



Learning from the Experts Webinar Series

Workforce Development



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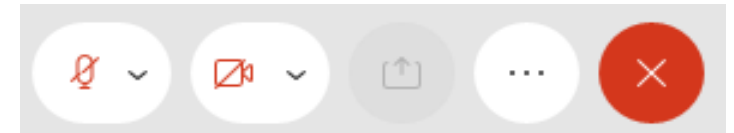
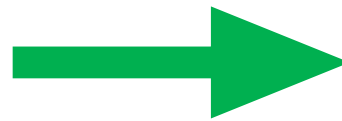
May 25, 2022


Meeting Procedures

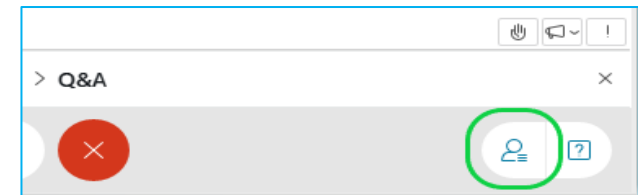
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Participation for Members of the Public:

- > Members of the public will be muted upon entry.
- > Questions and comments may be submitted in writing through the Q&A feature at any time during the event.
- > If technical problems arise, please contact Sal.Graven@nyserda.ny.gov



You'll see  when your microphone is muted



Learning from the Experts

This webinar series is hosted by NYSERDA's offshore wind team and features experts in offshore wind technologies, development practices, and related research.

DISCLAIMER:

The views and opinions expressed in this presentation are those of the presenter and do not represent the views or opinions of NYSERDA or New York State.





