Transforming Maine's Future Forest Workforce

February 2024

FOR/MAINE

camoin associates

Acknowledgements

Forest Opportunity Roadmap / Maine (FOR/MAINE) is a unique cross-sector collaboration between industry, communities, government, education, and non-profits, which have come together to ensure that Maine strategically adapts and capitalizes on changing markets to maintain our leading role in the global forest economy and support prosperity in our state. The coalition was created with support from the U.S. Economic Development Administration and the U.S. Dept. of Agriculture.

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Introduction

"Transforming Maine's Future Forest Workforce: Seamless Pathways" ("Seamless Pathways") is an initiative of the FOR/MAINE partnership focused on developing career pathways to in-demand forest products sector (FPS) jobs, developing tactics to better engage grant-targeted populations in these pathways, and engaging employers in expanding the sector's talent pipeline through strategic talent attraction and retention practices. This initiative aligns with FOR/MAINE's workforce development strategies.

FOR/MAINE Workforce Development Strategies:

1. Fostering greater education, outreach, and awareness of opportunities in the FPS for Maine secondary school students, adult students, and advisors;

2. Cultivating workforce pipelines and integrating with statewide attraction and recruitment efforts;

3. Leveraging existing workforce infrastructure to increase coordination and engagement and expand existing internship, apprenticeship, and training programs;

4. Increasing participation of in-state populations, such as youth, women, displaced workers, immigrants, and other often marginalized populations; and

5. Focus on "placemaking" as an important component to keep Maine youth in their communities.

Expanding talent pathways requires a multipronged, cross-sector approach. Increasing the FPS workforce involves not only thinking creatively about translating employer skills needs to prospective workers but also collaborating with the right educators and industry champions along the way to meet workers where they are. And while bringing more workers into the FPS is key, creating an environment that welcomes them is equally as critical. Seamless Pathways addresses this, laying the groundwork for building awareness about FPS career opportunities and the needs of grant-targeted populations, increasing prospective workers' access to FPS jobs, and helping employers expand their talent sourcing and retention practices.

In addition to the analyses and career pathway resources in this report, throughout Q1 2024, FOR/MAINE will host a series of trainings to help FPS employers expand their talent pipeline. The trainings have multiple goals with the ultimate aim of spurring employers to become more proactive with talent recruitment and retention to meet their most in-demand job and skills needs. Goals include encouraging businesses to look closely at their hiring process; identifying areas where they can engage workers from more diverse backgrounds; connecting with partners and networks that may be sources of new employees; and taking advantage of resources to improve company culture, policies, and operations from the perspective of different communities.

Training #1: Customizing Hiring Practices: Strategies for Successful Recruitment

Training #2: Building Community Partnerships: Bridging Gaps in Employment

Training #3: Sustaining a Diverse Workforce: Retention Strategies

The following report contains summaries of work completed between May 2023 and January 2024, including:

- An FPS demographic and occupational analysis;
- A summary of feedback collected through focus groups, interviews, and surveys with employers, community partners, and students;
- Occupational Profiles and Career Pathways related to target FPS occupations; and
- Recommendations for using the Career Pathways as resources to attract and advance workers in the FPS, particularly from populations underrepresented in the FPS workforce.

Forest Products Sector Profile

Purpose

This profile provides background for the top forestry career pathways. It places the top occupations within the context of the forest products sector and Maine's overall economy.

Methodology

The forest products sector includes the industries identified in the Forest Opportunity Roadmap for Maine Workforce Development Strategy (2021): **Harvesting, Wood Product Manufacturing, Pulp & Paper Manufacturing**, and related **Transportation** industries. These industries form the basis for the forest products sector's staffing pattern, which is then used to define its workforce.

Target occupations for the FPS were identified in the Forest Opportunity Roadmap for Maine Workforce Development Strategy (2021), further validated via a FOR/MAINE employer survey in Q1 of 2023 and supplemented by the consulting team and grant partners involved in this project's steering committee.

Economic projects are necessarily backward-looking and do not take into account new fields or innovations that might positively or negatively (such as automation) impact job growth and therefore demand for workers. Certain occupations that are projected to be in high demand in the near future due to those advancements have been included in this analysis, namely Chemical Engineers, Material Engineers related to nanocellulose engineering.

Unless otherwise noted, all data in this analysis is for the year 2022 for the State of Maine and was sourced from Lightcast. All projections are for the years 2022 - 2032.

Early Key Takeaways

- FOR/MAINE has identified 15 target occupations within the forest products sector that contain the skills that are currently in high demand and will be most critical for the future of the FPS industry.

- Many of the target occupations are employed across multiple industry sectors. The forest products sector will have competition from all other industry sectors for these workers and skill sets.

- Even though the forest products sector is projected to stagnate in terms of overall sector job growth, employers will still have training and pipeline needs in the near future. Between 20 - 40% of workers in the top occupations will reach retirement age within the next 10 years.

- **The forest products sector is projected to have an average of nearly 21,700 job openings per year over the next 10 years.** The target occupations account for about 10% of that demand, particularly *Logging Equipment Operators*, *Heavy and Tractor-Trailer Truck Drivers*, *Bus and Truck Mechanics and Diesel Engine Specialists*, *Mobile Heavy Equipment Mechanics*, and *Computer Numerically Controlled Tool Operators.*

- The forest products sector accounts for the vast majority of employment for several of the target occupations, including *Logging Equipment Operators*, *Wood Sawing Machine Setters, Operators, and Tenders*, *Woodworking Machine Setters, Operators, and Tenders*, and *Log Graders and Scalers*. Other sectors are not likely to create training programs for these niche occupations. FOR/MAINE should take ownership of cultivating training pipelines for these occupations.

- FOR/MAINE will have a shared responsibility for training the top occupations which are more dispersed across multiple industry sectors, such as *Heavy and Tractor-Trailer Truck Drivers*, *Bus and Truck Mechanics and Diesel Engine Specialists*, *Mobile Heavy Equipment Mechanics*, and *Computer Numerically Controlled Tool Operators.* It should identify and collaborate in cross-sector partnerships to develop a talent pipeline for these occupations.

- Nearly half of the top occupations require little or some preparation for entry-level jobs.

- The forest products sector is older, whiter, and significantly more male-dominated than the economy overall. However, the occupations that are most diverse and have the most females are also those with the highest wages, including *Materials Engineers*, *Chemical Engineers*, *Electrical and Electronics Engineering Techs*, and *Heavy and Tractor-Trailer Truck Drivers*.

Summary of Top Occupations

Heavy & Tractor-Trailer Truck Drivers

- Large share of employment among top occupations
- Largest projected openings
- Significant retirement risk
- Some preparation needed*

Logging Equipment Operators

- Predominately work in forestry
- Largest share of employment among top occupations
- Large projected openings
- Significant retirement risk
- Little preparation needed

Bus and Truck Mechanics & Diesel Engine Specialists

- Large share of employment among top occupations
- Large projected openings
- Medium preparation needed

Mobile Heavy Equipment Mechanics

- Large projected openings
- Significant retirement risk
- Medium preparation needed

Computer Numerically Controlled Tool Operators

- Large projected openings
- Medium preparation needed

Wood Sawing Machine Setters, Operators & Tenders

- Predominately work in FPS
- Large share of employment among top occupations
- Some preparation needed

Woodworking Machine Setters, Operators & Tenders

- Predominately work in FPS
- Some preparation needed

Electrical & Electronic Engineering Techs.

- Significant retirement risk
- High earnings
- Medium preparation needed

Farm Equipment Mechanics & Service Technicians

- Significant retirement risk
- Medium preparation needed

Millwrights

- Over half work in FPS
- Significant retirement risk
- Relatively high earnings
- Some preparation needed

Adhesive Bonding Machine Operators and Tenders

- Over half work in FPS
- Significant retirement risk
- Some preparation needed

Foresters

- Over half work in FPS
- Significant retirement risk
- Relatively high earnings
- High preparation needed

Materials Engineers

- High earnings
- High preparation needed

Chemical Engineers

- High earnings
- High preparation needed

Log Graders & Scalers

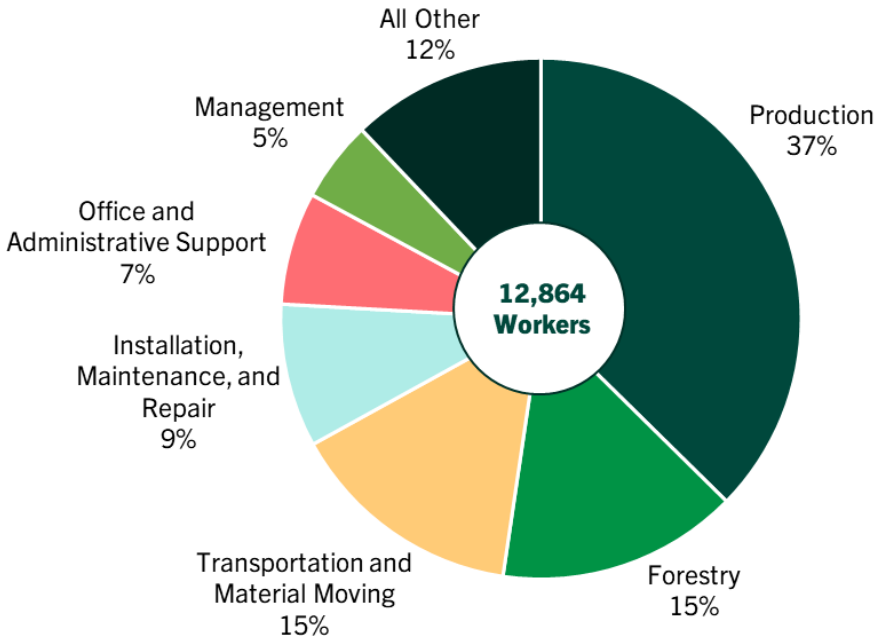
- Nearly ¾ work in FPS
- Some preparation needed

*Preparation levels are based on O*NET's Job Zones (https://www.onetonline.org/help/online/zones).

Forestry Sector Workforce

With nearly 13,000 jobs, the forest products sector represents 1.8% of Maine's total employment. **Production** occupations account for the largest share of occupations within the forest products sector, representing 37% of all workers. Other major occupation categories include **Farming, Fishing, and Forestry*** occupations and **Transportation and Material Moving** occupations, each representing 15% of the sector's workforce. These tend to be lower-wage compared to other occupation groups, such as **Management** occupations or **Business & Financial Operations** occupations.

TOP OCCUPATION GROUPS IN THE FOREST PRODCUTS SECTOR, 2022



* **Source:** Lightcast 2023.2 datarun; Forestry falls within the Farming, Fishing, and Forestry occupation group; however, there are no farming (aside from greenhouses and nurseries) or fishing occupations within the FPS staffing pattern.

Target Occupations in the Forest Products Sector

The table below shows the 15 target occupations within the forest products sector. **Together, these occupations contain a set of skills that are currently in high demand and will be most critical for the future of the FPS industry.**

Altogether, the target occupations represent just under 27% of FPS employment, with *Logging Equipment Operators*, *Heavy Tractor-Trailer Truck Drivers*, *Sawing Machine Setters, Operators, and Tenders, Wood*, and *Woodworking Machine Setters, Operators, and Tenders, Except Sawing* accounting for the largest share of the employment among the target occupations.

Several target occupations are primarily employed within the forest products sector – for example, almost 99% of *Logging Equipment Operators* in Maine work within the sector. Other occupations work more commonly in other industries. For example, about 6% of *Heavy and Tractor-Trailer Truck Drivers* work in the FPS, while about 94% work in other industries across the economy.

TARGET OCCUPATIONS WITHIN MAINE'S FOREST PRODUCTS SECTOR, 2022

SOC	Occupation	Jobs	Share of all FPS jobs	Share of occupation working in FPS
45-4022	Logging Equipment Operators	1,443	11.2%	98.6%
53-3032	Heavy and Tractor-Trailer Truck Drivers	658	5.1%	5.8%
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	468	3.6%	93.6%
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	434	3.4%	88.9%
49-9044	Millwrights	152	1.2%	52.4%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	109	0.8%	8.8%
51-9191	Adhesive Bonding Machine Operators and Tenders	42	0.3%	66.5%
51-9161	Computer Numerically Controlled Tool Operators	33	0.3%	3.4%
19-1032	Foresters	32	0.2%	52.1%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	22	0.2%	1.1%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	5	0.0%	1.4%
17-2131	Materials Engineers	5	0.0%	6.1%
45-4023	Log Graders and Scalers	5	0.0%	71.5%
17-2041	Chemical Engineers	4	0.0%	6.8%
49-3041	Farm Equipment Mechanics and Service Technicians	0	0.0%	0.0%
Total Target Occupations		**3,412**	**26.5%**	**n/a**
TOTAL FOREST PRODUCTS SECTOR		**12,864**	**100.0%**	**n/a**

Source: Lightcast 2023.2

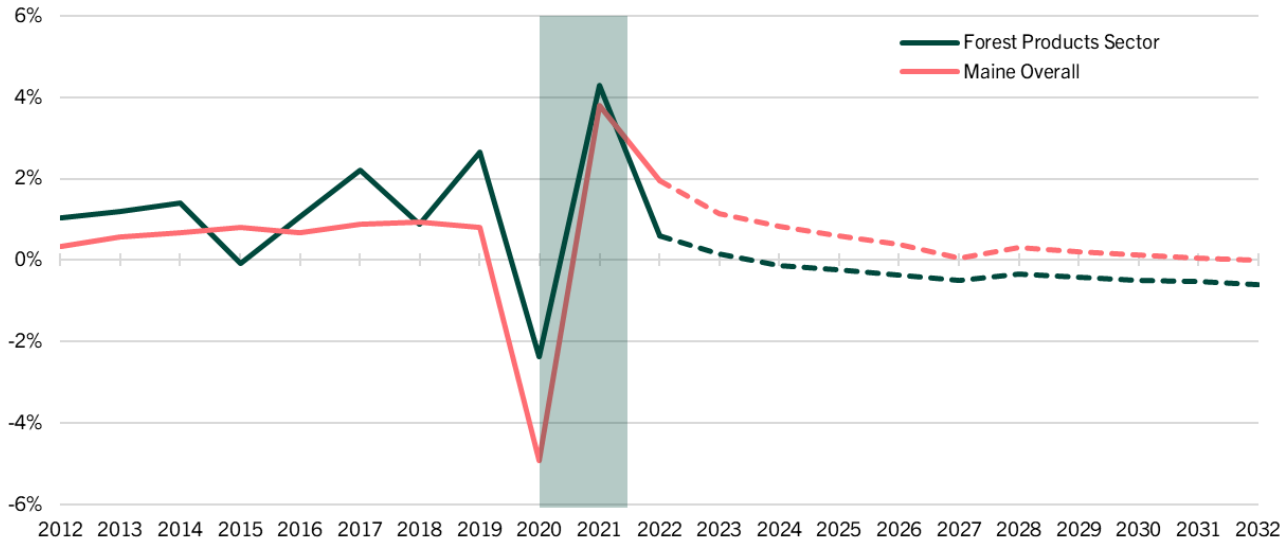
Job Growth

The graph below shows the forest products sector's growth compared to the overall economy of Maine. Over the past 10 years, the FPS grew by 13% (compared to 6% for the overall economy), adding approximately 2,081 jobs. *Heavy & Tractor-Trailer Truck Drivers* saw the fastest growth in the last ten years, adding 1,691 jobs. Other largest growth target occupations include *Bus & Truck Mechanics and Diesel Engine Specialists*, *Mobile Heavy Equipment Mechanics*, and *CNC Tool Operators*. These occupations all have relatively high wages.

Before the COVID-19 pandemic, the forest products sector tended to grow at a faster rate annually compared to the Maine economy overall. During the pandemic, the forest products sector was less severely impacted, declining 2% compared to -5% in the overall economy. While job growth in the forest products sector rebounded by 2021, it is projected to dip below pre-pandemic levels by 2024.

In the next ten years, the forest products sector is projected to contract by 3% (compared to +4% growth in Maine's overall economy), losing an estimated 655 jobs. The largest declines are expected among *Logging Equipment Operators* (-247 jobs), *Heavy and Tractor-Trailer Drivers* (-233 jobs), and *Mobile Heavy Equipment Mechanics, Except Engines* (-120 jobs).

Historic and Projected Job Growth, Year-Over-Year



Source: Lightcast 2023.2 datarun
Note: Shaded area represents the COVID-19 epidemic

Economy-Wide Demand for Target Occupations

The table represents the total demand for the target occupations across the economy, for which the FPS is only one source of demand. For example, although about 6.8% of *Chemical Engineers* are employed within the FPS, they are more likely to be employed in other industries such as pharmaceutical manufacturing or scientific research.

While the target occupations are expected to contract over the next ten years, the projected average annual openings (which include job openings due primarily to job growth and retirement) suggest there will be strong demand for these workers. Overall, the forest products sector is expected to have an **average of nearly 21,700 job openings across the full FPS per year from 2022-2032**. Among the target occupations, there are projected to be approximately 2,221 openings per year, particularly for *Heavy and Tractor-Trailer Truck Drivers* (with an annual average of 1,370 jobs), *Logging Equipment Operators* (211), *Bus and Truck Mechanics and Diesel Engine Specialists* (188), and *Mobile Heavy Equipment Mechanics* (126), *and Computer Numerically Controlled Tool Operators* (105). Demand for these occupations is being driven by the impending retirement of Baby Boomers, with between 20% to 40% of the workforce in these occupations projected to retire in the next 10 years.

DEMAND FOR TARGET OCCUPATIONS ACROSS MAINE'S ECONOMY, 2022

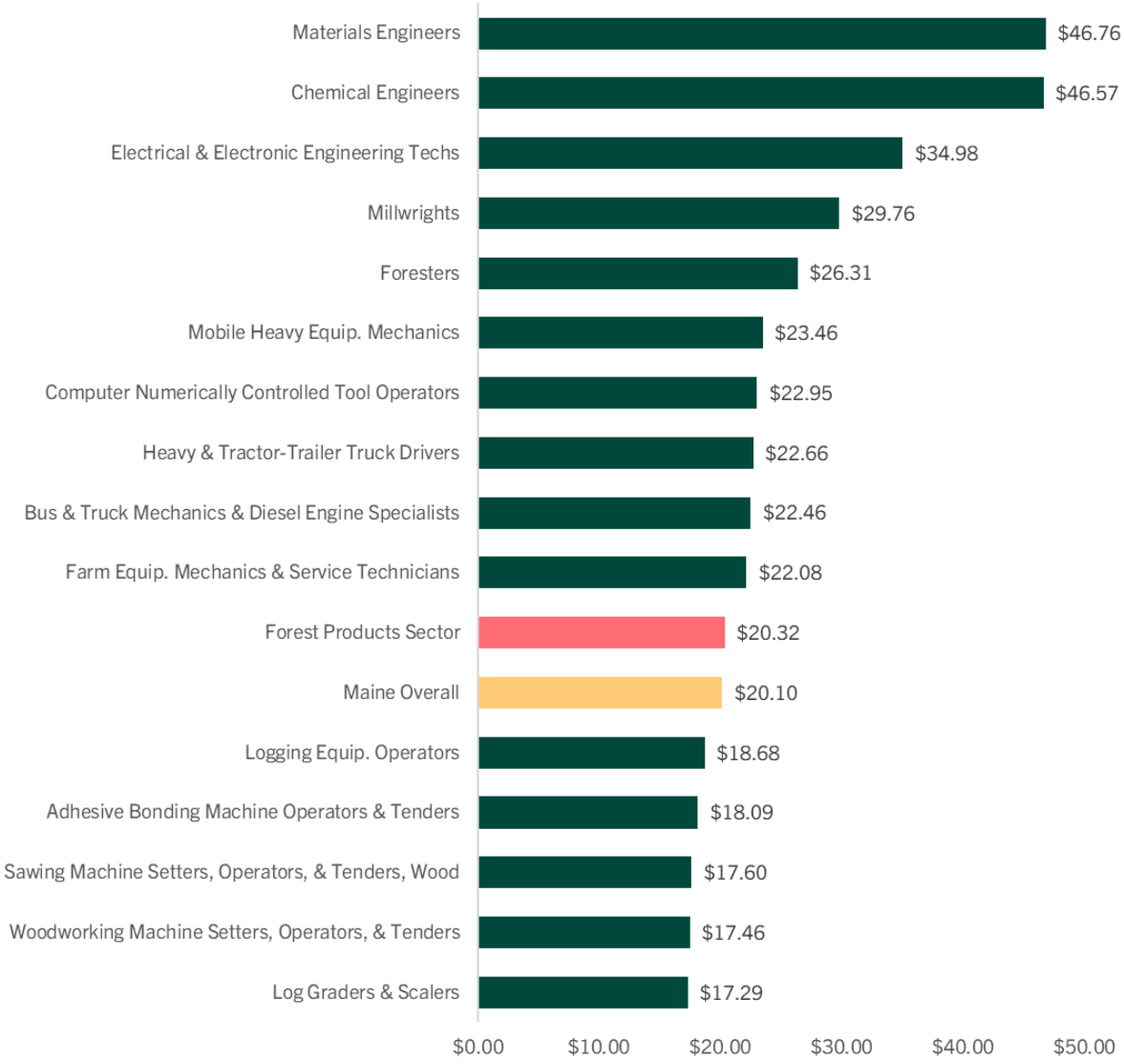
SOC	Occupation	Jobs	Projected Growth		Avg. Annual Openings	Retiring in the Near-Term
			Change	Rate		
53-3032	Heavy and Tractor-Trailer Truck Drivers	11,276	(229)	(2%)	1,370	36%
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,987	(38)	(2%)	188	28%
45-4022	Logging Equipment Operators	1,463	(339)	(23%)	211	32%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	1,232	19	2%	126	30%
51-9161	Computer Numerically Controlled Tool Operators	961	(31)	(3%)	105	25%
51-7041	Sawing Machine Setters, Operators, and Tenders, Wood	500	(35)	(7%)	58	23%
51-7042	Woodworking Machine Setters, Operators, and Tenders, Except Sawing	488	(53)	(11%)	47	20%
17-3023	Electrical and Electronic Engineering Technologists and Technicians	366	25	7%	44	32%
49-9044	Millwrights	291	(22)	(8%)	25	39%
49-3041	Farm Equipment Mechanics and Service Technicians	158	25	16%	19	33%
17-2131	Materials Engineers	83	15	18%	8	28%
51-9191	Adhesive Bonding Machine Operators and Tenders	64	(3)	(5%)	8	31%
17-2041	Chemical Engineers	62	15	25%	6	26%
19-1032	Foresters	61	(1)	(2%)	6	33%
45-4023	Log Graders and Scalers	7	(3)	(133%)	1	26%

Source: Lightcast 2023.2; average annual openings and retirement projections for 2022 - 2023

Median Wages

Ten out of fifteen of the target occupations for the forest products sector have higher median hourly earnings than the state average. Note that these wages are for the occupation across the entire economy (not just forest products). Wages among these occupations trend upwards with higher-skill occupations, with *Materials Engineers* and *Chemical Engineers* having the highest hourly earnings; however, *Foresters* proves an exception, requiring a high level of job preparation (a Bachelor's degree), but earning less than *Electrical & Electronic Engineering Techs* (medium job preparation) and *Millwrights* (some job preparation).

Median Hourly Earnings for Top Forest Products Occupations, 2022



Source: Lightcast 2023.2

Demographics

The following pages display graphs for the top occupations by age, sex, and race.

Age

The top forest products occupations are slightly older than Maine's overall workforce, with 66% of its labor force under the age of 55 compared to 72% for all occupations. While the share of workers aged 25-55 is roughly equal in the sector compared to the overall economy, there are about half as many workers under the age of 25. For some occupations, this may be due to the educational requirements for these jobs.

- *Millwrights* have the highest share of workers aged 55 and over (39%).
- Conversely, *Woodworking Machine and Sawing Machine Setters, Operators, and Tenders* have the lowest share of workers aged 55+. These tend to be relatively low-wage, low-skill jobs compared to other occupations in the sector.

Sex

The targeted occupations in the forest products sector are predominantly male with 86% of workers being male. This is counter to the overall makeup of the workforce, which is 49% female.

