean Occupations Posted (O*NET) in DuPage County

Occupation (O*NET)	Sector	Number of Postings	Percent of Chicago Clean Jobs Postings
Project Management Specialists	All Other	404	5.8%
Environmental Science and Protection Technicians, Including Health	All Other	320	4.6%
Recycling and Reclamation Workers	All Other	293	4.2%
Civil Engineers	Green Building and Construction	254	3.6%



Occupation (O*NET)	Sector	Number of Postings	Percent of Chicago Clean Jobs Postings
Occupational Health and Safety Specialists	All Other	220	3.1%
Food Scientists and Technologists	All Other	194	2.8%
Environmental Scientists and Specialists, Including Health	All Other	181	2.6%
Environmental Engineers	Green Building and Construction	176	2.5%
Occupational Health and Safety Technicians	All Other	163	2.3%
Solar Sales Representatives and Assessors	Solar and Wind	162	2.3%

The tables below shows the top requested specialized skills across the Clean Jobs sector in Chicago, as well as the emerging sector skills. Lightcast also identified certifications requested across Clean Jobs and only two show up in at least five percent of job postings – Valid Driver’s License and LEED Accredited Professional (AP).

Emerging skills are those skills that appear in at least four percent of Clean Jobs postings and where skill recall rate from 2021-2024 is higher than that of 2016-2019. These skills are also forecast to grow at a strong pace at a national level through at least 2026. Chemistry, Data Analysis, Procurement, Finance, Stormwater Management, Data Collection and Regulatory Compliance are all emerging skills that, while small, will be important to the future of the sector.

Table 4: Top Requested Specialized Skills in Chicago MSA 2021-2024

Specialized Skills	Skill Recall Rate
Project Management	26%
Environmental Science	14%
Construction	11%
Auditing	11%
Biology	10%
Marketing	9%
Environment Health And Safety	8%
Business Development	8%
Continuous Improvement Process	7%
Environmental Engineering	7%

Table 5: Top Emerging Clean Jobs Skills in Chicago MSA by recall rate, 2021-2024

Certifications	Skill Recall Rate	Skill Growth Rate	National Skill Projection
Environmental Science	14%	24.6%	Rapidly Growing
Biology	10%	8.9%	Rapidly Growing
Continuous Improvement Process	7%	18.9%	Rapidly Growing
Chemistry	7%	7.5%	Rapidly Growing
Data Analysis	6%	25.9%	Rapidly Growing
Procurement	6%	18.2%	Growing
Finance	5%	51.7%	Rapidly Growing
Stormwater Management	5%	17.2%	Rapidly Growing
Data Collection	5%	44.3%	Rapidly Growing
Regulatory Compliance	4%	9.9%	Growing



Subsector Analysis

Job postings data by sector shows that the Green Building and Construction sector is the largest in both the Chicago MSA and DuPage County and Automotive is the smallest sector. All other Clean Job sectors are very similar in size by demand.

Figure 9: DuPage County Postings by Sector

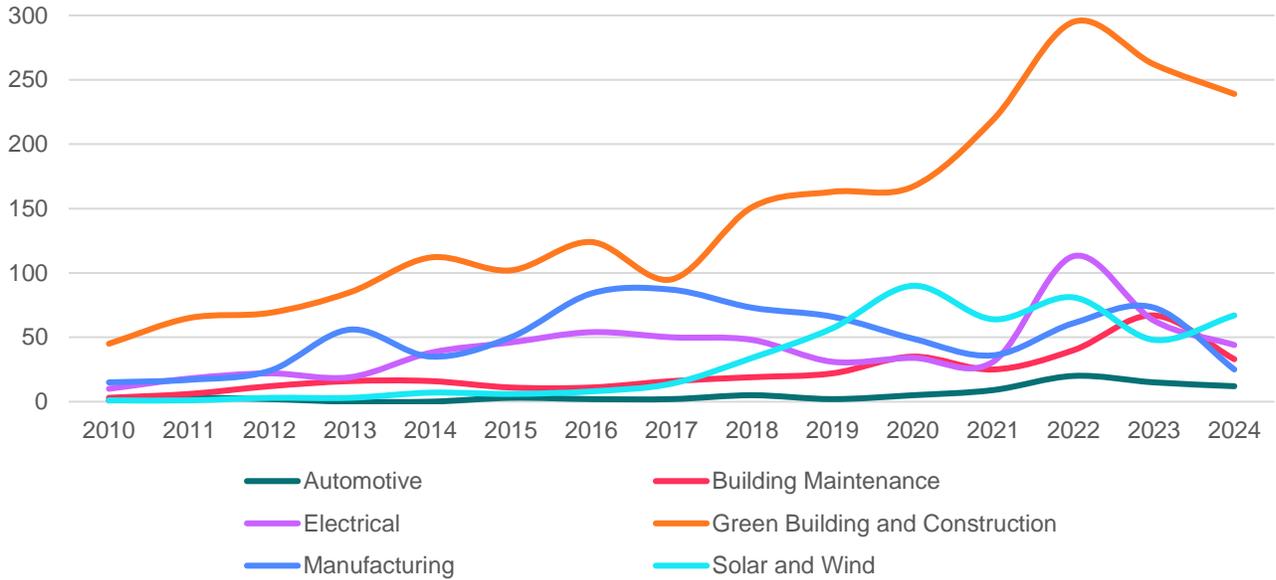
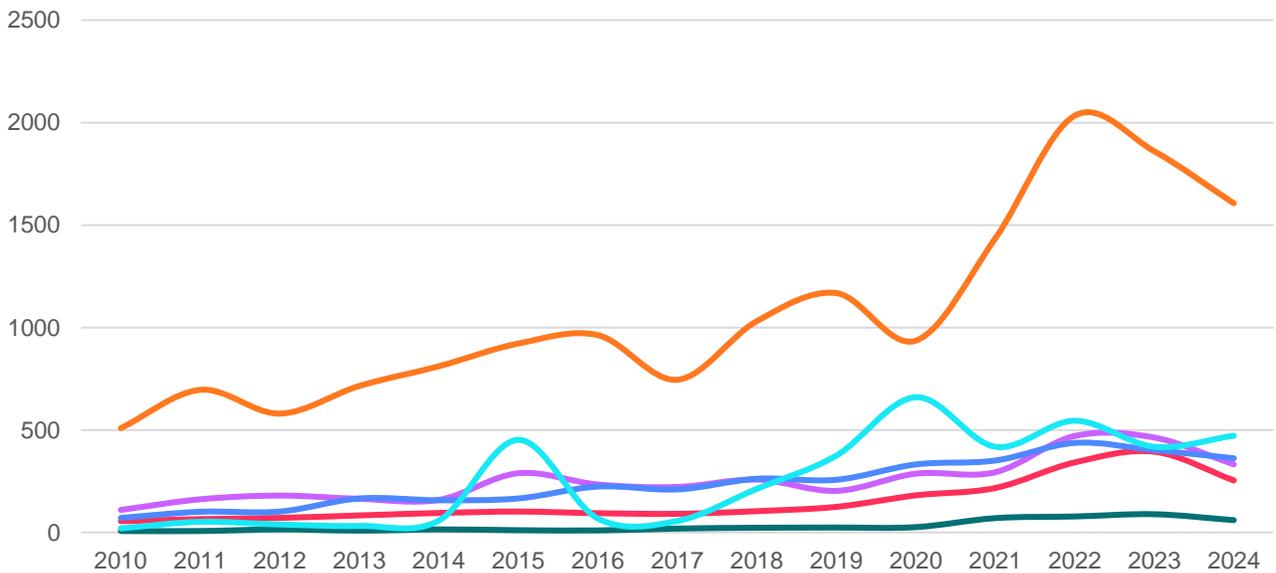


Figure 10: Chicago MSA Postings by Sector



The following section highlights key data points for each sector based on job postings within the Chicago MSA, as well as demographics within DuPage County.

Key Sector Findings

- Demand is growing across all Clean Sectors in the Chicago MSA.
- HVAC and Project Management skills cross a number of sectors as the top requested skills by employers.
- Building Maintenance, Manufacturing and Solar & Wind are at the highest risk of impending retirements. The percentage of workers at age 55 and older for these sectors are higher than the DuPage workforce average.
- Women are underrepresented in every sector, indicating an opportunity to further engage this population in the Clean Energy workforce.
- Hispanic and Latino populations are overrepresented in lower-wage occupations across clean energy jobs, but especially in the Construction and Manufacturing sectors.
- There is an opportunity to further engage diverse populations in target occupations in the Clean sector, especially those that are or lead to high-wage jobs.

Considering employment trends, demand, and growth potential, Lightcast recommends that DuPage County prioritize the **Green Building and Construction, Building Maintenance, and Solar and Wind** sectors within the broader Clean Jobs sector. Additionally, DuPage County demonstrates a notable specialization in engineering services related to the Clean Energy sector, providing a strong foundation for further development and investment.