Offshore Wind Supply Chain Occupational Gap Analysis

January 2022

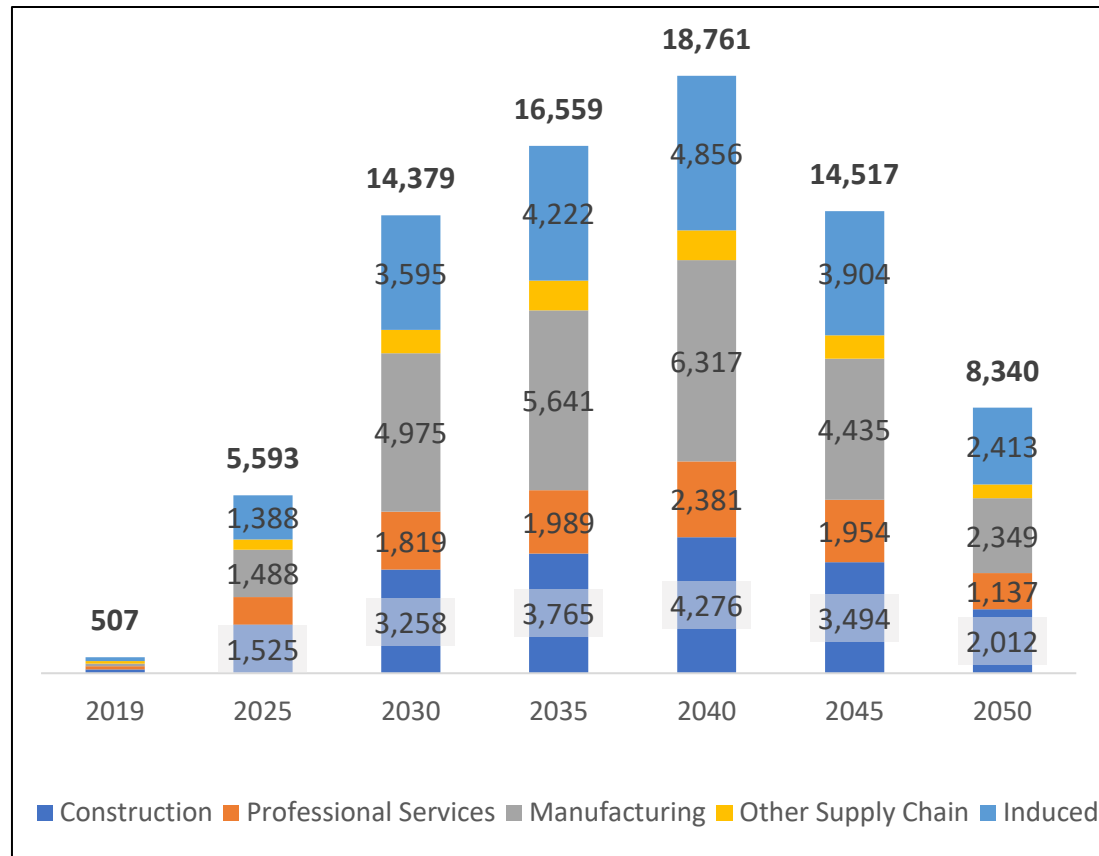


Overview

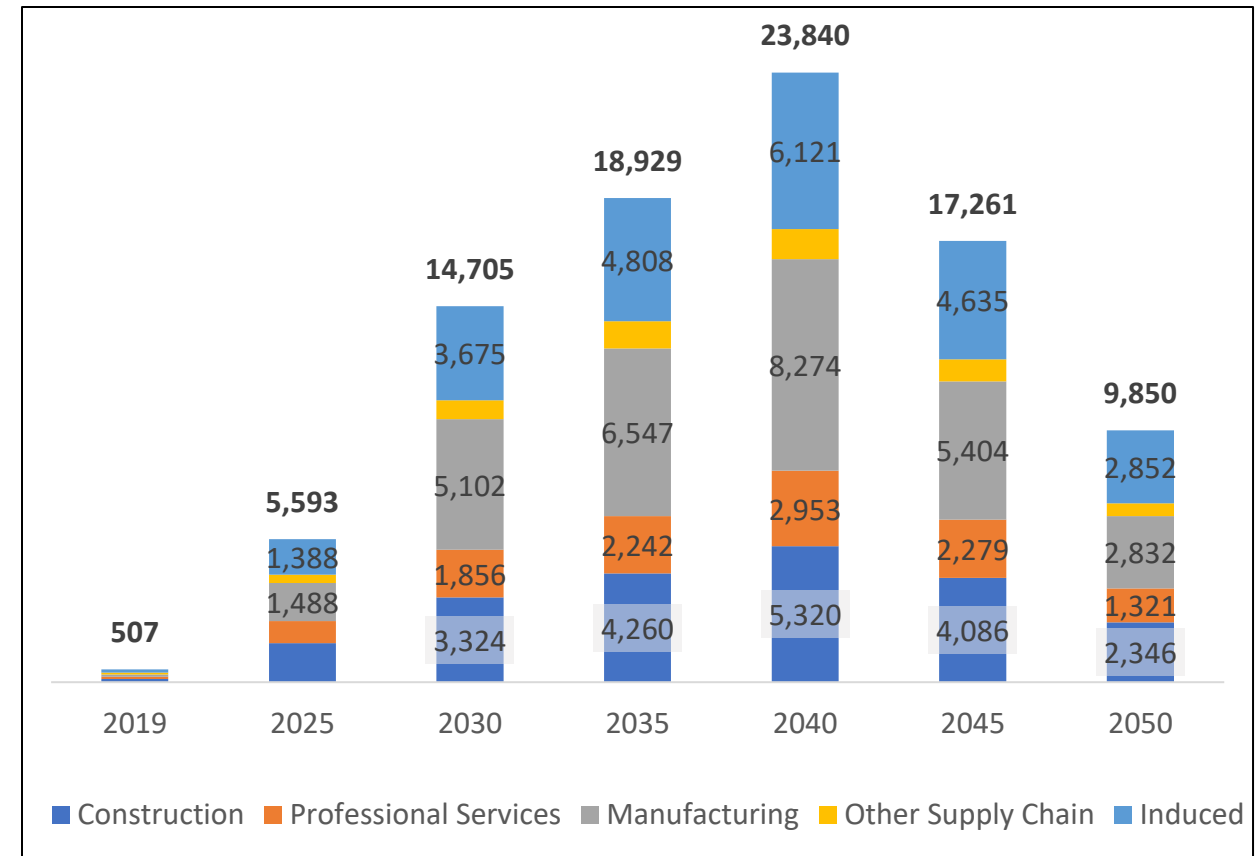
1. Comprehensive database of 117 *distinct* OSW-related occupations
2. In-depth occupational analysis
 - Supply-demand gap, relative concentration, & geographic distribution
3. Job Growth by Industry, 2019-2050
4. Training program overview

Projected Offshore Wind Employment Growth, 2019-2050 (JTWG Study)