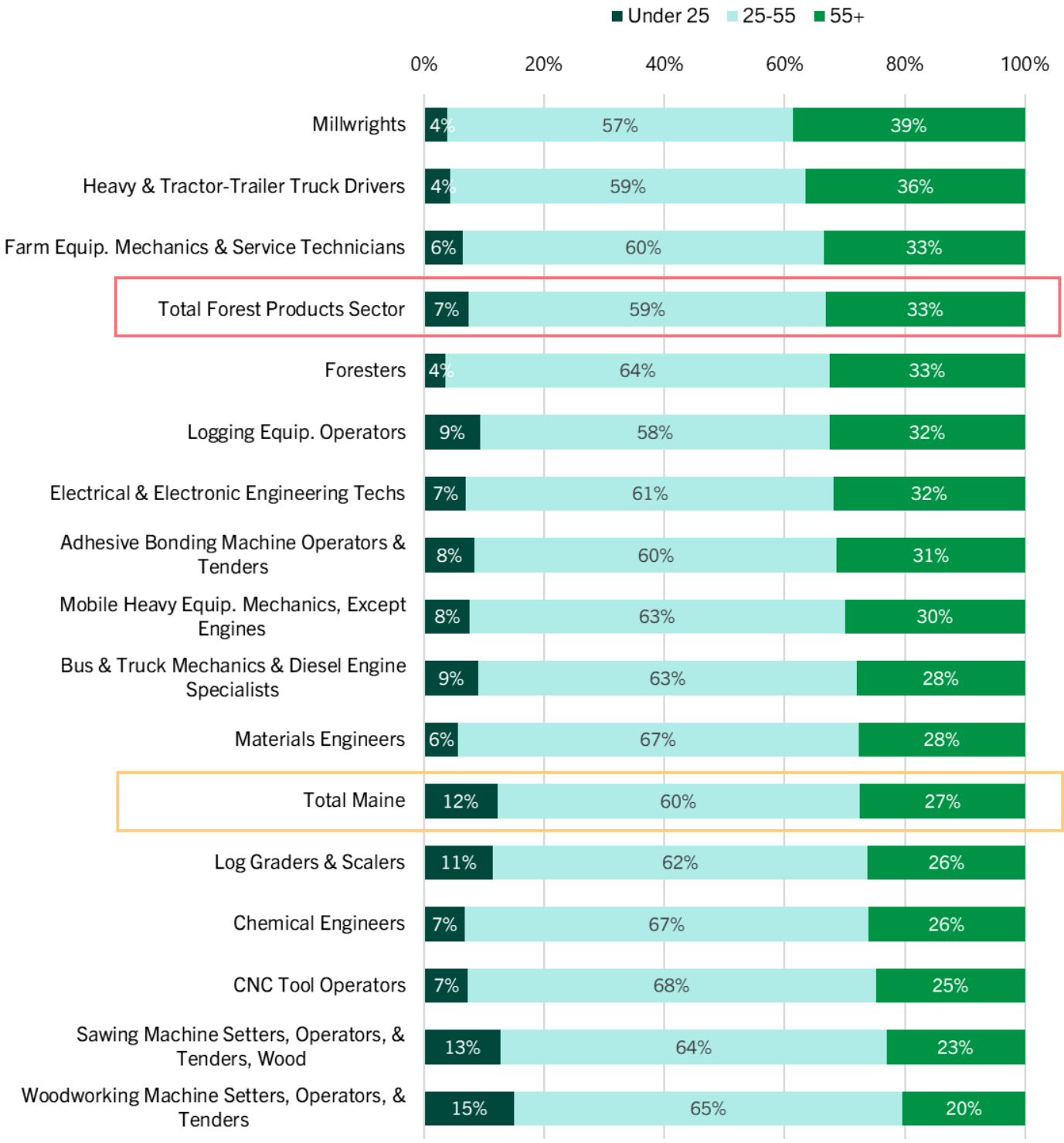
- Four occupations have over 99% of workers that are male: *Millwrights, Farm Equipment Mechanics & Service Technicians, Mobile Heavy Equipment Mechanics, and Bus & Truck Mechanics & Diesel Engine Specialists*. Mechanic and technician occupations tend to be the most male-dominated.
- *Adhesive Bonding Machine Operators & Tenders* are the most likely to be female, with a 38% share of the workforce. The three highest-wage occupations, *Materials Engineers, Chemical Engineers, Electrical & Electronic Engineering Techs*, also have higher shares of female workers compared to the industry overall.

Race

The top forest products occupations are predominantly white, with white employees making up 90% or more of the top occupations' demographics. The forest products workforce overall is approximately 94% white, compared to 89% for Maine's total workforce.

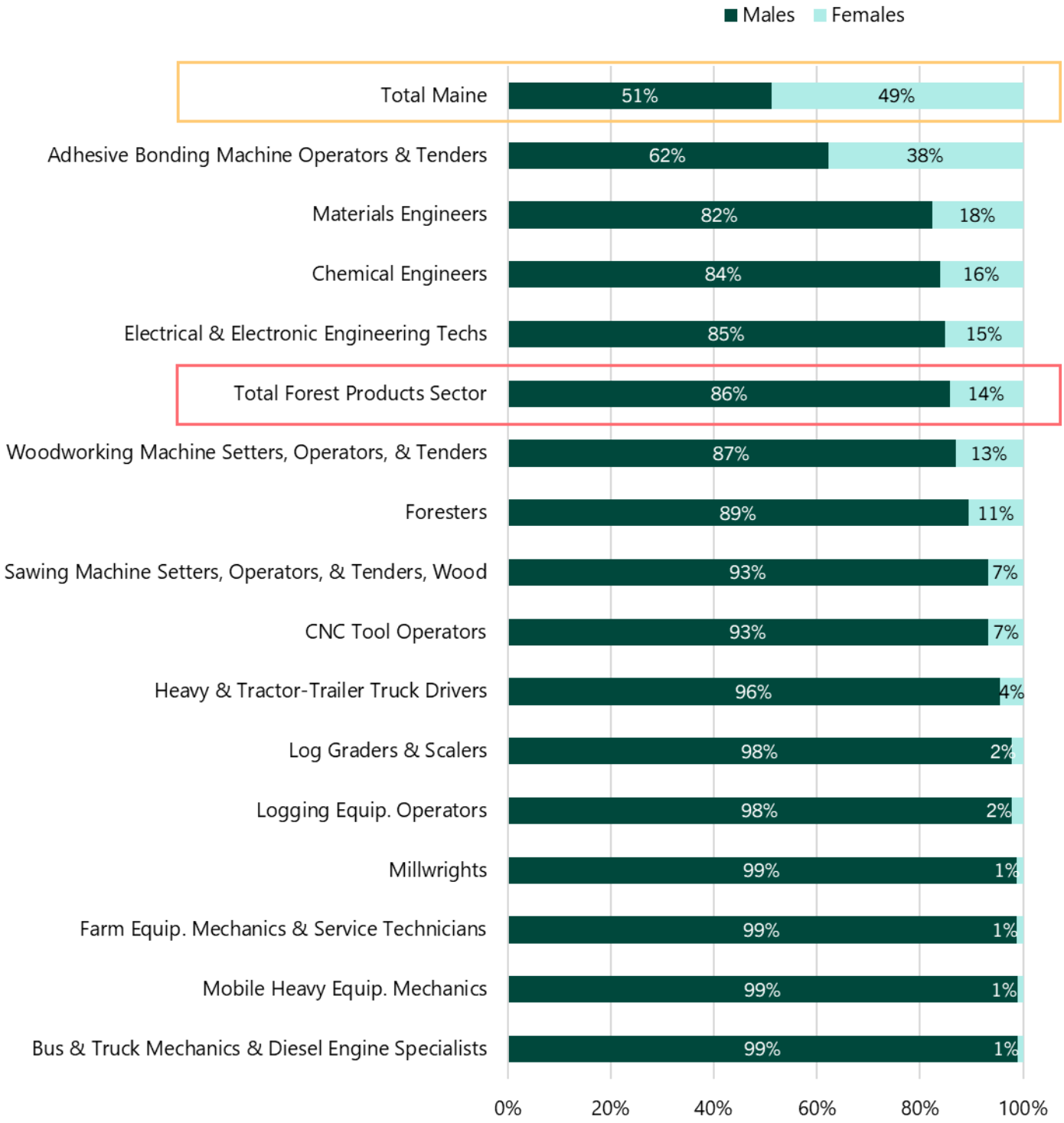
- *Millwrights* and *Foresters* are the least diverse of the top occupations, with about 98% and 99% of their workforce being white, respectively.
- *Heavy and Tractor-Trailer Truck Drivers* are the most diverse of the forest products occupations, with a similar share of white workers (88%) as the state, with 4% Black and African American, 4% Hispanic or Latino, and 4% Multiracial. This is a relatively higher-wage occupation.
- Other higher-wage occupations such as *Electrical and Electronics Engineering Techs*, *Chemical Engineers*, and *Materials Engineers* are among the occupations that are slightly more diverse than the forest products sector overall.

Age Demographics for Target Forest Products Occupations, 2022



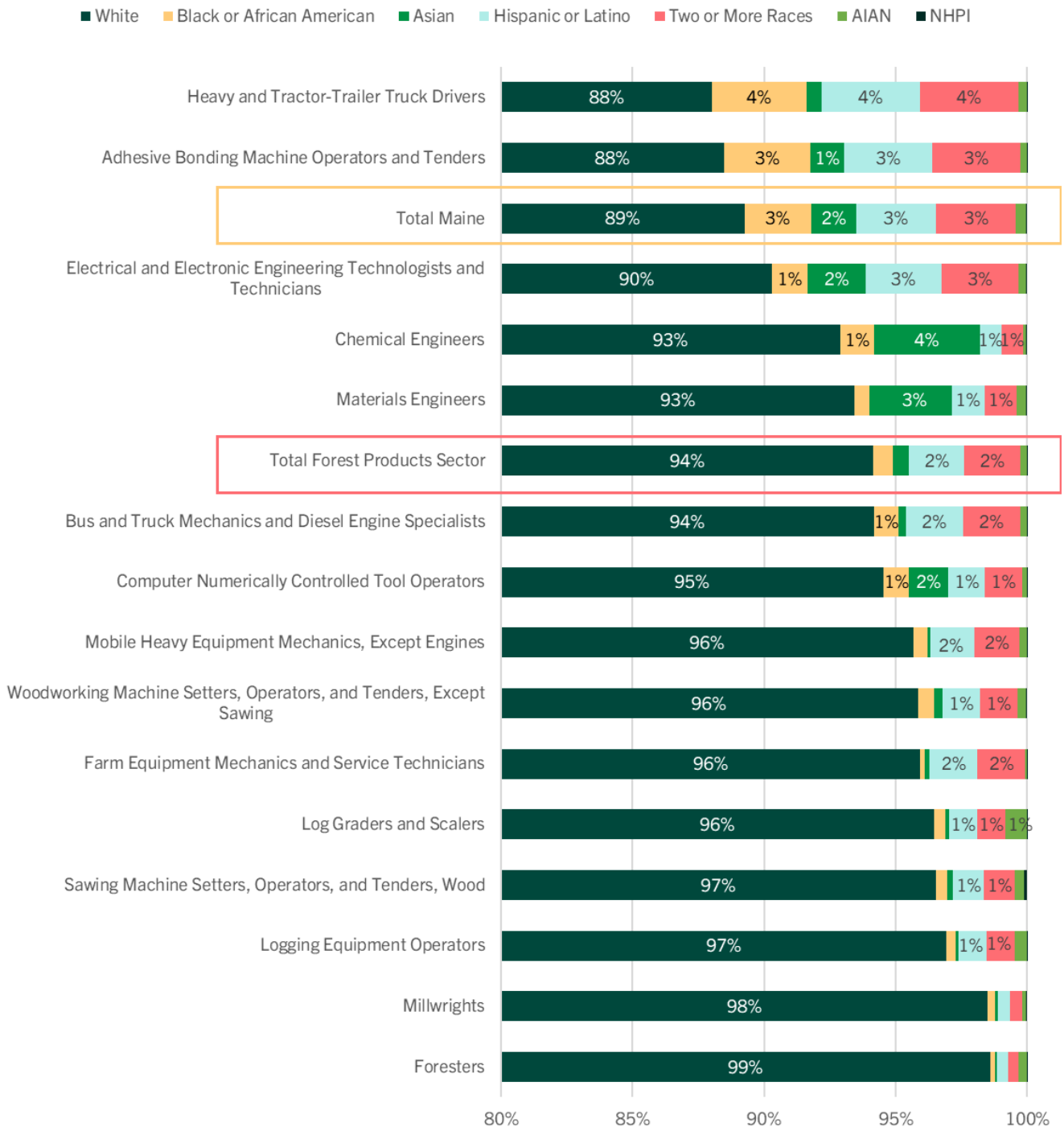
Source: Lightcast 2023.2

Sex Demographics for Target Forest Products Occupations, 2022



Source: Lightcast 2023.2 datarun
Note: Data is unavailable for sexes other than male and female.

Race Demographics for Target Forest Products Occupations



Source: Lightcast 2023.2 datarun
Notes: AIAN stands for American Indian or Alaska Native. NHPI stands for Native Hawaiian Pacific Islander
The Census defines "Hispanic or Latino" as a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.

Engagement Summary

Overview

To engage with a wide range of players involved in the Forest Products Sector, the project team convened focus groups, dispersed surveys, attended a dinner, and held interviews to hear from students, employers, community developers and more. Below is a summary of the impact of the stakeholder engagement phase.

In-Person and Virtual Engagement

Total: 139 stakeholders engaged

- 26 attendees across four focus groups
- 20 individual interviews with Maine stakeholders
- 28 attendees at an FPS industry dinner with employers
- 16 employer responses to the Maine's Forest Opportunity Roadmap Survey
  - Goal: Learn directly from employers about occupation-specific hiring requirements such as education, technical skills, and behavioral skills.
- 49 responses from high school students in rural Maine to the Maine Forest Collaborative Student Survey
  - Goal: Learn directly from students about the perceptions of the forest products sector and the methods and type of information that will help them build career awareness
- Stakeholders also included the FOR/Maine DOL Grant Committee, which provided ongoing feedback throughout the project.

Employer Takeaways

Employers expressed the following approaches and needs around expanding the FPS talent pipeline:

Talent Attraction

- Clear up misguided information that makes younger people think there is no future in the industry.
- Increase affordable housing.
- Provide affordable childcare.
- Engage returning Mainers.
- Work with temp agencies.
- Increase outreach to those formerly incarcerated.
- Reduce barriers to entry – for all job seekers, including underserved populations.

Talent Development

- Build awareness of the industry.
- Create pathways with specific opportunities within occupations.
- Expand training programs to fill gaps and provide greater access.

Talent Retention

- Increase support for mental health.
- Provide affordable childcare.
- Encourage a healthy work-life balance.
- Increase salary by even very small amounts.

Focus Group Takeaways

Focus Group participants expressed the following approaches and needs around expanding the FPS talent pipeline:

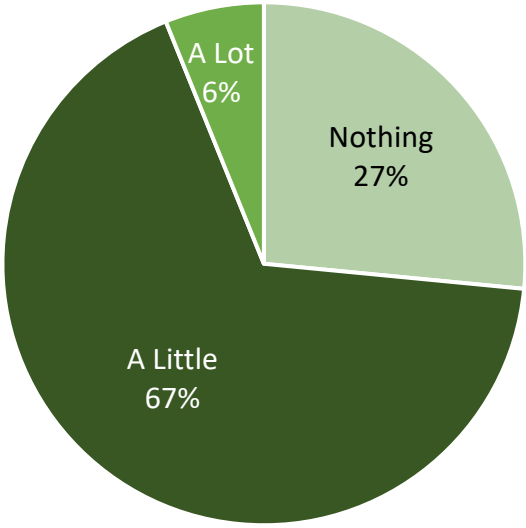
- FPS is viewed as an uncertain, dying industry with mill closures; heavy, hard, dirty work; long hours; downtime due to seasonality; lack of benefits; and too much travel
- Overall lack of public knowledge and communication regarding opportunities and pathways
- K-12 focuses on college, rather than available jobs. There is a lack of knowledge among educators and counselors and pressure to meet educational requirements that limits career exposure due to competition for focus and time
- FPS jobs are attractive to certain types of people: outdoorsy, hands-on, team players; these types of workers tend not to want classroom training
- There is significant demand for CDLs with an opportunity for cross-training to combat seasonality
- There is a disconnect between employers and workers regarding what workers want, such as childcare, transportation, flexibility, affordable housing

Maine Forest Collaborative Student Survey

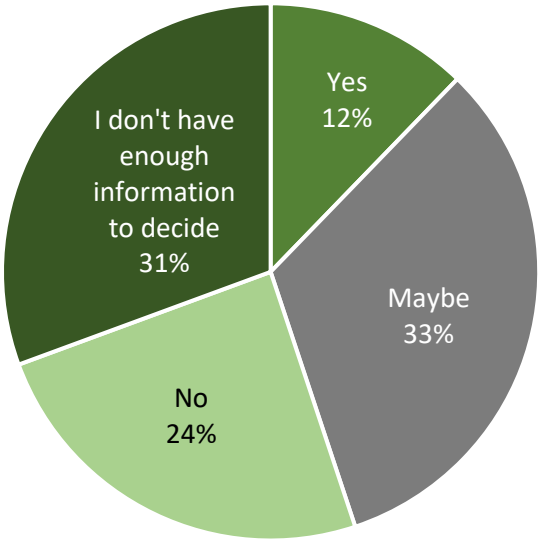
Through the Maine Forest Collaborate Student Survey, students expressed the following approaches and needs around expanding the FPS talent pipeline:

- Students want information about jobs and salaries available, job difficulty, the impacts and goals of FPS, and its impacts on wildlife
- Some students believe that FPS jobs would make good money, allow them to stay in Maine, and reward hard workers
- Other students are not interested in FPS jobs and believe that they are boring and do not pay well
- Most students wrote that they would like more information about FPS jobs before making any decision

How much do you know about the forest products industry?



Would you consider a career in the forest products industry?



Occupation Profiles and Career Pathways

About the Occupation Profiles and Career Pathways

One of the most important aspects of expanding the FPS talent pipeline is sharing consistent information on the type of career options that are available. Workers need to be able to see themselves in the field and have confidence that their investment in FPS training, education, and career experience, will yield a stable job. The Occupation Profiles and Career Pathways in this next section are a starting point for distributing information on FPS opportunities.

The Occupation Profiles provide an overview of some of the most in-demand FPS occupations. They intend to serve as a reference point for learners, guidance and career counselors, and other service providers to educate prospective workers on the characteristics of FPS jobs.

Below are some considerations for those referencing the Occupation Profiles:

- Career pathways are variable. Not all occupations have linear career pathways.
- Education is a sufficient onramp into some FPS occupations, but others require on-the-job training.
- Career pathways change based on if an employee pursues a specialized or management track.

To show the natural relationships between similar FPS occupations and address the non-linear nature of career progression, the profiles consolidate in-demand occupations into seven groups of related occupations: **Engineering Workers**, **Foresters**, **Heavy and Tractor-Trailer Truck Drivers**, **Large Equipment Mechanics**, **Logging Workers**, **Millwrights, and Production Workers**.

Each profile begins with an Executive Summary that outlines high-level labor market information, typical entry points for the occupation(s) – including College & University, Career & Technical Education, and Experience in Related Occupations – and a snapshot of career progression based on specialized, management, or related fields tracks. This approach reflects the multiple ways in which a worker can access, grow, and evolve within the FPS. Educators and service providers might consider printing or sharing this Executive Summary as a standalone document to give prospective workers an at-a-glance perspective on the field.

Next, the Occupation Profiles delve into skills, wages, demographics, and other detailed labor market information on the FPS occupation(s). The profile sets expectations about what workers can anticipate on the job, as well as more specifics on what career progression can look like. At this point, the profile also highlights education and training programs in Maine that students, current workers, and guidance and career counselors can you to provide concrete guidance on the next step to entering the FPS workforce.

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ENGINEERING WORKERS

Develop and maintain equipment and processes that facilitate the transformation of raw forest products into value-added goods and materials ranging from wood pellets, construction lumber, to finished products like cabinets and furniture. According to employers, the most in-demand engineering occupations within the sector include:

- **Chemical Engineers**
- **Materials Engineers**
- **Electrical and Electronic Engineering Technologists and Technicians**

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ENGINEERING WORKERS

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine, across all sectors (average 2022 -32)	Median Hourly Wages across all sectors (2022)
511	58	$36.58

Typical Entry Points

An Associate's or Bachelor's degree is typically required for this occupation. Summer internships or cooperative learning is often required for graduation.

Career & Tech. Education

- Electrical Tech
- Pre-Engineering
- Electronics & Adv. Mfg.
- Precision Machining Tech

Associate's or Bachelor's Degree

- Chemical Engineering
- Materials Science Engineering
- Engineering Technology

Experience in Related Occupations

- Industrial Production Managers
- Chemical Technicians
- Electricians

Engineering Tech / Intern

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards becoming a licensed engineer.

Licensed Engineers

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need several years of experience and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Chemical
- Materials
- Process
- Design
- Quality

Management

- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training

- Project Management
- Product Management

Education and Training Providers

The following institutions provide training for *Engineering Workers:*

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications	Length
Career & Technical Education Programs	Biddeford Regional Center of Technology	Biddeford	Electrical Technology	State of Maine Journeyman's Electrician's License	1-2 years
	Capital Area Technical Center	Augusta	Electrical Technology	OSHA-10; Journeyman License Classroom & Working Hours; National Association of Home Builders Certification; Maine State Electrician Helper License; NOCTI	
	Foster CTE Center	Farmington	Pre-Engineering	OSHA-10; CPR/First Aid	
	Lewiston Regional Technical Center	Lewiston	Precision Machining Technology	None listed	
				OSHA-10; Journeyman License Classroom Hours	
				None listed	
	Presque Isle Tech Center	Presque Isle	Engineering Technology	None listed	
	Mid-Coast School of Technology	Rockland	Pre-Engineering	None listed	
	Somerset Career & Technical Center	Skowhegan	Pre-Engineering	None listed	
	United Technologies Center	Bangor	Electronics & Advanced Manufacturing	OSHA-10; CompTIA A+	
Community College	Eastern Maine Community College	Bangor	Electrical & Automation Technology	Associate's Degree	1 - 2 years
	Washington County Community College	Calais	Electromechanical Instrumentation Technology	Associate's Degree	
	Kennebec Valley Community College	Fairfield	Electrical Technology	Certificate	
				Associate's Degree	
	Central Maine Community College	Auburn	Electromechanical Technology	Certificate	
				Associate's Degree	
	York County Community College	Wells	Electrician Technology	Certificate	
	Southern Maine Community College	South Portland	Electrical Engineering	Certificate	
				Associate's Degree	
University	University of Maine	Orono	Chemical Engineering	Undergraduate Certificate	4+ years
				Bachelor's Degree	
				Master's Degree	
				Ph.D.	
		Machias	Engineering Pathways	1+3 Engineering Pathways	
		Farmington	Engineering Pathways	1+3 Engineering Pathways	
		Augusta	Engineering Pathways	1+3 Engineering Pathways	

Engineering Workers

FOR/MAINE

Typical Entry Points

An Associate's or Bachelor's degree is typically required for this occupation. Summer internships or cooperative learning is often required for graduation. Examples of entry points include (but are not limited to):

Career & Tech. Education

- Electrical Tech
- Pre-Engineering
- Electronics & Adv. Mfg.
- Precision Machining Tech

Associate's or Bachelor's Degree

- Chemical Engineering
- Materials Science Engineering
- Engineering Technology

Experience in Related Occupations

- Industrial Production Managers
- Chemical Technicians
- Electricians

ENGINEERING TECH / INTERN

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards becoming a licensed engineer.

Behavioral Skills

- Willingness to learn
- Work ethic
- Problem Solving
- Critical Thinking

Technical Skills

- Basic electrical experience and knowledge
- Computer skills
- Experience with analytical and scientific software
- CAD experience

Avg. Hourly Salary Range: $22.94 - $58.45

ENGINEERS

With a Bachelor's degree and 4-8 years of experience, workers can become certified by the State of Maine as a Licensed Engineer. From there, career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 5+ years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Behavioral Skills

- Work ethic
- Effective communication skills
- Ability to effectively manage others
- Ability to work in remote or disconnected areas

Technical Skills

- Industrial code experience
- Network understanding
- Professional Licensure

Specialization

- Chemical
- Materials
- Industrial
- Process
- Design
- Quality

Management

- Team Lead
- Supervisor
- Manager
- Area/District Manager

Related Fields

- Project Management

CHEMICAL ENGINEERS

17-2041

Design chemical plant equipment and devise processes for manufacturing chemicals and products, such as gasoline, synthetic rubber, plastics, detergents, cement, paper, and pulp, by applying principles and technology of chemistry, physics, and engineering.

Skills

- Science
- Complex Problem Solving
- Critical Thinking
- Judgment and Decision Making
- Mathematics

Typical Work Activities

- Processing Information
- Analyzing Data or Information
- Getting Information
- Working with Computers
- Making Decisions and Solving Problems

Typical Work Context

- Email
- Face-to-Face Discussions
- Telephone
- Work with Group or Team
- Typical Work Week Longer than 40 Hours

For more information see Onetonline.org

Chemical Engineers

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **62**
- Projected Growth:
  - **25% in Maine**
  - **13% in the US**
- Hires (2022): **21**
- Near-Term Retirements: **16 (25%)**
- Average Annual Openings: **6***
- Graduates in Maine (2021): **109**

**Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation*

Job Preparation Needed: High

Typical requirements for entry:

- Bachelor's degree
- No on-the-job training
- No work experience required

Workforce Demographics

- 26% of workers are over the age of 55
- 7% BIPOC workers
- 16% female workers
- National education attainment:
  - 59% Bachelor's degree
  - 22% Master's degree
  - 7% Doctoral or professional degree

Jobs Postings for Chemical Engineers in Maine

Top Job Titles: Process Engineers | Process Control Engineers | Chemical Engineers

Specialized Skills:

- Process Engineering
- Process Improvement
- New Product Development
- Statistical Process Controls

Qualifications:

- Professional Engineer (PE) License
- Six Sigma Green Belt
- Lean Manufacturing Certification

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Chemical Engineers

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $46.57

Top Compatible Occupations

The following occupations have comparable skills to *Chemical Engineers* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Nuclear Engineers
- Materials Engineers
- Water/Wastewater Engineers
- Mining and Geological Engineers, Including Mining Safety Engineers
- Automotive Engineers

Source: Lightcast 2023.2

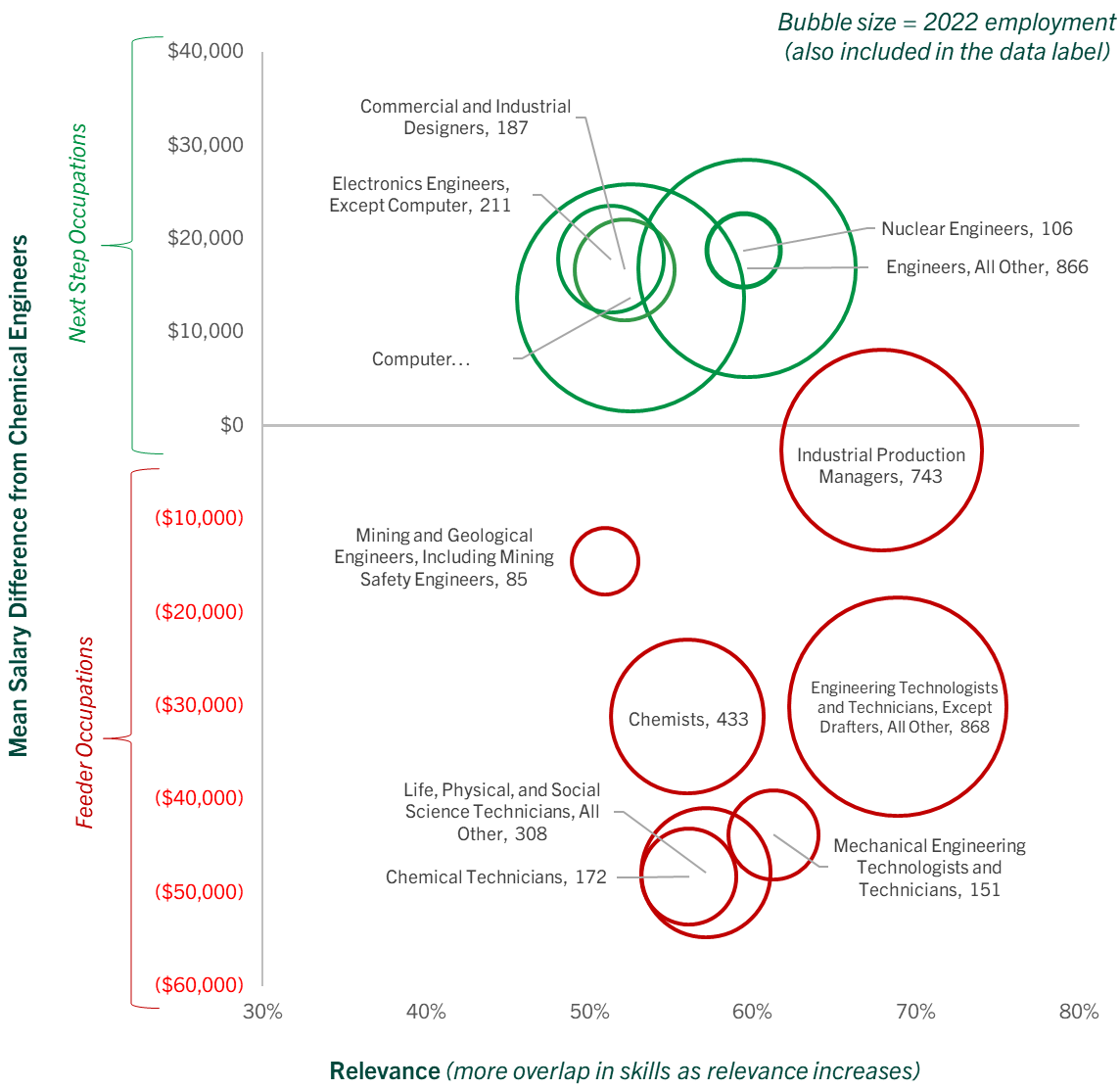
Chemical Engineers

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Chemical Engineers* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Chemical Engineers*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Chemical Engineers*; therefore, becoming a *Chemical Engineers* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Chemical Engineers* and present opportunities for advancement with minimal upskilling.