Automotive



597

Green Employment
in Chicago MSA
2023



-2.7%

Employment
Growth
2020-2023



0.69

Chicago MSA
Sector Location
Quotient



297

Total Postings in
Chicago MSA
2021-2023



287%

Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

- Tesla

- Radius Recycling

- UL Solutions

- Gordon Food Service

Top Requested Specialized Skills and Certifications

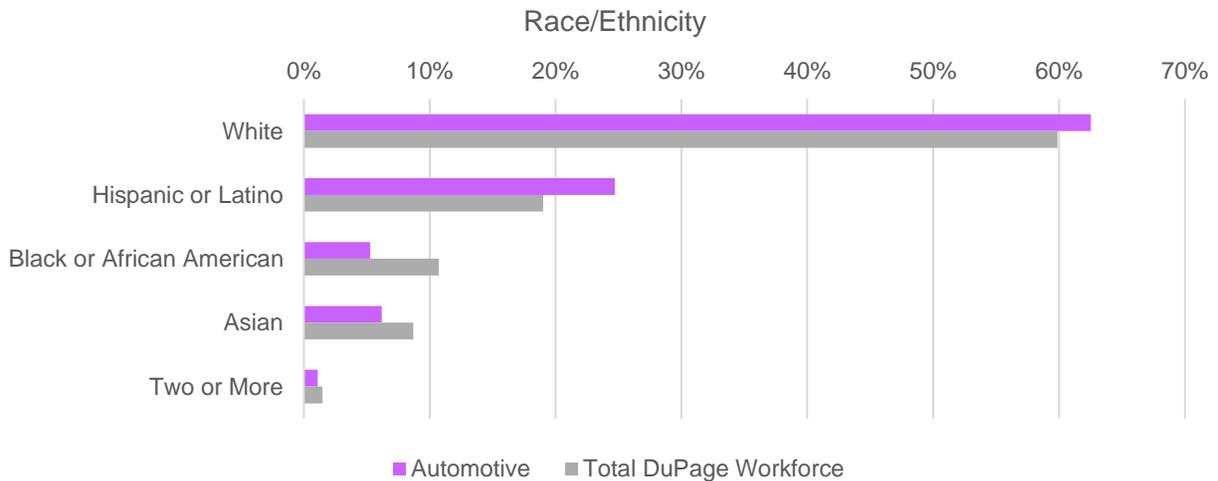
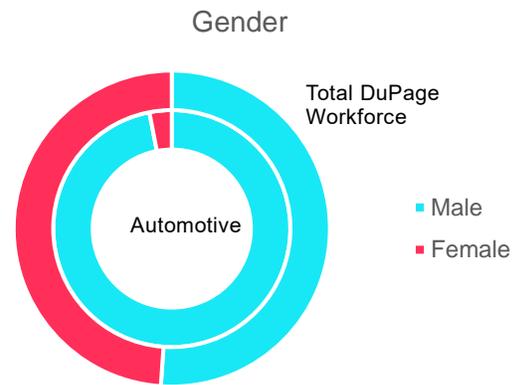
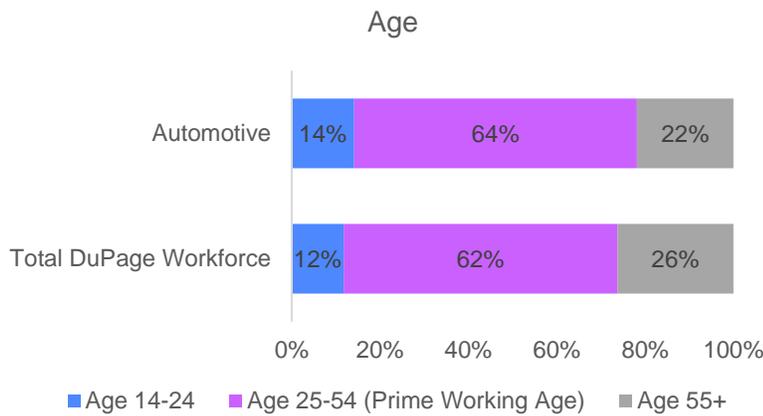
- Electric Vehicles

- Valid Driver's License

- Automotive Service Excellence (ASE) Certification

- HVAC

- Continuous Improvement Process



Building Maintenance



1,438

Green Employment
in Chicago MSA
2023



4.3%

Employment
Growth
2020-2023



0.76

Chicago MSA
Sector Location
Quotient



1,207

Total Postings in
Chicago MSA
2021-2023



279%

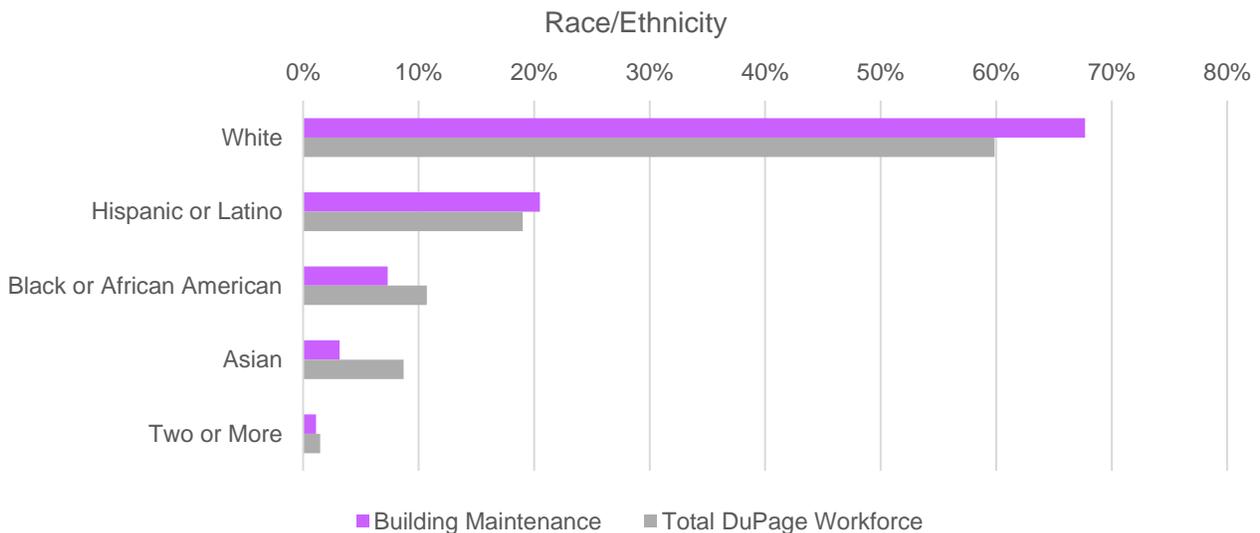
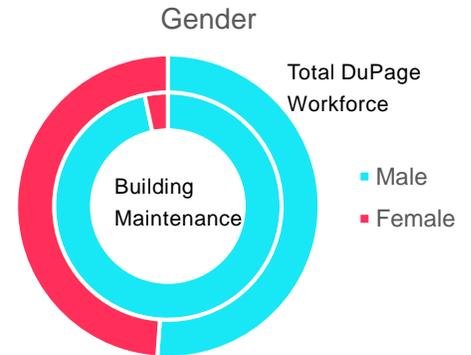
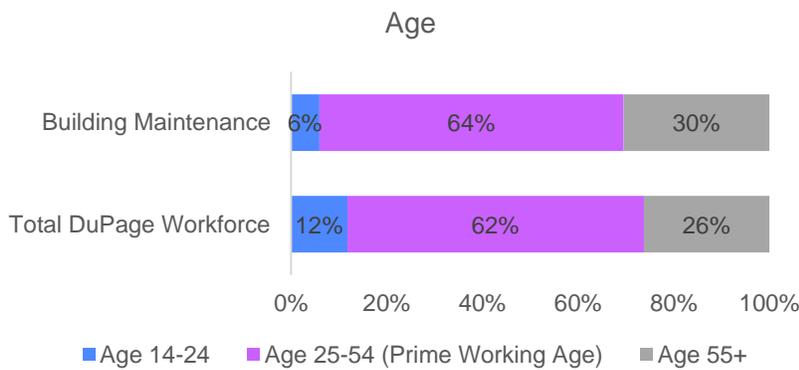
Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

Stantec / Cardno
Resource Environmental Solutions
Chicago Botanic Garden
Eaton Corporation
Invenergy

