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Alaska's Transportation Workforce Detours: Maximizing training opportunities and outcomes in DOT&PF's key industries.

FINAL REPORT

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Commissioned by the Alaska Department of Transportation & Public Facilities in fall 2023, this report examines Alaska's workforce in nine priority construction occupations, including laborers, carpenters, electricians, and truck drivers. The study aimed to assess current workforce characteristics, forecast growth, and explore strategies to increase participation by underrepresented groups such as women, people of color, and rural residents. Using interviews, surveys, labor data, and public datasets, the report presents detailed industry profiles that cover job nature, wages, workforce demographics, growth projections, training availability, and recruitment challenges. Key findings show that Alaska's construction workforce is aging, with significant shortages projected across all priority occupations - particularly for truck drivers and operating engineers. Women represent a small fraction of the workforce, though training programs report higher female enrollment than current field representation. Rural and minority student participation remains low. Common challenges cited by employers include worker shortages, lack of skills, competition, and limited rural workforce availability. The report outlines crosscutting strategies to grow the workforce: expanding accessible training, targeted outreach, improving job value and retention, building partnerships, offering competitive compensation, and providing support services such as travel, housing, and childcare.

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Executive summary

This report was commissioned by the Alaska Department of Transportation & Public Facilities (DOT&PF) in the fall of 2023. The objectives were to describe the current Alaska workforce in priority occupations, to identify projected growth in those occupations, and to identify how the state could fill positions in those jobs with Alaskans, particularly by increasing representation of under-represented workers including women, people of color, and people from rural areas.

We used key informant interviews of training providers and employers, surveys of training providers and employers, de-identified data from the Alaska Department of Labor and Workforce Development, and extensive web searches and publicly available datasets to compile industry profiles for construction laborers and 8 other priority occupations identified by DOT&PF: carpenters, cement masons, electrical workers (including electricians and linemen), ironworkers, operating engineers, pile drivers, plumbers and pipefitters, and truck drivers.

The report details methods and data sources, and notes how secondary career and technical education (CTE) programs are providing youth with opportunities to learn about and develop skills in construction trades. The report contains an industry profile for each occupation that describes the nature of the work, an overview of wages, an Alaska worker profile, projected growth, an overview of training providers and their capacity, and recruitment and retention challenges as reported by employers. Each profile ends with recommendations from employers and training providers for growing the workforce.

Across all priority occupations, truck drivers and operating engineers have the oldest workforce, with 25% and 22% of current workers, respectively, aged 55 and older. Construction laborers are the youngest workforce, with 47% of the workers under the age of 35. There are few women currently working in the priority occupations. 11% of construction laborers are female, and women comprise 7% or less of the workforce for all other occupations. The 5-year in-occupation retention rate is highest for electricians and linemen and plumbers and pipefitters, and lowest for ironworkers and piledrivers. Laborers and carpenters are most likely to move between priority occupations, but to remain in construction jobs in Alaska.

The 10-year projected growth in all priority industries is higher in Alaska than it is for the nation, with the exception of piledrivers (though some training providers for pile drivers perceived Alaska projections to be low). Employers and training providers across all occupations noted that current shortages of skilled workers will challenge the industry to meet the increased demand for a skilled workforce.

While basic skills training for the priority occupations generally lasts a few months, full journeyman certification takes several years. All occupations have union training centers and federally registered apprenticeship opportunities. Notably, with the exception of truck drivers, training providers noted that trainees are primarily males, and all training providers reported higher enrollments of women than their representation in the current Alaska workforce. Students of color and students from rural areas make up less than a 20% of enrollments at training centers. These data indicate that increasing access to training and improving retention for underrepresented students is an area of opportunity for the state.

Across all priority occupations, employers listed a lack of available workers in general, a lack of skilled workers, competition with other Alaska employers, an aging or retiring workforce, and a lack of workers in rural areas as their most significant challenges to recruiting and retaining workers, though some occupations reported different challenges as well. Across all priority industries, employers of pile drivers

were the most likely to report recruitment and hiring challenges.

Recommendations for growing the workforce varied across occupations, but contained several crosscutting recommendations. These include:

- **Access** - Expanding training access by investing in flexible, technology-enabled, and rural-accessible programs
- **Outreach** - Strengthening outreach to youth, women, and underrepresented groups
- **Value** - Promoting the value and wide variety of career paths in construction
- **Retention** - Supporting year-round employment with cross-training and off-season job matching to retain workers and instructors
- **Partnerships** - Strengthening partnerships between trades, training programs, and industry to streamline career pathways
- **Compensation** - Offering competitive pay, benefits, and supports for workers and instructors
- **Supports** - Reducing barriers to training and employment through supportive solutions with travel, housing, and childcare

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Introduction & scope

This work was commissioned by the Alaska Department of Transportation and Public Facilities (DOT&PF) Office of Civil Rights. In anticipation of infrastructure investments and multiple projects, the office wanted to explore two fundamental questions:

1. Does Alaska have the workers it needs for upcoming construction projects and infrastructure development?
2. What can be done to improve underrepresented Alaskan's access to high-wage, high-demand construction jobs throughout the state?

The Office of Civil Rights - On the Job Training (OJT) program identified eight priority occupations representing the biggest areas of training and employment needs in the state, as communicated to them by the contractors and people bidding on construction jobs. These were: carpenters, cement masons, electrical workers (including electricians and linemen), ironworkers, operating engineers, pile drivers, plumbers and pipefitters, and truck drivers. Additionally, and in response to industry feedback, we included construction laborers in the analysis.

Methods & data sources

To answer these questions, we synthesized data across a variety of sources into profiles that describe each priority occupation. Primary data (i.e., key informant interviews and surveys) were collected with approval from the University of Alaska Anchorage Institutional Review Board. Employment records from the Alaska Department of Labor and Workforce Development (DOLWD) were compiled as part of the State's administration of the unemployment insurance program. Using a pre-specified plan of analysis, DOLWD compiled these records under a service agreement and provided aggregate statistics. Additionally, we accessed publicly available data from a variety of sources including the National Center for Education Statistics, institutional and union webpages, the US Department of Labor's O*NET Online database, Perkins reports, and Alaska workforce development plans.

Key informant interviews

We conducted key informant interviews to understand priorities and needs from employers and training providers, to hear their perspectives and interpretations around compiled datasets, and to use that information to inform further data collection. For this project, we conducted 18 interviews with education and training providers, and 15 with employers. These were conducted over Zoom, lasted between 32 and 116 minutes (average 55 minutes) and were transcribed and coded to identify areas of opportunity, challenges, and recommendations. Education key informants were identified through project contacts and snowball sampling. Employer key informants were identified through snowball sampling, publicly available lists such as DOT&PF Disadvantaged Business Enterprise (DBE), DOT&PF bidders list, DOT&PF vendors list, the Alaska General Contractors (AGC) directory, the Alaska Builders and Contractors (ABC) directory; Google searches; and attending public events such as Alaska Construction Career Day and job fairs.

Employer surveys

To identify Alaska employers, we compiled a list of Alaska businesses that included DOT&PF Disadvantaged Business Enterprise (DBE), DOT&PF bidders list, DOT&PF vendors list, the Alaska General Contractors (AGC) directory, the Alaska Builders and Contractors (ABC) directory, and employers listed online on union and association websites. We used Google searches to identify contact information (names, email addresses, and phone numbers) for each organization. This activity yielded over 500 active businesses in Alaska employing workers in the priority occupations, and the data in this report include 117 survey responses, or a 23% response rate.

Each organization with a valid email address received an initial email invitation to participate, followed by two reminder emails. We called employers who did not respond to email invitations twice to offer the opportunity to complete the survey via phone. We initially contacted employers in the summer, but completed our contacts in the winter to ensure employers had an opportunity to participate after construction season. Employers were asked about each priority occupation in sequence; many employers hire workers across multiple occupations and completed a survey for more than one priority occupation.

Alaska secondary education providers

Data about secondary education (high school) training and workforce development were obtained through Alaska Department of Education and Early Development (DEED) reports and websites, AKDOL report and websites, Alaska school district websites, Google searches, and information from key informant interviews. Additional data were obtained from DEED which included information about student enrollment numbers for CTE courses by school districts.

Education institution surveys

To identify Alaska education and training providers, we identified active training programs in Alaska and utilized the DOLWD Eligible Training Providers List (ETPL) of Alaska . Our searches yielded a total of 40 organizations, including union training and apprenticeship programs, non-union training and apprenticeship training programs, vocational/technical schools, technical colleges, regional training centers, pre-apprenticeship training programs, and skills training programs (such as CDL driving school). Data in this report include 30 survey responses from training providers, or a 75% response rate. Some training providers, such as the Alaska Ironworkers Training Program Trust, provide training specific to a particular occupation, whereas other training providers like the Alaska Vocational Technical Center (AVTEC) and community and technical colleges provide training for multiple occupations in a single facility.

Each education institution with a valid email address (generally this was a Dean or Training Director of a program) received an initial email invitation to participate, followed by one reminder email. We called education institutions who did not respond to email invitations twice to offer the opportunity to complete the survey via phone. Training providers were asked about each priority occupation in sequence; if they provided training for multiple occupations, then the survey questions were asked for each occupation separately.

We have had challenges in some of the more remote locations … getting local qualified workers.

- Alaska training provider

Alaska's secondary education construction training

Though this report focuses primarily on the availability of postsecondary training opportunities in Alaska, secondary education programs offer youth opportunities to explore careers and develop technical skills while they are still in high school. Secondary Career and Technical Education (CTE) programming in Alaska includes high school coursework, career exploration, personal learning and career planning, advising, and credit transfer agreements that help youth develop skills that can be applied in postsecondary programs and the workforce.

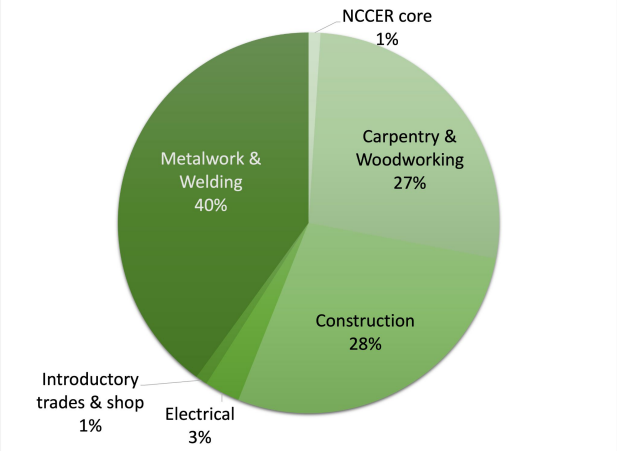
State programs

The Alaska Department of Education & Early Development (DEED) distributes federal Carl Perkins funds to support Alaska school districts in implementing Career & Technical Education (CTE) programs.[1] Funding is used to implement classes, train staff, purchase equipment, organize advisory boards, and report metrics such as graduation rates, academic proficiency, and post-placement information. Additionally, the Alaska Workforce Investment Board (AWIB) provides grant funds for Alaska Construction Academies and State Training and Employment Programs (STEP), several of which are implemented through school districts, regional training centers, unions or non-profits.[2,3] The Alaska Association of Career and Technical Educators (AACTE) and the Alaska Postsecondary Commission (APS) support educators and youth throughout the state to grow capacity and skills in high-demand industries.

District & local programs

Alaska school districts offer CTE classes across all of the recognized career clusters. Specific to construction, Alaska school districts offer high school classes in welding, metalwork, carpentry, woodworking, construction skills, electrical, National Center for Construction & Education Research (NCCER) core skills, and introduction to the trades. Many districts utilize nationally recognized curriculum, such as NCCER[4] or Career Connections,[5] and some districts offer middle school classes in woodworking and construction. Many CTE courses also include credits in core subjects, such as math.

Figure 1. **2023-2024 Alaska high school construction enrollments**



Across Alaska high schools, the most common construction courses are welding & metalworking, carpentry & woodworking, and general construction.

Enrollments in construction courses have remained fairly steady between 2021 and 2024, with construction courses accounting for approximately one fifth of the overall CTE enrollments. Figure 1 shows enrollments in CTE construction courses across Alaska high schools for the 2023-2024 academic year.