MATERIALS ENGINEERS

17-2131

Evaluate materials and develop machinery and processes to manufacture materials for use in products that must meet specialized design and performance specifications. Develop new uses for known materials. Includes those engineers working with composite materials or specializing in one type of material, such as graphite, metal and metal alloys, ceramics and glass, plastics and polymers, and naturally occurring materials. Includes metallurgists and metallurgical engineers, ceramic engineers, and welding engineers.

Skills

- Active Listening
- Complex Problem Solving
- Reading Comprehension
- Science
- Critical Thinking

Typical Work Activities

- Analyzing Data or Information
- Making Decisions and Solving Problems
- Getting Information
- Updating and Using Relevant Knowledge
- Identifying Objects, Actions, and Events

Typical Work Context

- Email
- Face-to-Face Discussions
- Indoors, Environmentally Controlled
- Work with Group or Team
- Wear Common Protective or Safety Equipment such as Safety Shoes, Glasses, Gloves, Hearing Protection, or Hard Hats

For more information see Onetonline.org

Materials Engineers

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **83**
- Projected Growth:
  - **18% in Maine**
  - **11% in the US**
- Hires (2022): **34**
- Near-Term Retirements: **23 (28%)**
- Average Annual Openings: **8***
- Graduates in Maine (2021): **50**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: High

Typical requirements for entry:

- Bachelor's degree
- No on-the-job training
- No work experience required

Workforce Demographics

- 28% of workers are over the age of 55
- 7% BIPOC workers
- 18% female workers
- National education attainment:
  - 9% Associate's degree
  - 51% Bachelor's degree
  - 19% Master's degree

Jobs Postings for Materials Engineers in Maine

Top Job Titles: Engineers/Scientists | Plastics Engineers | Welding Engineers | Materials Engineers | Supervisory Chemists | Metallurgists

Specialized Skills:

- Physics
- Chemistry
- Project Management
- New Product Development
- Process Development

Qualifications:

- Engineer in Training
- Professional Engineer (PE) License

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Materials Engineers

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $46.76

Top Compatible Occupations

The following occupations have comparable skills to *Materials Engineers* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Materials Scientists
- Nuclear Engineers
- Microsystems Engineers
- Chemical Engineers
- Fuel Cell Engineers

Source: Lightcast 2023.2

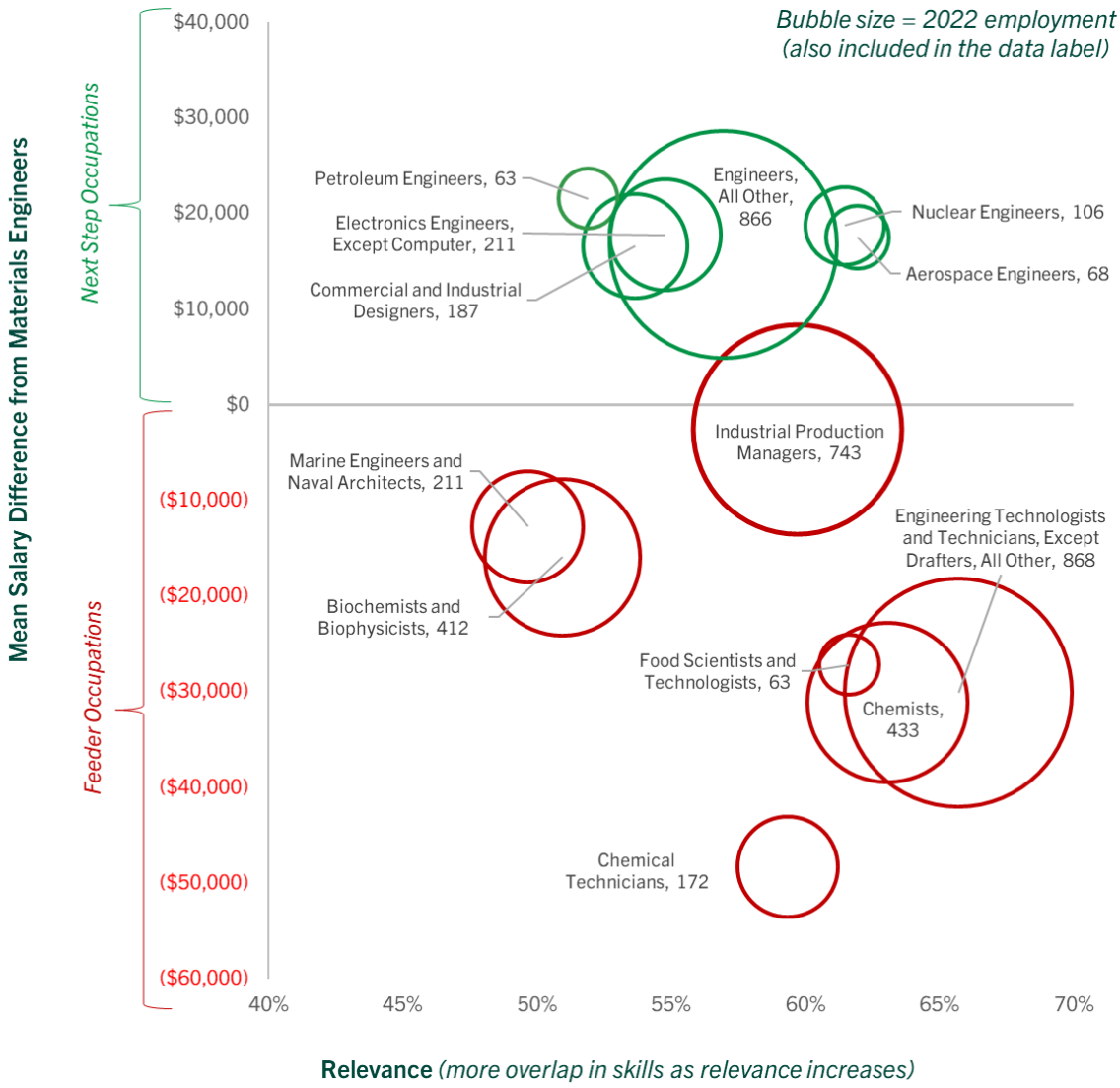
Materials Engineers

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Materials Engineers* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Materials Engineers*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Materials Engineers*; therefore, becoming a *Materials Engineers* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Materials Engineers* and present opportunities for advancement with minimal upskilling.



ELECTRICAL AND ELECTRONIC ENGINEERING TECHNOLOGISTS AND TECHNICIANS

17-3023

Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, adjust, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions.

Skills

- Critical Thinking
- Reading Comprehension
- Complex Problem Solving
- Active Listening
- Troubleshooting

Typical Work Activities

- Working with computers
- Making decisions & problem solving
- Getting information
- Communicating with supervisors, peers, or subordinates
- Evaluating information to determine compliance with standards

Typical Work Context

- Email
- Face-to-Face discussions
- Indoors, environmentally controlled
- Freedom to make decisions
- Important to be exact or accurate

For more information see Onetonline.org

Electrical and Electronic Engineering Techs

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **366**
- Projected Growth:
  - **7% in Maine**
  - **7% in the US**
- Hires (2022): **155**
- Near-Term Retirements: **116 (32%)**
- Average Annual Openings: **44***
- Graduates in Maine (2021): **92**

**Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation*

Job Preparation Needed: Medium

Typical requirements for entry:

- Associate's degree
- No on-the-job training
- No work experience required

Workforce Demographics

- 32% of workers are over the age of 55
- 9% BIPOC workers
- 15% female workers
- National education attainment:
  - 18% high school graduates
  - 33% some college, no degree
  - 30% Associate's degree

Job Postings for Electrical and Electronic Engineering Techs in Maine

Top Job Titles: Electromechanical Techs | Building Automation Techs | Maintenance Electricians | Fiber Optic Techs | Electronics Techs

Specialized Skills:

- Electronics
- Electrical Systems
- Electromechanics

Qualifications:

- Valid Driver's License

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Electrical and Electronic Engineering Techs

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $34.98

Top Compatible Occupations

The following occupations have comparable skills to *Electrical and Electronic Engineering Techs* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Photonics Techs
- Aerospace Engineering and Operations Technologists and Techs
- Mechanical Engineering Technologists and Techs
- Avionics Techs
- Nanotechnology Engineering Technologists and Techs

Source: Lightcast 2023.2

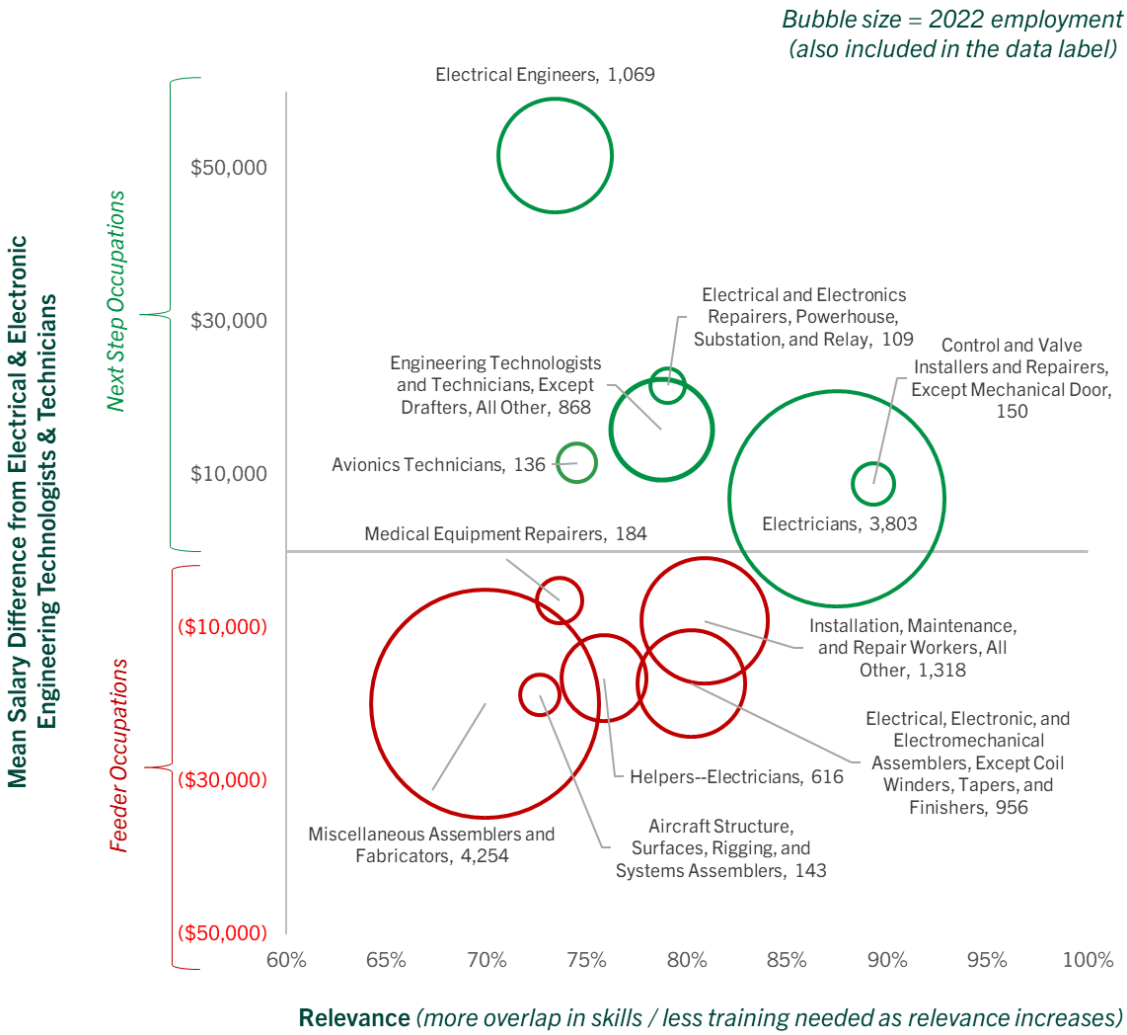
Electrical and Electronic Engineering Techs

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Electrical and Electronic Engineering Techs* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Electrical and Electronic Engineering Techs*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Electrical and Electronic Engineering Techs*; therefore, becoming an *Electrical and Electronic Engineering Tech* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

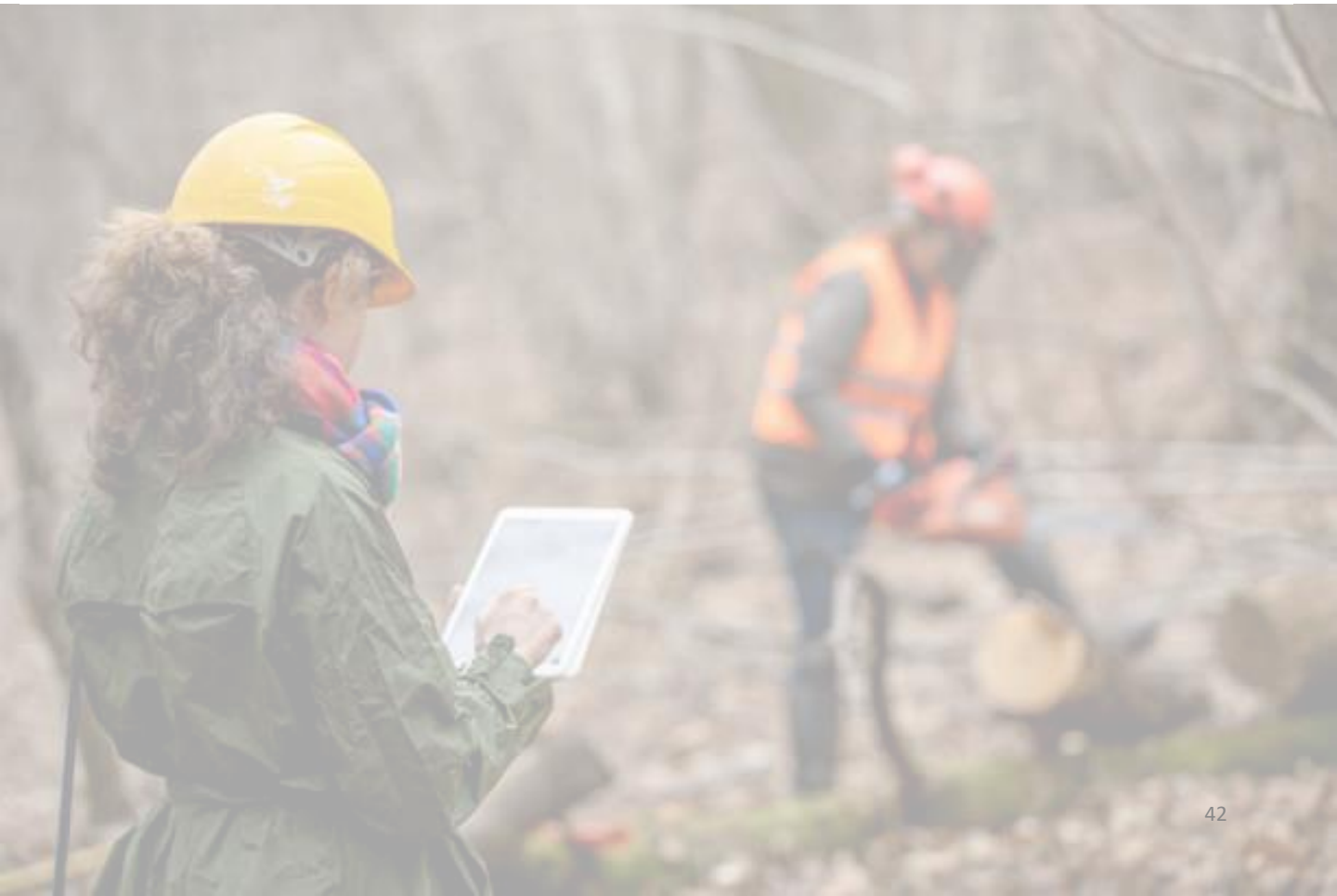
Next Step Occupations have higher wages than *Electrical and Electronic Engineering Techs* and present opportunities for advancement with minimal upskilling.



FOR/MAINE

FORESTERS

Foresters manage public and private forested lands for economic, recreational, and conservation purposes. Foresters may inventory the type, amount, and location of standing timber, appraise the timber's worth, negotiate the purchase, and draw up contracts for procurement. Foresters may determine how to conserve wildlife habitats, creek beds, water quality, and soil stability, and how to best comply with environmental regulations. Foresters may devise plans for planting and growing new trees, monitor trees for healthy growth, and determine optimal harvesting schedules.



FOR/MAINE

FORESTERS

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine, across all sectors (average 2022 -32)	Median Hourly Wages across all sectors (2022)
61	6	$26.31

Typical Entry Points

A Bachelor's degree is typically required, though Associates degree programs are also available. Summer internships or cooperative learning is often required for graduation.

Career & Tech. Education

- Forestry
- Wood Harvesting
- Natural Resource Management
- Agriscience

Associate's or Bachelor's Degree

- Forestry
- Forest Ecology
- Forest Resources
- Applied Forest Management

Experience in Related Occupations

- Conservation Scientists
- Forest & Conservation Workers/Technicians

Forester Tech / Intern

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards certification.

Licensed Forester & Career Progression

With 1 -2 years of field experience plus a Bachelor's degree, workers can become certified by the State of Maine as a Licensed forester. From there, career progression can take multiple forms depending on interests, prior experience, and skill attainment. To advance, workers need 5-7+ years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Planning
- Harvesting
- Silviculture
- Industrial
- Road Forestry
- Technical
- Outreach

Management

- Team Lead
- Supervisor
- Manager
- Area/District Manager

Related Fields

- Sales
- Procurement
- Marketing

FORESTERS

19-9032

Foresters manage public and private forested lands for economic, recreational, and conservation purposes. May inventory the type, amount, and location of standing timber, appraise the timber's worth, negotiate the purchase, and draw up contracts for procurement. May determine how to conserve wildlife habitats, creek bets, water quality, and soil stability, and how to best comply with environmental regulations. May devise plans for planting and growing new trees, monitor trees for healthy growth, and determine optimal harvesting schedules.

Skills

- Active Listening
- Complex Problem Solving
- Critical Thinking
- Reading Comprehension
- Speaking

Typical Work Activities

- Getting Information
- Identifying Objects, Actions, and Events
- Organizing, Planning, and Prioritizing Work
- Communicating with Supervisors, Peer, or Subordinates
- Documenting/Recording Information

Typical Work Context

- Email
- Face-to-face discussions
- Telephone
- Freedom to make decision
- Some freedom with structured vs. unstructured work

For more information see Onetonline.org

Foresters

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **61**
- Projected Growth:
  - **-2% in Maine**
  - **6% in the US**
- Hires (2022): **21**
- Near-Term Retirements: **20 (33%)**
- Average Annual Openings: **105***
- Graduates in Maine (2021): **37**

**Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation*

Job Preparation Needed: High

Typical requirements for entry:

- Bachelor's Degree
- No on-the-job training
- No work experience required

Workforce Demographics

- 33% of workers are over the age of 55
- 2% BIPOC workers
- 11% female workers
- National education attainment:
  - 76% Bachelor's degree
  - 19% Master's degree
  - 5% Doctoral or professional degree

Jobs Postings for Foresters in Maine

Top Job Titles: Forester | Professional Development Manager | Agricultural Specialist | Planning Manager | Harvesters

Specialized Skills:

- Forestry
- Forest Management
- Surveying
- Agriculture

Qualifications:

- Valid Driver's License
- State of Maine Licensed Forestry

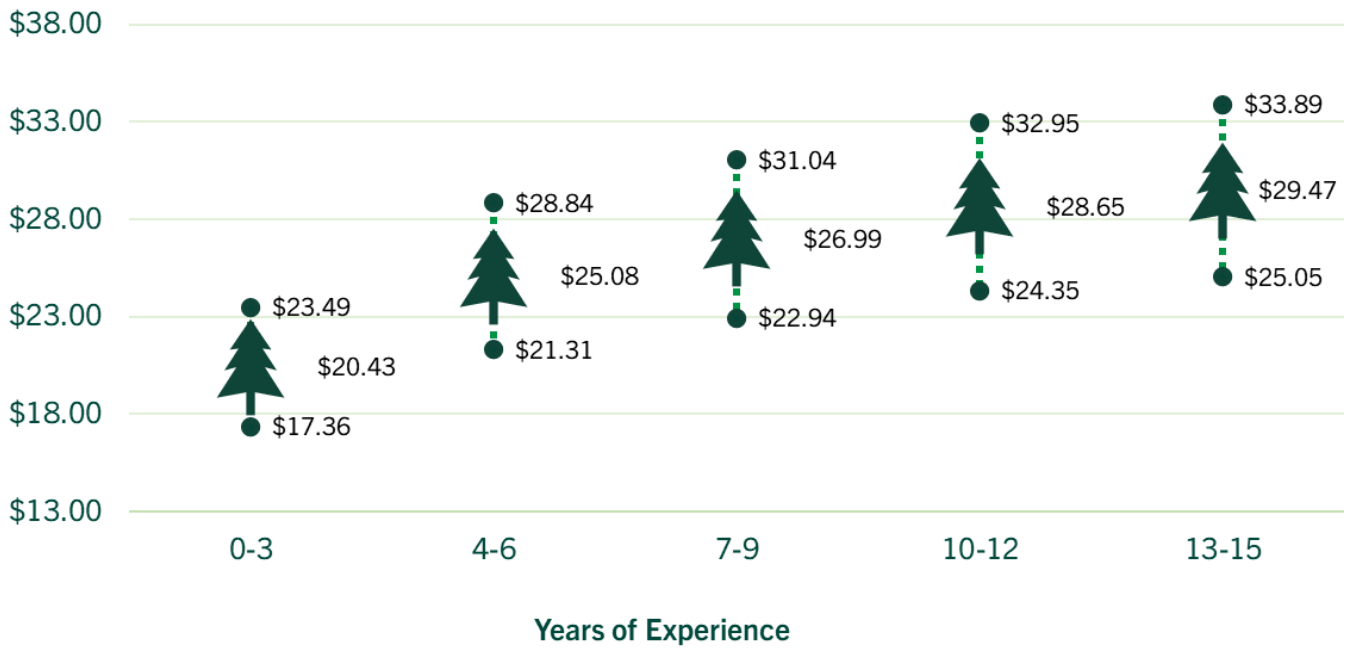
All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Foresters

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $26.31



Top Compatible Occupations

The following occupations have comparable skills to *Foresters* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Range Managers
- Zoologists and Wildlife Biologists
- Environmental Restoration Planners
- Conservation Scientists
- Energy Auditors

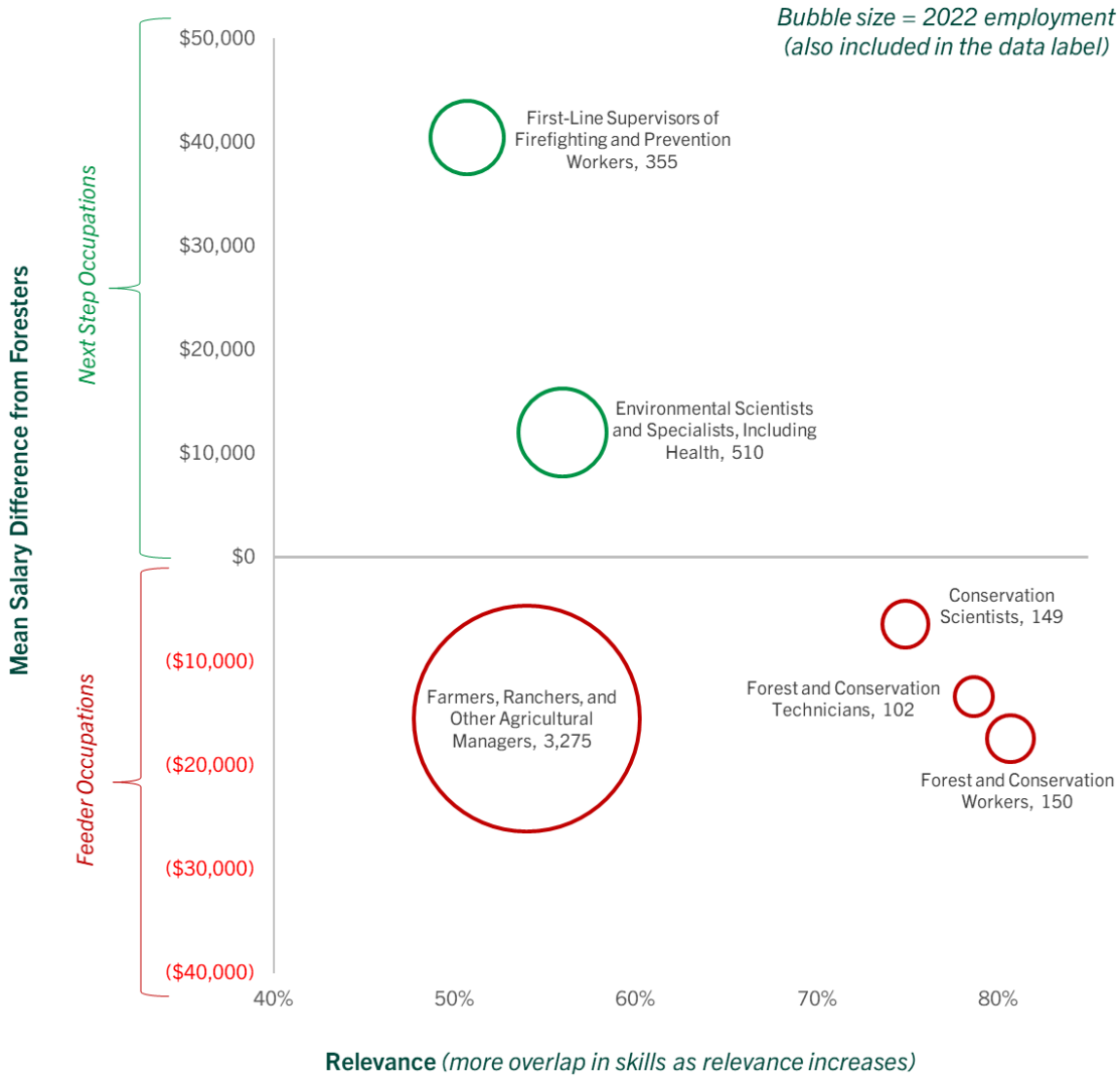
Source: Lightcast 2023.2

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Foresters* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Foresters*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Foresters*; therefore, becoming a *Forester* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Forester* and present opportunities for advancement with minimal upskilling.