Top Requested Specialized Skills and Certifications

Valid Driver's License
Ecological Restoration
HVAC
Hand Tools
Plumbing



Electrical



1,915

Green Employment
in Chicago MSA
2023



-2.8%

Employment
Growth
2020-2023



0.80

Chicago MSA
Sector Location
Quotient



1,560

Total Postings in
Chicago MSA
2021-2023



79%

Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

- Sargent & Lundy

- Invenergy

- Siemens

- Leidos

- UL Solutions

Top Requested Specialized Skills and Certifications

- Electrical Engineering

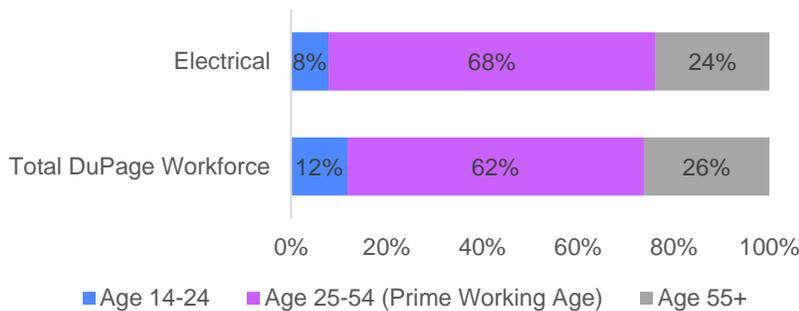
- Electrical Systems

- Project Management

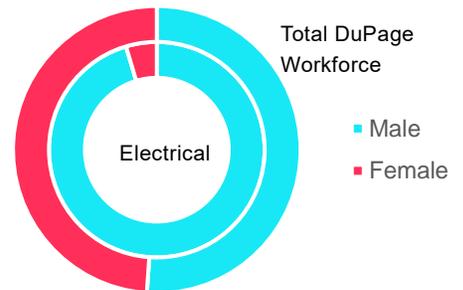
- AutoCAD

- Engineering Design Process

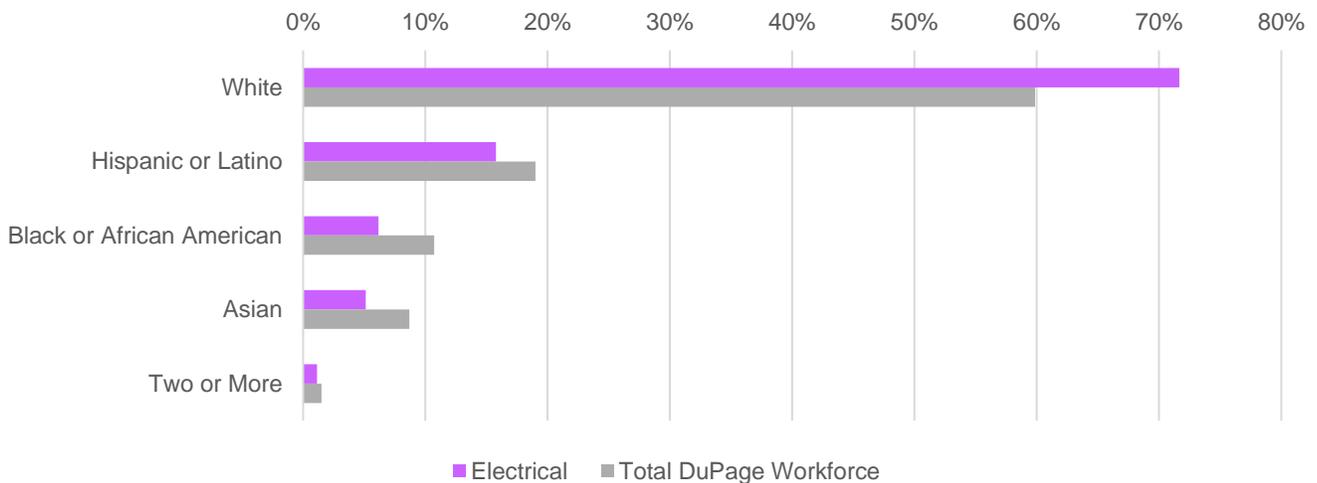
Age



Gender



Race/Ethnicity



Green Building and Construction



9,743

Green Employment
in Chicago MSA
2023



20.9%

Employment
Growth
2020-2023



0.77

Chicago MSA
Sector Location
Quotient



6,935

Total Postings in
Chicago MSA
2021-2023



80%

Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

- Invenergy

- AECOM

- CBRE

- Burns & McDonnell

- Jacobs Solutions

Top Requested Specialized Skills and Certifications

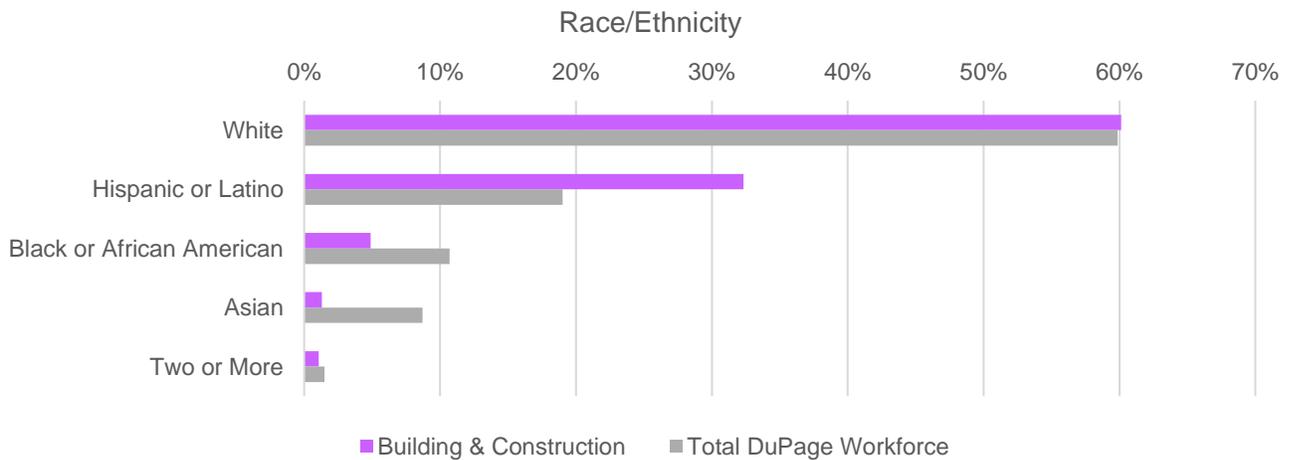
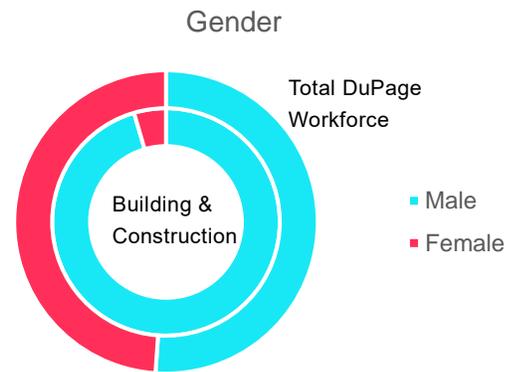
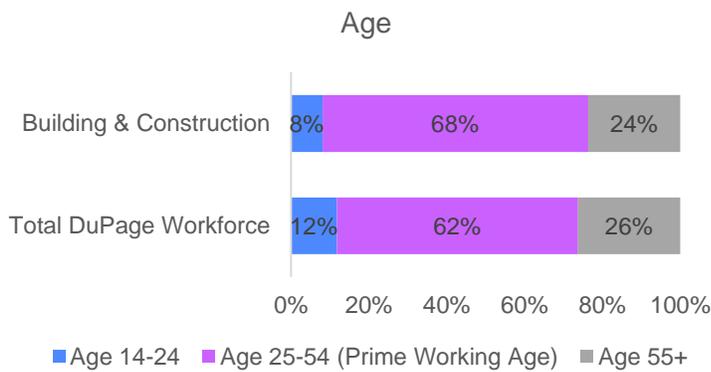
- Project Management

- Valid Driver's License

- Construction

- Accounting

- Renewable Energy



Manufacturing



3,249

Green Employment
in Chicago MSA
2023



2.9%

Employment
Growth
2020-2023



0.75

Chicago MSA
Sector Location
Quotient



1,552

Total Postings in
Chicago MSA
2021-2023



53%

Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

- Regal Rexnord Corp

- Exelon

- Dover Corporation

- S&C Electric Company

- Abbott Laboratories

Top Requested Specialized Skills and Certifications

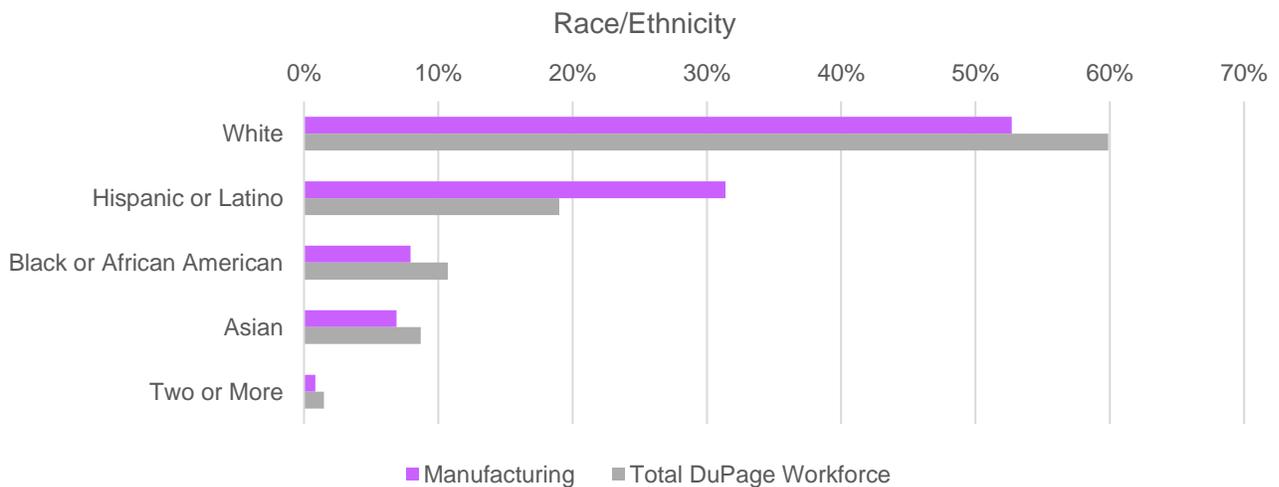
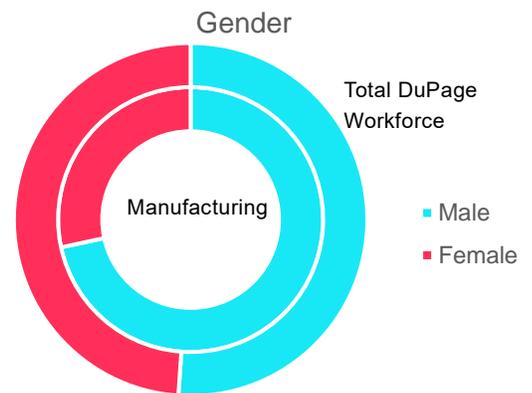
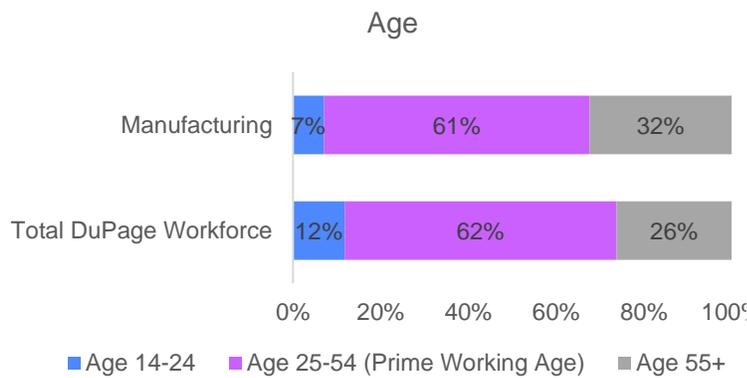
- Environmental Monitoring