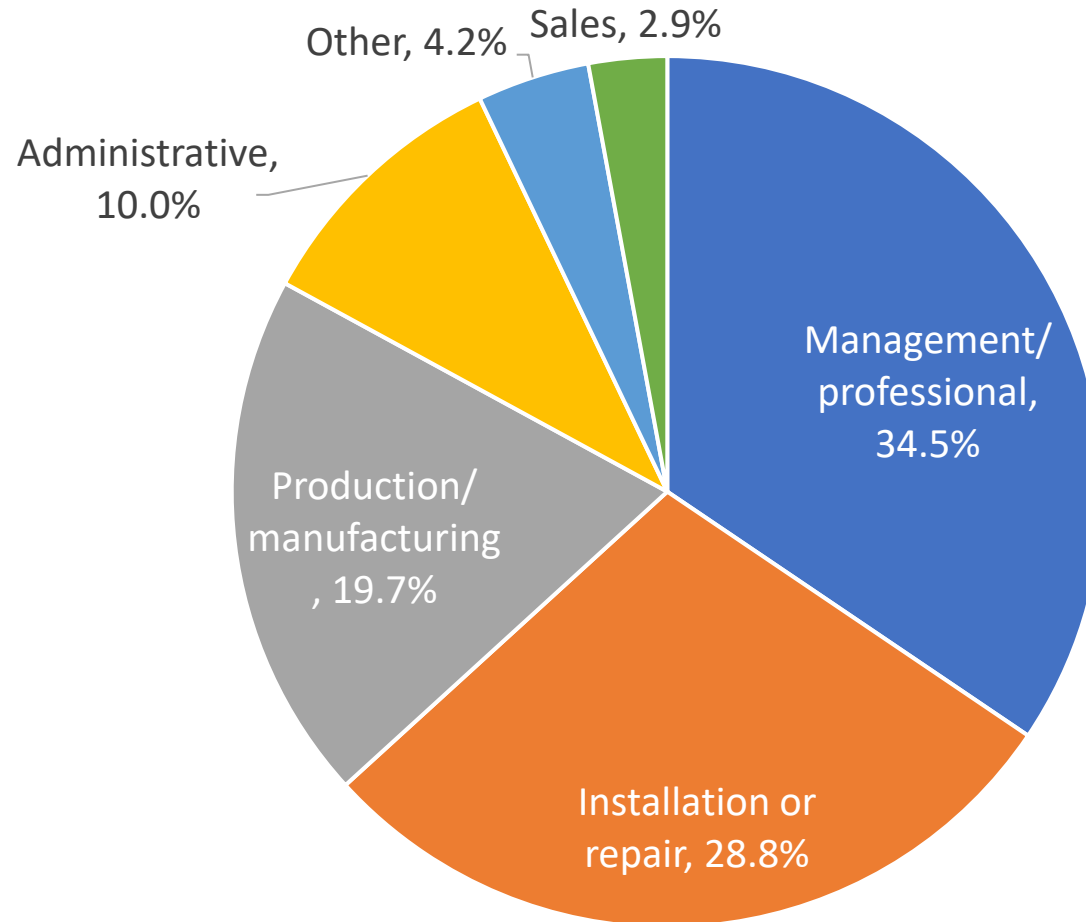
Low Carbon Fuels



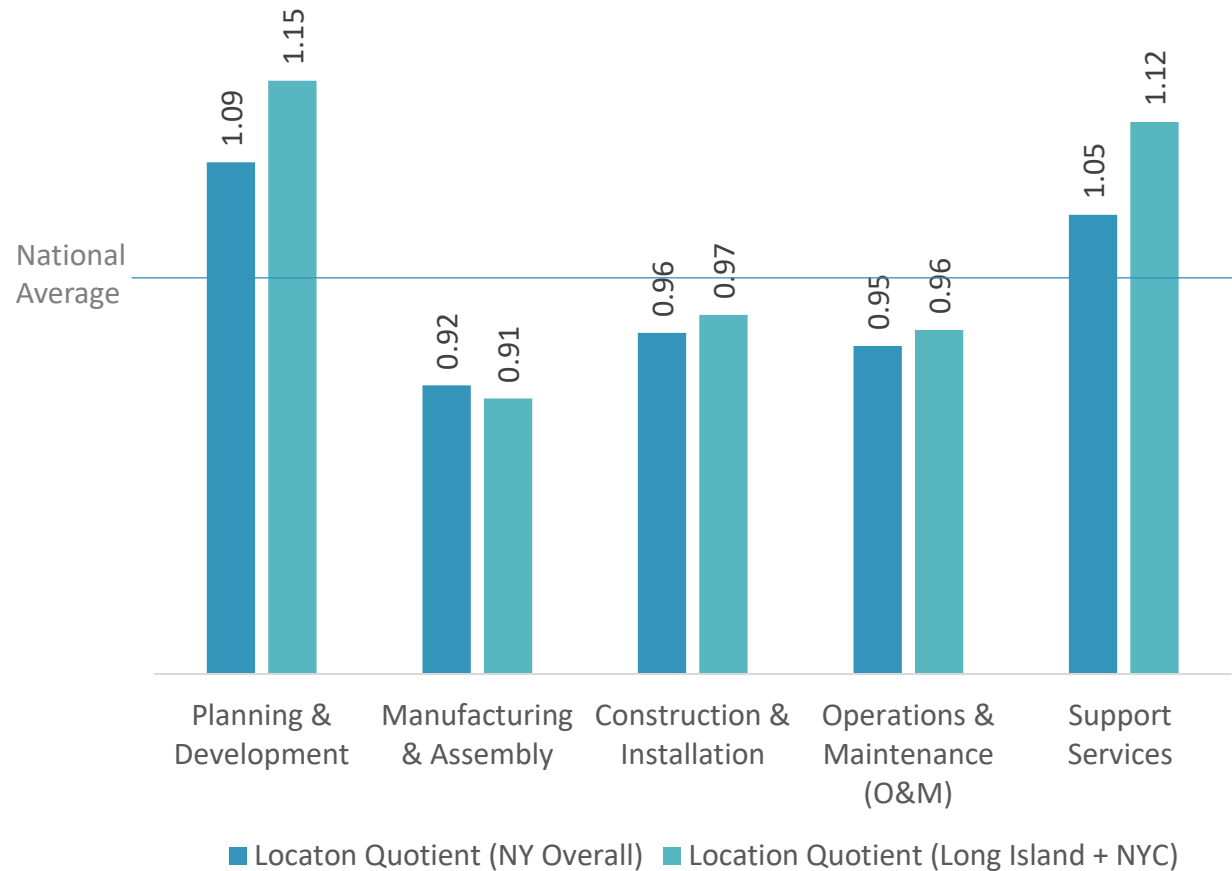
Accelerated Transition



Projected Distribution of OSW Employment