School districts also enhance their CTE construction programs with strategies such as:

- Offering specific within-school career pathways related to construction, welding, or transportation
- Offering specialized programs at career and technical high schools
- Working with industry partners including unions, regional training centers, local and statewide non-profits and Alaska Native corporations
- Partnering with post-secondary institutions to articulate credits or offer dual enrollment opportunities

Endnotes: Alaska's secondary education construction training

1. Alaska Career & Technical Education Perkins State Plan. https://education.alaska.gov/cte/perkins-state-plan
2. Alaska Department of Labor and Workforce Development, Alaska Workforce Investment Board ACA Program Service Providers. https://awib.alaska.gov/training-programs/aca-providers.html
3. Alaska Department of Labor and Workforce Development, STEP Grant Providers. https://awib.alaska.gov/training-programs/step-grant-providers.html
4. National Center for Construction Education and Research. https://www.nccer.org/
5. United Brotherhood of Carpenters, Career Connections. https://www.carpenters.org/citf-training/citf-training-programs/career-connections/

Carpenters

Occupation overview

A carpenter builds, installs and repairs structures and fixtures made of wood, metal, or other materials. These include concrete forms, building frameworks, scaffolding, stairways, and window and door frames. Carpenters can also install cabinets, hardwood floors, siding, drywall, and insulation. Individuals in this occupation may also build doors and brattices (ventilation walls or partitions) in underground passages (such as in mining).[1] Carpenters work in a variety of industries, such as construction, mining, oil & gas, and maritime industries.[2]

Alaska has some unique challenges with regard to geography and climate. Carpenters in Alaska have to adapt to extreme temperatures and moisture in some locations. Construction in Alaska is also dependent upon the season; with more civil construction, such as bridges and roadwork, done in the summer. Carpenters can do more building or "vertical" work in the winter.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as carpenters in Alaska work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for carpenters based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for carpenters in Alaska range from $15.85 to $48.54.[3, 4, 5] Most Alaska employers who participated in this research said they base their wages on the State of Alaska Pamphlet 600 rates of pay or "little Davis-Bacon wages," and many said they pay above scale to be competitive. Table 1 depicts carpenter wages from several different data sources.

Table 1
Carpenter wages in Alaska and the US

	Alaska	US
	Annual earnings[6]	
Median	$62,190	$56,350
Bottom 10% of workers earn (<=)	$47,060	$37,440
Top 10% of workers earn (>=)	$101,910	$94,580
	Hourly wage[7, 8, 9]	
Average	$34.72	$29.31
Median	$29.90	$27.09
	Davis-Bacon hourly wages[10]	
Journeyman	$48.54	-
Apprentice	$29.12	-

This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 61% (2022 Alaska Department of Labor and Workforce Development). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 61% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 2
Alaska's carpenter workforce, 2022

	% of workers
Age Group	
55 and over	16%
35-55	41%
18-35	31%
Unknown/Other*	13%
Gender	
Female	4%
Male	84%
Unknown/Other*	12%
Place of Residence	
Anchorage-Matsu	36%
Gulf Coast	7%
Interior	15%
Northern	3%
Southeast	9%
Southwest	6%
Unknown/Other*	24%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

I have plenty of carpenters, but I have jobs that are in remote locations that people don't want to go to. So, I think the challenge is having the right number of people that are willing to go to the job site that we need them to go to.

- Alaska employer

Projected growth

In the next 10 years, Alaska is expected to add 200 new jobs for carpenters (a 7% increase), which is a faster rate of growth than the rest of the nation. Alaska employers who participated in our research generally agreed with these projections, but noted that anticipated infrastructure investments may drive the need higher. Concomitantly, Alaska employers noted that private sector work may not follow the same trends in demand that are seen in the public sector.

Table 3
Projected growth for carpenters

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	2,160 employees	956,300 employees
Projected employment in 10 years	2,320 employees	964,900 employees
Projected 10-year growth	7%	1%
Projected annual job openings over the next 10 years	200 jobs	79,500 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, about a quarter of today's carpenters were working in the industry. Seven percent were laborers, 30% were in other construction jobs in Alaska, 3% were in non-construction jobs in Alaska, and just over a third were working outside of Alaska. Table 4 reflects the industry's ability to retain carpenters, and what other occupations feed into the carpenter workforce.

> *I see there is a real challenge in having the labor pool to draw from. I mean, it's a real balancing act. Am I gonna bid a job that I need 12 carpenters on and then go, 'Oh, I hope I can find them?'*
>
> - Alaska employer

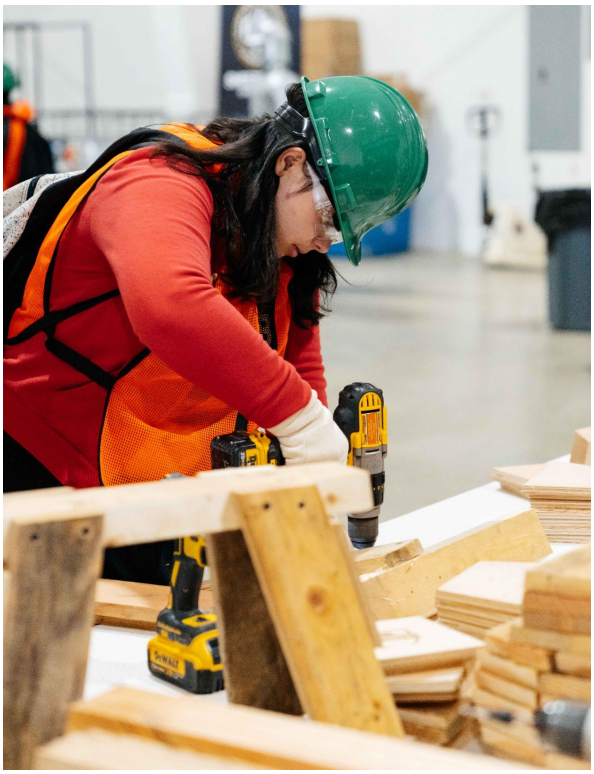


Table 4 Movement in and out of carpenter jobs		
How many 2017 carpenters are still in the field?	Occupation	What were 2022's carpenters doing 5 years ago?
25%	Carpenter in Alaska	26%
4%	Laborer in Alaska	7%
30%	Other construction occupation in Alaska	30%
3%	Non-construction occupation in Alaska	3%
38%	Unknown or outside Alaska workforce	34%

About a quarter of carpenters working in Alaska in 2017 were still employed as carpenters in 2022. Another third were working as laborers or in other construction jobs in Alaska, such as carpenter helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff. Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data.

Training overview

Requirements & certifications

An entry-level job as a carpenter typically requires a high school diploma (or equivalent), and carpentry training. Other common requirements include basic math skills, a driver's license, and being able to perform the job's physical demands. Carpenters learn their trade through apprenticeship training programs, vocational schools, technical colleges, and on-the-job training. Many of these programs offer an industry-recognized certification, occupational endorsement, or associate's degree. Formal training programs through apprenticeships or vocational training schools are recommended by employers.[10, 11]

Alaska's postsecondary training programs

Alaska has 18 programs to train in carpentry skills; this includes one union training program for carpenters, the Alaska Carpenters Training Trust, which has two locations (Anchorage and Fairbanks). Of Alaska's 18 programs, and 12 provided data for our project.

Training programs include in-person and online skills training, pre-apprenticeships, internships, and apprenticeships. Many students will continue to pursue additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately four years for a carpenter apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[11] In 2023, Alaska had 210 carpenter/pile driver apprentices enrolled in four apprenticeship programs registered with the US Department of Labor.[12] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 65 trainees per year. Additionally, other programs that provide skills training and pre-apprenticeship training enrolled an additional 460 trainees annually. The reported annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) across these programs was 79%.

Table 5 depicts characteristics of students who participate in these carpentry training programs in key target characteristics for increased representation.

Table 5
Under-represented groups' participation in Alaska's carpenter training programs

Students of color	16%
Women	30%
Rural	7%

Data sources: Surveys of 12 education or training providers. Percentages reflect weighted averages by program size for all 12 training programs that provided data

Visibility of the industry, funding and access or proximity to training centers were the most frequently cited recruitment challenges among education programs for carpenters. The most common retention challenges among carpenter training programs were related to funding, access, and proximity to home, which creates challenges around homesickness, housing, and childcare. There were also retention challenges related to balancing work and training, and the seasonal and physical aspect of the job.

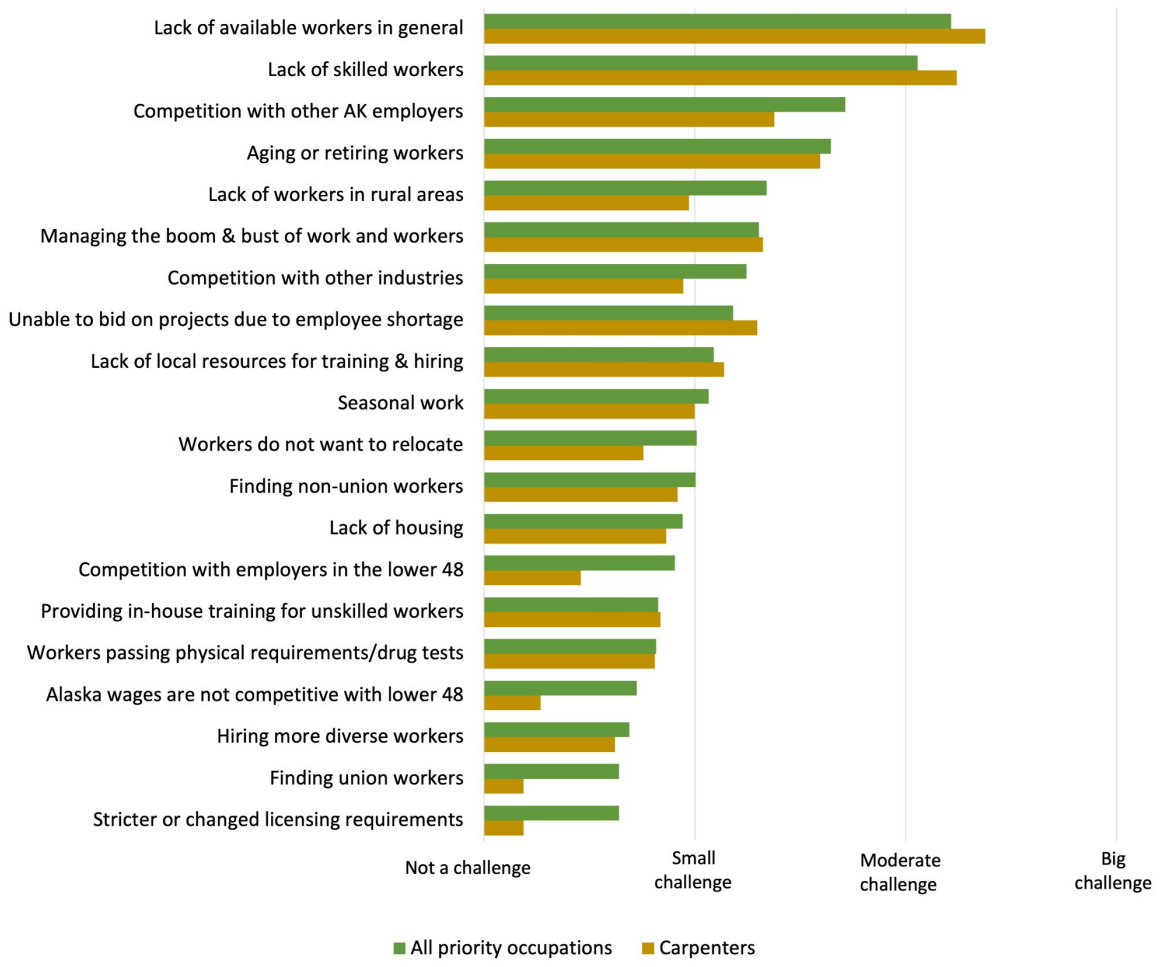
Employer challenges/perspectives

We completed seven key informant interviews and received survey data from 53 active Alaska businesses that employ carpenters. Figure 2 depicts how those employers characterized their hiring challenges, as compared to other priority industries. Employers of carpenters were slightly more likely to say they have difficulty finding workers and skilled workers, but otherwise, on average, they reported fewer challenges than other priority industries. Employers of carpenters were least likely of all priority industries to report challenges finding rural workers, but they still rated this as a "small challenge" on average.

> *They are part of the Carpenters Union, so we pay their union benefits. Beyond that we provide them with paid vacation. We provide them with vehicles, we provide them with profit sharing bonuses. All of those are outside the negotiated agreement are fairly common within our industry.*
>
> - Alaska employer

Figure 2 depicts the challenges that employers face in filling their demand for workers in priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of carpenters rated each item; when the brown bar is longer than the green bar, it indicates that employers of carpenters have a greater challenge in this area than the average of all 8 priority industries.