- Auditing

- Good Manufacturing Practices

- Machinery

- Project Management



Solar & Wind



1,170

Green Employment
in Chicago MSA
2023



18.9%

Employment
Growth
2020-2023



0.54

Chicago MSA
Sector Location
Quotient



1,853

Total Postings in
Chicago MSA
2021-2023



96%

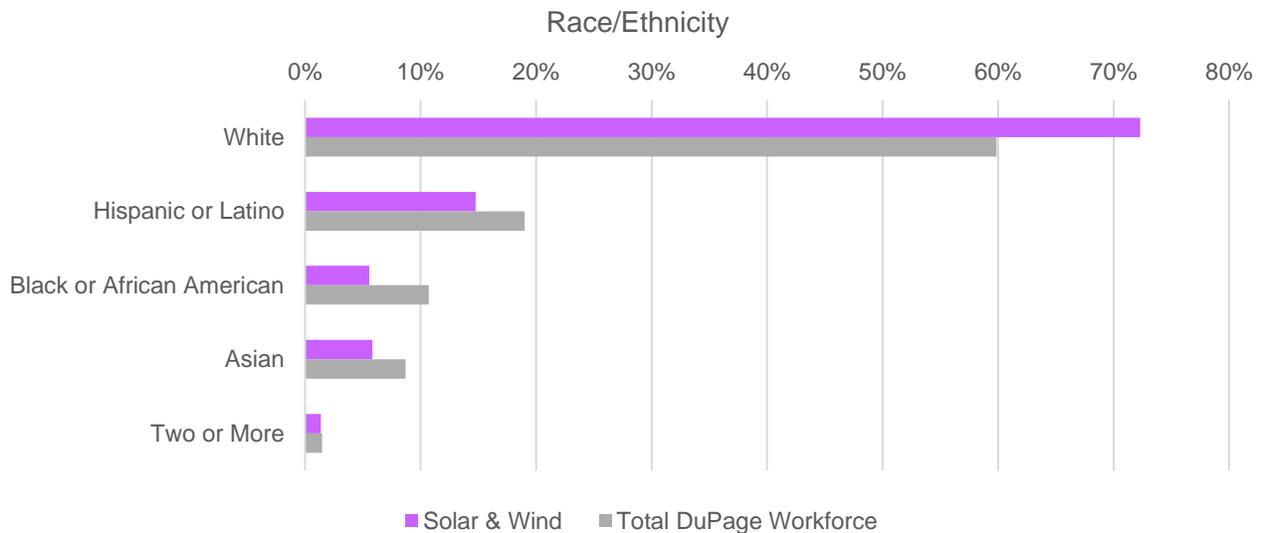
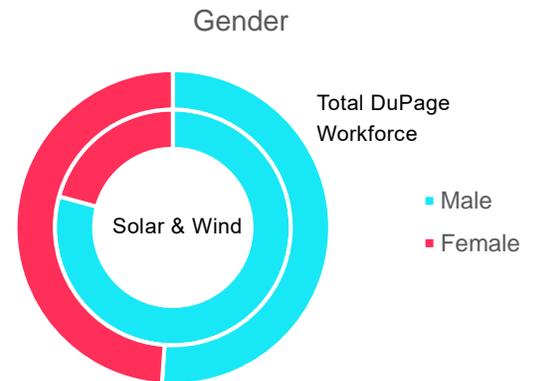
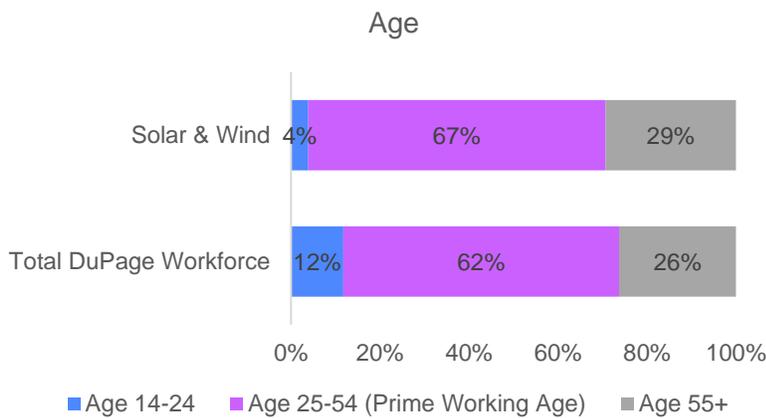
Demand Growth
2018-2023

Top Posting Employers, Chicago MSA

Sunrun
Invenergy
Blue Raven Solar
Vivint
SunPower Corp.

Top Requested Specialized Skills and Certifications

Solar Sales
Valid Driver's License
Construction
Solar Energy Systems Installation
Project Management



Target Occupations



Target Occupations

The following section examines the specific occupations that make up the Clean Jobs sector in the region based on the O*NET codes defined in the Methodology. Data shown in this section will allow DuPage County to better understand employer demand within the sector and which occupations may provide the most opportunity for DuPage County residents.

Table 4 below shows the top 20 in-demand occupations in the Chicago MSA and in DuPage County, de-duplicated and ranked by total Chicago Postings 2021-2023. Nearly all these occupations have experienced growth since 2018, with the exception of Food Scientists and Technologists. Notably, Sustainability Specialists and Maintenance and Repair Workers have shown the highest growth in demand over the past five years. About half of these occupations are associated directly with one of the identified sectors of focus and the others fall in the broader Clean Jobs sector. Location quotient (LQ) indicates where a region has occupational specialization. An LQ above 1.0 (in bold below) signifies a higher concentration than the US average. Most of these occupations also have wages above the regional living wage, based on MIT's living wage calculator. It should be noted that while a majority of these occupations tend to require a Bachelor's degree, there are opportunities that are accessible for workers without a degree.

Table 6: Top Clean Job Occupations

Occupation (O*NET)	DuPage Postings 2021-2023	Chicago Postings 2021-2023	Chicago Demand Growth 2018-2023	DuPage LQ	Chicago LQ	Median Advertised Salary
Recycling and Reclamation Workers	293	2,261	104%	0.84	0.89	\$33,800
Project Management Specialists	404	2,178	99%	1.09	0.86	\$112,500
Environmental Science and Protection Technicians, Including Health	320	1,709	93%	1.15	0.85	\$41,600
Occupational Health and Safety Specialists	220	1,470	63%	1.18	1.14	\$100,000
Environmental Restoration Planners	159	1,427	54%	0.73	0.82	\$57,500
Environmental Scientists and Specialists, Including Health	181	1,207	76%	0.69	0.59	\$69,938
Civil Engineers	254	1,176	114%	0.91	0.63	\$88,148
Occupational Health and Safety Technicians	163	1,156	108%	0.96	0.92	\$75,000
Environmental Engineers	176	1,064	43%	0.81	0.82	\$78,282
Food Scientists and Technologists	194	993	-25%	2.15	1.55	\$70,500
Solar Sales Representatives and Assessors	162	881	141%	0.65	0.51	\$105,500
Sustainability Specialists	67	783	478%	0.87	1.32	\$83,501
Architectural and Engineering Managers	134	781	100%	1.00	0.84	\$107,500
Mechanical Engineers	127	757	165%	0.78	0.82	\$98,800
Energy Auditors	100	744	62%	1.20	1.02	\$80,000
Maintenance and Repair Workers, General	104	729	426%	0.91	0.82	\$45,094
Water/Wastewater Engineers	99	680	101%	0.71	0.63	\$89,250
Energy Engineers, Except Wind and Solar	99	645	68%	2.00	1.25	\$93,150
Sales Managers	69	640	126%	0.97	1.13	\$112,500
Solar Photovoltaic Installers	73	621	83%	0.51	0.52	\$47,840
Electrical Engineers	114	620	134%	0.77	0.79	\$105,000
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	123	577	110%	1.43	1.01	\$90,000
Software Developers	108	399	39%	0.98	0.71	\$107,500



Target Jobs in the Clean Energy Sector for DuPage County

Leveraging the data above, Lightcast worked with the DuPage team to prioritize target occupations within the Clean Energy sector that show the most promising opportunity for DuPage County residents and workers. These selected occupations meet *at least two* of the following criteria, indicating a strong opportunity for regional workers:

- Positive past job growth in DuPage County and/or Chicago MSA
- High demand in DuPage County and/or Chicago MSA
- High concentration of workers in DuPage County
- Median advertised salary above \$55,000
- Alignment with one of the Clean Jobs Sectors

For each target occupation, Lightcast has created an Occupational Profile which highlights the following data, which will help inform workforce strategies for DuPage County Workforce Development Division:

- Lightcast Recommended Strategy – An overview of the most impactful strategies to address talent needs/gaps for each occupation.
- O*NET Occupation Definition
- Typical Entry-Level Education from O*NET
- Chicago MSA Postings (2021-2023)
- Chicago MSA Demand Growth (2018-2023)
- Chicago Location Quotient (LQ) – Location Quotient indicates occupational concentration in a given region compared to the national average
- Median Advertised Salary – From job postings data
- Regional Educational Program Completions (2022) from relevant programs from IPEDS
- Minimum Requested Education and Experience Levels from job postings
- Top Requested Skills by Regional Employers and the associated national growth projections for each skill
- Relevant Regional Education Programs (CIP) to show which programs are most closely tied to the target occupation
- Top Feeder Occupations – These represent pools of workers in the region that can be upskilled or reskilled to meet employer demand for the target occupation.
- Top Next Step Occupations – These represent common next step occupations in career pathways.