by Occupational Group in 2030



Relative Concentration of OSW-related Jobs by Project Phase



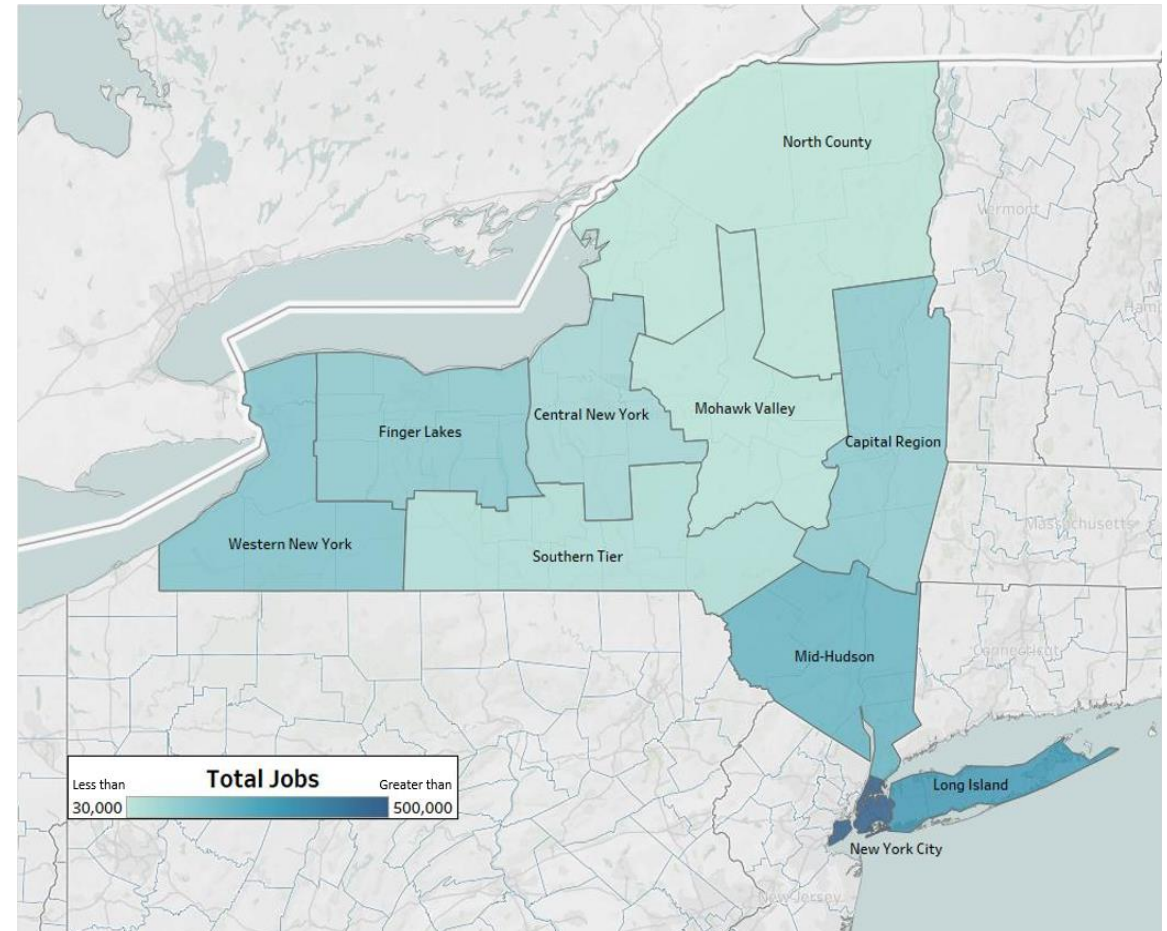
What is a **Location Quotient**?