Figure 2. **Recruitment & retention challenges for carpenter employers**



Opportunities

Key employer and training provider recommendations for growing the carpenter workforce include:

- Getting more youth involved
- Retaining workers during the off-season and offsetting losses due to the seasonal nature of carpentry work
- Offering more competitive wages
- Attracting more women into the profession
- Increasing access to training, including using technology and online training such as NCCER which provides consistent training across settings and provides safe and early exposure to the industry
- Maximize utilization of the workforce by providing cross training with other trades that have overlapping skills

Endnotes: Carpenters

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Cement Masons

Occupation overview

Cement masons and concrete finishers spread, smooth, and finish surfaces of poured concrete, such as roads, sidewalks, curbs, floors, sidewalks, and walkways using a variety of hand and power tools. They align forms for sidewalks, curbs, or gutters. They patch voids and use saws to cut expansion joints in surfaces.[1] In Alaska, this work is often seasonal, with the majority of work being done outdoors and during the summer construction season.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as cement masons in Alaska work variable hours, move around to different projects and have gaps of time between projects. There are also different minimum wage rates for cement masons based on funding source (state or federal), construction type (building, heavy, highway and residential), geographic location, and union participation. State and federal minimum hourly wages for cement masons in Alaska range from $20.00 to $46.93.[2,3] Table 6 depicts cement mason wages from several different data sources.

Table 6
Cement mason wages in Alaska and the US

	Alaska	US
	Annual earnings[4]	
Median	$73,670	$50,720
Bottom 10% of workers earn (<=)	$43,340	$37,440
Top 10% of workers earn (>=)	$107,320	$83,580
	Hourly wage[5, 6, 7]	
Average	$37.84	$27.60
Median	$35.42	$24.38
	Davis-Bacon hourly wages[8]	
Journeyman	$46.93	-
Apprentice	$28.16	-

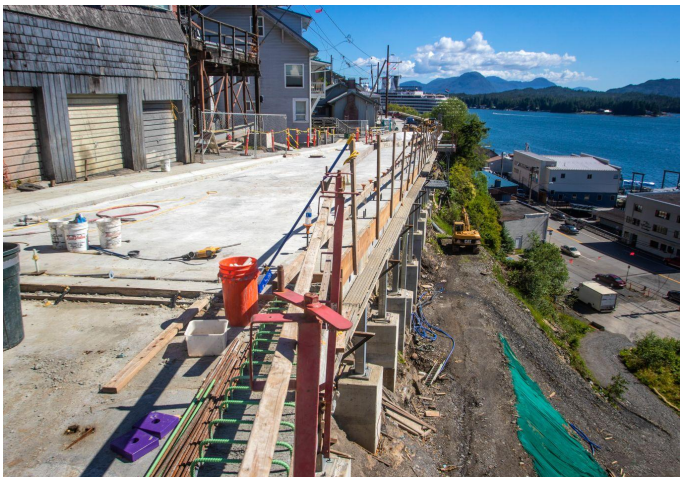
This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

In the industry, the earnings ratio for women (i.e, women's average annual earnings as a percentage of men's earnings), is 71% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 71% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Table 7
Alaska's cement mason workforce, 2022

	% of workers
Age Group	
55 and over	10%
35-55	34%
18-35	34%
Unknown/Other*	22%
Gender	
Female	4%
Male	74%
Unknown/Other*	22%
Place of Residence	
Anchorage-Matsu	45%
Gulf Coast	6%
Interior	6%
Northern	-
Southeast	4%
Southwest	1%
Unknown/Other*	37%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*



I don't think that there's enough masons. It's hard if we have a lot of concrete or curb work or something. And we start early. Now, we can get guys that do that work [but] by June, we're gonna sub out any mason work just because it doesn't seem that we can get those guys, if you're late to the game. … Because it seems like if you don't get them early you're not gonna get them.

- Alaska employer

Projected growth

In the next 10 years, Alaska is expected to add 20 new jobs for cement masons, whereas nationwide the number of cement masons is projected to decline. Employers noted given the small number of cement masons in Alaska, there is increased competition for them. Strategies employers utilized to mitigate hiring challenges include hiring cement masons earlier in the season or utilizing workers trained in different trades to do concrete work. One key informant noted the number of cement masons has declined over the past five years because there has been less building construction and the work has shifted towards more bridge and road construction due to infrastructure funding.

Table 8
Projected growth for cement masons

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	220 employees	206,200 employees
Projected employment in 10 years	240 employees	197,900 employees
Projected 10-year growth	9%	-4%
Projected annual job openings over the next 10 years	20 jobs	14,200 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, about 20% of today's cement masons were working in the industry. Five percent were laborers, 24% were in other construction in Alaska, 5% were in non-construction jobs, and almost half were working outside of Alaska. Table 9 reflects the industry's ability to retain cement masons, and what other occupations feed into the cement mason workforce.

Table 9 Movement in and out of cement mason jobs		
How many 2017 cement masons are still in the field?	Occupation	What were 2022's cement masons doing 5 years ago?
26%	Cement mason in Alaska	20%
6%	Carpenter in Alaska	-
6%	Laborer in Alaska	5%
19%	Other construction occupation in Alaska	24%
3%	Non-construction occupation in Alaska	5%
42%	Unknown or outside Alaska workforce	46%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as a cement mason typically requires a high school diploma or equivalent and masonry training. Other common requirements include being an Alaska resident and a driver's license. Cement masons typically learn the trade through apprenticeships, vocational schools and on-the-job training. Some workers start out at construction laborers or helpers before becoming a cement mason.[9]

Alaska's postsecondary training programs

Alaska has one union training center for cement masons, the Alaska Trowel Trades Training Center in Palmer. A few training locations provide skills training in concrete foundations and formwork as part of their construction skills training, but only one training program provides a full pathway for cement mason training.

Training programs include skills training, pre-apprenticeship, and apprenticeship. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in an apprenticeship and moving towards a journeyman certification. It takes approximately four years for a cement mason apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[10] In 2023, Alaska

had 41 cement mason apprentices enrolled in one apprenticeship program registered with the US Department of Labor.[11] One education key informant noted that since their union merged with Seattle, more experienced apprentices can travel to Seattle during the winter to work. In addition, federally registered apprenticeship programs allow apprentices to travel to other locations outside Alaska for apprenticeship opportunities.

Table 10 notes that Alaska's union training center has trained about 15 new cement masons annually for the past 2-3 years. However, it is difficult to report capacity and completion rates for many training programs, since annual admissions can fluctuate depending on industry needs.

Table 10
Cement mason training program types, capacity, and enrollments

Type of Training	Annual new admissions	Annual program completers	Annual enrollment capacity	Program length
Skills training, pre-apprenticeship, & apprenticeship	25	15	23	48 months, including 3 months skills training and apprenticeship

Data reported to ISER by Alaska's union training center for cement masons. Counts reflect the average number of admissions and completers over the last 2-3 years.

Table 11 depicts characteristics of students who participate in the cement mason training program in key target characteristics for increased representation.

Table 11
Under-represented groups' participation in Alaska's cement mason training program

Students of color	30%
Women	3%
Rural	3%

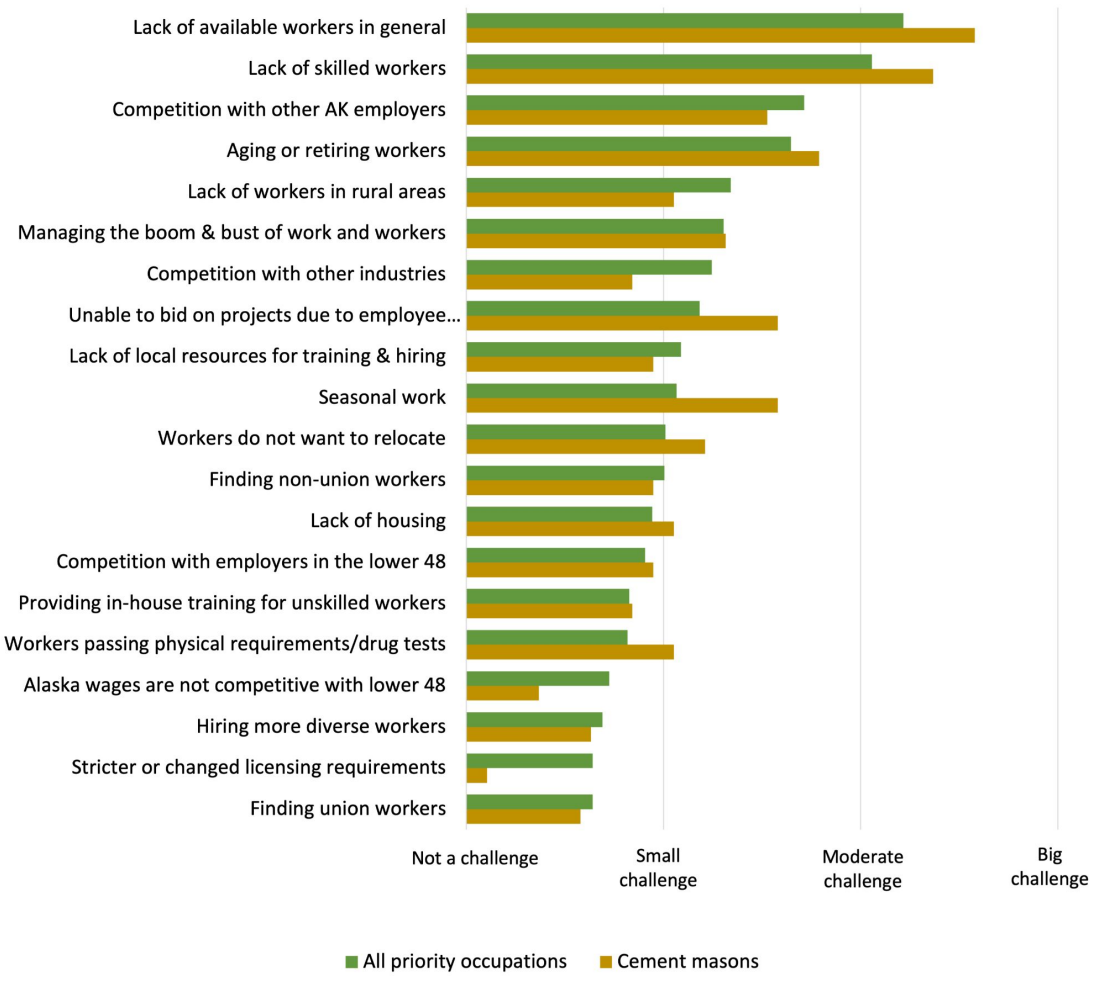
Data reported to ISER by Alaska's union training center for cement masons.

Visibility of the industry and access or proximity to the training center was cited as a recruitment challenge for the training program, especially for individuals from rural areas.

Employer challenges/perspectives

We completed five key informant interviews and collected survey data from 29 active Alaska businesses that employ cement masons. Figure 3 depicts how those employers of cement masons characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of cement masons rated each item; when the brown bar is longer than the green bar, it indicates that employers of cement masons have a greater challenge in this area than the average of all 8 priority industries.The top challenges for employers of cement masons were a lack of available workers in general and a lack of skilled workers. Compared to other occupations, employers of cement masons were more likely to report a lack of workers and seasonal work as a challenge. Employers of cement masons were the least likely to report competition with other industries and challenges with licenses.

Figure 3. **Recruitment & retention challenges for cement mason employers**



Opportunities

Key employer and training provider recommendations for growing the cement mason workforce include:

- Attracting more women and rural Alaskans into the profession
- Retaining workers during the off season
- Increasing access to training, especially for rural Alaska
- Establishing training partnerships to collaborate with other trades and lower 48 apprenticeships
- Increasing youth outreach via collaborations with high schools and career fairs

Endnotes: Cement masons

1. US Department of Labor, O*Net Online. https://www.onetonline.org/link/summary/47-2051.00

2. US Department of Labor, Wage Determinations. https://sam.gov/wage-determinations

3. US Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2023. Cement Masons and Concrete Finishers. https://www.bls.gov/oes/

4. U.S Department of Labor, O*Net Online – Cement Masons. Alaska Wages: 47-2051.00 - Cement Masons and Concrete Finishers (onetonline.org)

5. The Davis-Bacon pay scale is the hourly wage rate and fringe benefits for a specific job classification, set by the Alaska Department of Labor for each job classification in a given area. https://labor.alaska.gov/lss/pamp600.htm

6. Alaska Department of Labor & Workforce Development, Alaska Statewide Wages, 2023. https://live.laborstats.alaska.gov/wage/index.html#47

7. US Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2023. Cement Masons and Concrete Finishers (bls.gov)

8. Alaska Department of Labor & Workforce Development, Laborers' & Mechanics' Minimum Rates of Pay (Pamphlet 600, Issue 49). https://labor.alaska.gov/lss/pamp600.htm

9. Masonry Workers: Occupational Outlook Handbook: US Bureau of Labor Statistics. https://www.bls.gov/ooh/construction-and-extraction/brickmasons-blockmasons-and-stonemasons.htm#tab-4

10. Alaska Department of Labor and Workforce Development, Apprenticeship in Alaska. https://awib.alaska.gov/apprentice/

11. Alaska Department of Labor and Workforce Development, Alaska Apprenticeships, April 2024. https://awib.alaska.gov/documents/apprenticeships_2024.pdf

Construction laborers

Occupation overview

A construction craft laborer performs various physical tasks at construction sites, such as operating a wide range of hand and power tools, earth tampers, cement mixers, hoisting and rigging equipment, surveying and measuring equipment, and various other equipment. A laborer's responsibilities may also involve site preparation, trench digging, installation of braces to support excavation sides, erection of scaffolding, cleaning and repairing equipment, and clearing of rubble, debris, and waste materials. Additionally, laborers provide support to other craft construction workers.[1] Work for laborers in Alaska can be more seasonal, depending on the type of project, such as a highway project. Laborers in the building trades can have more year-round work.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as laborers in Alaska may work variable hours, move between different projects, and have gaps of time in between projects. There are also different minimum wage rates for laborers based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, type of laborer, overtime pay, and union participation. There is a wide range of state and federal minimum wages for laborers in Alaska, with hourly wages ranging from $9.00 to $55.12.[2,3] However, one training provider noted the reported wages in Table 12 were significantly lower than trained laborers should expect in Alaska.