Education and Training Providers

The following institutions provide training for *Foresters:*

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications	Length
Career & Technical Education Programs	Caribou Technology Center	Caibou	Agriculture & Natural Resources	None listed	1-2 years
	Foster CTE Center	Farming-ton	Forestry	Certified Logging Professional Apprentice; Professional Logging Contractor; National Tractor Safety; OSHA-10; First Aid/CPR	
	Presque Isle Tech Center	Presque Isle	AgriScience & Natural Resources	None listed	
	Region 9 School of Applied Technology	Mexico	Forestry/Wood Harvesting	First Aid/CPR; OSHA-10; Certified Logging Professional; CDL Class A and/or B	
	Region 2 School of Applied Technology	Houlton	Forestry/Natural Resources	Certified Logging Professional Apprentice; Wildland Firefighting Certification; First Aid/CPR	
	St. John Valley Technology Center	Frenchville	Forest Resource Management	None listed	
Colleges & Universities	University of Maine	Fort Kent	Applied Forest Management	Associate, Forestry Minor	2 years
		Oronoco	Forestry	Bachelor of Science	4 years
			Forest Ecology	Bachelor of Science	4 years
			Forestry	Master of Science	2 years
			Forest Resources	Master of Science or Ph.D.	2+ years
	Unity College	Unity	Wildland Fire Science and Management	Bachelor of Science	4 years

Foresters

FOR/MAINE

Typical Entry Points

A Bachelor's degree is typically required for this occupation, though Associates degree programs are also available. Summer internships or cooperative learning are often required for graduation. Examples of entry points include (but are not limited to):

Career & Tech. Education

- Forestry
- Wood Harvesting
- Natural Resource Management
- Agriscience

Associate's or Bachelor's Degree

- Forestry
- Forest Ecology
- Forest Resources
- Applied Forest Management

Experience in Related Occupations

- Conservation Scientists
- Forest & Conservation Workers/Technicians

FORESTER TECH / INTERN

Depending on the entry point, workers will likely be able to bring value to the role right away, while gaining the education and experience required to move towards certification.

Behavioral Skills

- Work ethic
- Willingness to learn
- Communication skills
- Ability to work in harsh conditions and remote or disconnected areas

Technical Skills

- GPS / GIS / In-woods navigation
- Familiarity with harvesting equipment
- Knowledge of tree species and environmental issues
- Surveying

FORESTERS

Avg. Hourly Salary Range: $17.36 - $33.89

With 1-2 years of field experience plus a Bachelor's degree, workers can become certified by the State of Maine as a Licensed forester. From there, career progression can take multiple forms depending on interests, prior experience, and skill attainment. To advance, workers need 5-7+ years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Behavioral Skills

- Work ethic
- Effective communication skills
- Ability to effectively manage others
- Ability to work in harsh conditions and remote or disconnected areas

Technical Skills

- Licensed Forester
- Knowledge of forest product markets
- Applied knowledge of tree species
- Ability to process regulatory permits and requirements
- Growth and yield modeling

Specialization

- Planning
- Harvesting
- Silviculture
- Industrial
- Road Forestry
- Technical
- Outreach

Management

- Team Lead
- Supervisor
- Manager
- Area/District Manager

Related Fields

- Sales
- Procurement
- Marketing

FOR/MAINE

HEAVY & TRACTOR-TRAILER TRUCK DRIVERS

Heavy and Tractor-Trailer Truck Driver in the Forest Products Sector drive tractor-trailer combination or a truck with a capacity of at least 26,001 pounds Gross Vehicle Weight (GVW) to pick up raw materials from the forests and deliver them to woodmills, sawmills, and other production facilities to be processed. Drivers may be required to load or unload trucks. Requires commercial driver's license.

FOR/MAINE

TRUCK DRIVERS

Current Jobs in Maine, across all sectors (2022)

11,297

Job Openings per Year in Maine, across all sectors (average 2022 -32)

1,362

Median Hourly Wages across all sectors (2022)

$22.27

Typical Entry Points

Workers are required to pursue a postsecondary training to gain a Commercial Driver's License and receive short-term on-the-job training. There are many training programs available to prepare for this licensure.

Short-Term Training

- Commercial Drivers License
- Large Equipment and Maintenance and Operation

Experience in Related Occupations

- Heavy Equipment Operator
- Log Truck Driver
- Earth Drillers
- Bus Drivers

Professional Certifications

- CDL A
- CDL B

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. Typically, after about 2 years of experience workers may be able to advance by demonstrating leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Crane Operator
- Self-loading
- Off-road

Management

- Team Lead
- Supervisor
- Manager

Cross-Training

- Logistics
- Production
- Mechanics

HEAVY & TRACTOR-TRAILER TRUCK DRIVERS

53-3032

Drive tractor-trailer combination or a truck with a capacity of at least 26,001 pounds Gross Vehicle Weight (GVW). May be required to unload truck. Requires commercial drivers' license. Includes tow truck drivers.

Skills

- Operation and Control
- Operations Monitoring
- Monitoring
- Critical Thinking
- Reading Comprehension

Typical Work Activities

- Operating Vehicles, Mechanized Devices, or Equipment
- Inspecting Equipment, Structures, or Materials
- Getting Information
- Identifying Objects, Actions, and Events
- Monitoring Processes, Materials, or Surroundings

Typical Work Context

- In an enclosed vehicle or equipment
- Outdoors, exposed to weather
- Frequent decision making
- Duration of typical work week is more than 40 hours
- Impact of decisions on co-workers or company results is very important

For more information see Onetonline.org

Heavy & Tractor-Trailer Truck Drivers

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **11,297**
- Projected Growth:
  - **-3% in Maine**
  - **14% in the US**
- Hires (2022): **6,527**
- Near-Term Retirements: **4,112 (36%)**
- Average Annual Openings: **1,362**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Short-term on-the-job training
- No work experience required

Workforce Demographics

- 36% of workers are over the age of 55
- 10% BIPOC workers
- 4% female workers
- National education attainment:
  - 47% high school graduates
  - 23% some college, no degree
  - 7% Associate's degree

Jobs Postings for Heavy & Tractor-Trailer Truck Drivers in Maine

Top Job Titles: CDL Truck Drivers | Local Truck Drivers | Delivery Drivers | Regional Truck Drivers

Specialized Skills:

- Truck Driving

Qualifications:

- Commercial Driver's License (CDL), Class A and Class B

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Heavy & Tractor-Trailer Truck Drivers

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $22.27

Top Compatible Occupations

The following occupations have comparable skills to *Heavy & Tractor-Trailer Truck Drivers* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Railroad Brake, Signal, and Switch Operators
- Crane and Tower Operators
- Operating Engineers & Other Construction Equipment Operators
- Light Truck Drivers
- Septic Tank Servicers and Sewer Pipe Cleaners

Source: Lightcast 2023.2

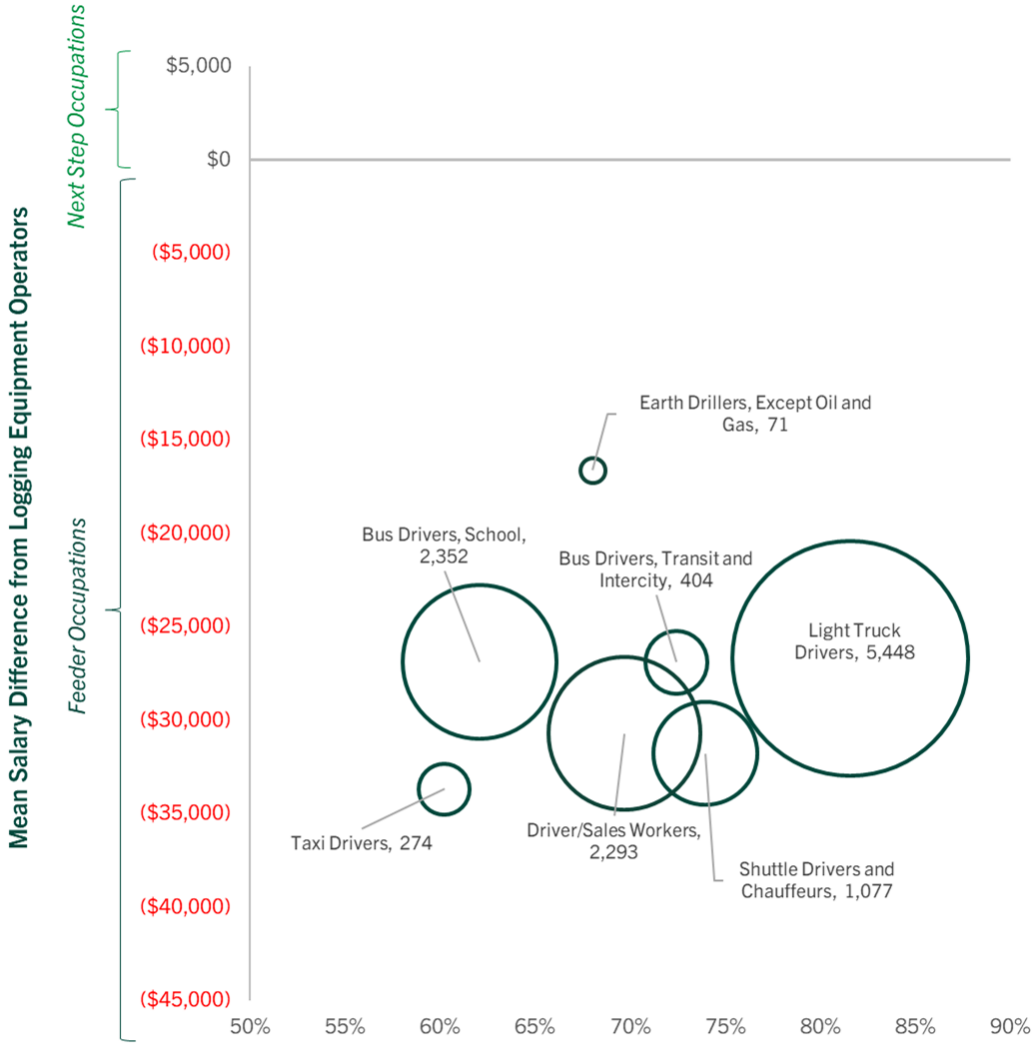
Heavy & Tractor-Trailer Truck Drivers

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Heavy & Tractor-Trailer Truck Drivers* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Heavy & Tractor-Trailer Truck Drivers*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Heavy & Tractor-Trailer Truck Drivers*; therefore, becoming a *Millwright* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Heavy & Tractor-Trailer Truck Drivers* and present opportunities for advancement with minimal upskilling.



Heavy & Tractor-Trailer Truck Drivers

Education and Training Providers

The following institutions provide training for *Heavy & Tractor-Trailer Truck Drivers* within 2 – 4 months:

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications
Career & Technical Education Programs	Northeast Technical Institute	Bangor	Commercial Driver's License	Short-Term Training
	Caribou Technology Center	Caribou	Large Equipment Maintenance and Operation	None listed
	Region 9 School of Applied Technology	Mexico	Commercial Drivers License	CDL Class A & B
	Somerset Career & Technical Center	Skowhegan	Commercial Truck Driving	CDL Class B
	Westbrook Regional Vocational Center	Westbrook	Commercial Drivers License	CDL Class A & B
	Tri-County Technical Center	Dexter	Commercial Drivers License	CDL Class A & B; Fork Lift Certification; MaineOxy Certification
	Saint Croix Regional Technical Center	Calais	CDL Truck Driving	American Welding Society
Community College	Northern Maine Community College	Presque Isle	Commercial Driver's License	CDL
	Eastern Maine Community College	Bangor	Commercial Driver's License	CDL
	Washington County Community College	Calais	Commercial Driver's License	CDL
	Kennebec Valley Community College	Fairfield	Commercial Driver's License	CDL
	York County Community College	Wells	Commercial Driver's License	CDL

Heavy & Tractor-Trailer Truck Drivers

FOR/MAINE

Typical Entry Points

Workers are required to pursue a postsecondary training to gain a Commercial Driver's License and receive short-term on-the-job training. There are many training programs available to prepare for this licensure. Examples include (but are not limited to):

Short-Term Training

- Commercial Drivers License
- Large Equipment and Maintenance and Operation

Experience in Related Occupations

- Heavy Equipment Operator
- Log Truck Driver
- Earth Drillers
- Bus Drivers

Professional Certifications

- CDL A
- CDL B

TRUCK DRIVERS

Avg. Hourly Salary Range: $17.27-$26.97

Depending on the entry point, workers will require short-term OTJ and licensure to develop the necessary skills to operate independently.

Behavioral Skills

- Drug-free
- Clean driving record
- Work Ethic
- Comfort being independent
- Willingness to work in harsh environments

Technical Skills

- CDL A and/or B
- Mechanical aptitude
- Experience with heavy hauling
- Experience with off-road driving

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. Typically, after about 2 years of experience workers may be able to advance by demonstrating leadership, experience, and capabilities in one or more of the following areas.

Behavioral Skills

- Drug-free
- Clean driving record
- Willingness and comfort being in a disconnected environment
- Problem solving

Technical Skills

- Mechanical experience
- Loader experience
- Knowledge of geographic location
- Wood road driving experience

Specialization

- Crane Operator
- Self-loading
- Off-road

Management

- Team Lead
- Supervisor
- Manager

Cross-Training

- Logistics
- Production
- Mechanics

LARGE EQUIPMENT MECHANICS

Large Equipment Mechanics in the Forest Products Sector work on a variety of machines ranging from logging equipment in the forest to trucks and forklifts in wood and sawmills. According to employers, the most in-demand production occupations within the sector include:

- Bus & Truck Mechanics and Diesel Engine Specialists
- Mobile Heavy Equipment Mechanics, Except Engines
- Farm Equipment Mechanics and Service Technicians

FOR/MAINE

LARGE EQUIPMENT MECHANICS

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine, across all sectors (average 2022 -32)	Median Hourly Wages across all sectors (2022)
977	218	$24.01

Typical Entry Points

Medium job preparation is needed. Most workers have a high school diploma or equivalent plus vocational schools and receive moderate- to long-term on-the-job training (OJT), which can range from 1 -2 years, or an associate's degree. Examples of the types of training available include (but are not limited to):

Career & Tech. Education

- Heavy Equipment Maintenance & Operation
- Diesel Equipment & Technology

Certificate or Associate's Degree

- Diesel, Truck & Heavy Equipment Technology
- Diesel and Automotive Engines
- Diesel Hydraulics Technology

Experience in Related Occupations

- Auto Service Techs
- Industrial Machinery Mechanics
- Installation, Maintenance & Repair

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, skill attainment, or degree attainment. To advance, workers need around 5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas. These skills may be learned through OTJ or external training.

Specialization

- Specific equipment and machines or processes

Management

- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training

- Industrial Machinery Mechanics
- Millwrights

Large Equipment Mechanics

Education and Training Providers

The following institutions provide training for large equipment mechanics.

Type	Institution	Location	Program	Relevant Industry Credentials &	Length
Career & Technical Education Programs	Caribou Technology Center	Caribou	Large Equipment Maintenance and Operation	OSHA 10-Hour; First Aid/CPR/AED	1-2 years
	Coastal Washington County	Machias	Diesel Technology	None listed	
	Presque Isle Tech Center	Presque Isle	Industrial & Farm Mechanics	None listed	
	Region 9 School of Applied Technology	Mexico	Heavy Equipment	CDL Class A/B; NCCER Heavy Equipment Credentials; OSHA-10; First Aid/CPR	
	St. John Valley Technology Center	Frenchville	Heavy Equipment Operation	ACT Work Keys National Career Readiness Certificate (NCRC)	
	United Technologies Center	Bangor	Diesel Equipment	None listed	
	Westbrook Regional Vocational Center	Westbrook	Heavy Equipment Operation	OSHA-10	
Colleges	Eastern Maine Community College	Bangor	Diesel, Truck, and Heavy Equipment Technology	Certificate, ASE Associate's Degree	1-2 years
	Washington County Community College		Diesel and Automotive Engine Overhaul	Certificate Associate's Degree Certificate	
	Northern Maine Community College	Presque Isle	Diesel Hydraulics Technology	Associate's Degree, ASE Certification	

Large Equipment Mechanics

FOR/MAINE

Typical Entry Points

Medium job preparation is needed. Most workers have a high school diploma or equivalent plus vocational schools and receive moderate- to long-term on-the-job training (OJT), which can range from 1 -2 years, or an associate's degree. Examples of the types of training available include (but are not limited to):

Career & Tech. Education

- Heavy Equipment Maintenance & Operation
- Diesel Equipment & Technology

Certificate or Associate's Degree

- Diesel, Truck & Heavy Equipment Technology
- Diesel and Automotive Engines
- Diesel Hydraulics Technology

Experience in Related Occupations

- Auto Service Techs
- Industrial Machinery Mechanics
- Installation, Maintenance & Repair

LARGE EQUIPMENT MECHANICS

Avg. Hourly Salary Range: $14.21 - $28.23

Depending on the entry point, workers will require moderate- to long-term OTJ to develop the necessary skills to operate independently.

Behavioral Skills

- Attention to detail
- Safe working skills
- Willingness to learn
- Attention to detail
- Critical thinking

Technical Skills

- Basic knowledge of equipment and trucks
- Maintenance and repair skills
- Knowledge of basic rolling stock mechanic work
- CDL

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, skill attainment, or degree attainment. To advance, workers need around 5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas. These skills may be learned through OTJ or external training.

Behavioral Skills

- Willingness to be trained
- Good attitude
- Work ethic
- Willingness to work long hours
- Reliability
- Leadership

Technical Skills

- Ability to diagnose and fix equipment in a safe and proficient manner
- Welding certification
- Mechanical experience
- Diesel hydraulics experience

Specialization

- Specific equipment and machines or processes

Management

- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training

- Industrial Machinery Mechanics
- Millwrights

BUS & TRUCK MECHANICS & DIESEL ENGINE SPECIALISTS

49-3031

Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines.

Skills

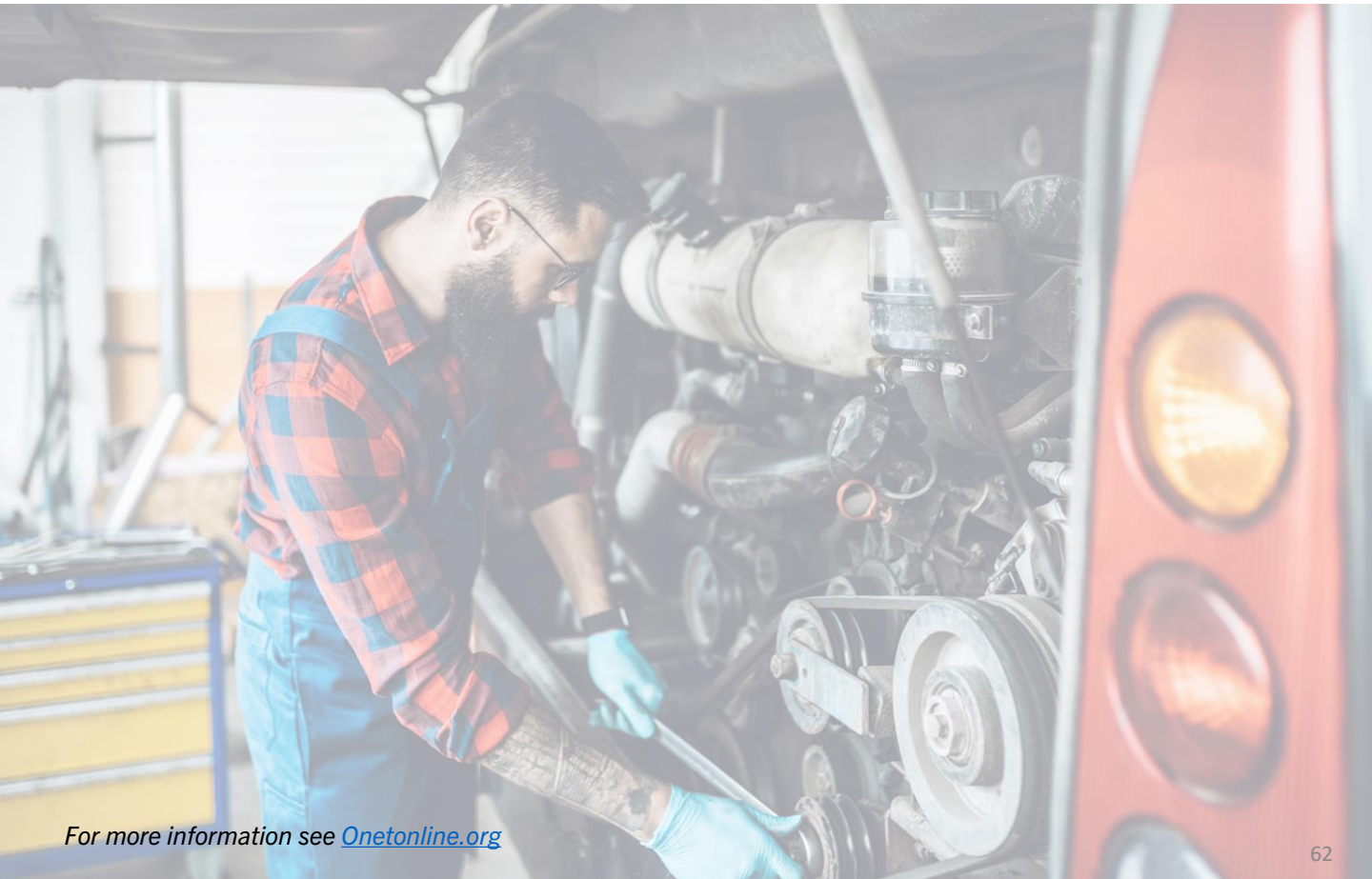
- Repairing
- Troubleshooting
- Operations Monitoring
- Equipment Maintenance
- Critical Thinking

Typical Work Activities

- Repairing & Maintaining Mechanical Equipment
- Inspecting Equipment, Structures, or Materials
- Getting Information
- Identifying Objects, Actions, and Events
- Operating Vehicles, Mechanized Devices, or Equipment

Typical Work Context

- Exposed to Contaminants
- Spend Time Using Hands to Handle, Control, of Feel Objects, Tools, or Controls
- Wear Common Protective or Safety Equipment
- Face-to-Face Discussions
- In an Enclosed Vehicle or Equipment



For more information see Onetonline.org

Bus & Truck Mechanics & Diesel Engine Specialists

FOR/MAINE

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **1,987**
- Projected Growth:
  - **-2% in Maine**
  - **8% in the US**
- Hires (2022): **847**
- Near-Term Retirements: **556 (28%)**
- Average Annual Openings: **188**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Medium

Typical requirements for entry:

- High school diploma or equivalent
- Long-term on-the-job training
- No work experience required

Workforce Demographics

- 28% of workers are over the age of 55
- 5% BIPOC workers
- 1% female workers
- National education attainment:
  - 47% high school graduates
  - 23% some college, no degree
  - 14% Associate's degree

Jobs Postings for Bus & Truck Mechanics in Maine

Top Job Titles: Diesel Truck and Trailer Mechanics I Diesel Mechanic Technicians I Truck/Trailer Mechanics I Diesel Mechanics

Specialized Skills:

- Diesel Engines
- Preventive Maintenance
- Electrical Systems
- Vehicle Maintenance
- Brakes

Qualifications:

- Valid Driver's License
- Commercial Driver's License (CDL)

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Bus & Truck Mechanics & Diesel Engine Specialists