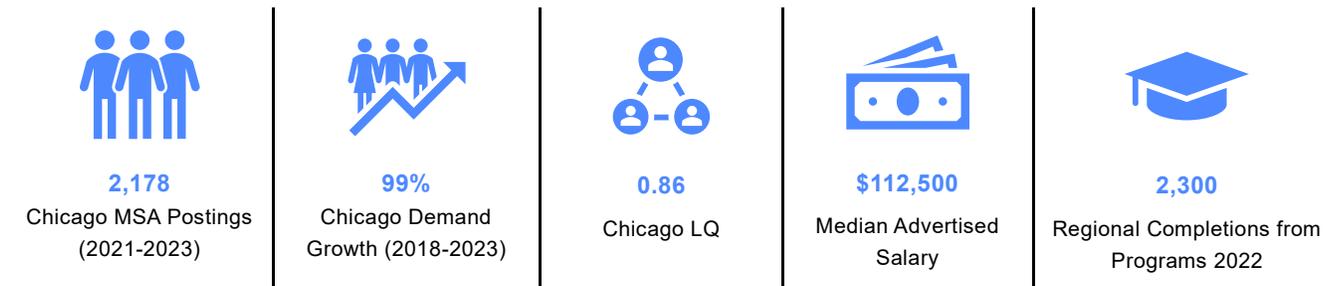


Project Management Specialists (O*NET 13-1082.00)

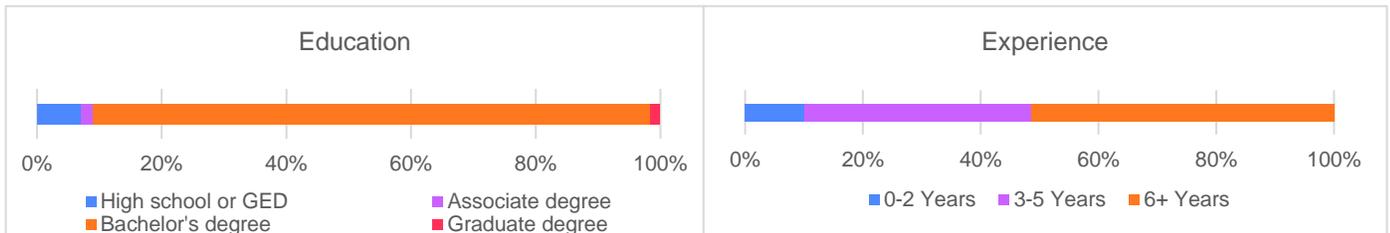
Lightcast Recommended Strategy: While presenting as a key clean energy occupation, many Project Management Specialist vacancies are outside of the clean energy sector. Meanwhile, younger generations cite the highest concerns for climate change. Target lateral transitions of millennial and gen-Z Project Management Specialists from outside the clean energy sector into the clean energy sector.

O*NET Definition: Analyze and coordinate the schedule, timeline, procurement, staffing, and budget of a product or service on a per project basis. Lead and guide the work of technical staff. May serve as a point of contact for the client or customer.

Typical O*NET Education/Experience Level Required: Typically, a four-year bachelor's degree is required, along with several years of work-related experience, on-the-job training, and/or vocational training.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Project Management	94.7%	7.1%
Construction	27.2%	10.5%
Project Schedules	22.9%	17.0%
Business Development	21.3%	5.5%
Environmental Science	20.7%	19.6%
Procurement	20.6%	13.8%
Construction Management	20.0%	6.9%
Subcontracting	17.4%	9.4%
Marketing	14.9%	23.0%
Project Documentation	14.8%	15.4%

Relevant Regional Educational Programs (CIP)

14.01	Engineering, General
03.01	Natural Resources Conservation and Research
52.2	Construction Management
52.02	Business Administration, Management and Operations
40.06	Geological and Earth Sciences/Geosciences

Feeder Occupations

- Information Technology Project Managers
- First-Line Supervisors of Office and Administrative Support Workers
- Management Analysts



Next Step Occupations

- Construction Managers
- Architectural and Engineering Managers
- Sales Managers



Sustainability Specialists (O*NET 13-1199.05)

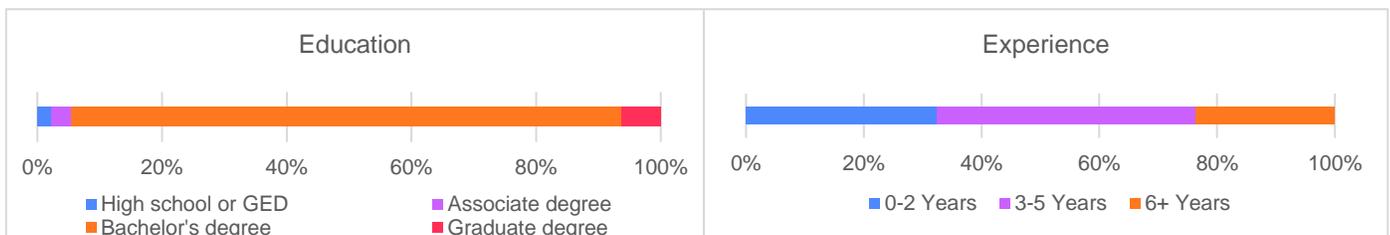
Lightcast Recommended Strategy: This role almost exclusively hires from postsecondary programs. Collaborate with local universities to ensure that curriculum aligns with top skills.

O*NET Definition: Address organizational sustainability issues, such as waste stream management, green building practices, and green procurement plans.

Typical O*NET Education/Experience Level Required: Typically, a four-year bachelor's degree is required, along with several years of work-related experience, on-the-job training, and/or vocational training.



Education/Experience Level Requested by Employers



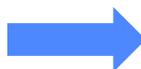
Skills	Skill Recall Rate	National Skill Projection
Project Management	35.4%	7.1%
Environmental Science	29.3%	19.6%
Environmental Social And Corporate Governance (ESG)	28.0%	19.7%
Greenhouse Gas	19.1%	20.6%
Sustainability Strategies	19.0%	7.9%
Sustainability Reporting	18.4%	11.2%
Data Analysis	17.0%	21.6%
Supply Chain	16.6%	22.3%
Sustainability Initiatives	16.0%	11.9%
Business Development	15.3%	5.5%

Relevant Regional Educational Programs (CIP)

14.01	Engineering, General
30.33	Sustainability Studies
03.01	Natural Resources Conservation and Research
52.02	Business Administration, Management and Operations
45.06	Economics

Feeder Occupations

- Project Management Specialists
- First-Line Supervisors of Office and Administrative Support Workers
- Social and Human Service Assistants



Next Step Occupations

- Chief Sustainability Officers
- Management Analysts
- Architectural and Engineering Managers

Civil Engineers (O*NET 17-2051.00)

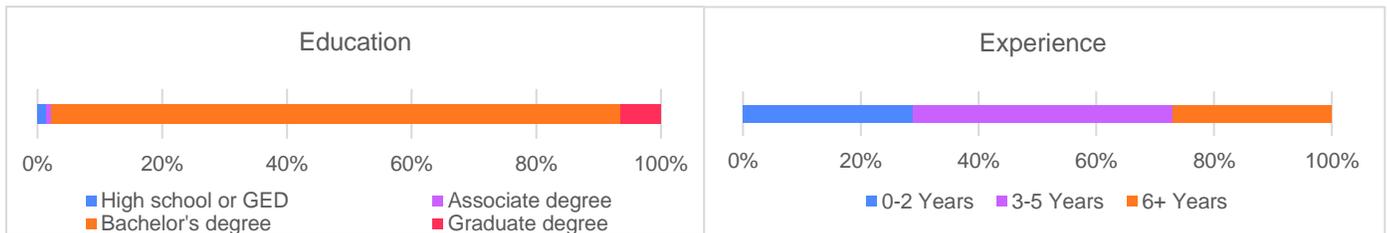
Lightcast Recommended Strategy: Collaborate with state and local governments to ensure that recruitment of this occupation aligns with planned infrastructure building and spending, especially in the wake of recent large fiscal policy expenditure for infrastructural improvements.

O*NET Definition: Perform engineering duties in planning, designing, and overseeing construction and maintenance of building structures and facilities, such as roads, railroads, airports, bridges, harbors, channels, dams, irrigation projects, pipelines, power plants, and water and sewage systems.

Typical O*NET Education/Experience Level Required: Four-year bachelor's degree combined with several years of work-related experience, on-the-job training, and/or vocational training.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Civil Engineering	47.8%	26.2%
Project Management	41.3%	7.1%
Construction	31.4%	10.5%
AutoCAD	31.2%	16.9%
Environmental Engineering	30.0%	27.0%
Stormwater Management	28.9%	26.1%
Project Engineering	28.1%	11.7%
AutoCAD Civil 3D	20.2%	7.5%
Grading (Landscape)	17.5%	12.1%
Engineering Design Process	17.3%	17.6%

Relevant Regional Educational Programs (CIP)

14.01	Engineering, General
14.08	Civil Engineering
15.05	Environmental Control Technologies/Technicians
14.14	Environmental/Environmental Health Engineering
14.19	Mechanical Engineering

Feeder Occupations

- Architectural and Civil Drafters
- First-Line Supervisors of Construction Trades and Extraction Workers
- Civil Engineering Technologists and Technicians



Next Step Occupations

- Architectural and Engineering Managers
- Construction Managers
- Project Management Specialists

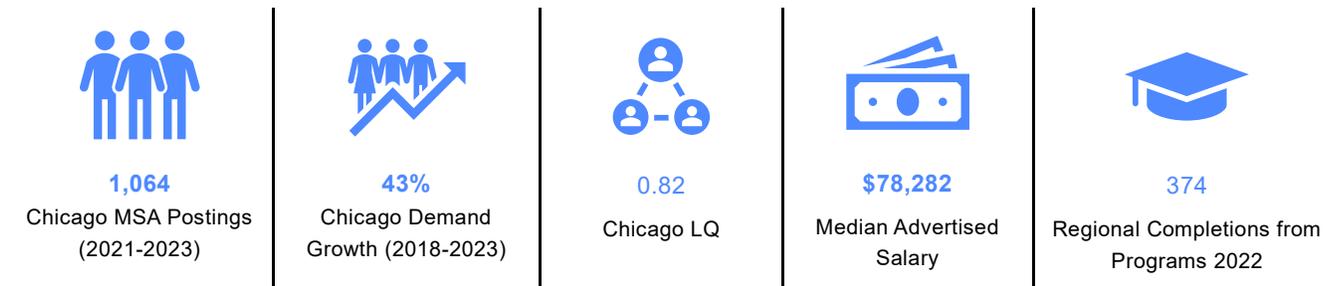


Environmental Engineers (O*NET 17-2081.00)