Table 12 Construction laborer wages in Alaska and the US		
	Alaska	**US**
	Annual earnings[4]	
Median	$49,950	$45,300
Bottom 10% of workers earn (<=)	$35,520	$31,510
Top 10% of workers earn (>=)	$75,760	$76,010
	Hourly wage[5, 6]	
Average	$26.78	$23.69
Median	$24.02	$21.78
	Davis-Bacon hourly wages[7]	
Journeyman	$27.82 - $50.11	-
Apprentice	$19.47 - $35.00	-

This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 80% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 80% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 13
Alaska's construction laborer workforce, 2022

	% of workers
Age Group	
55 and over	11%
35-55	29%
18-35	47%
Unknown/Other*	13%
Gender	
Female	11%
Male	79%
Unknown/Other*	11%
Place of Residence	
Anchorage-Matsu	31%
Gulf Coast	10%
Interior	13%
Northern	4%
Southeast	8%
Southwest	9%
Unknown/Other*	25%

Source: 2022 Alaska Department of Labor and Workforce Development data suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

The laborers … have a great apprenticeship program, and they are very focused. The people that work at these apprenticeships…they care a lot. A lot of them come from the field … a lot of them are retirees. But they do care a lot about the development of the next generation, and they do spend a lot of time and effort to prepare these people. But you can only do so much in a classroom setting. … There is a lot of training that still ends up happening on the job.

- Alaska training provider

Projected growth

In the next 10 years, Alaska is expected to add 350 new jobs for construction laborers, which is a faster rate of growth than the rest of the nation. However, one training provider noted that, with current resources and training facilities, there will be challenges to filling the growing workforce demand.

Table 14
Projected growth for construction laborers

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	3,560 employees	1,418,600 employees
Projected employment in 10 years	3,870 employees	1,480,500 employees
Projected 10-year growth	9%	4%
Projected annual job openings over the next 10 years	350 jobs	129,400 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, 17% of today's laborers were working in the industry. Two percent of laborers were working as carpenters in Alaska, 37% were in other construction jobs in Alaska, 3% were in non-construction jobs in Alaska, and 41% were working outside of Alaska. Table 15 reflects the industry's ability to retain laborers, and what other occupations feed into the laborer workforce.

Table 15 Movement in and out of laborer jobs		
How many 2017 laborers are still in the field?	Occupation	What were 2022's laborers doing 5 years ago?
15%	Laborer in Alaska	17%
3%	Carpenter in Alaska	2%
39%	Other construction occupation in Alaska	37%
6%	Non-construction occupation in Alaska	3%
37%	Unknown or outside Alaska workforce	41%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as a construction laborer may require a high school diploma or equivalent and construction training. A driver's license and being physically able to perform the job is also usually required. Laborers learn the trade through apprenticeship training programs, vocational schools, and on-the-job training. Some other construction craft workers may start as construction laborers.

Alaska's postsecondary training programs

Training programs include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately four years for a laborer apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[8] In 2023, Alaska had 148 laborer apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[9] There is one union training school for laborers, the Alaska Laborers Training, which has training facilities in Chugach and Fairbanks.

Employer challenges/perspectives

We did not survey Alaska employers about their ability to recruit and retain laborers, but many did say they employ laborers. One employer noted that the laborers today are well-trained and more skilled than in the past decades. They further noted they have a strong, cooperative partnership with the Union, however recruitment of workers remains an industry-wide challenge. In particular, the schedule of a

laborer can be challenging for parents; remote work, long hours, and a lack of childcare – especially during summer months – can be difficult for workers and strain their home relationships.

Opportunities

Key recommendations for growing the laborer workforce include:

- Increasing the state's training capacity
- Improving funding for outreach and recruitment
- Supporting trainees with travel, housing, and transportation to facilitate access to training programs
- Supporting workers with housing and transportation at job sites
- Increasing public awareness of the occupation and employment options via collaborations with high school CTE programs and guidance/career counseling
- Improving public perceptions of construction trades in general, and the laborer occupation in particular
- Connecting laborers to work opportunities during the off season

Keeping them in our community is very important. You know, we have a lot of people that leave. And the more people that leave … it really affects our whole community as a whole.

- Alaska employer

Endnotes: Construction laborers

1. US Department of Labor, O*Net Online. https://www.onetonline.org/link/summary/47-2061.00

2. US Department of Labor, Wage Determinations. https://sam.gov/wage-determinations

3. Alaska Department of Labor & Workforce Development, Laborers' & Mechanics' Minimum Rates of Pay (Pamphlet 600, Issue 49). https://labor.alaska.gov/lss/pamp600.htm

4. US Department of Labor, O*Net Online. https://www.onetonline.org/link/localwages/47-2061.00?st=AK

5. Alaska Department of Labor & Workforce Development, Alaska Statewide Wages, 2023. https://live.laborstats.alaska.gov/wage/index.html#47

6. US Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2023. Construction Laborers. https://www.bls.gov/oes/

7. The Davis-Bacon pay scale is the hourly wage rate and fringe benefits for a specific job classification, set by the Alaska Department of Labor for each job classification in a given area. https://labor.alaska.gov/lss/pamp600.htm

8. Alaska Department of Labor and Workforce Development, Apprenticeship in Alaska. https://awib.alaska.gov/apprentice/

9. Alaska Department of Labor and Workforce Development, Alaska Apprenticeships, April 2024. https://awib.alaska.gov/documents/apprenticeships_2024.pdf

Electricians & Linemen

Occupation overview

Electricians

An electrician installs, maintains, and repairs electrical wiring, equipment, and fixtures, ensuring that they comply with relevant codes. They may also install and service street lights, intercom systems, or electrical control systems.[1] Electricians work in a variety of industries, such as construction, maintenance, utilities, mining, oil & gas, and maritime industries.[2] Electricians in Alaska can work year-round.

Electrical Linemen

An electrical lineman installs, repairs and maintains electrical power systems. Lineman may also erect poles and transmission towers.[3] Electrical linemen work in a variety of industries, such as the electrical power industry, utility system construction, local government, building equipment contractors, and natural gas distribution.[4] Electrical linemen can work year-round, however some types of projects may slow down in the winter. Lineman primarily work outdoors, therefore they have to work in extreme weather conditions in Alaska.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as electricians in Alaska may work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for electricians based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. Table 16 depicts earnings for electricians and electrical linemen.

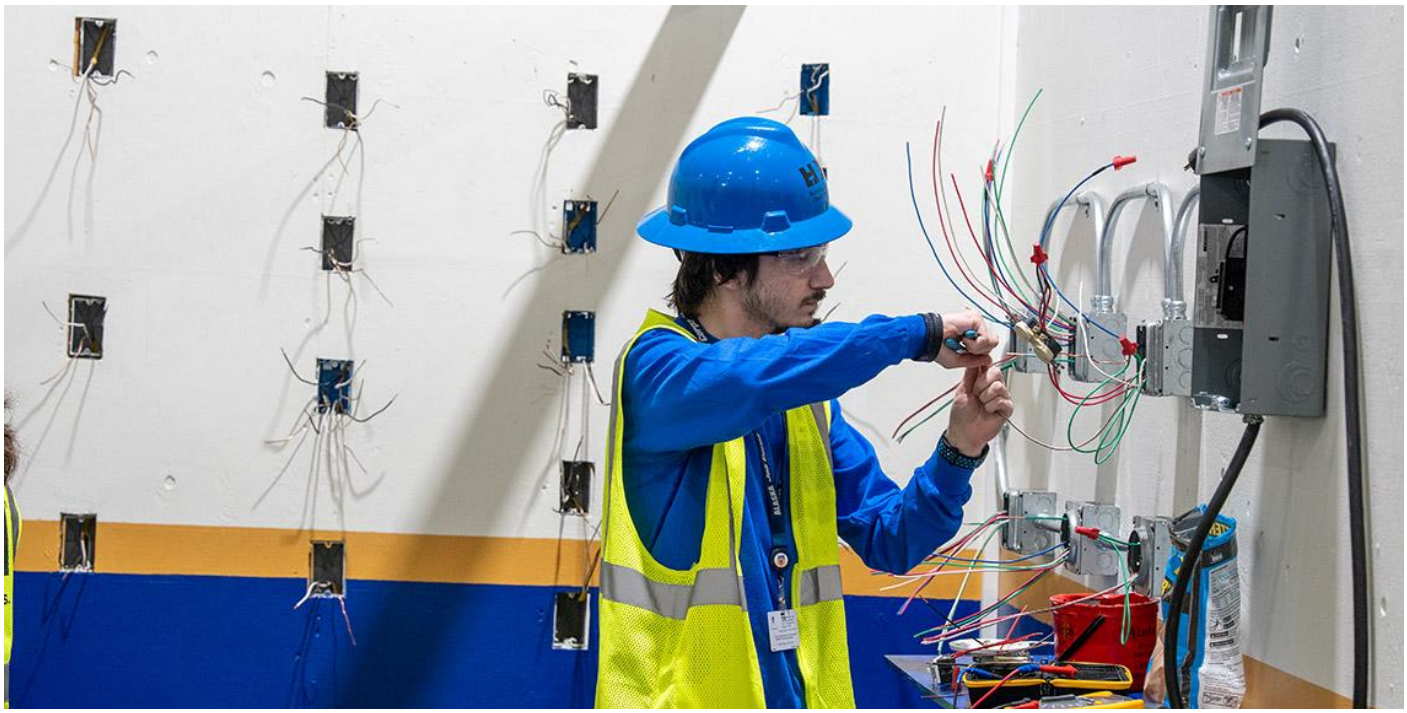


Table 16 Electricians & electrical linemen wages in Alaska and the US		
	Alaska	**US**
Electricians		
	Annual earnings[5]	
Median	$82,160	$61,590
Bottom 10% of workers earn (<=)	$48,770	$38,470
Top 10% of workers earn (>=)	$117,640	$104,180
	Hourly wage[6, 7]	
Average	$39.50	$32.60
Median	$39.50	$29.61
	Davis-Bacon hourly wages[8]	
Journeyman	$50.94	-
Apprentice	$28.02	-
Electrical linemen		
	Annual earnings[9]	
Median	$101,360	$85,420
Bottom 10% of workers earn (<=)	$73,950	$48,220
Top 10% of workers earn (>=)	$132,670	$119,920
	Hourly wage[10, 11]	
Average	$49.32	$41.30
Median	$48.73	$41.07
	Davis-Bacon hourly wages[12]	
Journeyman	$68.59	
Apprentice	$34.30	
This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.		

In the industry, the earnings ratio for female electricians and electrical linemen (i.e., women's average annual earnings as a percentage of men's earnings), is 65% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 65% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 17 Alaska's electrician & electrical lineman workforce, 2022	
	% of workers
Age Group	
55 and over	16%
35-55	39%
18-35	33%
Unknown/Other*	12%
Gender	
Female	4%
Male	85%
Unknown/Other*	12%
Place of Residence	
Anchorage-Matsu	41%
Gulf Coast	10%
Interior	16%
Northern	1%
Southeast	7%
Southwest	3%
Unknown/Other*	22%

Source: 2022 Alaska Department of Labor and Workforce Development data suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

We try to make sure everybody has a really good work-life balance. … We try to minimize out-of-town work for employees with families. … We are very family-oriented. … We try to accommodate to the best of our abilities everything we can. … People typically retire [here]. … They don't often quit.

- Alaska employer

Projected growth

In the next 10 years, Alaska is expected to add 170 new jobs for electricians and 30 new jobs for linemen, which is a faster rate of growth for both occupations than the rest of the nation.