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $22.46

Top Compatible Occupations

The following occupations have comparable skills to *Bus and Truck Mechanics* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Farm Equipment Mechanics and Service Technicians
- Motorboat Mechanics and Service Technicians
- Outdoor Power Equipment and Other Small Engine Mechanics
- Maintenance Workers, Machinery
- Electric Motor, Power Tool, and Related Repairers

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

Source: Lightcast 2023.2

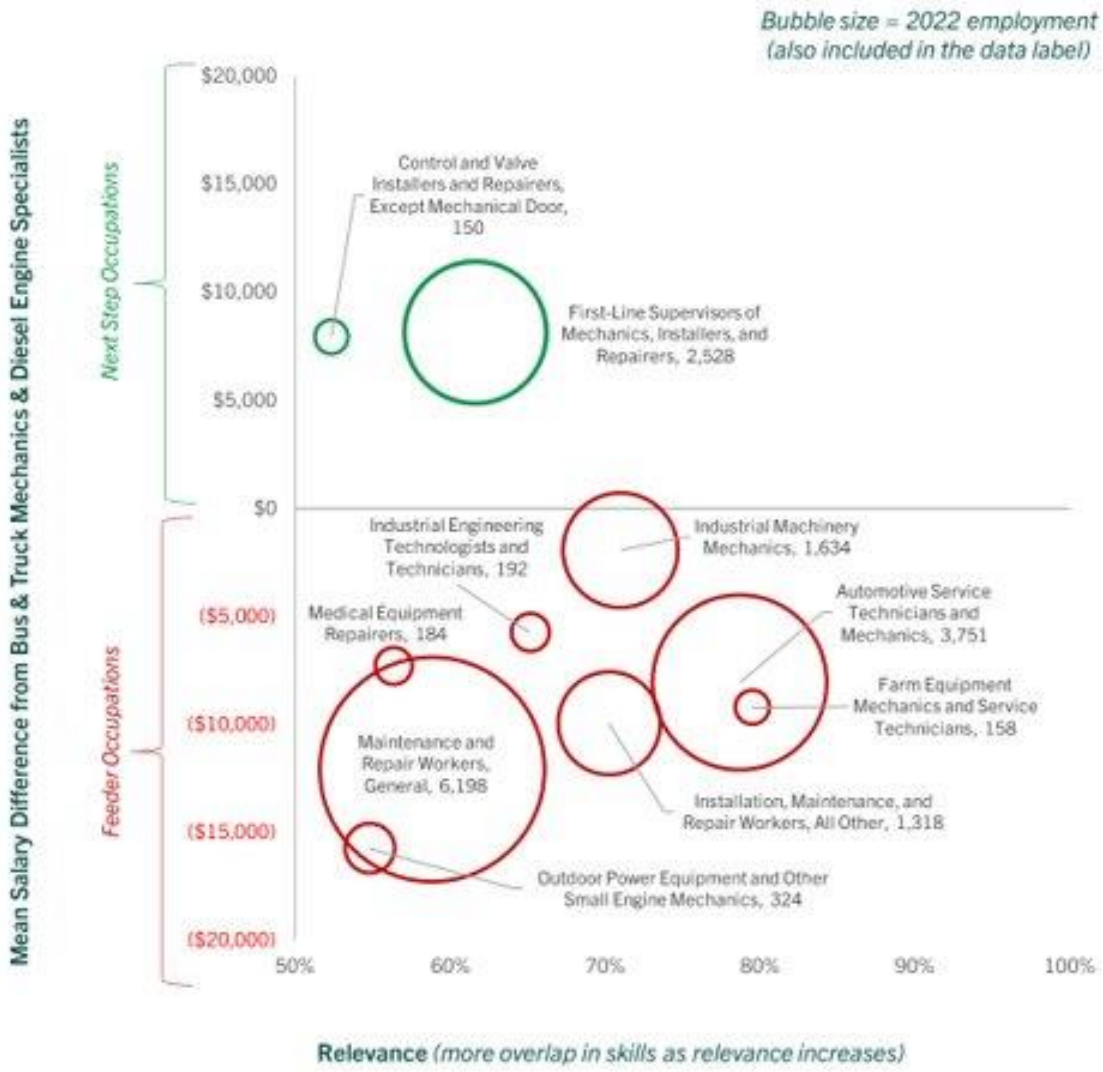
Bus & Truck Mechanics & Diesel Engine Specialists

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Bus and Truck Mechanics* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Bus and Truck Mechanics*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Bus and Truck Mechanics*; therefore, becoming a *Bus and Truck Mechanics* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Bus and Truck Mechanics* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.2

MOBILE HEAVY EQUIPMENT MECHANICS, EXCEPT ENGINES

49-3042

Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and mining. Excludes “Bus and Truck Mechanics and Diesel Engine Specialists” and “Rail Car Repairers.”

Skills

- Repairing
- Troubleshooting
- Equipment Maintenance
- Operations Monitoring
- Operation and Control

Typical Work Activities

- Repairing and Maintaining Mechanical Equipment
- Operating Vehicles, Mechanized Devices, or Equipment
- Inspecting Equipment, Structures, or Materials
- Handling and Moving Objects
- Making Decisions and Solving Problems

Typical Work Context

- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Exposed to contaminants
- Face-to-face discussions
- Indoors, not environmentally controlled
- Spend time using hand to handle, control, or feel objects, tools, or controls

For more information see Onetonline.org

Mobile Heavy Equipment Mechanics

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **1,232**
- Projected Growth:
  - **2% in Maine**
  - **12% in the US**
- Hires (2022): **654**
- Near-Term Retirements: **368 (30%)**
- Average Annual Openings: **126**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Medium

Typical requirements for entry:

- High school diploma or equivalent
- Long-term on-the-job training
- No work experience required

Workforce Demographics

- 30% of workers are over the age of 55
- 10% BIPOC workers
- 1% female workers
- National education attainment:
  - 47% high school graduates
  - 23% some college, no degree
  - 13% Associate's degree

Jobs Postings for Mobile Heavy Equipment Mechanics in Maine

Top Job Titles: Heavy Equipment Mechanics I Lift Mechanics I Forklift Mechanics I Industrial Equipment Mechanics I Electronic Measurement Equipment Mechanics I Heavy Equipment Service Technicians

Specialized Skills:

- Hydraulics
- Heavy Equipment
- Mechanics

Qualifications:

- Valid Driver's License

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Mobile Heavy Equipment Mechanics

Top Compatible Occupations

The following occupations have comparable skills to *Mobile Heavy Equipment Mechanics* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Electric Motor, Power Tool, and Related Repairers
- Industrial Machinery Mechanics
- Automotive Service Technicians and Mechanics
- Aircraft Mechanics and Service Technicians
- Maintenance and Repair Workers, General

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

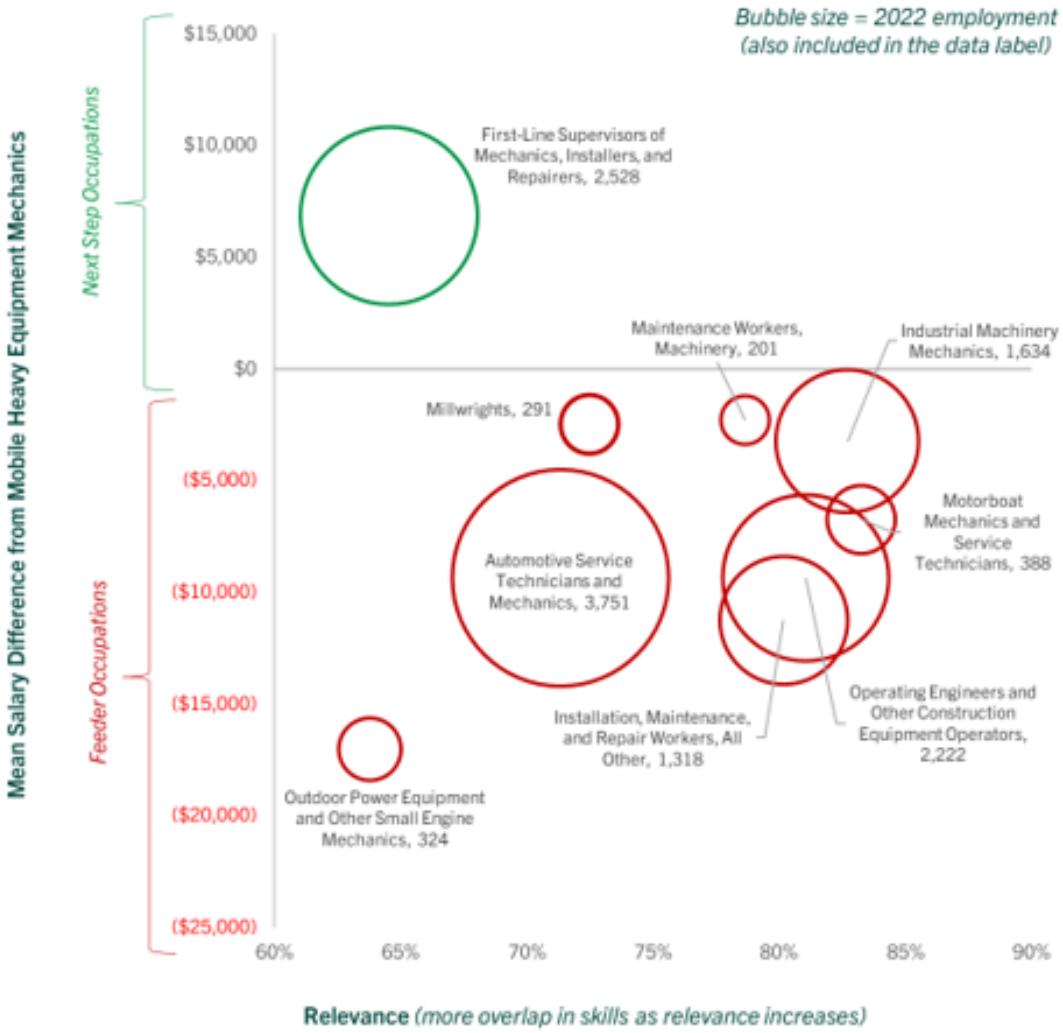
Source: Lightcast 2023.1

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Mobile Heavy Equipment Mechanics* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Mobile Heavy Equipment Mechanics*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Mobile Heavy Equipment Mechanics*; therefore, becoming a *Mobile Heavy Equipment Mechanics* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Mobile Heavy Equipment Mechanics* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.1

FARM EQUIPMENT MECHNICS AND SERVICE TECHNICIANS

49-3041

Diagnose, adjust, repair, or overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems. Excludes “Bus and Truck Mechanics and Diesel Engine Specialists.”

Skills

- Operations monitoring
- Operation and control
- Quality Control Analysis
- Monitoring
- Critical Thinking

Typical Work Activities

- Getting Information
- Operating Vehicles, Mechanized Devices, or Equipment
- Making Decisions and Solving Problems
- Repairing and Maintaining Mechanical Equipment
- Identifying Objects, Actions, and Events

Typical Work Context

- Face-to-Face Discussions
- Spend Time Using Hands to Handle, Control, or Feel Objects, Tools, or Controls
- Indoors, Not Environmentally Controlled
- Exposed to Hazardous Equipment
- Important to Be Exact or Accurate

For more information see Onetonline.org

Farm Equipment Mechanics

FOR/MAINE

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **158**
- Projected Growth:
  - **16% in Maine**
  - **13% in the US**
- Hires (2022): **61**
- Near-Term Retirements: **53 (33%)**
- Average Annual Openings: **19**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 24% of workers are over the age of 55
- 3% BIPOC workers
- 15% female workers
- National education attainment:
  - 23% less than high school diploma
  - 48% high school graduates
  - 21% some college, no degree

Jobs Postings for Farm Equipment Mechanics in Maine

Top Job Titles: Trailer Technicians | Farm Mechanics | Installers | Field Service Mechanics

Specialized Skills:

- Suspension (Vehicle)
- Clutch
- Powertrain

Qualifications:

- Valid Driver's License

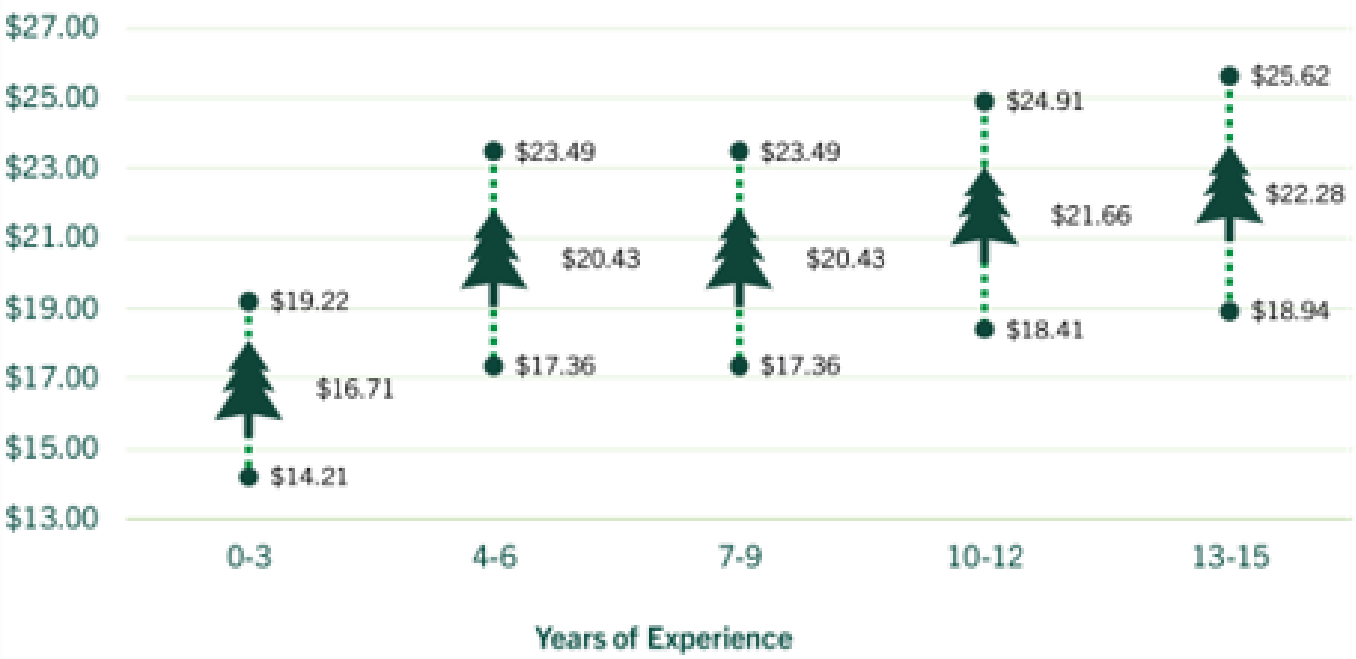
All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Farm Equipment Mechanics

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $22.08



Top Compatible Occupations

The following occupations have comparable skills to *Farm Equipment Mechanics* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Bus and Truck Mechanics and Diesel Engine Specialists
- Motorboat Mechanics and Service Technicians
- Outdoor Power Equipment Mechanics and Service Technicians
- Electric Motor, Power Tool, and Related Repairers
- Mobile Heavy Equipment Mechanics, Except Engines

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

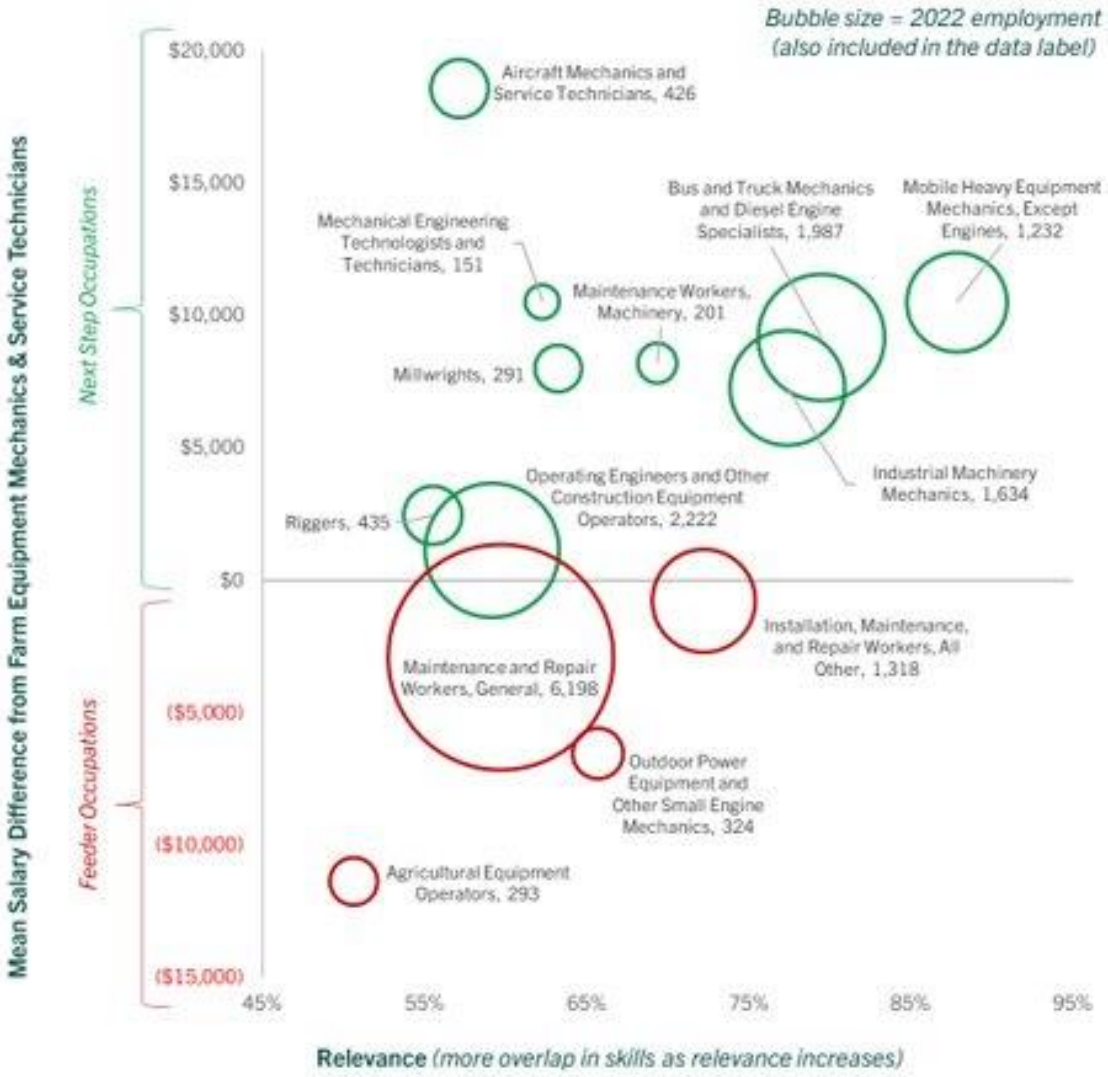
Source: Lightcast 2023.2

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Farm Equipment Mechanics* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Farm Equipment Mechanics*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Farm Equipment Mechanics*; therefore, becoming a *Farm Equipment Mechanics* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Farm Equipment Mechanics* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.2

LOGGING WORKERS

SOC Code 45-4020

Logging workers harvest forests in a variety of ways, from traditional chain saws to heavier logging equipment such as processors, forwarders, and skidders. The timber they harvest provides the raw material for countless consumer and industrial products. This broad occupation includes the following detailed occupations:

- **Logging Equipment Operators**
- **Fallers**
- **Log Graders and Scalers***
- **Logging Workers, All Other**

**Log grading and scaling is often not a stand-alone job, but rather a specialized skillset within other occupations. While the Bureau of Labor Statistics classifies this occupation as a "Logging Worker," employers indicate this occupation does not necessarily fit.*

FOR/MAINE

LOGGING WORKERS

SOC Code 45-4020

Logging workers harvest forests in a variety of ways, from traditional chain saws to heavier logging equipment such as processors, forwarders, and skidders. The timber they harvest provides the raw material for countless consumer and industrial products.

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine across all sectors (average 2022 -32)	Median Hourly Wages in Maine across all sectors (2022)
2,343	367	$18.75

Typical Entry Points

Little to no job preparation is required. Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training, which can take 6 months or more. However, there are training programs and pathways available that can reduce the among of time spent in training. Examples include:

High School & Adult Ed

- Forestry Immersion Program

Career & Tech. Education

- Forest & Wood Harvesting
- Heavy Equip. Operation

Experience in Related Occupations

- Conveyer Operator
- Laborer & Freight Mover
- Industrial Truck & Trailer Operator

Short-Term Training

- Mechanized Logging Operations
- Heavy Equip. Operations

Professional Certifications

- Cert. Logging Professional
- Qualified Logging Professional

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 1-5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Processor
- Forwarder
- Slasher/Loader
- Forest Tech.

Management

- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training

- Mill/Wood yard
- Maintenance
- CDL

Logging Workers

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **2,343**
- Projected Growth:
  - **-16% in Maine**
  - **2% in the US**
- Hires (2022): **615**
- Near-Term Retirements: **876 (37%)**
- Average Annual Openings: **367**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Little to none

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 37% of workers are over the age of 55
- 4% BIPOC workers
- 2% female workers
- Educational attainment:
  - 30% less than high school graduate
  - 47% high school graduates
  - 14% some college, no degree

Jobs Postings for Logging Workers in Maine

Top Job Titles: Tree Climbers/Arborists | Logging Equipment Operator | Groundmen

Specialized Skills:

- Forestry
- Arboriculture
- Forestry Equipment

Qualifications:

- Valid Driver's License
- Commercial Driver's License
- Certified Arborist
- DDCL Class B License
- Certified Logging Professional

Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Logging Workers

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $18.75

Source: Lightcast 2023.2
Note: Maine's minimum wage in 2023 is $13.80 per hour. Wage information on this page reflects 2022 data.

2022 Prevailing Wages for Logging Workers

Job Title	Hourly Wage
Logging Tractor Operator (Cable/Grapple Skidder)	$17.50
Log Loader Operator (Crane/Hydraulic)	$17.00
Delimber Operator	$19.00
Chipper Operator	$19.00
Slasher Operator	$19.00
Feller-Buncher Operator	$19.00
Operating Engineer	$20.00
Logging Equipment Mechanic	$21.00
Combination Slasher-Loader Operator	$19.00
Forwarder Operator	$20.00
Processor Operator	$20.50

Source: US Department of Labor Logging Wage Survey; data as of 11/8/2022

Detailed Occupations

The **Logging Workers** broad occupation group contains 4 detailed occupations: *Logging Equipment Operators*, *Fallers*, *Log Graders and Scalers*, and *Logging Workers, All Other*.* In Maine, *Logging Equipment Operators* is by far the largest detailed occupation within the **Logging Workers** broad occupation, accounting for 87% of employment. Other occupations within the group – including *Log Graders and Scalers* and *Fallers* – are often categorized as *Logging Equipment Operators* due to their similarity. Profiles for the detailed occupations are below.

Logging Equipment Operators
45-4022

Drive logging tractor or wheeled vehicle equipped with one or more accessories, such as bulldozer blade, frontal shear, grapple, logging arch, cable winches, hoisting rack, or crane boom, to fell tree; to skid, load, unload, or stack logs; or to pull stumps or clear brush. Includes operating stand-alone logging machines, such as log chippers.

Skills
- Operation and Control
- Operations Monitoring
- Equipment Maintenance
- Active Listening
- Monitoring
- Quality Control Analysis
- Troubleshooting

Typical Work Activities
- Operating Vehicles, Mechanized Devices, or Equipment
- Controlling Machines and Presses
- Repairing and Maintaining Mechanical Equipment
- Getting Information
- Inspecting Equipment, Structures, or Materials

Typical Work Context
- Use hands to handle, control, or feel objects, tools, or controls
- In an enclosed vehicle or equipment
- Duration of typical work week is > 40 hours
- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Frequent decision making

Job Preparation Required:
Little to none

Median Hourly Wage:
$19.76

Source: Onetonline.org; Lightcast 2023.2
**All Other includes a wide range of occupations; o*net data is not available for this occupation.*

Detailed Occupations (continued)

Fallers
45-4021

Use axes or chainsaws to fell trees using knowledge of tree characteristics and cutting techniques to control direction of fall and minimize tree damage.

Skills
- Operation and control
- Critical thinking
- Monitoring
- Operations monitoring
- Judgment and decision making

Typical Work Activities
- Performing general physical activities
- Controlling machines and processes
- Handling and moving objects
- Identifying objects, actions, and events
- Operating vehicles, mechanized devices, or equipment

Typical Work Context
- Outdoors, exposed to weather
- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Exposed to hazardous equipment
- Freedom to make decisions
- Use hands to handle, control, or feel objects, tools, or controls

Job Preparation Required:
Little to none

Median Hourly Wage:
$17.36

Source: Onetonline.org; Lightcast 2023.2

Detailed Occupations (continued)

Log Graders and Scalers
45-4023

Grade logs or estimate the marketable content or value of logs or pulpwood in sorting yards, millpond, log deck, or similar locations. Inspect logs for defects or measure logs to determine volume.

Note: Log grading and scaling is often not a stand-alone job, but rather a specialized skillset within other occupations. While the Bureau of Labor Statistics classifies this occupation as a "Logging Worker," employers indicate this occupation does not necessarily fit.

Skills
- Critical thinking
- Speaking
- Active learning
- Coordination

Typical Work Activities
- Judging the qualities of objects
- Documenting/recording information
- Estimating quantifiable characteristics
- Determining compliance with standards
- Inspecting equipment, structures, or materials

Typical Work Context
- Outdoors, exposed to weather
- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Frequent decision making
- Face-to-face discussions
- Duration of typical work week is > 40 hours

Job Preparation Required:
Little to none

Median Hourly Wage:
$15.27

Source: Onetonline.org; Lightcast 2023.2

Top Compatible Occupations: Logging Equipment Operators*

The following occupations have comparable skills to *Logging Equipment Operators* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forestry industry.