> Above average concentration of planning and development and support services

> Below average concentration of manufacturing, construction, and operations

Geographic Distribution

Regional Economic Development Council (REDC)	Total <u>OSW-Related</u> Jobs	% of Total <u>OSW-Related</u> Jobs
New York City	1,022,184	46.5%
Long Island	305,689	13.9%
Mid-Hudson	213,532	9.7%
Western New York	156,203	7.1%
Finger Lakes	140,136	6.4%
Capital Region	131,263	6.0%
Central New York	87,649	4.0%
Southern Tier	64,247	2.9%
Mohawk Valley	43,332	2.0%
North County	33,047	1.5%



Projected Workforce Gaps



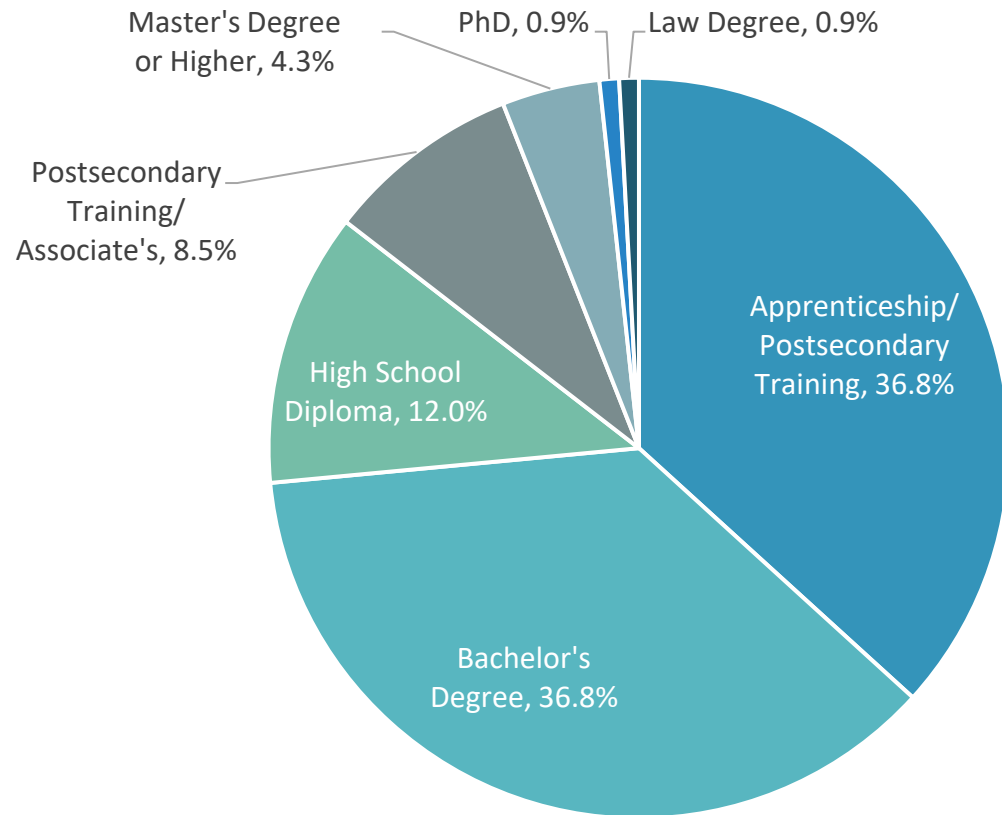
● Mild ● Moderate ● Severe

Severe	Demand exceeds supply <i>and</i> this gap exceeds the size of the existing workforce
Moderate	Demand exceeds supply but the gap is smaller than the existing workforce
Mild	Supply exceeds demand