Table 18
Projected growth for electricians and electrical linemen

	Alaska (2022-2032)	Nationwide (2022-2032)
Electricians		
Current employment	1,640 employees	762,600 employees
Projected employment in 10 years	1,850 employees	811,800 employees
Projected 10-year growth	13%	7%
Projected annual job openings over the next 10 years	170 jobs	73,500 jobs
Electrical linemen		
Current employment	320 employees	122,400 employees
Projected employment in 10 years	340 employees	125,800 employees
Projected 10-year growth	6%	3%
Projected annual job openings over the next 10 years	30 jobs	9,700 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, 48% of today's electricians and linemen were working in the industry. Two percent of electricians and linemen were working as laborers in Alaska, 25% were in other construction jobs in Alaska, 2% were in non-construction jobs in Alaska, and 23% were working outside of Alaska. Table 19 reflects the industry's ability to retain electricians and linemen, and what other occupations feed into the electrician and lineman workforce.

Table 19 Movement in and out of construction jobs		
How many 2017 electricians and linemen are still in the field?	Occupation	What were 2022's electricians and linemen doing 5 years ago?
44%	Electricians & linemen in Alaska	48%
2%	Telecommunications worker in Alaska	-
-	Laborer in Alaska	2%
21%	Other construction occupation in Alaska	25%
2%	Non-construction occupation in Alaska	2%
32%	Unknown or outside Alaska workforce	23%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

For electricians, an entry-level job typically requires a high school diploma or equivalent and electrician training. Electricians learn the trade through vocational schools, apprenticeships, or on-the-job training. Some workers start out at electrician helpers. Formal training programs through apprenticeships or vocational training schools are recommended by employers. Many jobs require an electrician certification, such as an Electrical Trainee, Electrical Journeyman Certificate of Fitness, or an Electrical Residential Certificate of Fitness.

For linemen, an entry-level job typically requires a high school diploma or equivalent, math skills, and a driver's license. Linemen learn the trade through a registered apprenticeship and require a Power Lineman Trainee certification. Some workers start out as lineman helpers. Formal training programs through registered apprenticeships are required by employers. Many jobs require a lineman certification, such as a Power Lineman Trainee or Lineman Journeyman Certificate of Fitness.

Alaska's postsecondary training programs

This report contains data from eleven Alaska programs that provide training for electricians, and two that provide skills training for linemen. This includes one union training program, the Alaska Joint Electrical Apprenticeship & Training Trust, which provides training for both occupations and has training facilities in Anchorage and Fairbanks. The union training program also provides training for telecommunications

workers, which, as shown in Table 19 has some crossover with the electrician and linemen workforce.

Electrician and lineman training programs in Alaska include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately four years for an electrician or lineman apprentice to reach journeyman status.

For both electricians and linemen, Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[13] In 2023, Alaska had 841 electrician apprentices and 113 lineman apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[14] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 46 electrician and 18 lineman trainees per year. Other programs that provide skills training and pre-apprenticeship training enrolled an additional 105 trainees annually. The reported annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) is 92% and 83%, respectively across all electrician and lineman programs that completed a survey.

Table 20 depicts characteristics of students who participate in these training programs in key target characteristics for increased representation.

Table 20
Under-represented groups' participation in Alaska's electrician and lineman programs

	Electricians	Linemen
Students of color	13%	20%
Women	19%	0%
Rural	24%	5%

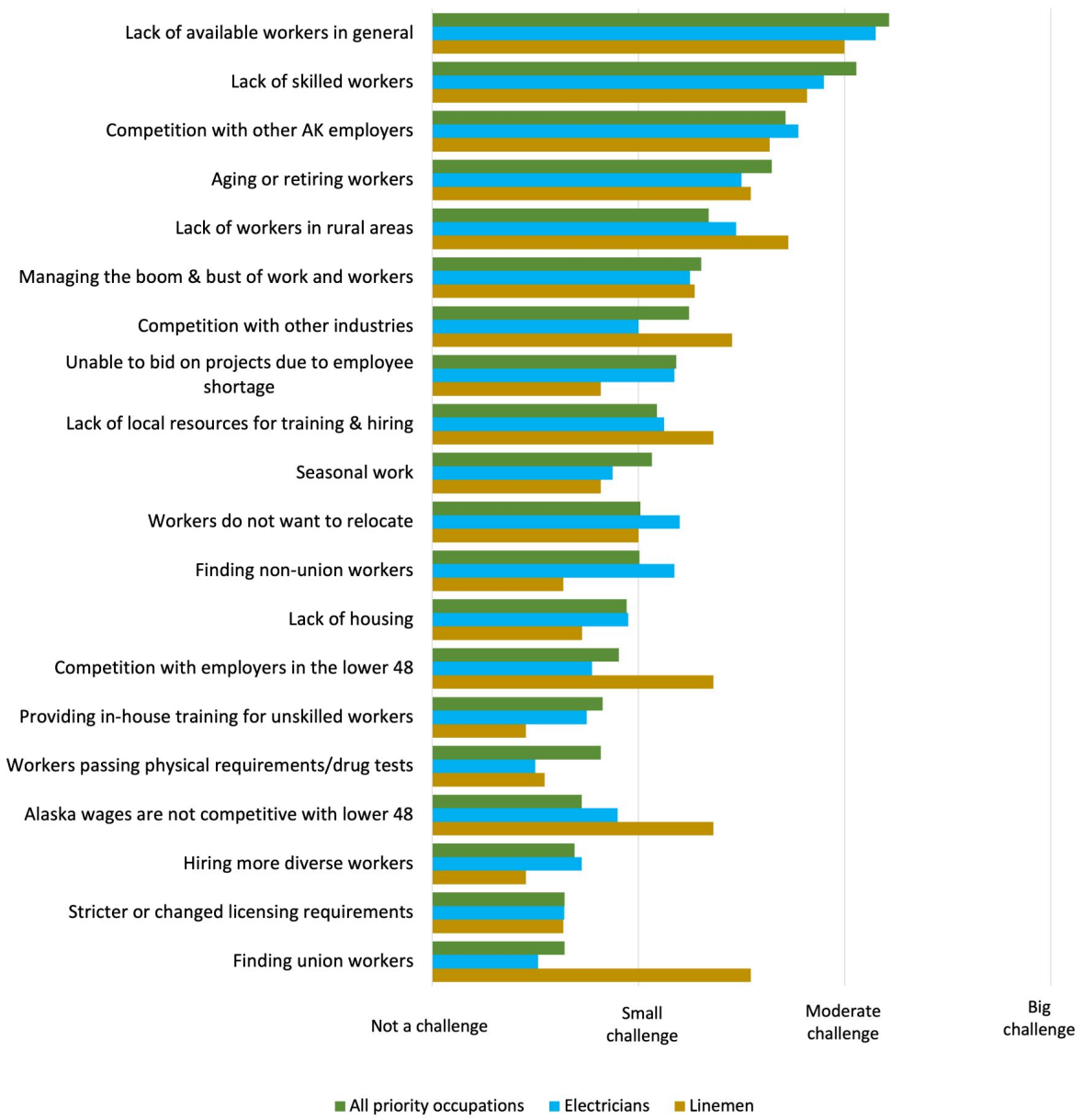
Data sources: Surveys of seven education or training providers, and one training provider for linemen. For electricians, percentages reflect weighted averages by program size for all seven training programs that provided data to our survey.

> *The biggest problem we have in Alaska is the seasonality of our work.*
>
> -Alaska employer

Employer challenges/perspectives

We completed 8 key informant interviews with Alaska businesses that employ electricians and two with Alaska businesses that employ linemen. We collected survey data from 55 Alaska businesses that employ electricians and 17 that employ linemen. Figure 4 depicts how those employers of characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The blue and brown bars show how employers of electricians and linemen, respectively, rated each item as compared to the other 8 priority industries.Top challenges for employers of electricians and linemen were lack of available workers and lack of skilled workers.

Figure 4. **Recruitment & retention challenges for electrician & linemen employers**



Opportunities

Key employer and training provider recommendations for growing the electrician workforce include:

- Strengthening and investing in outreach, access, and targeted training for youth, rural, and underrepresented populations
- Promoting awareness of opportunities and career paths in the electrical industry
- Strengthening recruitment and retention of workers and instructors with competitive wages, benefits, and supports for seasonal and remote workers
- Promoting industry-wide collaboration for enhanced and streamlined training, certification/licensure, and career opportunities for electrical and telecommunications workers

> *I would say [in] the last two years, electricians have been extremely hard to find. … That's the only craft where I've had to extend my search outside the state of Alaska.*
>
> - Alaska employer

Endnotes: Electricians & electrical linemen

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Ironworkers

Occupation overview

Structural iron and steel workers construct iron and steel girders, columns, and other structural components to form or support buildings, bridges, dams, towers, storage tanks, fences, roads, or energy infrastructure.[1] Also included in this job category are reinforcing iron and rebar workers, which use steel bars or mesh in concrete forms to reinforce concrete.[2]

Ironworkers in Alaska have to adapt to Alaska's extreme climate conditions, seasons, and terrain. Ironworkers may work year-round, but work increases during the summer, with more civil construction projects occurring during this time, such as bridges and roadwork.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as ironworkers in Alaska work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for ironworkers based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for ironworkers in Alaska range from $37.99 to $46.49.[3, 4] A training provider respondent noted that that the State of Alaska Pamphlet 600 or "little Davis-Bacon wage" is the prevailing wage on State of Alaska projects, and while Alaska is in the upper 75% for wages, west coast cities, Hawaii, and New York City generally pay more. Table 21 depicts ironworker wages from several different data sources.

Table 21
Ironworker wages in Alaska and the US

Structural Iron and Steel Workers	Alaska	US
	Annual earnings[5]	
Median	$73,770	$62,760
Bottom 10% of workers earn (<=)	$56,160	$40,510
Top 10% of workers earn (>=)	$86,510	$105,010
	Hourly wage[6, 7]	
Average	$34.16	$32.80
Median	$35.47	$30.17
	Davis-Bacon hourly wages[8]	
Journeyman	$46.49	-
Apprentice	$27.89	-

*This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.Note that in the O*Net database, wages are reported separately for structural steel and ironworkers and reinforcing iron and rebar workers, but Alaska data do not disaggregate to this level.*

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 39% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 39% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 22
Alaska's ironworker workforce, 2022

	% of workers
Age Group	
55 and over	14%
35-55	40%
18-35	33%
Unknown/Other*	13%
Gender	
Female	4%
Male	84%
Unknown/Other*	13%
Place of Residence	
Anchorage-Matsu	54%
Gulf Coast	7%
Interior	10%
Northern	1%
Southeast	5%
Southwest	-
Unknown/Other*	24%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

Alaska Works has been a good program to allow people to try out the trade. I'd say we get a third to half of our new apprentices from Alaska Works. It has been a really good source, a good partnership.

- Alaska training provider

Projected growth

In the next 10 years, Alaska is expected to add 10 new jobs for ironworkers, which is a faster rate of growth than the rest of the nation. A training provider suggested that there may be even more growth, due to infrastructure projects.

Table 23
Projected growth for ironworkers

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	80 employees	71,600 employees
Projected employment in 10 years	90 employees	72,900 employees
Projected 10-year growth	13%	2%
Projected annual job openings over the next 10 years	10 jobs	6,300 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.
Note that nationally, in addition to a 2% increase in structural iron and steel workers, the Bureau of Labor Statistics projects a 1% increase in the number of reinforcing iron and rebar workers.

Recruitment & retention

Five years ago, 38% of today's ironworkers were working in the industry. Twenty-eight percent were in other construction jobs in Alaska, 4% were in non-construction jobs in Alaska, and just under a third were working outside of Alaska. Table 24 reflects the industry's ability to retain ironworkers, and what other occupations feed into the ironworker workforce.

Table 24 Movement in and out of ironworker jobs		
How many 2017 ironworkers are still in the field?	Occupation	What were 2022's ironworkers doing 5 years ago?
19%	Ironworker in Alaska	38%
4%	Carpenter in Alaska	-
33%	Other construction occupation in Alaska	28%
8%	Non-construction occupation in Alaska	4%
35%	Unknown or outside Alaska workforce	30%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as an ironworker typically requires a high school diploma or equivalent and job-related training. Other common requirements include being an Alaska resident, a driver's license, and being able to perform the job's physical demands. Ironworkers learn the trade through vocational schools, apprenticeships, or on-the-job training. Formal training programs through apprenticeships or vocational training schools are recommended by employers.

Alaska's postsecondary training programs

Ironworker training programs in Alaska include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately four years for an ironworker apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[9] In 2023, Alaska had 63 ironworker apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[10] There is one union training program for ironworkers, the Pacific Northwest Ironworkers Apprenticeship Training Trust, which has a main training facility in Anchorage and provides cross-training in Palmer and Fairbanks. The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 7 trainees per year. In addition, there are a variety of training models for ironworker skills, which may also include gateway skills training, such as welding

programs. Other programs that provide skills training and pre-apprenticeship training enrolled an additional 298 trainees annually. The reported annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) across these programs was 64%. Education programs reported that a common retention challenge was that workers would be hired into jobs before they completed their training.