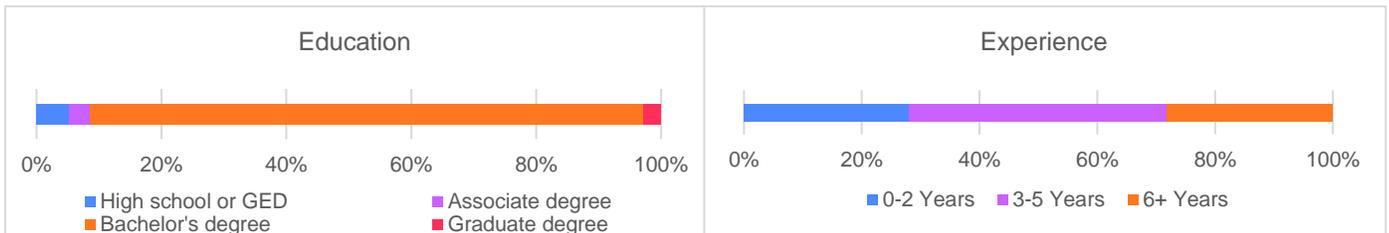
Lightcast Recommended Strategy: With a relatively low level of regional completions compared to regional demand, supply from the local postsecondary system is unlikely to fill vacancies. Meanwhile, opportunities for Environmental Engineers in California and Michigan are declining; focus recruitment to these states.

O*NET Definition: Research, design, plan, or perform engineering duties in the prevention, control, and remediation of environmental hazards using various engineering disciplines. Work may include waste treatment, site remediation, or pollution control technology.

Typical O*NET Education/Experience Level Required: Four-year bachelor's degree combined with several years of work-related experience, on-the-job training, and/or vocational training.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Environmental Engineering	48.9%	27.0%
Project Management	21.0%	7.1%
Environmental Compliance	14.0%	16.3%
Environmental Laws	13.5%	8.5%
Auditing	12.3%	21.8%
Chemical Engineering	12.2%	11.2%
Wastewater	11.4%	17.9%
Environment Health And Safety	11.4%	12.9%
Environmental Science	11.3%	19.6%
Regulatory Compliance	9.6%	18.6%

Relevant Regional Educational Programs (CIP)

14.01	Engineering, General
15.05	Environmental Control Technologies/Technicians
14.14	Environmental/Environmental Health Engineering
14.07	Chemical Engineering
03.01	Natural Resources Conservation and Research

Feeder Occupations

- Environmental Science and Protection Technicians, Including Health
- Environmental Restoration Planners
- Environmental Compliance Inspectors



Next Step Occupations

- Architectural and Engineering Managers
- Environmental Scientists and Specialists, Including Health
- Civil Engineers

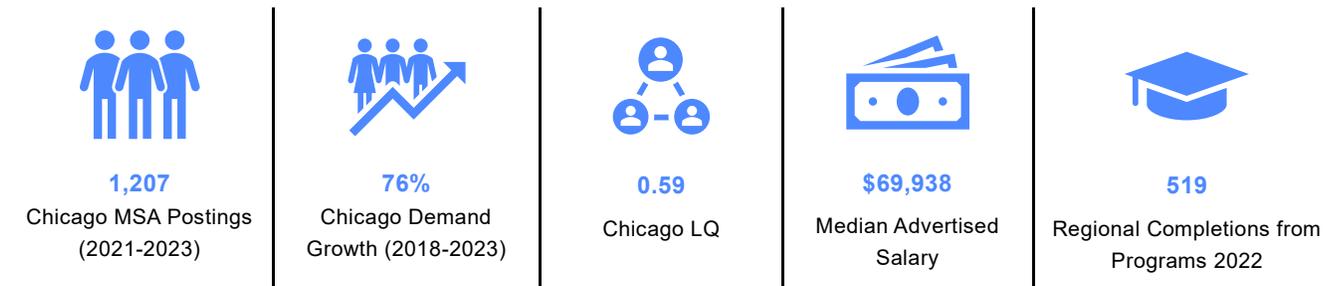


Environmental Scientists and Specialists, Including Health (O*NET 19-2041.00)

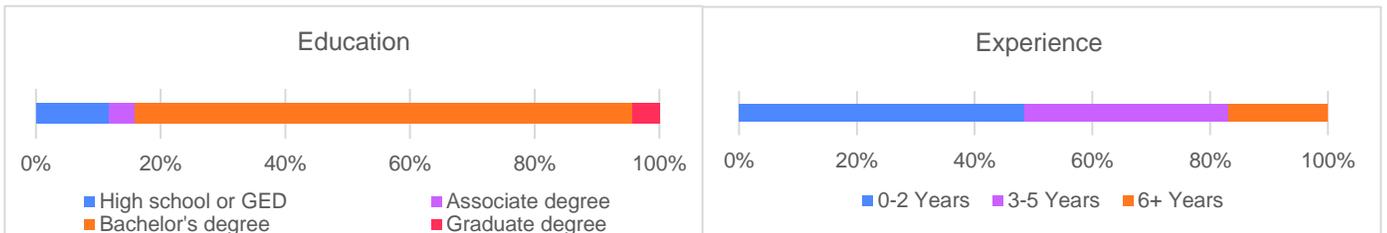
Lightcast Recommended Strategy: Demographics in this occupation in the Chicago MSA are younger than the regional average, with nearly 40% of employment under the age of 34. Advertise to young demographics for this occupation.

O*NET Definition: Conduct research or perform investigation for the purpose of identifying, abating, or eliminating sources of pollutants or hazards that affect either the environment or public health. Using knowledge of various scientific disciplines, may collect, synthesize, study, report, and recommend action based on data derived from measurements or observations of air, food, soil, water, and other sources.

Typical O*NET Education/Experience Level Required: Four-year bachelor's degree combined with several years of work-related experience, on-the-job training, and/or vocational training.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Environmental Science	49.8%	19.6%
Project Management	24.0%	7.1%
Biology	23.2%	25.7%
Environmental Engineering	22.2%	27.0%
Geology	21.7%	8.1%
Environmental Laws	19.1%	8.5%
Chemistry	18.6%	20.7%
Soil Science	18.1%	13.3%
Environmental Compliance	17.1%	16.3%
Sampling (Statistics)	14.3%	12.6%

Relevant Regional Educational Programs (CIP)

03.01	Natural Resources Conservation and Research
14.01	Engineering, General
40.06	Geological and Earth Sciences/Geosciences
26.01	Biology, General
40.05	Chemistry

Feeder Occupations

- Environmental Science and Protection Technicians, Including Health
- Life, Physical, and Social Science Technicians, All Other
- Brownfield Redevelopment Specialists and Site Managers



Next Step Occupations

- Environmental Engineers
- Project Management Specialists
- Occupational Health and Safety Specialists



Environmental Restoration Planners (O*NET 19-2041.02)

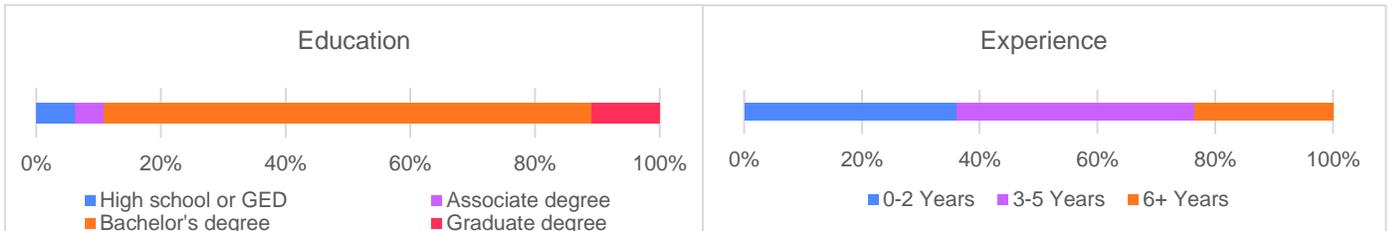
Lightcast Recommended Strategy: Collaborate with local postsecondary institutions for recruiting this role, as important local institutions, such as the University of Chicago, are among the top hiring organizations.

O*NET Definition: Collaborate with field and biology staff to oversee the implementation of restoration projects and to develop new products. Process and synthesize complex scientific data into practical strategies for restoration, monitoring or management.

Typical O*NET Education/Experience Level Required: Most of these occupations require graduate school, and most employers assume that candidates already have the required skills to perform this role.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Project Management	21.5%	7.1%
Environmental Science	15.0%	19.6%
Auditing	14.8%	21.8%
Biology	14.0%	25.7%
Good Manufacturing Practices	11.5%	13.1%
Ecology	8.6%	13.3%
Marketing	8.2%	23.0%
Biochemistry	8.0%	12.3%
FDA Regulations	7.6%	6.6%
Molecular Biology	7.5%	16.0%

Relevant Regional Educational Programs (CIP)	
26.01	Biology, General
03.01	Natural Resources Conservation and Research
14.01	Engineering, General
26.13	Ecology, Evolution, Systematics, and Population Biology
52.02	Business Administration, Management and Operations

Feeder Occupations

- Project Management Specialists
- Environmental Scientists and Specialists, Including Health
- Business Operations Specialists, All Other



Next Step Occupations

- Environmental Engineers
- Environmental Scientists and Specialists, Including Health
- Urban and Regional Planners

Environmental Science and Protection Technicians, Including Health (O*NET 19-4042.00)

Lightcast Recommended Strategy: Present this role as a significant opportunity for career mobility, as 75% of individuals who start in this occupation move into a higher-paying occupation when transitioning.