Top 10 Occupations with Projected Gap

SOC Code	Occupation	Total Jobs in NY, 2020 Q4	Location Quotient, 2020 (compared to US)	Estimated Workforce Gap	Typical Education
51-8099	Plant and System Operators, All Other	228	0.26	Severe	Apprenticeship/Postsecondary Training
53-7041	Hoist and Winch Operators	130	0.49	Severe	Apprenticeship/Postsecondary Training
47-5041	Continuous Mining Machine Operators	192	0.20	Severe	Post-secondary Training or Associate's
49-9081	Wind Turbine Service Technicians	182	0.38	Severe	Post-secondary Training or Associate's
51-4051	Metal-Refining Furnace Operators and Tenders	567	0.64	Moderate	High School Diploma
51-4199	Metal Workers and Plastic Workers, All Other	338	0.25	Moderate	Apprenticeship/Postsecondary Training
51-9162	Computer Numerically Controlled Tool Programmers	847	0.55	Moderate	Apprenticeship/Postsecondary Training
51-2041	Structural Metal Fabricators and Fitters	2,362	0.54	Moderate	Apprenticeship/Postsecondary Training
51-4193	Plating Machine Setters, Operators, and Tenders, Metal and Plastic	1,076	0.46	Moderate	High School Diploma
51-2031	Engine and Other Machine Assemblers	1,251	0.50	Moderate	High School Diploma

Typical Educational Attainment



Top 10 occupations with severe to moderate gap require Apprenticeship/Postsecondary or High School Diploma

Training Program Overview



Wind-specific programs: High focus on engineering with courses/tracks in wind energy