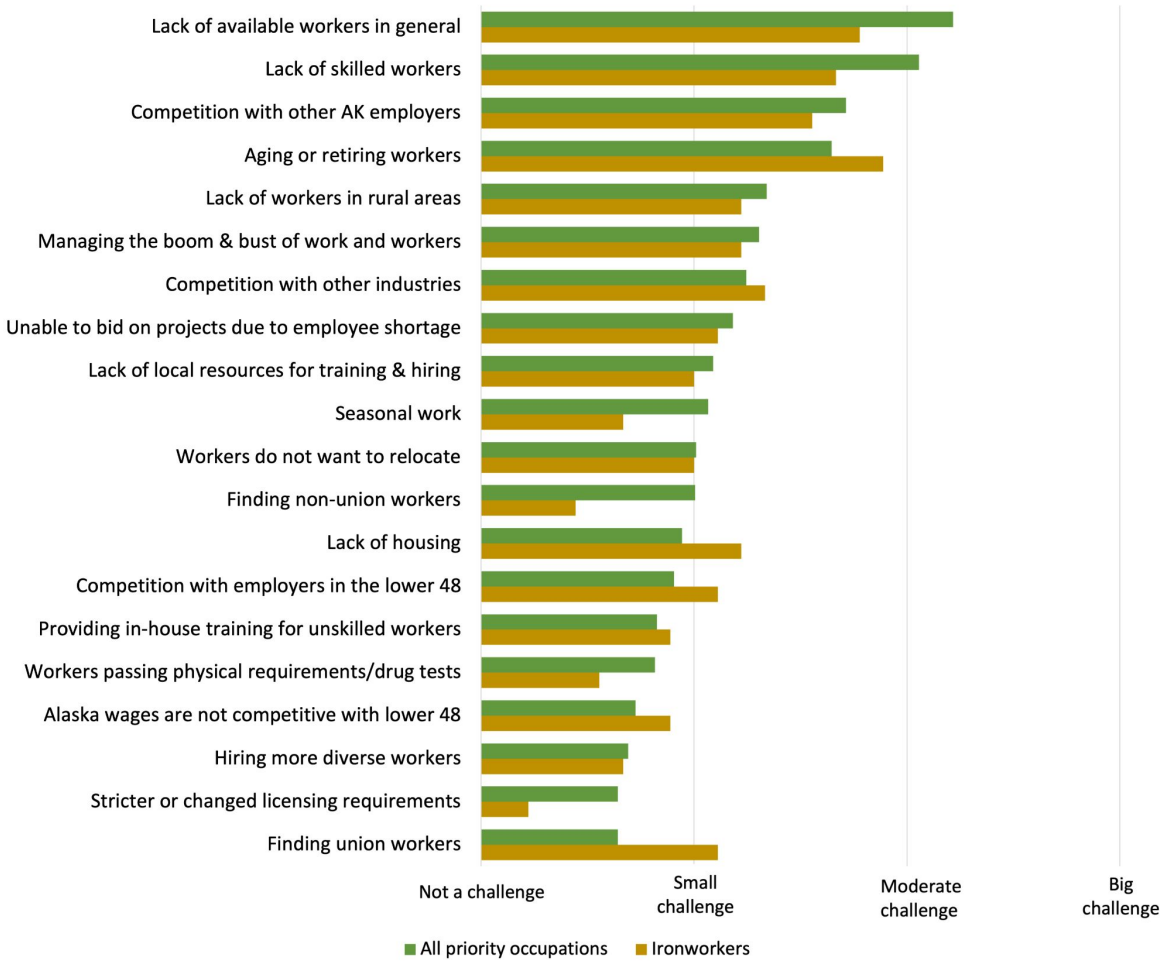
Table 25 **Under-represented groups' participation in Alaska's ironworker training programs**	
Students of color	18%
Women	34%
Rural	10%
Data sources: Surveys of five education or training providers. Percentages reflect weighted averages by program size for all five training programs that provided data to our survey.	

The most common recruitment challenges for ironworker training programs were understanding the value or need of the occupation itself, access or proximity to training locations, the availability of qualified applicants, and the physically challenging aspect of the job, including working outdoors.

Employer challenges/perspectives

We completed 6 key informant interviews and received survey data from 18 active Alaska businesses that employ or subcontract ironworkers. Figure 5 depicts how those employers of ironworkers characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of ironworkers rated each item; when the brown bar is longer than the green bar, it indicates that employers of ironworkers have a greater challenge in this area than the average of all 8 priority industries.Top challenges for employers of ironworkers were aging/retiring workers and lack of available workers.

Figure 5. **Recruitment & retention challenges for ironworker employers**



Opportunities

Key employer and training provider recommendations for growing the ironworker workforce include:

- Promoting the value, need, and impact of the work ironworkers do; highlighting the different types of projects and industries
- Developing partnerships that involve youth in career exploration and exposure
- Expanding recruitment pools by working with partner organizations to promote recruitment and access to training in underrepresented populations
- Education and training on the physical aspect and work environment of the job
- Increasing access and supports to work opportunities, especially in rural areas and in underrepresented populations

Endnotes: Ironworkers

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https://awib.alaska.gov/documents/apprenticeships_2024.pdf

Operating Engineers

Occupation overview

Operating engineers operate heavy equipment to move, excavate, and grade earth, erect structures, and pour concrete and pavement. They may operate one or more types of heavy machinery such as graders, bulldozers, back hoes, side booms, mobile cranes, scrapers, compressors, pumps, derricks, shovels, tractors, or front-end loaders. Operating engineers may also repair and maintain the equipment.[1] Operating engineers who run heavy equipment may also be called heavy equipment operators or operators; those who repair and maintain equipment may also be called heavy duty equipment mechanics or heavy-duty service oilers. Operating engineers work in a variety of industries, such as construction, mining, and oil & gas.[2] They may also work in other industries, such as energy and maritime. Operating engineers can work year-round, but tend to work more in the summer season. Winter work may include road and airport maintenance.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as operating engineers in Alaska work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for operating engineers based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for operating engineers in Alaska range from $19.05 to $60.86.[3, 4] Most Alaska employers who participated in this research said they base their wages on the State of Alaska Pamphlet 600 rates of pay or "little Davis-Bacon wages," and many said they pay above scale to be competitive. One employer noted they pay Davis Bacon wages whether the work mandates it or not. Table 26 depicts operating engineer wages from several different data sources.

Table 26 Operating engineer wages in Alaska and the US		
Operating Engineers	**Alaska**	**US**
	Annual earnings[5]	
Median	$72,380	$56,160
Bottom 10% of workers earn (<=)	$53,740	$38,410
Top 10% of workers earn (>=)	$100,530	$95,570
	Hourly wage[6, 7, 8]	
Average	$36.74	$29.89
Median	$34.80	$27.00
Heavy Equipment Mechanics	**Alaska**	**US**
	Annual earnings[9]	
Median	$80,230	$61,900
Bottom 10% of workers earn (<=)	$55,640	$42,990
Top 10% of workers earn (>=)	$103,470	$85,720
	Hourly wage [10, 11]	
Average	$38.62	$30.93
Median	$38.57	$29.76
	Davis-Bacon hourly wages[12]	
Journeyman	$41.66-$57.63	-
Apprentice	$25.00-$34.58	-
This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.The Davis-Bacon wages include both Operating Engineers and Heavy Equipment Mechanics.		

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 76% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 76% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

I think one of the best ways to go about [growing the workforce] would probably be stimulating a little more interest in the younger people. … I'm talking about the ones that are like in fifth and sixth grade. [Get them interested] in the construction industry.

- Alaska training provider

Alaska worker profile

Table 27 Alaska operating engineer profile, 2022	
	% of workers
Age Group	
55 and over	22%
35-55	40%
18-35	23%
Unknown/Other*	15%
Gender	
Female	5%
Male	80%
Unknown/Other*	15%
Place of Residence	
Anchorage-Matsu	33%
Gulf Coast	11%
Interior	16%
Northern	2%
Southeast	7%
Southwest	3%
Unknown/Other*	27%

Source: 2022 Alaska Department of Labor and Workforce Development data
**Unknown/other mostly reflects nonresidents of Alaska.*

The State is doing what they're doing. Private industry, specifically, our industry is doing what we're doing. Unions are doing [their part]. … We're all trying to chase the same thing, and it's to some extent it's too bad that we're not all doing it collectively.

- Alaska training provider

Projected growth

In the next 10 years, Alaska is expected to add 300 new jobs for operating engineers and 100 new jobs for heavy equipment mechanics, which is a faster rate of growth than the rest of the nation. Training providers noted that demand for the workers ebbs and flows; when demand increases employers "play catch up," but manage this growth to ensure that the workforce maintains a balance of journeymen and apprentices. Training providers and employers both agreed with growth projections in the industry as they anticipate new jobs in the oil and gas industry, as well as highway and airport projects.

Table 28 Projected growth for operating engineers & heavy equipment mechanics		
	Alaska (2022-2032)	Nationwide (2022-2032)
Operating engineers		
Current employment	2,780 employees	437,600 employees
Projected employment in 10 years	3,230 employees	449,200 employees
Projected 10-year growth	16%	3%
Projected annual job openings over the next 10 years	300 jobs	38,200 jobs
Heavy equipment mechanics		
Current employment	950 employees	169,100 employees
Projected employment in 10 years	1,080 employees	177,600 employees
Projected 10-year growth	14%	5%
Projected annual job openings over the next 10 years	100 jobs	15,100 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, over a third of today's operating engineers were working in the industry. Four percent were truck drivers, 31% were in other construction jobs in Alaska, 5% were in non-construction jobs in Alaska, and almost a quarter were working outside of Alaska. Table 29 reflects the industry's ability to retain operating engineers, and what other occupations feed into the operating engineer workforce.

> *Heavy duty mechanics are really, really tough to find right now. I think part of the problem for Alaska is that we haven't had any large projects in the last 10 years. A lot of people that were doing the kind of work we do left the state and went to the Lower 48 where there was a plentiful amount of work and the wages are a bit higher than they are in Alaska.*
>
> - Alaska employer

Table 29 Movement in and out of operating engineer jobs		
How many 2017 operating engineers are still in the field?	Occupation	What were 2022's operating engineers doing 5 years ago?
39%	Operating engineer in Alaska	37%
2%	Truck driver in Alaska	4%
24%	Other construction occupation in Alaska	31%
3%	Non-construction occupation in Alaska	5%
33%	Unknown or outside Alaska workforce	23%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include carpenter helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as an operating engineer may require a high school diploma or equivalent and heavy equipment experience. Operating engineers learn the trade through vocational schools, apprenticeships, or on-the-job training. Formal training programs through apprenticeships or vocational training schools are recommended by employers. Some jobs may require a CDL license.

Alaska's postsecondary training programs

Training programs include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately three to five years for an operating engineer apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[13] In 2023, Alaska had 135 heavy equipment operator, 50 heavy duty equipment mechanic, and 12 heavy duty service oiler apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[14] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 60 trainees per year. Additionally, other programs that provide skills training and pre-apprenticeship training enrolled an additional 180 trainees annually.

There is one union training program for operating engineers, the Alaska Operating Engineers/Employers Training Trust, which has training facilities in Palmer and Fairbanks. Additionally, we collected survey data from three other programs that provide skills training for operating engineers.

It is difficult to report capacity for training programs as many factors go into determining this; including industry needs, community needs, funding, and available resources. In addition, there are a variety of training models for operating engineer skills, which include different combinations of skills training, pre-apprenticeship, and apprenticeship models. The reported annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) is 83% across all operating engineer programs that completed a survey.

Table 30 depicts characteristics of students who participate in these operating engineer training programs in key target characteristics for increased representation.