O*NET Definition: Perform laboratory and field tests to monitor the environment and investigate sources of pollution, including those that affect health, under the direction of an environmental scientist, engineer, or other specialist. May collect samples of gases, soil, water, and other materials for testing.

Typical O*NET Education/Experience Level Required: This role typically requires an associate degree with several years of work-related experience, on-the-job training, and/or vocational training.



1,709

Chicago MSA Postings
(2021-2023)



93%

Chicago Demand
Growth (2018-2023)



0.85

Chicago LQ



\$41,600

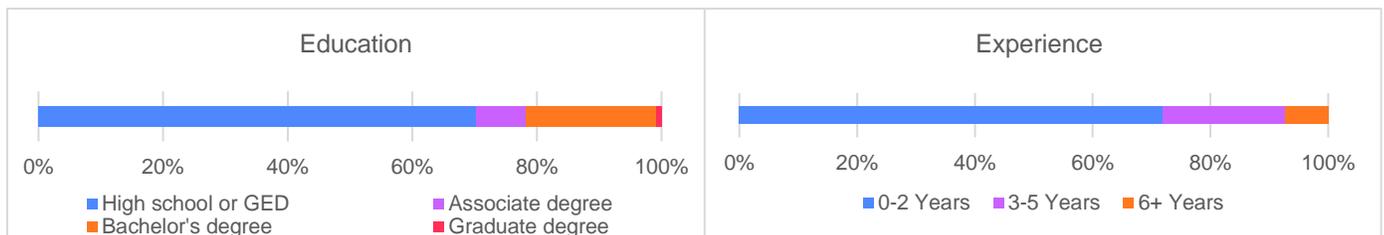
Median Advertised
Salary



716

Regional Completions from
Edu Programs 2022

Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Biology	14.1%	25.7%
Emergency Response	13.0%	20.3%
Vacuum Systems	9.2%	8.1%
Environmental Science	9.2%	19.6%
Oil Containment Booms	9.0%	1.2%
Decontamination	8.8%	10.2%
Project Management	7.7%	7.1%
Occupational Safety and Health Administration (OSHA)	7.7%	11.3%
Refinery Experience	7.0%	8.1%
Sampling (Statistics)	6.4%	12.6%

Relevant Regional Educational Programs (CIP)

03.01	Natural Resources Conservation and Research
40.06	Geological and Earth Sciences/Geosciences
14.01	Engineering, General
26.01	Biology, General
14.19	Mechanical Engineering

Feeder Occupations

- Hazardous Materials Removal Workers
- Life, Physical, and Social Science Technicians, All Other
- Forest and Conservation Workers



Next Step Occupations

- Environmental Engineers
- Environmental Scientists and Specialists, Including Health
- Project Management Specialists

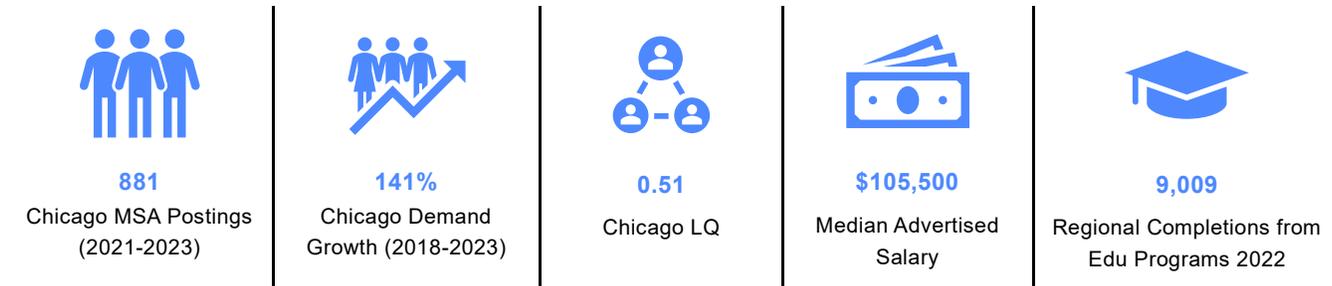


Solar Sales Representatives and Assessors (O*NET 41-4011.07)

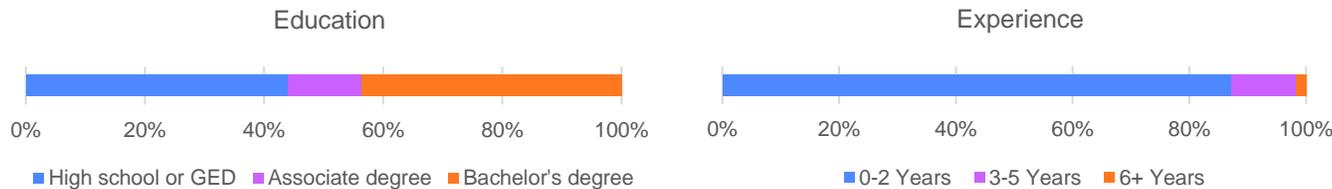
Lightcast Recommended Strategy: Many of these job openings for this occupation are accessible to those without a bachelor's degree. The focus should be on short-term training for the specialized skills below for workers to fill these roles in a more expedited way to meet fast-growing demand.

O*NET Definition: Contact new or existing customers to determine their solar equipment needs, suggest systems or equipment, or estimate costs.

Typical O*NET Education/Experience Level Required: Training in vocational schools, related on-the-job experience, or an associate's degree



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Solar Sales	78.1%	12.3%
Marketing	14.1%	23.0%
Warehousing	13.3%	13.0%
Field Marketing	13.0%	12.7%
Outside Sales	12.3%	1.2%
Selling Techniques	12.1%	-1.2%
Lead Generation	10.7%	7.5%
Sales Process	10.2%	15.5%
Customer Relationship Management	9.2%	22.1%
Community Marketing	8.6%	-2.7%

Relevant Regional Educational Programs (CIP)

52.02	Business Administration, Management and Operations
15.17	Energy Systems Technologies/Technicians
03.01	Natural Resources Conservation and Research
14.01	Engineering, General
52.14	Marketing

Feeder Occupations

- Retail Salespersons
- Customer Service Representatives
- Energy Auditors



Next Step Occupations

- Sales Managers
- General and Operations Managers
- Project Management Specialists

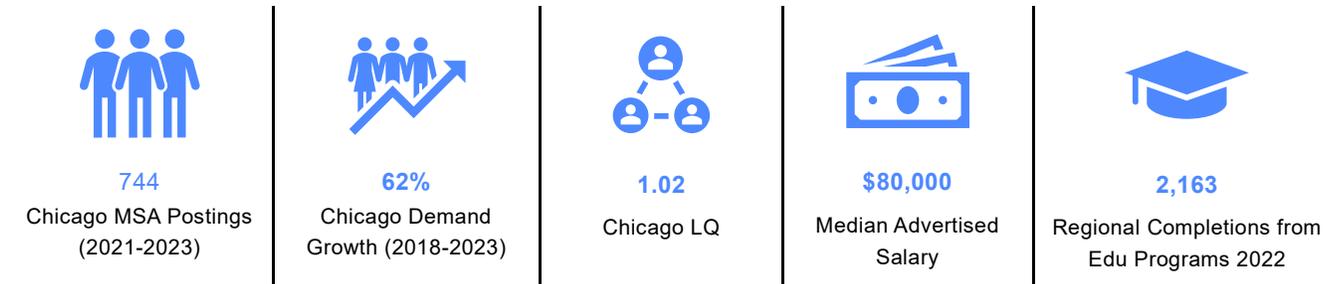


Energy Auditors (O*NET 47-4011.01)

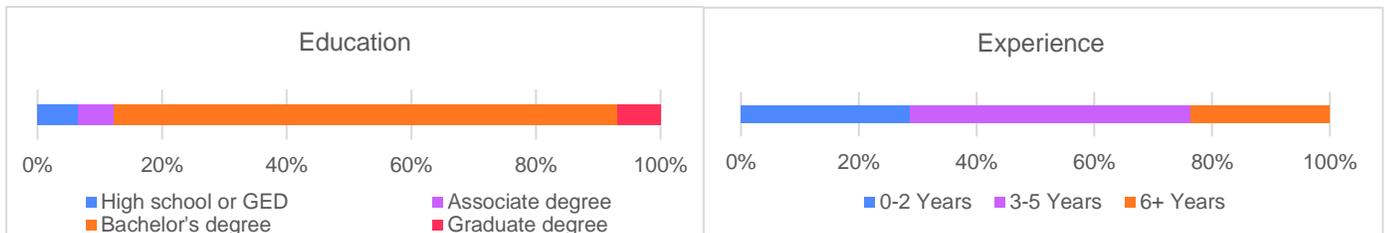
Lightcast Recommended Strategy: Advertise this occupation's significant earnings potential relative to its common educational requirements, as this occupation presents opportunities for those with less than a bachelor's degree.

O*NET Definition: Conduct energy audits of buildings, building systems, or process systems. May also conduct investment grade audits of buildings or systems.

Typical O*NET Education/Experience Level Required: Training in vocational schools, related on-the-job experience, or an associate degree.



Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Project Management	24.2%	7.1%
Auditing	19.9%	21.8%
Accounting	18.9%	24.0%
Renewable Energy	18.6%	22.6%
Finance	15.7%	27.3%
Economics	13.6%	22.7%
Marketing	13.6%	23.0%
Data Analysis	12.6%	21.6%
HVAC	10.7%	7.5%
Business Development	8.1%	5.5%

Relevant Regional Educational Programs (CIP)

14.01	Engineering, General
52.02	Business Administration, Management and Operations
45.06	Economics
52.01	Business/Commerce, General
52.08	Finance and Financial Management Services

Feeder Occupations

- Power Plant Operators
- First-Line Supervisors of Mechanics, Installers, and Repairers
- Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products



Next Step Occupations

- Energy Engineers, Except Wind and Solar
- Sustainability Specialists
- Project Management Specialists



Maintenance and Repair Workers, General (O*NET 49-9071.00)

Lightcast Recommended Strategy: Collaborate with employers to ensure strong career mobility opportunities for this occupation, given its relatively low advertised salary relative to other clean energy occupations.