- Hoist & Winch Operator
- Dredge Operators
- Operating Engineers & Other Construction Equipment Operators
- Coating, Painting, & Spraying Machine Setters, Operators & Tenders
- Textile Cutting Machine Setters, Operators & Tenders

Feeder and Next Step Occupations: Logging Equipment Operators*

Related occupations are plotted on the next page based on their skills transferability to *Logging Equipment Operators* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Logging Equipment Operators*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

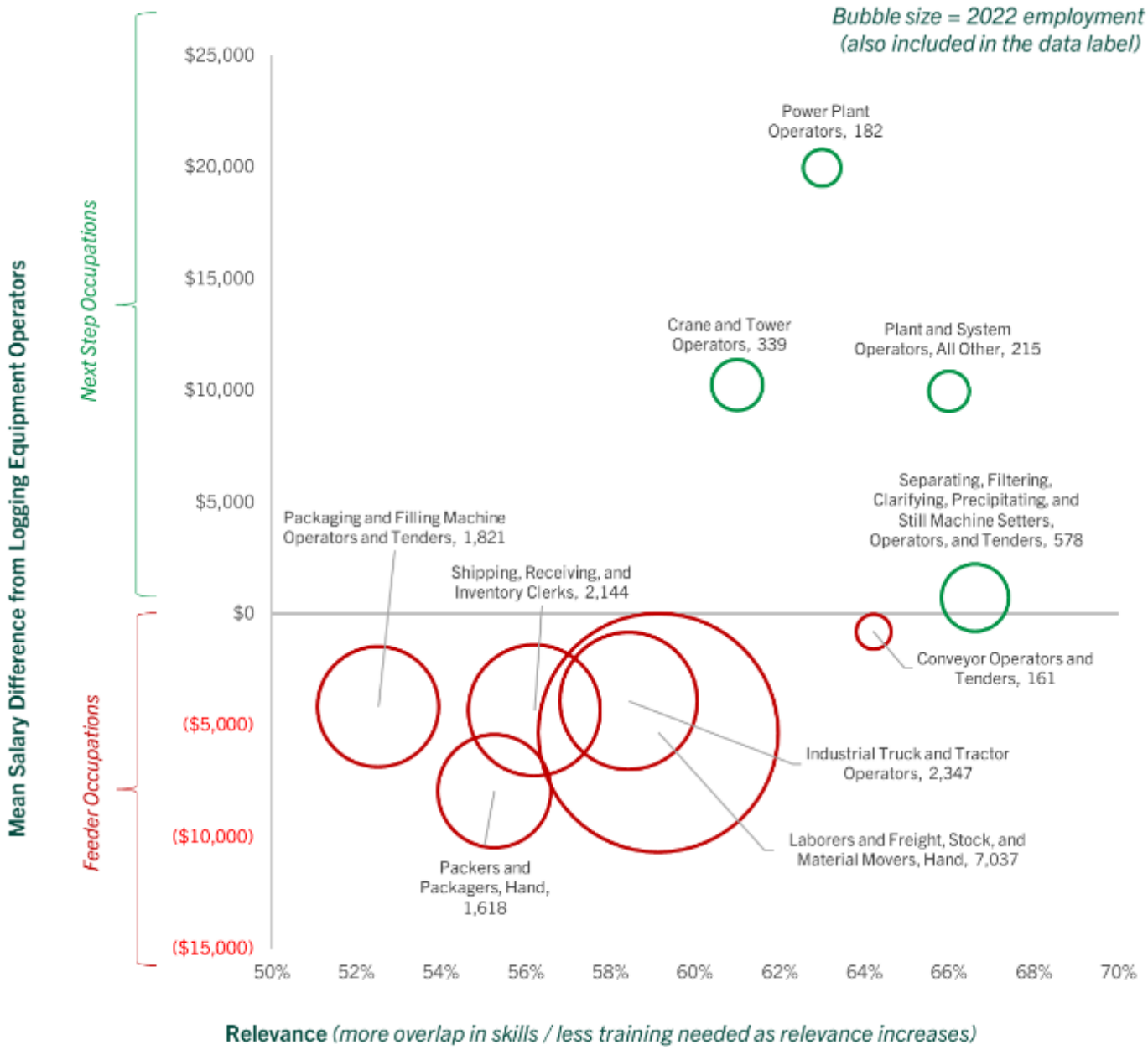
Feeder Occupations earn less than *Logging Equipment Operators*; therefore, becoming a *Logging Equipment Operator* would represent upward mobility with minimal training. They represent potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Logging Equipment Operators* and present opportunities for advancement with minimal upskilling.

Source: Lightcast 2023.2
** Data is not available at the broad occupation level; Logging Equipment Operators are used as a proxy for the entire broad occupation*

Logging Workers

Feeder and Next Step Occupations for Logging Equipment Operators*



Source: Lightcast 2023.2
** Data is not available at the broad occupation level; Logging Equipment Operators are used as a proxy for the entire Logging Workers occupation.*

Logging Workers

Training Providers

The following institutions provide training for *Logging Workers*:

Type	Length	Institution	Location	Program	Relevant Industry Credentials & Certifications
High School Programs	6 weeks	Brewer High School	Brewer	Forestry Immersion Summer Program	None listed
Career & Technical Education Programs	1-3 years	Caribou Technology Center	Caribou	Agriculture & Natural Resources	OSHA 10-Hour, First Aid/CPR/AED, Tractor Safety
				Large Equipment Maintenance and Operation	OSHA 10-Hour, First Aid/CPR/AED
		Foster CTE Center	Farmington	Forestry & Wood Harvesting	Certified Logging Professional, Professional Logging Contractor, National Tractor Safety, OSHA-10, First Aid/CPR
		Oxford Hills Technical School	Norway	Forestry & Heavy Equipment Operation	Certified Logging Professional, Class A or B CDL training, National Tractor Safety, OSHA 10-Hour, First Aid/CPR/AED
		Region 2 School of Applied Technology	Dyer Brook	Forestry Management & Operations	Certified Logging Professional; First Aid/CPR
		Region 9 School of Applied Technology	Rumford	Forestry/Wood Harvesting	Certified Logging Professional; CDL Class A and/or BFirst Aid/CPR; OSHA-10;
				Heavy Equipment	CDL Class A/B, NCCER Heavy Equipment Credentials, OSHA-10, First Aid/CPR
		St. John Valley Technology Center	Frenchville	Forest Resource Management	None listed
				Heavy Equipment Operation	ACT Work Keys National Career Readiness Certificate (NCRC)
		Westbrook Regional Vocational Center	Westbrook	Heavy Equipment Operation	OSHA-10
Community College	12 weeks	Northern Maine Community College	Presque Isle	Mechanized Logging Operations	Certificate
	1 year	Washington County Community College	Calais	Heavy Equipment Operations	Certificate
Professional Certifications	3-4 days	Maine TREE Foundation	Various	Certified Logging Professional	Certified Logging Professional (CLP), First Aid/CPR
	4 days	Sustainable Forestry Initiative Maine	Various	Qualified Logging Professional	Qualified Logging Professional (QLP), First Aid/CPR
	16 hours	Northeast Master Logger Certification	Online	Northeast Safe Logger	Certified Master Logger

Logging Workers

FOR/MAINE

Typical Entry Points

Little to no job preparation is required. Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training (OJT), which can take 6 months or more. However, there are training programs and pathways available that can reduce the among of time spent in training. Examples include (but are not limited to):

High School & Adult Ed
- Forestry Immersion Program

Career & Tech. Education
- Forest & Wood Harvesting
- Heavy Equip. Operation

Experience in Related Occupations
- Conveyer Operator
- Laborer & Freight Mover
- Industrial Truck & Trailer Operator

Short-Term Training
- Mechanized Logging Operations
- Heavy Equip. Operations

Professional Certifications
- Cert. Logging Professional
- Qualified Logging Professional

LOGGING WORKERS

Avg. Hourly Salary Range: $13.63 - $21.78

Depending on the entry point, workers will require moderate-term OTJ to develop the necessary skills to operate independently.

Behavioral Skills
- Reliability
- Common sense
- Willingness to learn
- Work ethic
- Ability to work in harsh conditions and remote or disconnected areas

Technical Skills
- Experience with forestry equipment
- Experience operating heavy equipment
- Basic maintenance skills
- Best management practices

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 1-5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas. These skills may be learned through OTJ or external training.

Behavioral Skills
- Willingness to be trained
- Good attitude
- Work ethic
- Willingness to work long hours
- Reliability
- Leadership

Technical Skills
- Certified Logging Professional
- Licensed Log Scaler
- Familiarity with region's tree species
- Experience running heavy equipment
- Basic maintenance capability
- CPR and First Aid

Specialization
- Processor
- Forwarder
- Slasher/Loader
- Forest Tech.

Management
- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training
- Mill/Wood yard
- Maintenance
- CDL

MILLWRIGHTS

In the Forest Products Sector, Millwrights install, dismantle, or move machinery and heavy equipment in wood and sawmills and other production plants according to layout plans, blueprints, or other drawings.

FOR/MAINE

MILLWRIGHTS

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine, across all sectors (average 2022 -32)	Median Hourly Wages across all sectors (2022)
291	25	$29.76

Typical Entry Points

Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training, which can take 6 months or more. However, there are training programs and pathways available that can reduce the among of time spent in training. Examples include:

High School & Adult Ed

- Forestry Immersion Program

Career & Tech. Education

- Welding
- Construction Technology
- Engineering Technology

Experience in Related Occupations

- Welder
- Maintenance Technician
- Mechanic

Short-Term Training

- Welding
- Manufacturing Technology
- Metal Fabrication

Professional Certifications

- Certified Welder
- OSHA 10
- NCCER

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers 2-3 years within the role to be fully trained and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Heavy Equipment
- Auxiliary Operator
- Operations

Management

- Team Lead
- Supervisor
- Manager

Cross-Training

- Engineering
- Maintenance
- Management

MILLWRIGHTS

49-9044

In the Forest Products Sector, Millwrights install, dismantle, or move machinery and heavy equipment in wood and sawmills and other production plants according to layout plans, blueprints, or other drawings.

Skills

- Operations Monitoring
- Equipment Maintenance
- Installation
- Critical Thinking
- Repairing

Typical Work Activities

- Repairing and Maintaining Mechanical Equipment
- Handling and Moving Objects
- Inspecting Equipment, Structures, or Materials
- Making Decisions and Solving Problems
- Performing General Physical Activities

Typical Work Context

- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Face-to-face discussions
- Responsible for others' health and safety
- Important to be exact or accurate
- Spend time using hands to handle, control, or feel objects, tools, or controls

For more information see Onetonline.org

Millwrights

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): 291
- Projected Growth:
  - **-8% in Maine**
  - **10% in the US**
- Hires (2022): **129**
- Near-Term Retirements: 112 (38%)
- Average Annual Openings: **25**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate on-the-job training
- No work experience required

Workforce Demographics

- 39% of workers are over the age of 55
- 2% BIPOC workers
- 1% female workers
- National education attainment:
  - 46% Bachelor's degree
  - 30% some college, no degree
  - 13% Associate's degree

Jobs Postings for Millwrights in Maine

Top Job Titles: Millwright | Journeyman Millwright | Maintenance Millwright | Millwright Helper | Turbine Mechanic | Industrial Mechanics

Specialized Skills:

- Machinery
- Hand Tools
- Power Tools Operation
- Welding
- Hydraulics

Qualifications:

- Valid Driver's License
- 10-Hour OSHA General Industry Card
- NCCER Millwright

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Millwrights

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $29.76

Top Compatible Occupations

The following occupations have comparable skills to *Millwrights* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Heating, Air Conditioning, and Refrigeration Mechanics and Installers
- Service Unit Operators, Oil and Gas
- Mobile Heavy Equipment Mechanics, Except Engines
- Hydroelectric Plant Technicians
- Farm Equipment Mechanics and Service Technicians

Source: Lightcast 2023.2

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Millwrights* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Millwrights*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Millwrights*; therefore, becoming a *Millwright* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Millwrights* and present opportunities for advancement with minimal upskilling.

Millwrights

Education and Training Providers

The following institutions provide training for *Millwrights*. In addition, there are many programs available throughout the state that provide training in Construction Technology, Manufacturing Technology, Electrical Technology, and Welding Technology that could be relevant, particularly in the career and technical education space.

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications	Length
Career & Technical Education Programs	Northern Penobscot Tech Region 3	Lincoln	Welding	American Welding Society Structural Certified Welder	1-2 years
	Region 2 School of Applied Technology	Houlton	Welding	American Welding Society Structural Certified Welder; OSHA-30; CPR/First Aid	
	Biddeford Regional Center of Technology	Biddeford	Welding and Metal Fabrication	American Welding Society; NCCER	
	Capital Area Tech. Center	Augusta	Machine Tool With Welding	NOCI; American Welding Society (AWS)	
	Caribou Tech. Center	Caribou	Welding/Metal Technology	None listed	
	Coastal Washington County Institute of Technology	Machias	Welding Technology	None listed	
	Lewiston Regional Tech. Center	Lewiston	Sheet Metal & Welding	OSHA-10	
	MSAD #24	Van Buren	Machine Tool/Welding	None listed	
	Mid-Coast School of Technology	Rockland	Welding & Metal Fabrication	American Welding Society Structural Steel Limited Thickness Certification; OSHA-10	
	Sanford Regional Tech. Center	Sanford	Welding and Metal Fabrication	American Welding Society (AWS)	
	Somerset Career & Tech. Center	Skowhegan	Welding Technology	OSHA-10; Cianbro Welding Certification; NCCER	
	St. John Valley Tech. Center	Frenchville	Welding	American Welding Society Limited Base Metal Thickness Plate	
	United Technologies Center	Bangor	Welding & Fabrication	American Welding Society (AWS); Maine Oxy; NCCER; OSHA-10	
	Saint Croix Regional Tech. Center	Calais	Welding	American Welding Society	
Community College	Southern Maine Community College	South Portland	Welding	Short-Term Training	3 weeks
	York County Community College	Wells	Welding	Short-Term Training	10 weeks
	Kennebec Valley Community College	Fairfield	Welding	Certificate	9 months
	Washington County Community College	Calais	Welding Technology	Certificate	1 year
	Northern Maine Community College	Presque Isle	Electrical Construction & Maintenance	Associate	2 years
	Eastern Maine Community College	Bangor	Welding Technology	Associate	2 years

Millwrights

FOR/MAINE

Typical Entry Points

Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training, which can take 6 months or more. However, there are training programs and pathways available that can reduce the among of time spent in training. Examples include:

High School & Adult Ed
- Forestry Immersion Program

Career & Tech. Education
- Welding
- Construction Technology
- Engineering Technology

Experience in Related Occupations
- Welder
- Maintenance Technician
- Mechanic

Short-Term Training
- Welding
- Manufacturing Technology
- Metal Fabrication

Professional Certifications
- Certified Welder
- OSHA 10
- NCCER

MILLWRIGHTS

Avg. Hourly Salary Range: $22.74-$33.72

Depending on the entry point, workers will require 2-3 years of on-the-job training to develop the necessary skills to operate independently.

Behavioral Skills
- Safe working skills
- Attention to detail
- Cooperation
- Dependability

Technical Skills
- Hand tools skills
- Exposure to manufacturing
- Machinery skills

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 5 or more years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas. These skills may be learned through OTJ or external training.

Behavioral Skills
- Problem solving
- Independence
- Detail orientation
- Leadership

Technical Skills
- Machining
- Mechanics
- Hydraulics
- Pneumatics
- Certified Welder
- Machining certifications
- Basic electrical skills

Specialization
- Heavy Equipment
- Auxiliary Operator
- Operations

Management
- Team Lead
- Supervisor
- Manager

Cross-Training
- Engineering
- Maintenance
- Management

FOREST PRODUCTS PRODUCTION WORKERS

Production workers in the Forest Products Sector operate machines and other equipment to transform raw forest products into value-added goods and materials ranging from wood pellets, construction lumber, to finished products like cabinets and furniture. According to employers, the most in-demand production occupations within the sector include:

- Sawing Machine Setters, Operators, and Tenders, Wood
- Woodworking Machine Setters, Operators, and Tenders, Except Sawing
- Adhesive Bonding Machine Operators and Tenders
- Computer Numerically Controlled Tool Operators

FOREST PRODUCTS PRODUCTION WORKERS

Current Jobs in Maine, across all sectors (2022)	Job Openings per Year in Maine, across all sectors (average 2022 -32)	Median Hourly Wages in Maine across all sectors (2022)
977	218	$20.39

Typical Entry Points

Little to no job preparation is required. Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training, which can take 6 months or more. However, there are training programs and pathways available that can reduce the amount of time spent in training. Examples include:

Adult Education

- Machining
- Woodworking

Career & Tech. Education

- Manufacturing Technology
- Precision Manufacturing
- Machine Tool

Experience in Related Occupations

- Assemblers & Fabricators
- Cutting Machine Operators
- Stockers

Short-Term Training

- Manufacturing Tech
- CNC Academy

Professional Certifications

- Natl. Institute of Metal-working Skills (NIMS)

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, and skill attainment. To advance, workers need 1-5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas.

Specialization

- Specific equipment and machines or processes

Management

- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training

- Relief Operator
- Maintenance
- Millwrights

Forest Products Production Workers

Education and Training Providers

The following institutions provide training for production workers. In addition, there are numerous construction and carpentry training programs available throughout the state that provide skills training on woodworking and sawing machines, particularly in the career and technical education space.

Type	Institution	Location	Program	Relevant Industry Credentials & Certifications	Length
Career & Technical Education Programs	Biddeford Regional Center of Technology	Biddeford	Manufacturing Technology	None listed	1-2 years
	Capital Area Technical Center	Augusta	Machine Tool With Welding	NOCTI, American Welding Society (AWS)	
	Foster CTE Center	Farmington	Composites Manufacturing	ACMA; Certified Composites Tech; OSHA-10; First Aid/CPR	
	Lewiston Regional Technical Center	Lewiston	Precision Machining Technology	Certificate (dual enrollment at Central Maine Community College)	
	Mid-Coast School of Technology	Rockland	Machine Tool	National Institute of Metalworking Skills (NIMS)	
			Composites Manufacturing	None listed	
	Sanford Regional Technical Center	Sanford	Precision Manufacturing	None listed	
Community College	Central Maine Community College	Auburn	Precision Machining Technology	Certificate, Associate's Degree, Advanced Certificate	1 - 2 years
	Kennebec Valley Community College	Fairfield	Precision Machining Technology	Certificate or Associate's Degree	4 months - 2 years
	Northern Maine Community College	Presque Isle	Computer Numerical Control (CNC)	Certificate, National Institute of Metalworking Skills (NIMS)	9 months
	Southern Maine Community College	South Portland	Manufacturing Technician	None listed	3 weeeks
			Precision Machining & Manufacturing	Associate's Degree	2 years
			CNC Machine Operator	Certificate	1 year
	York County Community College	Wells	Computer Numerical Control (CNC)	HAAS Mill and Lathe Certification, OSHA-10	14 weeks
University	University of Southern Maine	Portland	Precision Manufacturing Concentration	Bachelor of Science (transfer agreement with Central Maine Community College)	2 - 4 years

*Shaded programs provide short-term training at no cost to the student

Forest Products Production Workers

FOR/MAINE

Typical Entry Points

Some job preparation is needed. Most workers have a high school diploma or equivalent and receive moderate-term on-the-job training (OJT), which can range from a few months up to a year. However, there are training programs and pathways available that can reduce the amount of time spent in training. Examples include (but are not limited to):

Adult Education
- Machining
- Woodworking

Career & Tech. Education
- Manufacturing Technology
- Precision Manufacturing
- Machine Tool

Experience in Related Occupations
- Assemblers
- Cutting Machine Operators
- Stockers

Short-Term Training
- Manufacturing Tech
- CNC Academy

Professional Certifications
- Natl. Institute of Metal-working Skills (NIMS)

PRODUCTION WORKERS

Avg. Hourly Salary Range: $13.63 - $21.78

Depending on the entry point, workers will require moderate-term OTJ to develop the necessary skills to operate independently.

Behavioral Skills
- Attention to detail
- Safe working skills
- Willingness to learn
- Attention to detail
- Soft skills

Technical Skills
- Basic math
- Ability to use tape measures and calipers
- Operating standard pieces of mobilized equipment
- Machining experience
- Ability to read and interpret blueprints, mechanical documents, and drawings

Career Progression

Career progression can take multiple forms depending on the worker's interests, prior experience, skill attainment, or degree attainment. To advance, workers need 1-5 years within the role and to demonstrate leadership, experience, and capabilities in one or more of the following areas. These skills may be learned through OTJ or external training.

Behavioral Skills
- Willingness to be trained
- Good attitude
- Work ethic
- Willingness to work long hours
- Reliability
- Leadership

Technical Skills
- Understanding of and experience with computer programming and CAD/CAM
- Experience operating various equipment
- Ability to troubleshoot

Specialization
- Specific equipment and machines or processes

Management
- Team Lead
- Supervisor
- Manager
- Area Manager

Cross Training
- Relief Operator
- Maintenance
- Millwrights

COMPUTER NUMERICALLY CONTROLLED TOOL OPERATORS

51-9161

Operate computer-controlled tools, machines, or robots to machine or process parts, tools, or other work pieces made of metal, plastic, wood, stone, or other materials. May also set up and maintain equipment.

Skills

- Operation and control
- Operations monitoring
- Critical thinking
- Monitoring
- Quality Control Analysis

Typical Work Activities

- Using software to control machines and processes
- Getting information
- Communicating with coworkers
- Making decisions and solving problems
- Inspecting equipment, structures, or materials

Typical Work Context

- Distracting or uncomfortable sounds or noise levels
- Using hands to handle, control, or feel objects, tools, or controls
- Wear protective or safety gear such as shoes, glasses, gloves, hearing protection, or hard hats
- Important to be exact or accurate
- Face-to-face discussions

For more information see Onetonline.org

CNC Tool Operators

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **961**
- Projected Growth:
  - **-3% in Maine**
  - **-1% in the US**
- Hires (2022): **381**
- Near-Term Retirements: **239 (37%)**
- Average Annual Openings: **105**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 24% of workers are over the age of 55
- 5% BIPOC workers
- 7% female workers
- National education attainment:
  - 38% high school graduates
  - 30% some college, no degree
  - 14% Associate's degree

Jobs Postings for CNC Tool Operators in Maine

Top Job Titles: CNC Operators | Machine Operators | CNC Set Up Operators | CNC Machinists

Specialized Skills:

- CNC Machining
- Machine Operation
- Machining

Qualifications:

- Valid Driver's License
- Forklift Certification
- 10-Hour OSHA General Industry Card

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

CNC Tool Operators

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $22.95

Top Compatible Occupations

The following occupations have comparable skills to *CNC Tool Operators* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Industrial Machinery Mechanics
- Electric Motor, Power Tool, and Related Repairers
- Petroleum Pump System Operators, Refinery Operators, and Gaugers
- Electro-Mechanical and Mechatronics Technologists and Technicians
- Gas Plant Operators

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

Source: Lightcast 2023.2

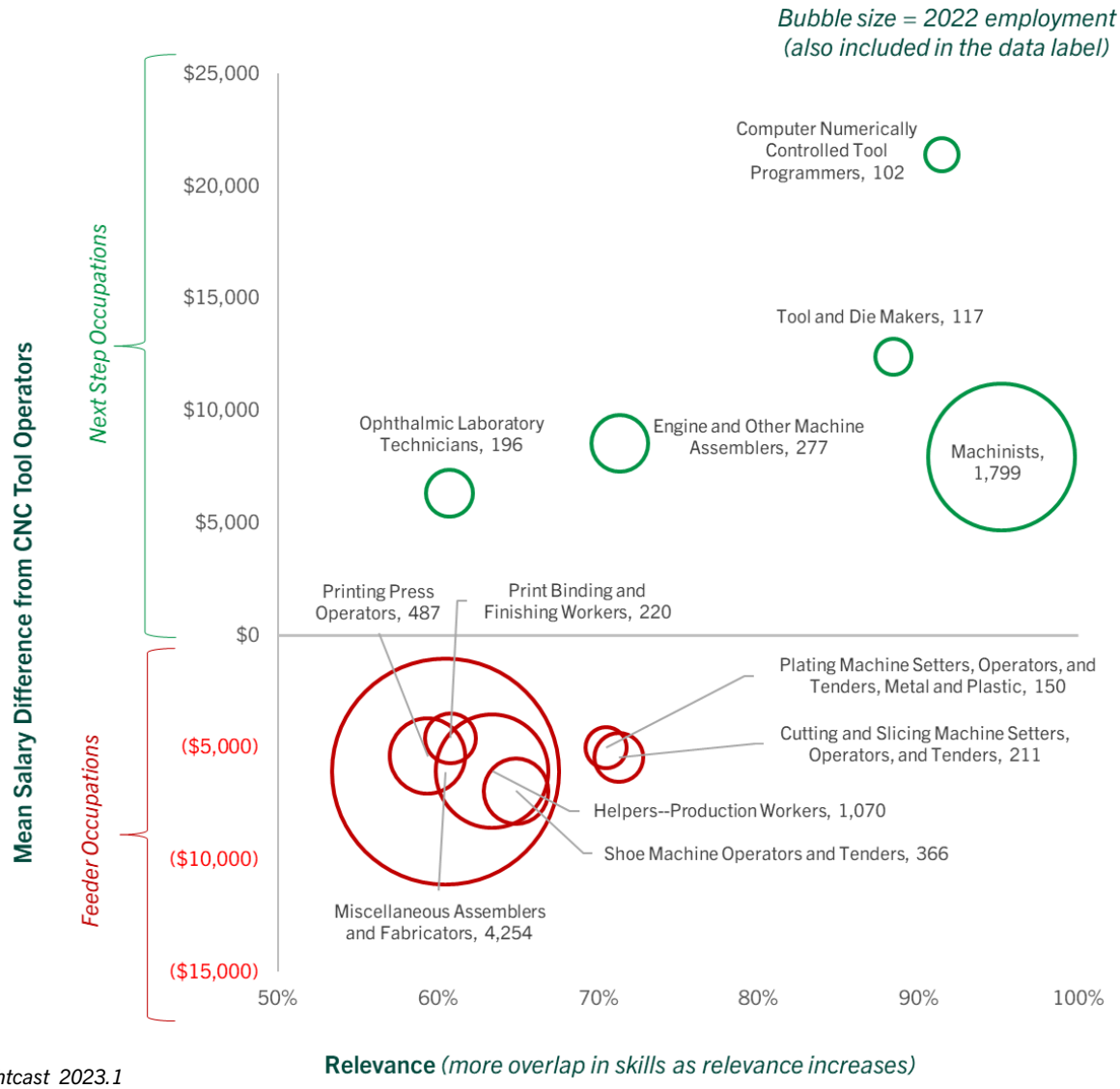
CNC Tool Operators

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *CNC Tool Operators* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *CNC Tool Operators*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *CNC Tool Operators*; therefore, becoming a *CNC Tool Operator* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *CNC Tool Operators* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.1

WOOD SAWING MACHINE SETTERS, OPERATORS, & TENDERS

51-7041

Set up, operate, or tend wood sawing machines. May operate computer numerically controlled (CNC) equipment. Includes lead sawyers. Workers who primarily program or operate CNC equipment are classified in "Computer Numerically Controlled Tool Operators and Programmers."