Table 30
Under-represented groups' participation in Alaska's operating engineer training programs

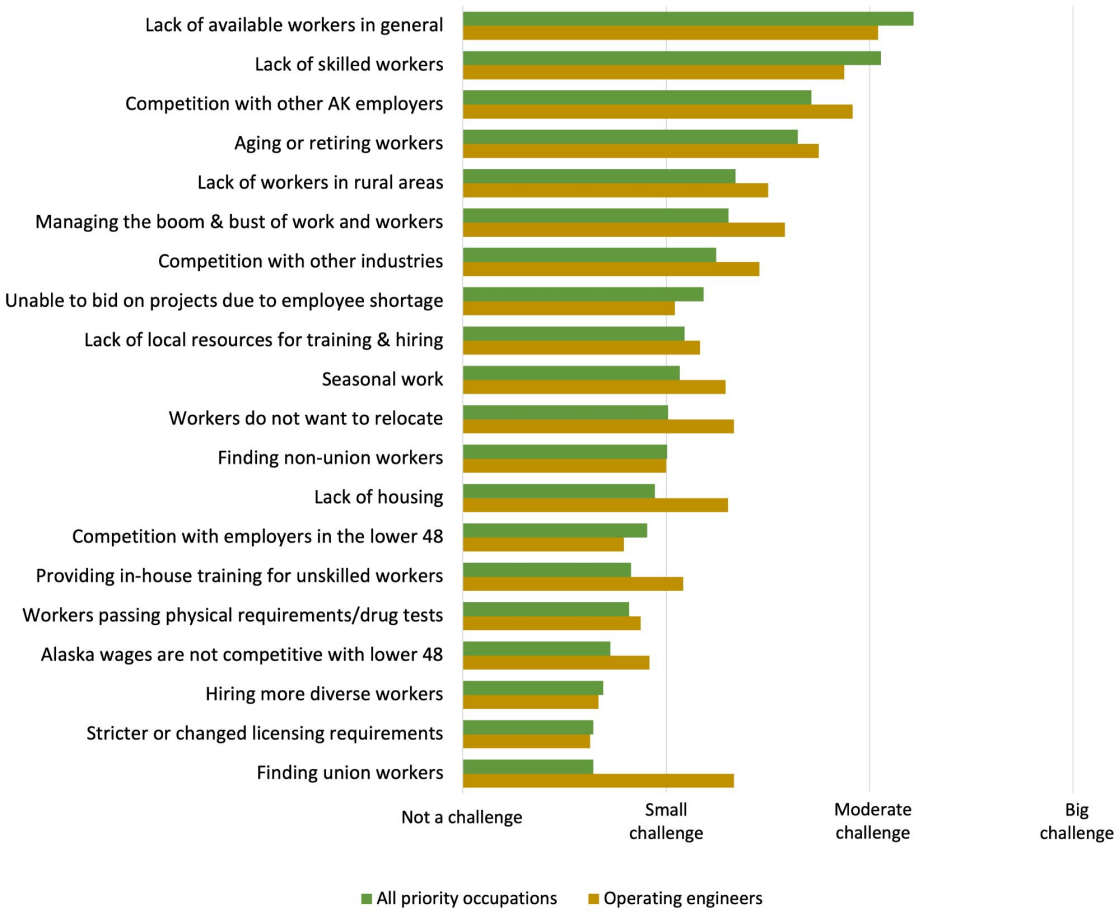
Students of color	34%
Women	20%
Rural	30%

Data sources: Surveys of 12 education or training providers. Percentages reflect weighted averages by program size for all 12 training programs that provided data to our survey.

Employer challenges/perspectives

We completed nine key informant interviews and collected survey data from 39 active Alaska businesses that employ or subcontract operating engineers. Figure 6 depicts how those employers of operating engineers characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of operating engineers rated each item; when the brown bar is longer than the green bar, it indicates that employers of operating engineers have a greater challenge in this area than the average of all 8 priority industries. Top challenges for employers of operating engineers were lack of available workers and competition with other employers in Alaska.

Figure 6. **Recruitment & retention challenges for operating engineer employers**



Opportunities

Key employer and training provider recommendations for growing the operating engineer workforce include:

- Supporting and funding for training and outreach to youth, rural and underrepresented populations, including flexible training and the use of technology, such as simulators and online training
- Promoting cross training of skills (such as mechanic skills, CDL) to stabilize seasonal employment
- Providing competitive wages and benefits for workers and instructors, including partnerships with industry to create flexible work/training schedules for instructors currently working in the field or retirees

> *We'll hire [operators] and try and start them on stuff where we have 50% productivity, even just because you wait too long … you're not gonna get them.*
>
> - Alaska employer

Endnotes: Operating engineers

1. US Department of Labor, O*Net Online. https://www.onetonline.org/link/summary/47-2073.00

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14.Alaska Department of Labor and Workforce Development, Alaska Apprenticeships, April 2024. https://awib.alaska.gov/documents/apprenticeships_2024.pdf

Pile drivers

Occupation overview

Pile drivers operate large machines mounted on barges, locomotive cranes, crawler treads, or skids to drive pilings for retaining walls, bulkheads, and foundations of structures such as buildings, bridges, and piers.[1] Pile drivers may also cut, prepare, and weld the components or structures involved in the pile driving project, as well as building and installing concrete forms for the foundation.[2] Pile drivers in Alaska tend to work more during the summer construction season.

Wages

Though the US Bureau of Labor Statistics 2024 wage data* reports annual earnings, these may not reflect regular, full-time employment as pile drivers in Alaska work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for pile drivers based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for piledrivers in Alaska range from $38.34 to $54.10.[3, 4] One key informant noted that pile drivers may work a lot of overtime and even work in remote locations outside of Alaska.

Table 31
Pile driver wages in Alaska and the US

	Alaska	US
	Annual earnings[5]	
Median	$87,630	$63,550
Bottom 10% of workers earn (<=)	$59,330	$40,840
Top 10% of workers earn (>=)	$108,000	$109,030
	Hourly wage[6, 7]	
Average	$41.78	$33.78
Median	$42.13	$30.55
	Davis-Bacon hourly wages[8]	
Journeyman	$48.54-$54.10	-
Apprentice	$29.12-$32.46	-

This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

*Throughout this report, we have used US Bureau of Labor Statistics 2023 wage data. For pile drivers, we use 2024 data as these were not available in 2023.

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 62% (2022 Alaska Department of Labor and Workforce Development). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 62% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

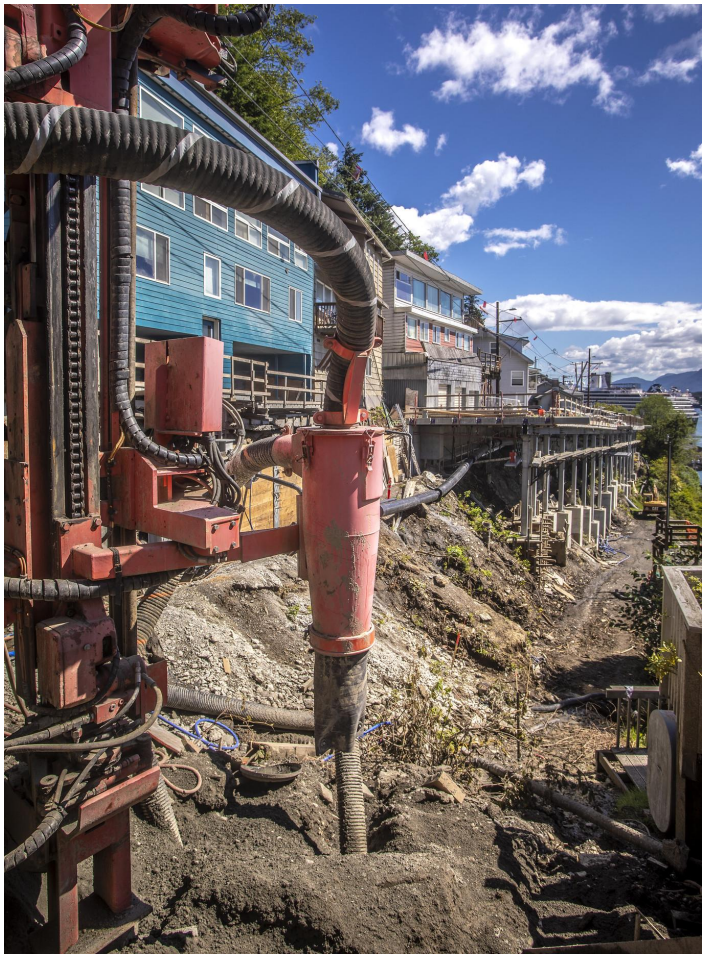
Alaska worker profile

Table 32
Alaska's piledriver workforce, 2022

	% of workers
Age Group	
55 and over	18%
35-55	44%
18-35	29%
Unknown/Other*	9%
Gender	
Female	6%
Male	85%
Unknown/Other*	9%
Place of Residence	
Anchorage-Matsu	57%
Gulf Coast	6%
Interior	4%
Northern	-
Southeast	10%
Southwest	3%
Unknown/Other*	19%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

> *There [are] no local pile drivers. … [We will] probably use iron workers and operators. I employed quite a bit of people that we've trained up or can train to be pile drivers.*
>
> - Alaska employer



Projected growth

In the next 10 years, the demand for pile drivers is projected to hold steady at the current number of employees. This is a lower rate of growth than the rest of the nation, which anticipates a 3% increase in the number of employees. However, some training providers who participated in our research indicated that these projections may not reflect anticipated growth for infrastructure projects, and noted that existing training programs need to grow since projects are currently shorthanded.

Table 33
Projected growth for pile driver

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	50 employees	3,300 employees
Projected employment in 10 years	50 employees	3,400 employees
Projected 10-year growth	0%	3%
Projected annual job openings over the next 10 years	10 jobs	300 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, 33% of today's pile drivers were working in the industry. Eight percent of pile drivers were working as carpenters in Alaska, 23% were in other construction jobs in Alaska, 5% were in non-construction jobs in Alaska, and 20% were working outside of Alaska. Table 34 reflects the industry's ability to retain pile drivers, and what other occupations feed into the pile driver workforce.

Table 34 Movement in and out of pile driver jobs		
How many 2017 pile drivers are still in the field?	Occupation	What were 2022's pile drivers doing 5 years ago?
20%	Pile driver in Alaska	33%
6%	Carpenter in Alaska	8%
18%	Other construction occupation in Alaska	23%
7%	Non-construction occupation in Alaska	5%
48%	Unknown or outside Alaska workforce	20%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as a pile driver typically requires a high school diploma or equivalent and work-related experience. Pile drivers learn the trade through vocational schools, apprenticeships, or on-the-job training. Formal training programs through apprenticeships or vocational training schools are recommended by employers.

Alaska's postsecondary training programs

Pile driver training programs in Alaska include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately four years for a piledriver apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[9] In 2023, Alaska had 32 carpenter/pile driver apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[10] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 14 trainees per year. Additionally, other programs that provide skills training and pre-apprenticeship training enrolled an additional 10 trainees annually. The reported annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) across these programs was 58%.

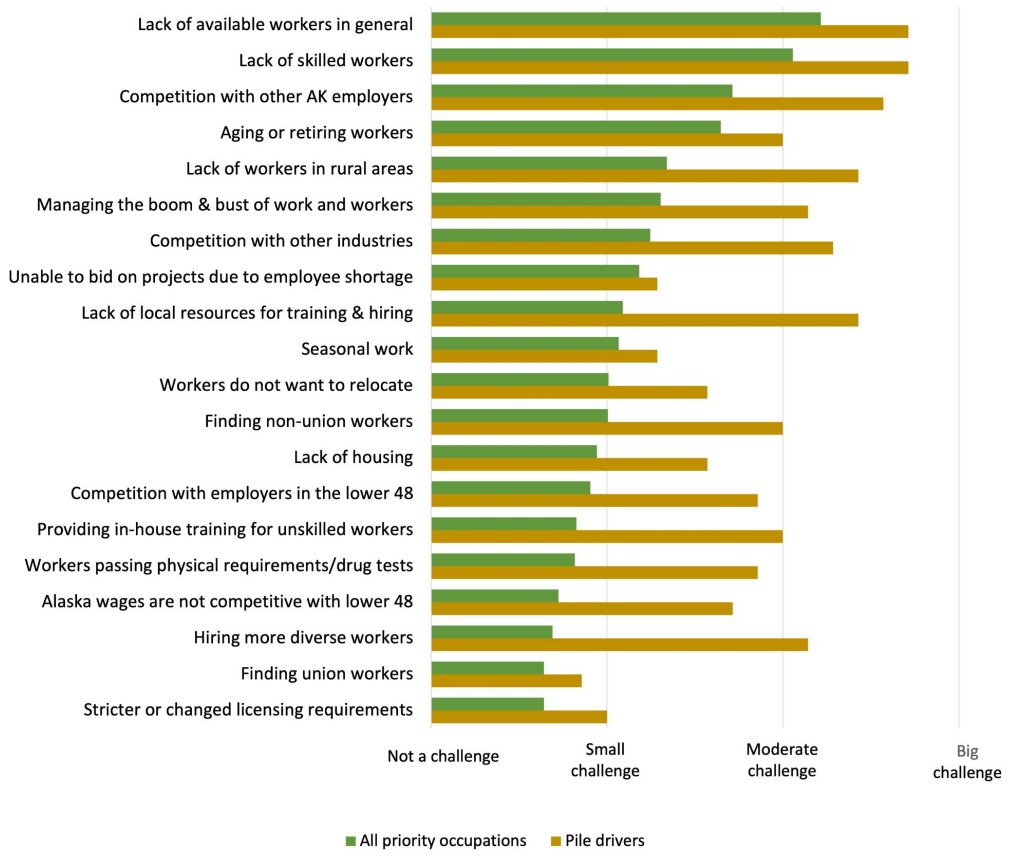
There is one union training program for pile drivers, the Alaska Carpenters Training Trust, which has a main training facility for pile drivers in Anchorage. Additionally, we collected data from two other programs that provide skills training for pile drivers. Table 35 depicts characteristics of students who participate in these pile driver training programs in key target characteristics for increased representation.