O*NET Definition: Perform work involving the skills of two or more maintenance or craft occupations to keep machines, mechanical equipment, or the structure of a building in repair. Duties may involve pipe fitting; HVAC maintenance; insulating; welding; machining; carpentry; repairing electrical or mechanical equipment; installing, aligning, and balancing new equipment; and repairing buildings, floors, or stairs.

Typical O*NET Education/Experience Level Required: Training in vocational schools, related on-the-job experience, or an associate's degree.



729

Chicago MSA Postings
(2021-2023)



426%

Chicago Demand
Growth (2018-2023)



0.82

Chicago LQ



\$45,094

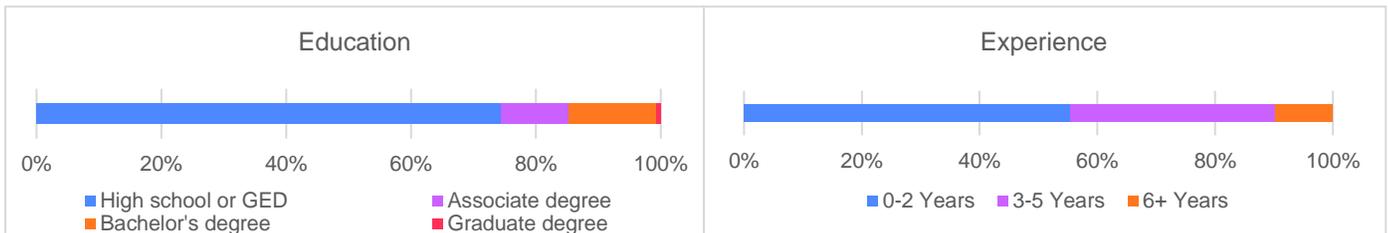
Median Advertised
Salary



432

Regional Completions from
Edu Programs 2022

Education/Experience Level Requested by Employers



Skills	Skill Recall Rate	National Skill Projection
Herbicides	29.7%	7.5%
Ecological Restoration	27.6%	2.9%
Chainsaws	25.6%	5.1%
Invasive Species Management	24.5%	1.2%
Mowing	21.0%	12.1%
Hand Tools	20.6%	6.1%
Plant Identification	19.9%	4.5%
Field Service Management	19.8%	18.2%
Erosion Control	18.7%	8.5%
Ecology	18.5%	13.3%

Relevant Regional Educational Programs (CIP)

26.13	Ecology, Evolution, Systematics, and Population Biology
46.05	Plumbing and Related Water Supply Services
03.01	Natural Resources Conservation and Research
26.01	Biology, General
15.03	Electrical/Electronic Engineering Technologies/Technicians

Feeder Occupations

- Industrial Machinery Mechanics
- Electrical and Electronic Engineering Technologists and Technicians
- Bus and Truck Mechanics and Diesel Engine Specialists



Next Step Occupations

- Automotive Service Technicians and Mechanics
- Mechanical Engineers
- Industrial Engineers



Appendix

List of Occupations by Clean Energy Sector

Automotive: Automotive Engineers (17-2141.02), Bus and Truck Mechanics and Diesel Engine Specialists (49-3031.00), Automotive Service Technicians and Mechanics (49-3023.00), Automotive Glass Installers and Repairers (49-3022.00), Automotive Body and Related Repairers (49-3021.00)

Building Maintenance: Plumbers, Pipefitters, and Steamfitters (47-2152.00), Heating, Air Conditioning, and Refrigeration Mechanics and Installers (49-9021.00), Maintenance and Repair Workers, General (49-9071.00), Industrial Machinery Mechanics (49-9041.00)

Electrical: Electrical and Electronic Engineering Technologists and Technicians (17-3023.00), Electrical and Electronics Drafters (17-3012.00), Electrical Engineers (17-2071.00), Energy Engineers, Except Wind and Solar (17-2199.03), Helpers--Electricians (47-3013.00), Electricians (47-2111.00), Electrical and Electronics Repairers, Powerhouse, Substation, and Relay (49-2095.00), Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094.00), Electrical Power-Line Installers and Repairers (49-9051.00), Electrical and Electronic Equipment Assemblers (51-2022.00), Electrical and Electronics Installers and Repairers, Transportation Equipment (49-2093.00)

Green Building and Construction: Construction Managers (11-9021.00), Architectural and Engineering Managers (11-9041.00), Sustainability Specialists (13-1199.05), Civil Engineers (17-2051.00), Environmental Engineers (17-2081.00), Environmental Restoration Planners (19-2041.02), Roofers (47-2181.00), Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters (47-3015.00), Brickmasons and Blockmasons (47-2021.00), Carpenters (47-2031.00), Floor Layers, Except Carpet, Wood, and Hard Tiles (47-2042.00), Insulation Workers, Floor, Ceiling, and Wall (47-2131.00), Helpers, Construction Trades, All Other (47-3019.00), Construction and Building Inspectors (47-4011.00), Construction and Related Workers, All Other (47-4099.00), Floor Sanders and Finishers (47-2043.00), Operating Engineers and Other Construction Equipment Operators (47-2073.00), Glaziers (47-2121.00), First-Line Supervisors of Construction Trades and Extraction Workers (47-1011.00), Boilermakers (47-2011.00), Painters, Construction and Maintenance (47-2141.00), Segmental Pavers (47-4091.00), Construction Laborers (47-2061.00), Energy Auditors (47-4011.01), Weatherization Installers and Technicians (47-4099.03), Cement Masons and Concrete Finishers (47-2051.00), Fence Erectors (47-4031.00), Hazardous Materials Removal Workers (47-4041.00)

Manufacturing: Sheet Metal Workers (47-2211.00), Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122.00), Heat Treating Equipment Setters, Operators, and Tenders, Metal and Plastic (51-4191.00), Plating Machine Setters, Operators, and Tenders, Metal and Plastic (51-4193.00), Chemical Equipment Operators and Tenders (51-9011.00), Inspectors, Testers, Sorters, Samplers, and Weighers (51-9061.00), Medical Appliance Technicians (51-9082.00), Painting, Coating, and Decorating Workers (51-9123.00), Structural Metal Fabricators and Fitters (51-2041.00), Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4033.00), Power Plant Operators (51-8013.00), Jewelers and Precious Stone and Metal Workers (51-9071.00), Electromechanical Equipment Assemblers (51-2023.00), Bakers (51-3011.00), Patternmakers, Metal and Plastic (51-4062.00), Gas Plant Operators (51-8092.00), Packaging and Filling Machine Operators and Tenders (51-9111.00), Semiconductor Processing Technicians (51-9141.00), Photographic Process Workers and Processing Machine Operators (51-9151.00), Helpers--Production Workers (51-9198.00), Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic (51-4031.00), Tool and Die Makers (51-4111.00), Cabinetmakers and Bench Carpenters (51-7011.00), Water and Wastewater Treatment Plant and System Operators (51-8031.00), Furnace, Kiln, Oven, Drier, and Kettle Operators and Tenders (51-9051.00), Computer Numerically Controlled Tool Operators (51-9161.00), Machinists (51-4041.00), Sawing Machine Setters, Operators, and Tenders, Wood (51-7041.00), Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders (51-9012.00), Coating, Painting, and Spraying



Machine Setters, Operators, and Tenders (51-9124.00), Cleaning, Washing, and Metal Pickling Equipment Operators and Tenders (51-9192.00), Production Workers, All Other (51-9199.00), First-Line Supervisors of Production and Operating Workers (51-1011.00), Slaughterers and Meat Packers (51-3023.00), Food Processing Workers, All Other (51-3099.00), Printing Press Operators (51-5112.00), Sewing Machine Operators (51-6031.00), Fabric and Apparel Patternmakers (51-6092.00), Furniture Finishers (51-7021.00), Power Distributors and Dispatchers (51-8012.00), Stationary Engineers and Boiler Operators (51-8021.00), Computer Numerically Controlled Tool Programmers (51-9162.00), Engine and Other Machine Assemblers (51-2031.00), Food Batchmakers (51-3092.00), Welders, Cutters, Solderers, and Brazers (51-4121.00), Print Binding and Finishing Workers (51-5113.00), Laundry and Dry-Cleaning Workers (51-6011.00), Tailors, Dressmakers, and Custom Sewers (51-6052.00), Mixing and Blending Machine Setters, Operators, and Tenders (51-9023.00), Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders (51-9041.00), Molders, Shapers, and Casters, Except Metal and Plastic (51-9195.00), Tire Builders (51-9197.00), Team Assemblers (51-2092.00), Drilling and Boring Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4032.00), Tool Grinders, Filers, and Sharpeners (51-4194.00), Textile Cutting Machine Setters, Operators, and Tenders (51-6062.00), Nuclear Power Reactor Operators (51-8011.00), Chemical Plant and System Operators (51-8091.00), Plant and System Operators, All Other (51-8099.00), Grinding and Polishing Workers, Hand (51-9022.00)

Solar and Wind: Solar Energy Systems Engineers (17-2199.11), Wind Energy Engineers (17-2199.10), Wind Energy Operations Managers (11-9199.09), Solar Energy Installation Managers (47-1011.03), Solar Photovoltaic Installers (47-2231.00), Solar Sales Representatives and Assessors (41-4011.07), Solar Thermal Installers and Technicians (47-2152.04), Structural Iron and Steel Workers (47-2221.00), Wind Turbine Service Technicians (49-9081.00)

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