Skills

- Operation and control
- Operations monitoring
- Critical thinking
- Monitoring
- Quality Control Analysis

Typical Work Activities

- Controlling Machines and Processes
- Handling and Moving Objects
- Performing General Physical Activities
- Inspecting Equipment, Structures, or Materials
- Identifying Objects, Actions, and Events

Typical Work Context

- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats
- Exposed to Hazardous Equipment
- Exposed to Contaminants
- Distracting or Uncomfortable Sounds or Noise Levels
- Important to be Exact or Accurate

For more information see Onetonline.org

Wood Sawing Machine Setters, Operators & Tenders

FOR/MAINE

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **500**
- Projected Growth:
  - **-7% in Maine**
  - **10% in the US**
- Hires (2022): **247**
- Near-Term Retirements: **115 (23%)**
- Average Annual Openings: **58**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 27% of workers are over the age of 55
- 8% BIPOC workers
- 8% female workers
- National education attainment:
  - 34% less than high school diploma
  - 45% high school graduates
  - 12% some college, no degree

Jobs Postings for Wood Sawing Machine Operators in Maine

Top Job Titles: Sawmill Supervisor | Trimmers | Saw Operator | Woodworkers | Lumber Graders

Specialized Skills:

- Mills
- Flooring
- Sawing

Qualifications:

- Valid Driver's License
- 10-Hour OSHA General Industry Card

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Wood Sawing Machine Setters, Operators & Tenders

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $17.60

Top Compatible Occupations

The following occupations have comparable skills to *Wood Sawing Machine Operators* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Helpers – Production Workers
- Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders
- Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic
- Coating, Painting, and Spraying Machine Setters, Operators, and Tenders
- Textile Cutting Machine Setters, Operators, and Tenders, Except Sawing

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

Source: Lightcast 2023.1

Wood Sawing Machine Setters, Operators & Tenders

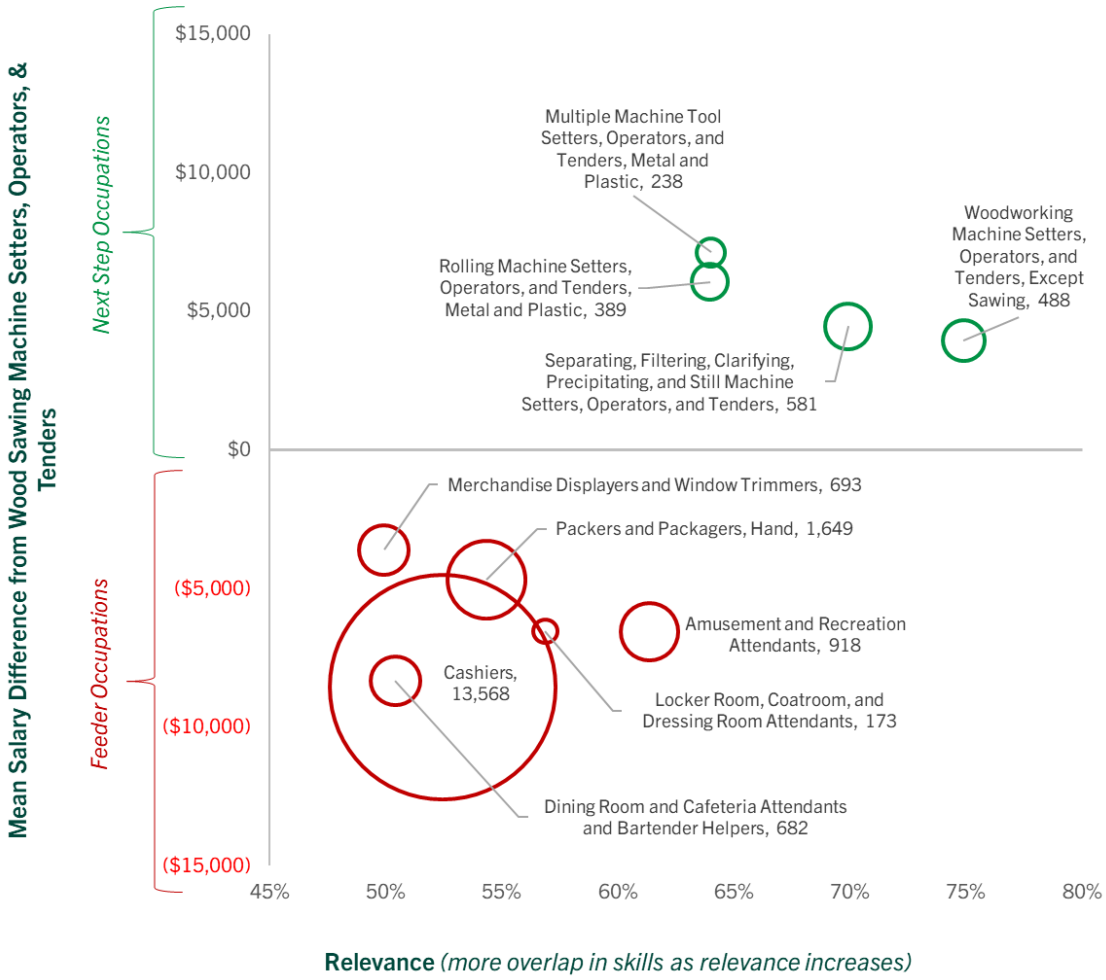
Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Wood Sawing Machine Operators* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Wood Sawing Machine Operators*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Wood Sawing Machine Operators*; therefore, becoming a *Wood Sawing Machine Operator* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Wood Sawing Machine Operators* and present opportunities for advancement with minimal upskilling.

Bubble size = 2022 employment (also included in the data label)



Source: Lightcast 2023.1

WOODWORKING MACHINE SETTERS, OPERATORS, AND TENDERS, EXCEPT SAWING

51-7042

Set up, operate, or tend woodworking machines, such as drill presses, lathes, shapers, routers, sanders, planers, and wood nailing machines. May operate computer numerically controlled (CNC) equipment. Workers who primarily program or operate CNC equipment are classified in “Computer Numerically Controlled Tool Operators and Programmers”.

Skills

- Operations monitoring
- Operation and control
- Quality Control Analysis
- Monitoring
- Critical Thinking

Typical Work Activities

- Controlling Machines and Processes
- Handling and Moving Objects
- Inspecting Equipment, Structures, or Materials
- Getting Information
- Performing General Physical Activities

Typical Work Context

- Exposed to Contaminants
- Face-to-Face Discussions
- Distracting or Uncomfortable Sounds or Noise Levels
- Spend Time Using Hands to Handle, Control, or Feel Objects, Tools, or Controls
- Spend Time Standing

For more information see Onetonline.org

Woodworking Machine Setters, Operators & Tenders

FOR/MAINE

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **488**
- Projected Growth:
  - **-11% in Maine**
  - **8% in the US**
- Hires (2022): **248**
- Near-Term Retirements: **100 (20%)**
- Average Annual Openings: **47**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 24% of workers are over the age of 55
- 3% BIPOC workers
- 15% female workers
- National education attainment:
  - 23% less than high school diploma
  - 48% high school graduates
  - 21% some college, no degree

Jobs Postings for Woodworking Machine Operators in Maine

Top Job Titles: Console Operators | Routers | Machine Setup Operators

Specialized Skills:

- Safety Standards
- Hoisting

Qualifications:

- Valid Driver's License
- 10-Hour OSHA General Industry Card

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Woodworking Machine Setters, Operators & Tenders

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $17.46

Top Compatible Occupations

The following occupations have comparable skills to *Woodworking Machine Operators* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Cutting, Punching, and Press Machine setters, Operators, and Tenders
- Textile Cutting Machine Setters, Operators, and Tenders
- Wood Sawing Machine Setters, Operators, and Tenders
- Metal and Plastic Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders
- Cutting and Slicing Machine Setters, Operators, and Tenders

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

Source: Lightcast 2023.2

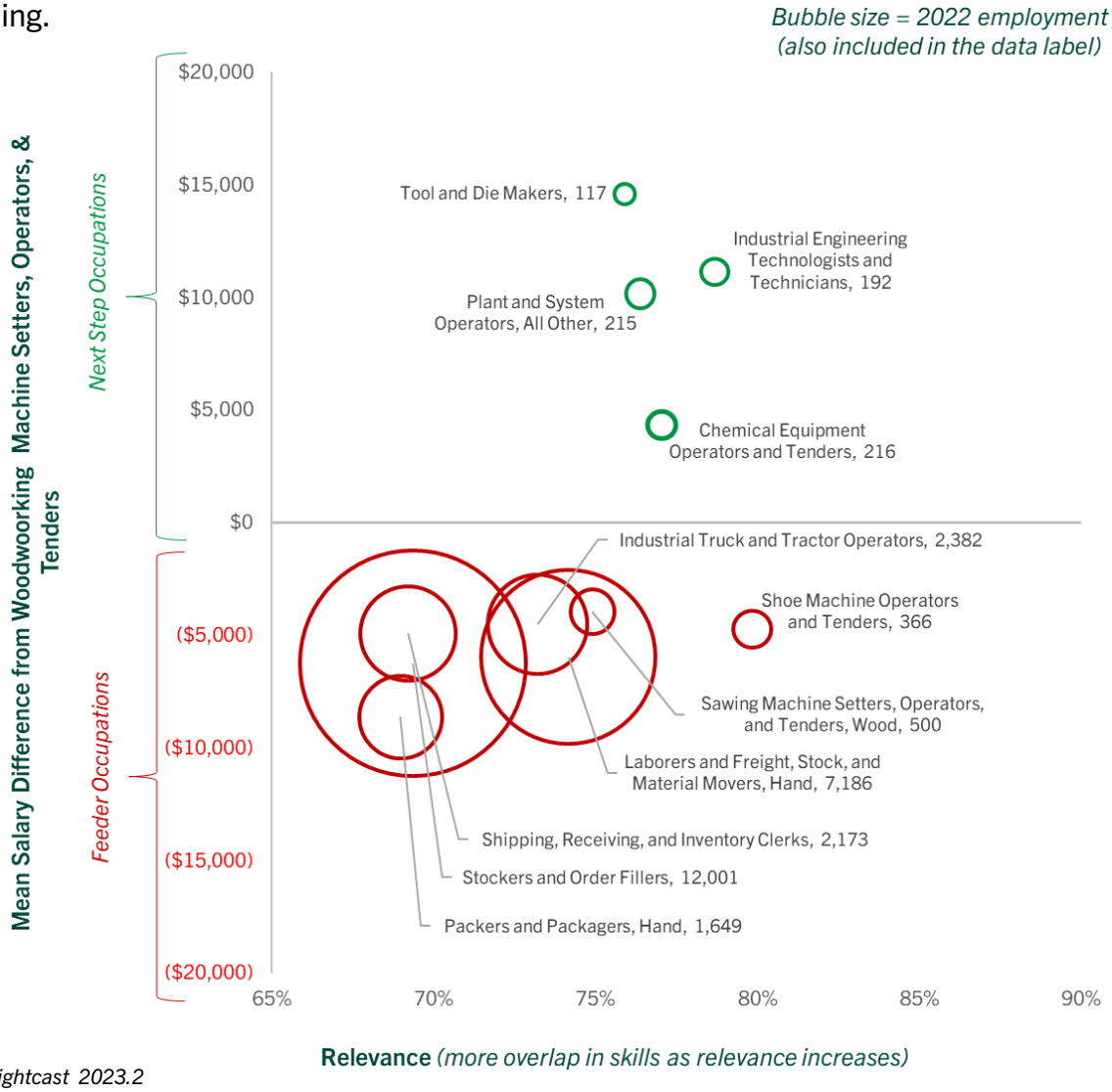
Woodworking Machine Setters, Operators & Tenders

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Woodworking Machine Operators* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Woodworking Machine Operators*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Woodworking Machine Operators*; therefore, becoming a *Woodworking Machine Operator* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Woodworking Machine Operators* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.2

ADHESIVE BONDING MACHINE OPERATORS & TENDERS

51-9191

Operate or tend bonding machines that use adhesives to join items for further processing or to form a completed product. Processes include joining veneer sheets into plywood; gluing paper; or joining rubber and rubberized fabric parts, plastic, simulated leather, or other materials.

Skills

- Operation and control
- Operations monitoring
- Active listening
- Monitoring
- Quality Control Analysis

Typical Work Activities

- Controlling Machines or Processes
- Handling and Moving Objects
- Inspecting Equipment, Structures, or Materials
- Getting Information
- Performing General Physical Activities

Typical Work Context

- Exposed to contaminants
- Spend time using hands to handle, control, or feel objects, tools, or controls
- Contact with others
- Spend time standing
- Wear common protective or safety equipment such as safety shoes, glasses, gloves, hearing protection, or hard hats

For more information see Onetonline.org

Adhesive Bonding Machine Operators & Tenders

Maine Employment Outlook 2022 - 2032

- Current Jobs (2022): **64**
- Projected Growth:
  - **-5% in Maine**
  - **6% in the US**
- Hires (2022): **34**
- Near-Term Retirements: **20 (31%)**
- Average Annual Openings: **105**

Average annual openings account for industry growth and worker replacements needed due to retirements or workers permanently leaving an occupation

Job Preparation Needed: Some

Typical requirements for entry:

- High school diploma or equivalent
- Moderate-term on-the-job training
- No work experience required

Workforce Demographics

- 31% of workers are over the age of 55
- 9% BIPOC workers
- 38% female workers
- National education attainment:
  - 43% high school graduates
  - 22% some college, no degree
  - 13% Associate's degree

Jobs Postings for Adhesive Bonding Machine Operators in Maine

Top Job Titles: Heat Treat Operators | Adhesive Bonders | Microwave Engineers

Specialized Skills:

- Standard Operating Procedure
- Automation
- Performance Management

Qualifications:

- Valid Driver's License
- 10-Hour OSHA General Industry Card

All data is for 2022 for the State of Maine unless otherwise noted
Source: Lightcast 2023.2 ; job postings from March 2018 - March 2023; job preparation and educational attainment at the national level

Adhesive Bonding Machine Operators & Tenders

Wages by Years of Experience

Low (15% below median), Median, and High (15% above median)

Overall Median Hourly Wage: $18.09

Top Compatible Occupations

The following occupations have comparable skills to *Adhesive Bonding Machine Operators* based on the levels and importance of knowledge, skills, and abilities. This means workers in these occupations could easily transfer their competencies to work in the forest products sector.

- Metal & Plastic Heat-Treating Equipment Setters, Operators, and Tenders
- Extruding & Forming Machine Setters, Operators, and Tenders (Synthetic and Glass Fibers)
- Cutting and Slicing Machine Setters, Operators, or Tenders
- Metal-Refining Furnace Operators and Tenders
- Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders (Metal and Plastic)

Note: Maine's minimum wage in 2023 is $13.80. Data reflects 2022 wages.

Source: Lightcast 2023.2

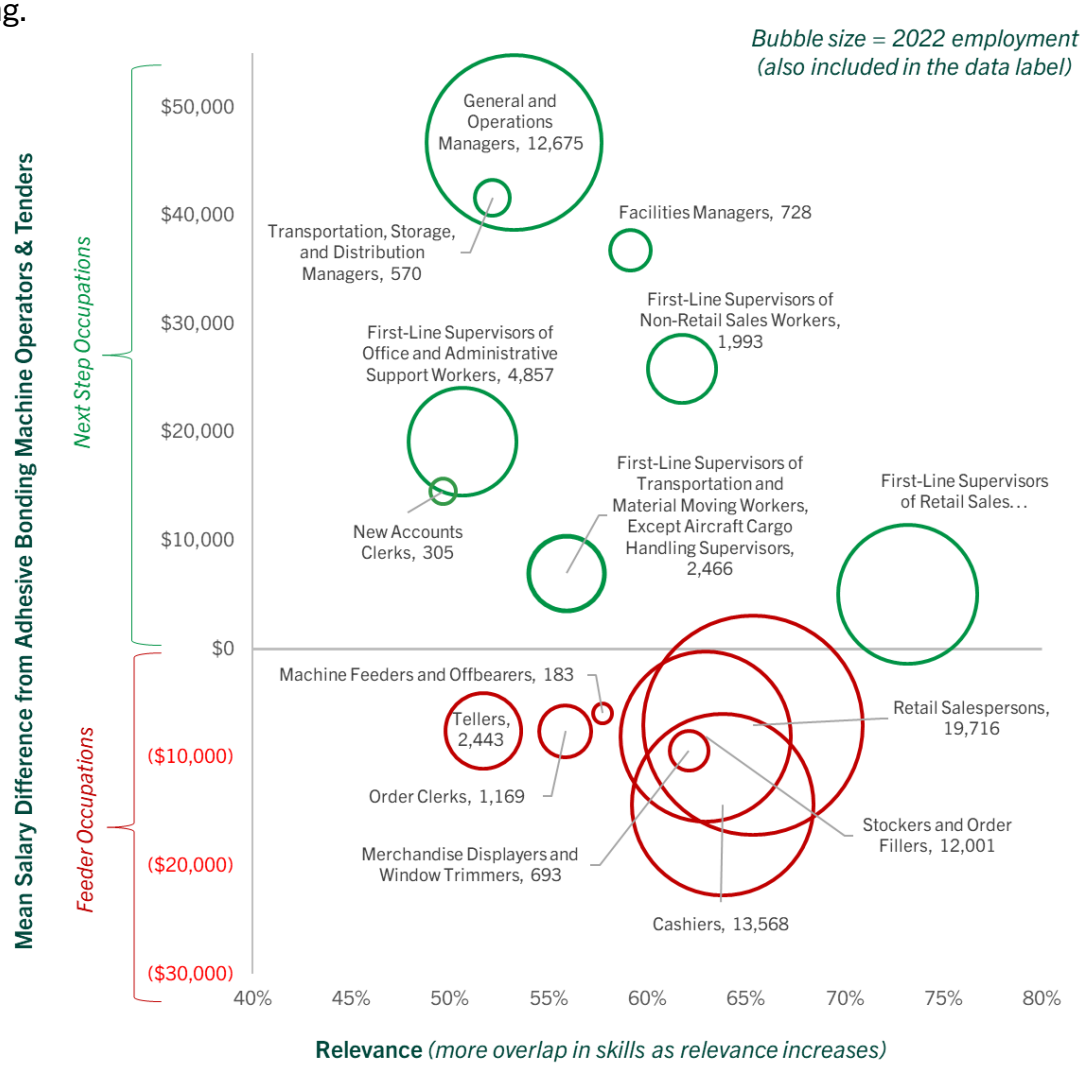
Adhesive Bonding Machine Operators & Tenders

Feeder and Next Step Occupations

Related occupations are plotted based on their skills transferability to *Adhesive Bonding Machine Operators* (the x axis) and their salary difference (the y axis, with $0 indicating the occupation has the same salary as *Adhesive Bonding Machine Operators*). Current employment in the occupation is represented by the bubble size (and in the data label) to indicate the size of the labor pool.

Feeder Occupations earn less than *Adhesive Bonding Machine Operators*; therefore, becoming an *Adhesive Bonding Machine Operator* would represent upward mobility with minimal training. These are potential sources of labor that could be drawn from to meet demand for this occupation.

Next Step Occupations have higher wages than *Adhesive Bonding Machine Operators* and present opportunities for advancement with minimal upskilling.



Source: Lightcast 2023.1

Pathway Recommendations

Overview

The following recommendations will support FOR/MAINE in promoting career pathways to advance talent development, recruitment, and retention for the Maine forest products sector.

1. **Provide ongoing technical support through FOR/MAINE or another organization to advance collaboration on career pathways for in-demand occupations and coordinate resource sharing for the forest products sector.**

2. **Convene an annual FPS Summit to unite all partners around career pathways expansion.**

3. **Increase marketing efforts to distribute career profiles and pathways to all FPS education and training providers, community partners, and the workforce system.**

4. **Administer student, alumni, and workforce surveys on an annual basis, working with workforce, education and training providers, and community partners to deliver it.**

5. **Evaluate feasibility of expanding existing training programs and infrastructure to support the FPS industry talent pipeline.**

These recommendations acknowledge the action that FOR/MAINE has already taken to support career pathways in the forest products sector, including outreach and marketing to adult job seekers in target populations (such as veterans, migrant workers, and workers from the re-entry community), career exploration programs for students, and efforts to expand access to jobs and credentials that propel workers into FPS careers. The following recommendations build on these efforts while also offering strategies for growing FPS partnerships and more closely engaging employers in talent pipeline development.

1. **Provide ongoing technical support through FOR/MAINE or another organization to advance collaboration on career pathways for in-demand occupations and coordinate resource sharing for the forest products sector.**

Description

For the FPS to build momentum expanding its talent pipeline, it will be critical to cement FOR/MAINE's role as a resource and convenor to sustain career pathway efforts long-term. While other groups target their efforts around industry engagement and advocacy, FOR/MAINE is best positioned to continue as the face for FPS industry-education collaboration. Designating a convenor will also help ensure that DEI efforts remain a priority as the industry evolves to expand its talent pipeline in new ways.

Activities:

a) **Formalize an HR network** to coordinate and bolster industry engagement in career pathways, validate the skills required by employers to inform education partners, and share progress implementing DEI efforts and other learnings from FOR/MAINE employer trainings. Target biannual or quarterly meetings to discuss employer needs, talent pipeline successes and challenges, piloting career pathway programs, and other potential collaborations with partners.
b) **Biannually refresh career pathways** with the latest labor market information and industry insights. Publish career pathways online, including integrating pathways with Department of Labor's online portal and Maine Tree's Maine Outdoor Career Guide.
c) **Send quarterly reminders** to FPS education and training partners about where to find profiles and pathways related to in-demand FPS occupations. This can be built into existing newsletters or other FOR/MAINE outreach methods.
d) **Continue seeking grants and funding streams** to support the FPS, including for marketing and outreach.

Partners to Engage

- FPS education and training providers
- HR leadership from FPS employers
- Maine Department of Labor
- Maine Forest Products Council
- Maine Tree
- Professional Logging Contractors Northeast
- Regional workforce boards

Strategy 1 in Action:

Ongoing Technical Assistance

American Forests: Career Pathways Initiative

American Forests has looked for innovative solutions to diversifying the forestry workforce, in this case primarily focusing on urban forestry. The Tree Equity Workforce Network (TEWN) was created based on feedback from stakeholders that partners from across the sector would benefit from a forum to share ideas, best practices, pre-employment strategies, and other initiatives that will help address the growing employment gap in the tree care industry. The goal of the network is to promote training and support of individuals who are underrepresented in the tree care industry, particularly Black, Indigenous, and people of color.

Learn more:

https://www.americanforests.org/project/career-pathways/#workforest

2. Convene an annual FPS Summit to unite all partners around career pathways expansion.

Description

Regular engagement of industry and education leaders will be critical to continue strengthening career pathways within the FPS. An annual summit creates space for ongoing dialogue about industry needs and innovative solutions to fostering talent, ensuring alignment between the skills taught in the classroom and those in demand among FPS employers.

Activities:

a) After establishing a new **HR network**, begin to plan a first annual convening to bring together leaders from industry, education, workforce and economic development, and community partners to collaborate on solutions to talent challenges across the FPS.
b) Utilize the annual summit to gather **real-time labor market information** from employers to validate the skills required for their jobs.
c) Engage with **national industry networks** to continually monitor FPS best practices, utilizing the summit and resulting engagement as a forum for discussing new innovations or opportunities.
d) E**ncourage resource sharing and partnership** among K-12, postsecondary education, community partners, and employers to scale up existing training programs and ensure equipment, land, and instructors are being optimized.

Partners to Engage

- Adult education providers
- FPS education and training providers
- HR leadership from FPS employers
- Maine Department of Labor
- Maine Forest Products Council
- Maine Tree
- Middle school and high school education teachers and guidance counselors
- New Mainers programs
- New Ventures Maine
- Professional Logging Contractors Northeast
- Regional workforce boards
- Rural Aspirations

Strategy 2 in Action:

Annual FPS Summit

Foundation for California Community Colleges: California Forestry Workforce Summit

The Foundation for California Community Colleges has organized the California Forestry Workforce Summit to create a forum for dialogue with state and federal leaders about the challenges and resources for effective, equitable workforce development in the forestry and wildfire management sectors. The agenda includes opportunities to hear from employers, training providers, and students about their experiences and needs, and dedicates time to discussing potential solutions and future projects.

Learn more:

https://foundationccc.org/our-work/climate-action/building-a-strong-climate-workforce/california-resilient-careers-in-forestry/#Forestry_Workforce_Summit

3. Increase marketing efforts to distribute career profiles and pathways to all FPS education and training providers, community partners, and the workforce system.

Description

Bringing transparency to skills requirements for in-demand jobs is key to supporting equitable access to FPS career pathways. To spread awareness of career opportunities in the FPS and ensure all partners receive the same insights, FOR/MAINE should advertise and promote career pathway materials through as many media channels as possible to reach the greatest number of individuals. FOR/MAINE can share this information directly and should also equip its partner network to share to ensure a common message about the FPS.