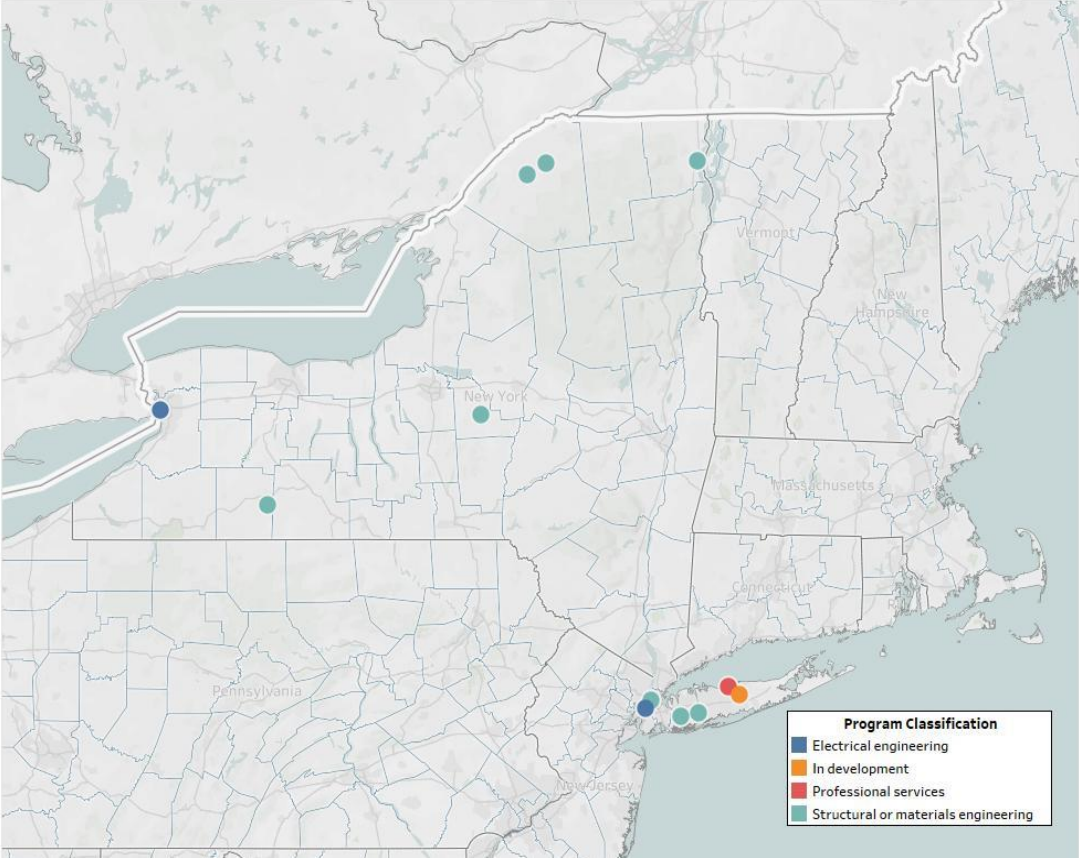


General/vocational trades: 750+ programs to support key trades for OSW projects

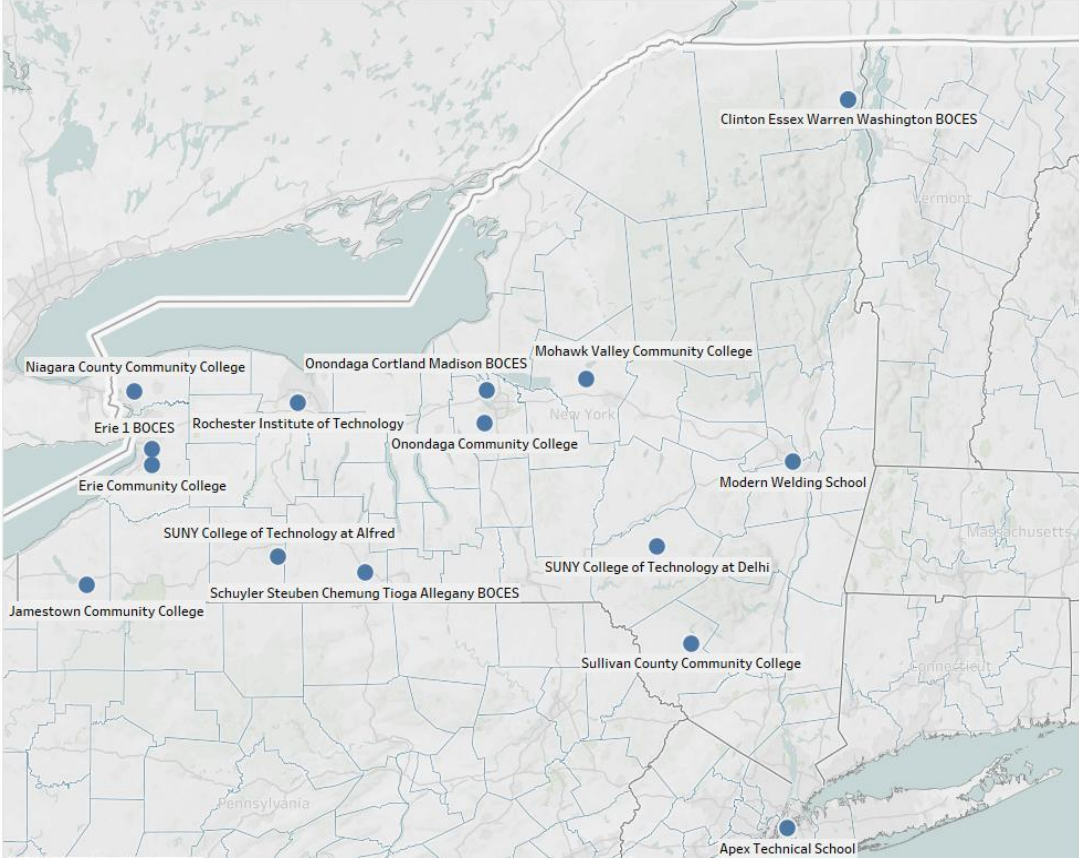


Gap analysis: Insufficient programs for wind techs and CNC machinists (jobs with severe to moderate gaps)

Wind-Specific Training Programs



Vocational Trade Programs



Carpenters

Typical Entry-Level Education

High school diploma or equivalent

Previous Work Experience

None

Typical On-The-Job Training

Apprenticeship

Common Certifications/ Licensing Requirements

- OSHA 10 Hour (2 days)
- Building Performance Institute (6-40 hours)
- Construction Supervisor (2 months for license; 3 yrs prior experience)



Knowledge

- Wood & substitute materials
- Construction techniques
- Shop mathematics
- Safe working practices



Skills

- Setup & operation of carpentry & wood working tools & equipment



Abilities

- Interpret blueprints & instructions
- Apply standard measurements, specifications, & instructions
- Select appropriate materials



6 in 10 percent receive
healthcare benefits



7 in 10 percent receive
retirement benefits

Crane & Tower Operators

Typical Entry-Level Education

High school diploma or equivalent

Previous Work Experience

<5 years

Typical On-The-Job Training

Moderate-term on-the-job training

Common Certifications/ Licensing Requirements

- Tower Crane Operator (4-8 weeks)
- Mobile Crane Operator (up to 30 days)
- Service Truck Crane Operator (3 days)
- Overhead Crane Operator (4-8 weeks)
- Massachusetts Hoisting License (6 hours)



Knowledge

- Safety protocols
- Operation of cranes
- Mathematics



Skills

- Operation, design, & use of cranes
- Equipment maintenance
- Troubleshooting & repair



Abilities

- Transport, lift, and move heavy loads using a traveling or stationary case



Healthcare benefits
through union membership



Retirement benefits
through union membership

Pile Driver Operators

Typical Entry-Level Education

High school diploma or equivalent

Previous Work Experience

None

Typical On-The-Job Training

Moderate-term on-the-job training

Common Certifications/ Licensing Requirements

- Dedicated Pile Driver Operator (<1 day)
- Massachusetts Pile Driver Apprenticeship (7K hours on-the-job training & 640 hours of classroom learning)