Activities:

a) **Update website** with revised career pathway information, allowing opportunities for jobseekers to interact with the information and find more details. Ensure that all updated information is connected to the Department of Labor's career pathway information.
b) **Promote materials among partners** who provide career exploration or advising services, including schools, community-based organizations, faith-based organizations, etc. All organizations will be able to share common information with their jobseekers, ensuring an accurate and common message about the industry.
c) **Create a plan for social media dissemination**. In order to reach the most potential jobseekers, distribute profiles and pieces of key information through multiple social media channels, through graphics, videos, or audio ads. Tailor messaging by demographics, for example using TikTok to engage with students and Facebook to target older workers.
d) **Join events as a speaker or panelist** to get in front of students and job seekers in person. This will provide new avenues to distribute career pathways information, hear questions and comments directly from current and future job seekers, and build relationships with partners that engage target populations around Maine.

Partners to Engage

- FPS education and training providers
- Local media outlets
- Maine Department of Labor
- Middle school and high school education teachers and guidance counselors
- Regional workforce development organizations

Strategy 3 in Action:

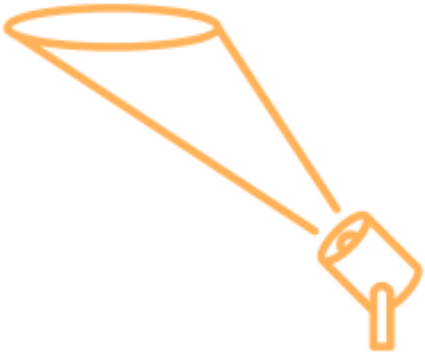
Career Pathways Information Distribution

San Diego Workforce Partnership: Labor Market Information on Priority Sectors and Jobs

While broader than one industry, the San Diego Workforce Partnership maintains an interactive website containing labor market information for its priority sectors and jobs. This website is available for jobseekers to understand the variety of opportunities available, and as it is publicly available, can be utilized by local community organizations and schools as a central source of this employment information. In addition to the data, each job and sector includes information on resources available to assist jobseekers in transitioning to these jobs, including formal and informal training and networking opportunities.

Learn more:

https://workforce.org/my-next-move/



4. Administer student, alumni, and workforce surveys on an annual basis, working with workforce, education and training providers, and community partners to deliver it.

Description

Through discussions and survey responses, Maine high school students shared that they and their peers do not have a strong sense of what the FPS is, what jobs exist, and what compensation looks like. Students explained that they would be interested in almost any job if they were introduced to it in an engaging way, and if it paid well. Moreover, students stated that they are currently most interested in the jobs with which they have had firsthand experience, specifically from field trips to job sites or having guest speakers with demonstrations in the classroom.

Activities

a) **Distribute the survey at the end of FPS camps and other summer programs** to continually assess students' familiarity with and interest in the industry.
b) After asking a student a survey question, **offer one sentence of explanation to not only measure familiarity, but increase it.** For example, after asking "Do you think that FPS workers make a lot of money?", the next page will say "FPS workers make $67,942 annually on average!" before the next question is asked.
c) Every year, include a question to **ask respondents the best way to reach them with information**, as that is constantly changing.
d) **Offer prizes to randomly selected survey respondents to encourage participation.**

Partners to Engage

- FPS summer camps
- Local school districts, including CTE programs
- Maine Department of Labor
- Maine Forest Collaborative
- Regional workforce systems
- Rural Aspirations
- UMaine Pulp and Paper Foundation

Strategy 4 in Action:

Student Career Exploration Survey

Sienna College Research Institute and CareerJamTM

In 2022 the Sienna College Research Institute and CareerJamTM implemented a survey intended to be replicated annually that would measure student career interests and awareness at the middle school level. This survey established a local baseline for educators to measure and verify how far along students are in career preparedness and development as they begin high school course selections. It also provided valuable insights into the needs for career awareness and exploration, supporting strategies to help align industry need with student interest.

Learn more:

https://www.career-jam.com

5. Evaluate feasibility of expanding existing training programs and infrastructure to support the FPS industry talent pipeline.

Description

There are several existing best practices in Maine for FPS training and industry engagement, and FOR/MAINE should focus on identifying how to support these models through additional capacity for existing programs, technical assistance to new programs, scaling to other parts of the state, and resource sharing. Programs such as Brewer High School's Forestry Immersion Program and Northern Maine Community College's Mechanized Logging Operations program are highly valued by employers, who expressed the desire to see these programs scaled up across the state. By being intentional with program investment and expansion, FOR/MAINE can also connect target populations with the training that employers value most.

Activities

a) **Meet individually with existing education and training providers** to understand current capacity, ability to meet future demand, and feasibility of scaling the program to targeted areas of the state.
b) **Continue providing technical assistance** to connect existing education and training providers with funding opportunities and state resources.
c) **Facilitate connections and opportunities for resource sharing** among education and training providers and employers.
d) Explore opportunities to **integrate targeted FPS curriculum and career exploration** into education and training programs that are not specifically targeted towards FPS jobs.
e) Encourage education and training partners to offer **industry-recognized credentials** (certifications, licenses, etc.) that help learners become more competitive upon graduation.

Partners to Engage

- Adult education providers
- FPS education and training providers
- HR leadership from FPS employers
- Middle school and high school education teachers and guidance counselors
- Rural Aspirations

Strategy 5 in Action:

Industry Summer Camps

Friends of the Forest, Anacortes, WA

Friends of the Forest offers youth education programs to offer kids the opportunity to explore forestry careers in the Anacortes region. This includes both afterschool and summer programs, emphasizing programming that not only exposes participants to a variety of careers, but begins building critical skillsets such as observation skills and teamwork.

Learn more:

https://www.friendsoftheacfl.org/youth-education-programs

Appendix: Regional Background Report

Introduction

The purpose of this report is to provide background and context for the creation of targeted workforce development strategies for key, tradable industry clusters within the State of Maine

This report includes brief overviews of the region's:

- Demographics
- Economy
- Labor force
- Labor force demographics
- Underserved populations

Unless otherwise noted, all data within this report is for 2022 and sourced from Lightcast.

Key Takeaways

- The State's population is on an increasing trajectory, growing faster than New England.
- There are fewer millennials and higher retirement risk than expected; the State is older than New England and nation.
- Racial diversity is much lower than expected for an area this State's size.
- Educational attainment is lower than New England but similar to the nation.
- Poverty is higher in Maine than in New England, but lower than the nation; and median household income is lower than both New England and the nation.
- The State is a net importer of population – more people are moving into the state than out, at the fastest rate in New England.
- Jobs have been increasing faster than New England over the past 5 years and are expected to continue to increase over the next five years.
- While average earnings have increased, they are still lower than the national average and well below the New England average.
- The State's share of New England's GRP is low relative to its share of population and jobs; its workers contribute less GRP per job compared to New England.
- Corporate, Subsidiary, and regional Manufacturing Offices, Temporary Help, Computer Systems Design Services, Crop Production, Shellfish Fishing, and Pulp Mills are the State's top industries in terms of job growth, concentration, and competitiveness.
- Labor force participation is lower than New England and lower than the nation and is well below pre-pandemic levels. Unemployment is at its lowest since 2019.
- 27% of the population is overqualified for the types of jobs employers are offering, which similar to regional and national levels.
- Enrollments and completions are declining; most completions are for college degrees and over 29% are completed through distance learning.
- The top common skills point to strengths in customer service and management, while specialized skills indicate workforce strengths in nursing and office worker jobs.
- The State is a net exporter of labor; the average commute is about 24 minutes, low compared to the nation.
- The State has a slightly larger proportion of older workers than at the region and nation.
- Maine's workforce is less diverse than New England and the nation.
- The sex composition of the workforce about 51% male, in line with broader trends regionally and nationally.
- The underserved populations that have the highest jobless rates include older workers, teens, and individuals with disabilities, though the vast majority of these individuals are not actively participating in the labor force. The underserved populations that would offer the greatest impact in terms of expanding the workforce include older workers, and workers with a disability

Demographics

Population
1,387,049

- 9.1% of New England's population
- Increased by 51,306 over the last 5 years (+3.8%, compared to +2.7% for the region and +2.8% for the US)
- Projected to increase by 58,676 over the next 5 years (+4.2%, compared to +3.2% for the region and +2.6% for the nation)

Median Age*
44.7

- The state is the oldest by median age in New England and older than the nation (38.8)
- Lower youth (<25) population than expected at 26% of the population compared to 29% in New England and 31% in the U.S.
- High retirement risk, with 37% of the population aged 55+ compared to 33% in New England and 30% in the U.S.

Median age source: US Census Bureau Population Estimates

Diversity
7.75%

BIPOC Share of Population

- Increased by 18,314 over the last 5 years (+20.5% compared to +12.5% for the region and +2.8% for the nation)
- Expected to increase by an additional 22,737 over the next 5 years (+21.2% compared to 11.3% for region and 7.5% for the nation)
- Racial diversity is very low for an area this size (102,712 racially diverse people compared to 558,420 on average for an area Maine's size)

Educational Attainment
35%

Bachelor's Degree +

- The State's educational attainment is 7.5 percentage points lower than the region's rate of 42.1%, but 0.5% higher than the national rate of 34.1%
- The high school graduation rate is 86.14% in 2022, relatively unchanged from 5 years prior

* Source: Maine State Education Department, 2022 4-year outcomes

Household Income
$63,182

- The State's median household income is lower the region ($81,920) and lower than the nation ($69,717)
- With a poverty rate of 11.0%, the State has more poverty than the region (9.5%) but less than the nation (12.6%)

Average Net Migration
6,346

2016 - 2020

- The State is a net importer of population with an average of 28,596 migrating in of the region and 22,250 migrating out per year
- In 2020, top originating counties included: Middlesex County, MA (5.3%), Strafford County, NH (3.3%), and Rockingham County, NH (7.1%)
- In 2020, top destination counties included: Rockingham County, NH, (3.7%), Strafford County, NH (3.6%), and Middlesex County, MA (2.0%)

FOR/ MAINE

Economy

Jobs
721,061

- 8.8% of the region's jobs
- Increased by 16,907 over the last 5 years (+2.4% compared to 0.4% in the region and +3.4% in the nation)
- Projected to increase by an additional 21,970 over the next 5 years (+3.0% compared to +7.2% in the region and +7.0% in the nation)

Average Earnings
$67,942

- $23,757 below the region's average ($91,699) and $12,996 below the national average earnings ($80,938)
- Grew by 31% since 2017, outpacing New England (26%) and the U.S. (25%)

Gross Regional Product
$

- 6.5% of the region's GRP, which is low relative to the State's share of the region's population (9.1%) and jobs (8.8%)
- Productivity is at $118,024 per worker, which is $41,900 lower than the region and $29,942 lower than the nation

Competitiveness
#

jobs added or lost due to local factors, 2017-2022*

- Corporate, Subsidiary, and regional Managing Offices: +3,684
- Temporary Help Services: +2,242
- Crop Production +1,991
- Computer Systems Design Systems: +1,871
- Colleges, Universities, and Professional Schools (+1,480)

* i.e., job growth or decline cannot be explained by national or industry growth

High Concentration Industries*

- Shellfish Fishing: 80.6
- Pulp Mills: 25.3
- Footwear Manufacturing: 23.3
- Newsprint Mills: 18.5
- Ship Building and Repairing: 12.7

* Compares an industry's share of regional employment with its share at the national level. A LQ of 2.5 would mean the industry is 2.5x more concentrated in the region than the typical region.

High Growth Industries
2017-2022

- Corporate, Subsidiary, and regional Manufacturing Offices: +4,521 (43% growth)
- Temporary Help Services: +2,775 (38%)
- Computer Systems Design Services: 2,200 (107%)
- Crop Production: +1,991 (49%)

Labor Force

Labor Force*
673,600
March 2023

- 8.4% of the New England's labor force
- Labor force participation rate of 58.0%, 5.7 percentage points lower than the region rate (63.7%), and 5.1 percentage points lower than the nation (62.6%). Participation rates remain much lower than the pre-pandemic rate of 62.3% (2019)
- 446,750 missing workers (not in the labor force), 54% of whom are above the age of 65**

* Includes the civilian, non-institutionalized population 16 years+ Source: BLS; **Source: American Community Survey 2021 5-year Estimates. "Not in labor force" includes retired persons, students, those taking care of children or other family members, and others who are neither working or seeking work.

Unemployment*
2.6%
March 2023

- 17,570 workers are unemployed
- Unemployment 0.9 percentage points lower than the nation (3.5%)
- Unemployment rates are down from their peak of 9.4% in May 2020

* Source: BLS

Underemployment*
27%

- Underemployment similar to the region (26%) and the nation (27%)
- There are 9% more people with Some College, Non-Degree Awards than required by employers; 9% more with an Associate's Degree; and 8% more with a Graduate Degree or Higher

* Underemployment = Population at Educational Level – Jobs Requiring Educational Level

Avg. Annual Completions
15,374
2017 - 2021

- 34 institutions operating within the State
- 15,374 completions in 2021 (-3%), 29% of which were in distance programs
- 89.7% of completions were for degrees and 10.3% were for certificates

Net Commuters
-12,392
2022

- The state is a net exporter of workers with 721,061 jobs and 733,460 resident workers, meaning that some workers are leaving the state for work.
- The counties that have more jobs than resident workers are: Cumberland County (35,856), Kennebec County 4,777), Penobscot County (4,586), and Knox County (1,520)
- The mean commute time is 24.3 min. which is faster than the nation (26.8 min.)

Top In-demand Skills
2017 - 2022

Specialized:

- Nursing (9%)
- Merchandising (8%)
- Selling Techniques (5%)
- Marketing (5%)
- Auditing (4%)
- Accounting (3%)

Common:

- Communications (31%)
- Customer Service (25%)
- Management (21%)
- Sales (17%)
- Operations (14%)

* Profile analytics mine data from the 64,244 online resumes that list Maine as the place of residence (50.4% of all jobs in the region).

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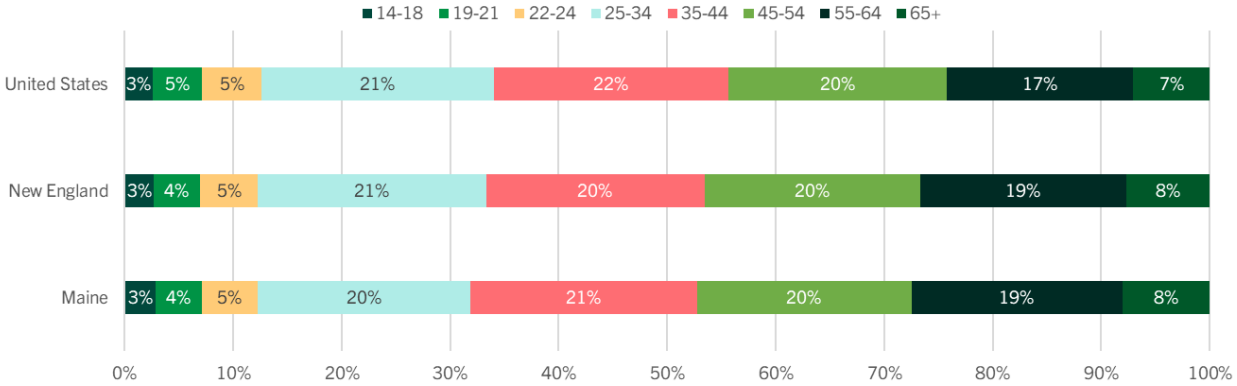
Labor Force Demographics

The graphs below show the demographic distribution of the Maine's workforce by age, race, and sex.

Maine's workforce is slightly older than the state and national level, with older workers (ages 55–64 and 65+) accounting for 27% of the workforce, equal to the regional share but higher than the nation's 24%. This is a long-term trend: in 2016, 27% of the workforce was over the age of 54.

Age

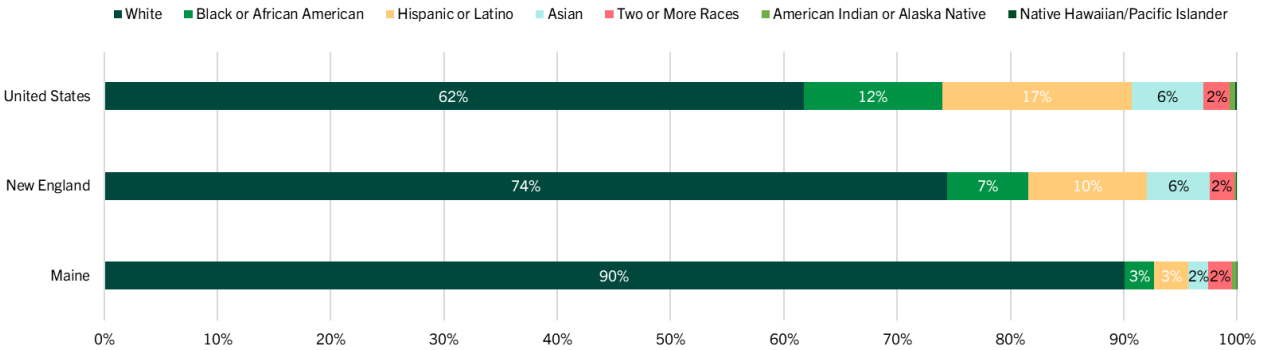


Source: Lightcast 2023.2

Note: Age cohorts are determined by data availability. Data is not available in more detailed age groups than listed above.

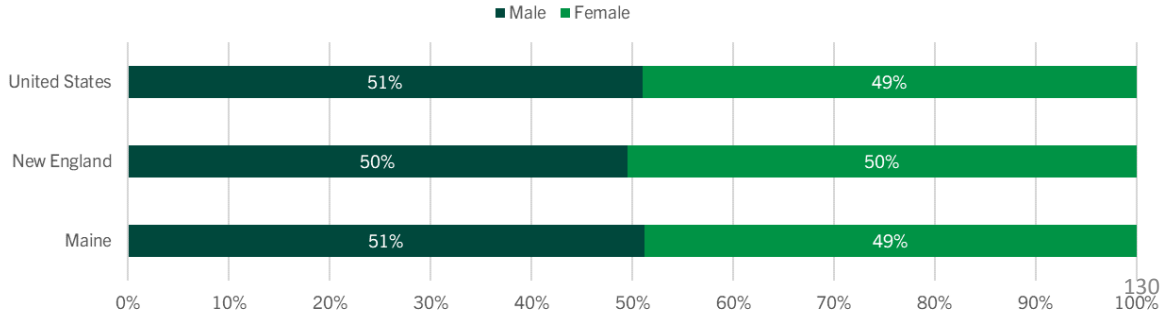
The racial composition of the workforce is less diverse than the region and the nation, with 10% BIPOC workers compared to 26% for the region and 38% for the nation. The State's workforce is increasingly more diverse with a 2.3% increase in BIPOC workers in the past 5 years in line with the Regional (+3.0%) and national (+2.3%) trends.

Race and Ethnicity



Maine's workforce is evenly split, in keeping with State and national trends. The sex distribution of workers has remained consistent over the past 5 years for all 3 regions of analysis.

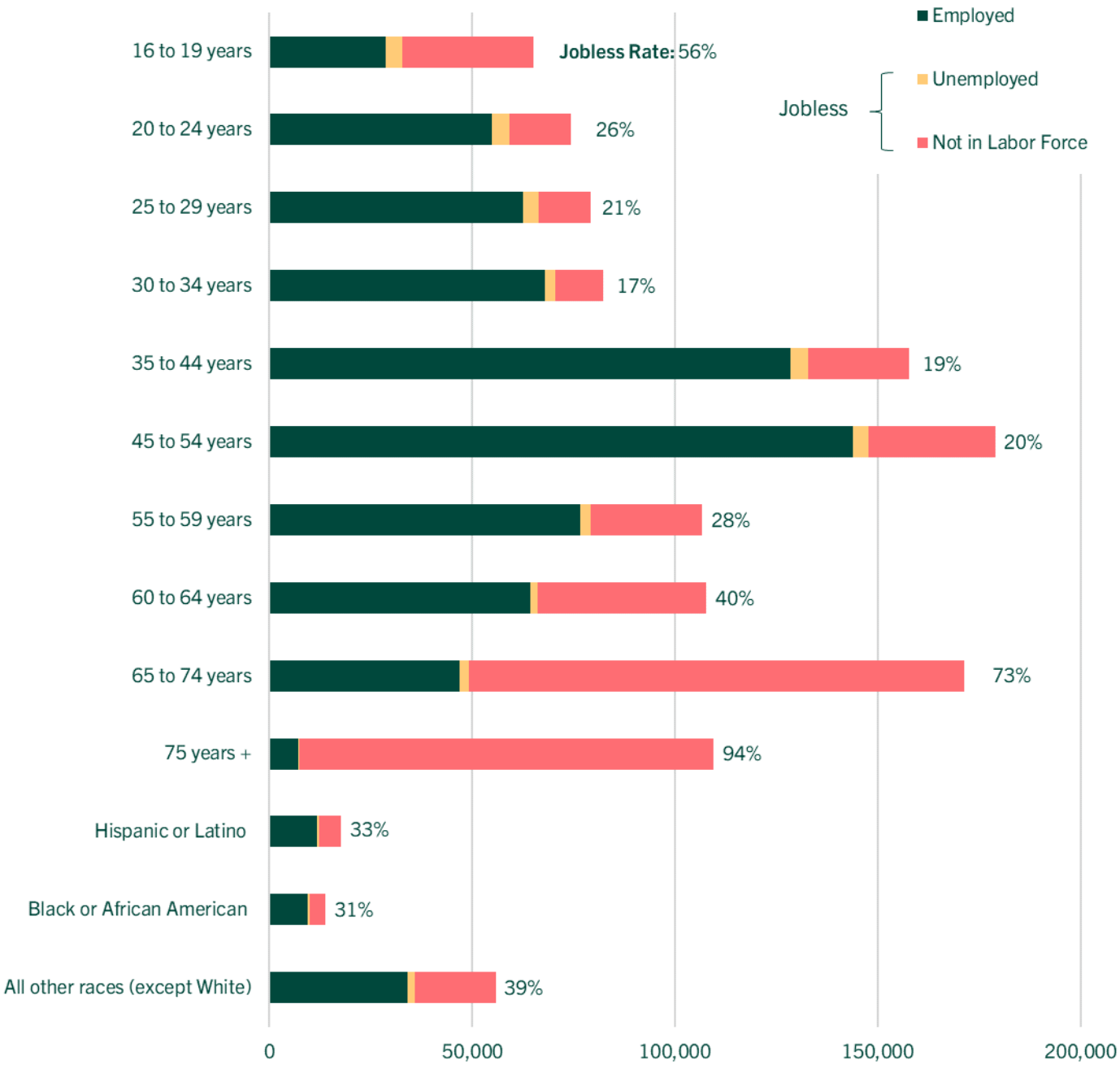
Sex



Jobless Demographics

In 2021, 40% of Maine's population aged 16+ were jobless, meaning that they were either unemployed or not in the labor force.* Jobless rates varied significantly across age, race, and ethnicity. Jobless rates are lowest for age cohorts between 25-54 years old and highest for those aged 16-19 and over 60 years old.

State of Maine Jobless Population by Demographic, Population Aged 16+



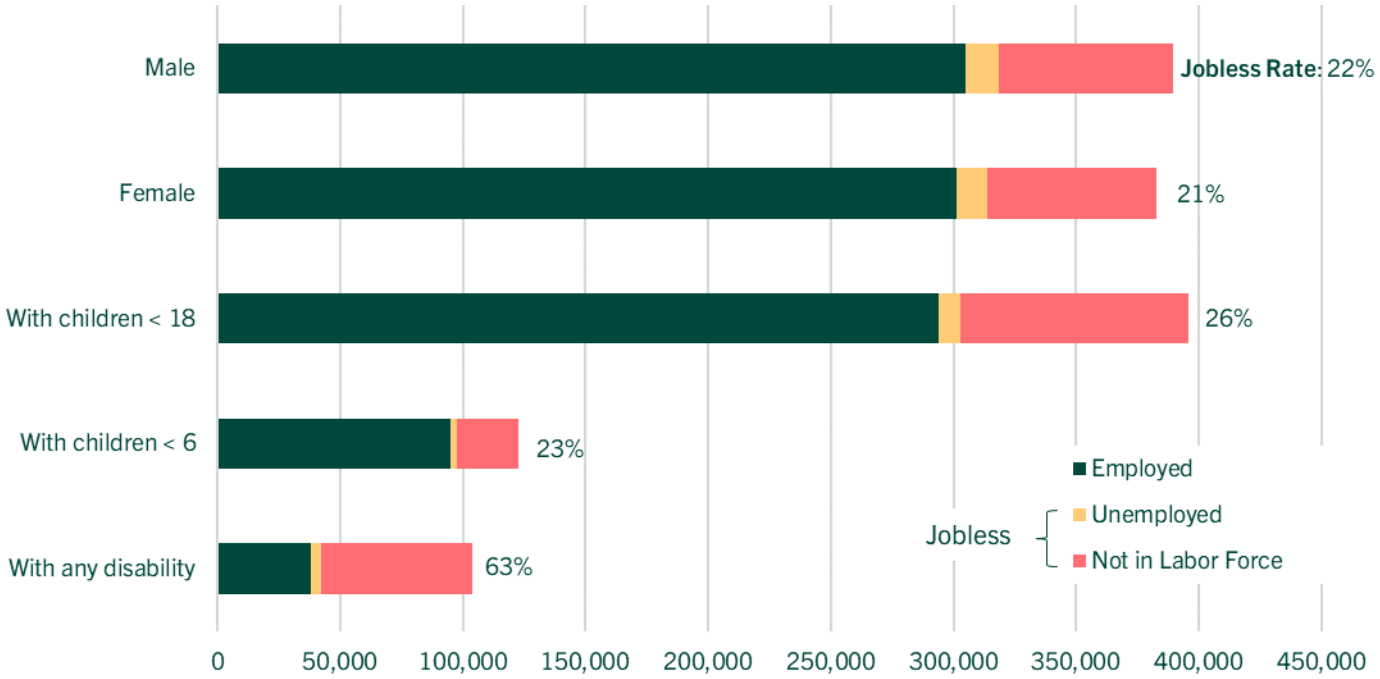
Source: ACS

*Note: "Not in labor force" includes retired persons, students, those taking care of children or other family members, and others who are neither working nor seeking work.

Jobless Demographics

Among the core working-aged population (20-64 years old), about 24% of individuals are jobless, i.e., either unemployed or not engaged in the labor force. The jobless rate is particularly high for those with a disability (63%), though the jobless rate is also relatively high for women with children (26%).

State of Maine Jobless Population by Demographic, Population Aged 20-64



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