Knowledge

- Building & construction materials, methods, & tools
- Use of mechanical tools



Skills

- Operate heavy-duty construction or installation equipment
- Inspecting equipment, structures, or materials



Abilities

- Operate pile drivers & other heavy construction equipment



Healthcare benefits
through union membership



Retirement benefits
through union membership

Wind Turbine Technicians

Typical Entry-Level Education

Postsecondary non-degree award (i.e., certificate or license)

Previous Work Experience

None

Typical On-The-Job Training

Long-term on-the-job training (>1 yr)

Common Certifications/ Licensing Requirements

- Global Wind Organization (2 days)



Knowledge

- Electrical, mechanical, & hydraulic systems (for land-based and offshore wind)



Skills

- Troubleshoot & test electrical & mechanical equipment & systems



Abilities

- Inspect, diagnose, adjust, repair, & maintain wind turbines



9 in 10 percent receive healthcare benefits



8 in 10 percent receive retirement benefits

Electricians

Typical Entry-Level Education

High school diploma or equivalent (incl. proficiency in algebra)
Paid apprenticeship (entry-level wages, full day of work, classes at night)

Previous Work Experience

None

Typical On-The-Job Training

Apprenticeship (4 years; 8,000 hours)

Common Certifications/ Licensing Requirements

- License – Journeyman (1 to 2 months) or Master (150 hours of electrician classroom education, and 1 year as MA journeyman)
- OSHA 10 Hour (2 days)



Knowledge

- Diagnosing typical equipment failures & causes of failures
- Electrical codes
- Math/algebra
- Technical knowledge



Skills

- Installation & repair of electric products
- Preventative maintenance
- Trouble-shooting



Abilities

- Install, operate, maintain, and repair electric apparatus



60% receive healthcare benefits



70% percent receive retirement benefits

Sheet Metal Workers

Typical Entry-Level Education

High school diploma or equivalent (incl. proficiency in algebra & geometry)

Previous Work Experience

Paid internship

Typical On-The-Job Training

Apprenticeship (5 years)

Common Certifications/ Licensing Requirements

- Journeyman Sheet Metal Worker License (750 hours of classroom sheet metal training)
- Master Sheet Metal Worker License (2000 hours of work as a journeyman or 40-hour master's course)



Knowledge

- Hand & power tools equipment & safety procedures
- Welding
- Knowledge of different construction materials
- Mathematics



Skills

- Reading of blueprints
- Lay out, measure, and mark dimensions on materials
- Fasten seams or joints with welds & other materials



Abilities

- Fabricate, assemble, install, and repair sheet metal products & equipment



60% receive healthcare benefits



70% percent receive retirement benefits

Mechanical Engineers

Typical Entry-Level Education

- Bachelor's degree (83%)
- Associates degree or some college (12%)

Previous Work Experience

None

Typical On-The-Job Training

None

Common Certifications/ Licensing Requirements

- Engineer-in-Training Certificate (completion of NCEES Fundamentals of Engineering Exam)
- Professional Engineer License (4 years)
- Computer Assisted Design (Less than 1 year)
- Lean Six Sigma Certificate (2 to 7 weeks)



Knowledge

- Mechanical engineering principles & techniques
- Advanced mathematics
- System analysis & design
- Computer aided design software
- Hydraulic & electric systems
- HVAC systems



Skills

- Mechanical, electrical, and plumbing design & systems
- Build, maintain, and assess machinery
- Create blueprints & develop prototypes



Abilities

- Design, develop, operate, & repair of mechanical systems



Similar to other
engineering professions



Similar to other
engineering professions

Welders

Typical Entry-Level Education

High school diploma or equivalent (incl. proficiency in algebra & geometry)
Training program (up to six months)

Previous Work Experience

None

Typical On-The-Job Training

Moderate-term on-the-job training

Common Certifications/ Licensing Requirements

- License – Completion of AWE certified welder exam or NYSDOT field welder exam
- AWS Certified Welder – performance-based exam, no prerequisites
- NYSDOT Field Welder Certification - performance based exam, no prerequisites



Knowledge

- Blueprint reading
- Math/algebra
- Fabrication
- Metals & substitute materials



Skills

- Operate various hand tools and welding equipment
- Refurbishing



Abilities

- Fabricate, assemble, install, and repair metal products & equipment



60% receive healthcare benefits



70% percent receive retirement benefits

Preliminary Conclusions



Sufficient professional services to move laterally and support OSW



Expand vocational training for construction and manufacturing positions



Connect to coastal, downstate employers for apprenticeship and OJT programs

Coming Next:

June 22, 1:00 p.m. ET

Stakeholder

Engagement & Offshore

Wind

Rebecca Karp, Karp
Strategies

Andel Koester, Karp
Strategies

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