Table 35 **Under-represented groups' participation in Alaska's pile driver training programs**	
Students of color	2%
Women	1%
Rural	4%
Data sources: Surveys of two education or training providers. Percentages reflect weighted averages by program size for the two training programs that provided data to our survey.	

Employer challenges/perspectives

We completed three key informant interviews and collected survey data from 17 active Alaska businesses that employ pile drivers. Figure 7 depicts how those employers of pile drivers characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of pile drivers rated each item; when the brown bar is longer than the green bar, it indicates that employers of pile drivers have a greater challenge in this area than the average of all 8 priority industries. Top challenges for employers of pile drivers were lack of available workers in general and lack of skilled workers. Across all priority industries, employers of pile drivers were the most likely to report recruitment and hiring challenges.

Figure 7. **Recruitment & retention challenges identified by pile driver**



Opportunities

Key employer and training provider recommendations for growing and retaining the piledriver workforce include:

- Recruiting new people into the field to replace the aging workforce through partnerships with organizations that support underrepresented populations
- Increasing recruitment and retention of women
- Youth outreach and training
- Increasing Alaska's training and apprenticeship capacity, including making more training opportunities available and accessible in rural areas
- Increasing cross training; provide training across trades with overlapping skills to maximize utilization of the workforce and retain workers during the off season

Endnotes: Piledrivers

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2. Alaska Local 2520 Piledrivers & Divers. https://local2520.org/what-we-do.html

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7. US Bureau of Labor Statistics, Occupational Employment and Wage Statistics, May 2023. https://www.bls.gov/oes/tables.htm#nat

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9. Alaska Department of Labor and Workforce Development, Apprenticeship in Alaska. https://awib.alaska.gov/apprentice/

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Plumbers & Pipefitters

Occupation overview

Plumbers, pipefitters, and steamfitters build, install, alter, and repair pipe systems or pipelines that are used to transport air, water, steam, or other liquids or gases. They may install heating and cooling equipment, and mechanical control systems. Other examples of job titles include: pipe fabricator and pipe welder.[1] Plumbers and pipefitters are considered a priority occupation in the construction and oil & gas industries.[2] Plumbers and pipefitters in Alaska can work year-round.

Wages

Though the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as plumbers and pipefitters in Alaska may work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for plumbers and pipefitters based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for plumbers and pipefitters in Alaska range from $14.00 to $51.66.[3, 4]

Table 36
Plumber & pipefitter wages in Alaska and the US

	Alaska	US
	Annual earnings[5]	
Median	$81,670	$61,550
Bottom 10% of workers earn (<=)	$51,280	$38,690
Top 10% of workers earn (>=)	$105,180	$103,140
	Hourly wage[6, 7, 8]	
Average	$39.47	$32.62
Median	$39.26	$29.59
	Davis-Bacon hourly wages[9]	
Journeyman	$44.50-$51.66	-
Apprentice	$22.25-$28.48	-

This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 54% (2022 Alaska Department of Labor and Workforce Development data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 54% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 37
Alaska's plumber & pipefitter workforce, 2022

	% of workers
Age Group	
55 and over	15%
35-55	43%
18-35	36%
Unknown/Other*	7%
Gender	
Female	3%
Male	91%
Unknown/Other*	7%
Place of Residence	
Anchorage-Matsu	47%
Gulf Coast	7%
Interior	21%
Northern	2%
Southeast	4%
Southwest	2%
Unknown/Other*	16%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

> *They have a good, solid apprenticeship program that cranks out a lot of good highly skilled workers. I think this is probably their biggest year they have been able to bring in a good amount of apprentices.*
>
> - Alaska employer

Projected growth

In the next 10 years, Alaska is expected to add 110 new jobs for plumbers and pipefitters (a 13% increase over the current workforce), which is a faster rate of growth than the rest of the nation. Some training providers suggested that, with anticipated infrastructure projects, growth may be even higher.

Table 38
Projected growth for plumbers & pipefitters

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	1,110 employees	482,700 employees
Projected employment in 10 years	1,250 employees	493,600 employees
Projected 10-year growth	13%	2%
Projected annual job openings over the next 10 years	110 jobs	42,600 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, 42% of today's plumbers and pipefitters were working in the industry. Two percent of plumbers and pipefitters were working as laborers in Alaska, 31% were in other construction jobs in Alaska, 2% were in non-construction jobs in Alaska, and 22% were working outside of Alaska. Table 39 reflects the industry's ability to retain plumbers and pipefitters, and what other occupations feed into the plumber and pipefitter workforce.

> *The certified welders are a challenge for us … having enough of those. … And just folks that are familiar with specifics of work in Alaska … there is just not enough of them in the state anymore.*
>
> - Alaska employer

Table 39 Movement in and out of plumber & pipefitter jobs		
How many 2017 plumbers & pipefitters are still in the field?	Occupation	What were 2022's plumbers & pipefitters doing 5 years ago?
38%	Plumber & pipefitter in Alaska	42%
1%	Laborer in Alaska	2%
28%	Other construction occupation in Alaska	31%
2%	Non-construction occupation in Alaska	2%
32%	Unknown or outside Alaska workforce	22%

About a quarter of plumbers and pipefitters working in Alaska in 2017 were still employed as plumbers and pipefitters in 2022. Another third were working as laborers or in other construction jobs in Alaska, such as carpenter helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff. Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data.

Training overview

Requirements & certifications

An entry-level job as a plumber or pipefitter typically requires a high school diploma or equivalent and job-related experience. Plumbers and pipefitters learn the trade through vocational schools, apprenticeships, or on-the-job training. Some workers start out as a plumber or pipefitter helper. Formal training programs through apprenticeships or vocational training schools are recommended by employers. Alaska requires a plumber trainee or plumber utility trainee certificate of fitness, a plumber journeyman certificate of fitness, a plumber gas certificate of fitness, a plumber utility certificate of fitness, or a boiler operator certificate of fitness to perform plumbing or heating work in the state.

Alaska's postsecondary training programs

Plumber and pipefitter training programs in Alaska include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately five years for a plumber and pipefitter apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[10] In 2023, Alaska had 427 plumber and pipefitter apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[11] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 49 trainees per year. Additionally, other programs that provide skills training and pre-apprenticeship training enrolled an additional 108 trainees annually. The reported

annual retention rate (i.e., the proportion of trainees entering programs who ultimately complete them) across these programs was 76%.

There are three union training programs for plumbers and pipefitters, which have training facilities in Anchorage (UA Local 367 Plumbers and Steamfitters), Fairbanks (Fairbanks Area Plumbers and Pipefitters UA Local 375 Apprentice and Journeyman Training Trust), and Juneau (Plumbers and Pipefitters Local 262 JATC). Additionally, we collected survey data from five other programs that provide skills training for plumbers and pipefitters. Table 40 depicts characteristics of students who participate in these plumber and pipefitter training programs in key target characteristics for increased representation.

Table 40
Under-represented groups' participation in Alaska's plumber and pipefitter training programs

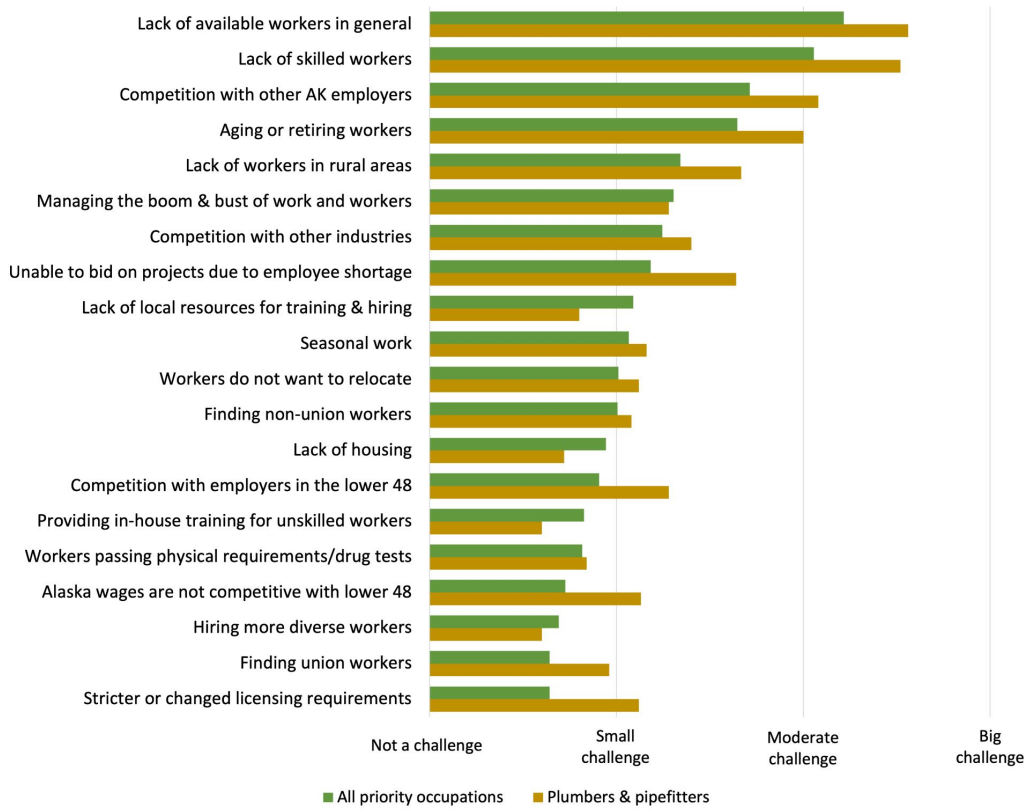
Students of color	5%
Women	7%
Rural	3%

Data sources: Surveys of 12 education or training providers. Percentages reflect weighted averages by program size for all 12 training programs that provided data to our survey.

Employer challenges

We completed five key informant interviews and collected survey data from 39 active Alaska businesses that employ or subcontract plumbers and pipefitters. Figure 8 depicts how those employers of plumbers and pipefitters characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of pile drivers rated each item; when the brown bar is longer than the green bar, it indicates that employers of plumbers and pipefitters have a greater challenge in this area than the average of all 8 priority industries. Top challenges for employers of plumbers and pipefitters were lack of available workers and lack of skilled workers. Overall, employers of plumbers and pipefitters reported higher rates of hiring and recruitment challenges than the other priority industries.

Figure 8. **Recruitment & retention challenges for plumber & pipefitter employers**



Opportunities

Key employer and training provider recommendations for growing the plumber and pipefitter workforce include:

- Promoting the value, need, and impact of the work plumbers and pipefitters do
- Targeting outreach and support for recruiting underrepresented groups
- Funding and expanding access and support for targeted training and employment of underrepresented groups, including flexible training opportunities such as online training and partnering with agencies that provide support
- Including education and industry partners to develop and streamline career pathways for workers and instructors to include cross training of skills

> *I'd like to see the State really invest in workforce development. And whatever we need to do to help that along over the next 10 years. We've got a lot of work in the state that's gonna need these kinds of trained people for. So, I'd like to see the State step up their efforts in that.*
>
> - Alaska employer

Endnotes: Plumbers & pipefitters

1. US Department of Labor, O*Net Online. https://www.onetonline.org/link/summary/47-2152.00

2. McDowell Group (2016). *Cross-Industry Workforce Development Priorities.* https://alaskacrossindustryplan.org/resources/2016_AK_cross_industry_skills_McDowell_report.pdf

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Heavy and Tractor-Trailer Truck Drivers

Occupation overview

Heavy and tractor-trailer truck drivers operate trucks with a capacity of at least 26,001 pounds Gross Vehicle Weight (GVW). Drivers may also be involved in loading and unloading the truck. Heavy and tractor-trailer truck driver jobs require a commercial drivers' license (CDL). Examples of heavy and tractor-trailer truck driver jobs include: auto carrier driver, cement truck driver, concrete mixer truck driver, fuel truck driver, garbage truck driver, line haul driver, logging truck driver, lowboy driver, moving van driver, over-the road driver, semi-truck driver, tanker driver, and tow or winch truck driver.[1] Heavy and tractor-trailer truck drivers work in a wide variety of industries; such as construction, mining, and oil & gas.[2] Truck drivers can work year-round, but may transport different types and quantities of goods or materials, depending on the season and industry.

Earnings

Wages the US Bureau of Labor Statistics 2023 wage data reports annual earnings, these may not reflect regular, full-time employment as truck drivers in Alaska may work variable hours, move around to different projects, and have gaps of time in between projects. There are also different minimum wage rates for truck drivers based on funding source (state or federal), construction type (building, heavy, highway, and residential), geographic location, and union participation. State and federal minimum hourly wages for truck drivers in Alaska range from $43.22 to $53.05.[3, 4]

Table 41
Heavy & tractor-trailer truck driver wages in Alaska and the US

	Alaska	US
	Annual earnings[5]	
Median	$63,140	$54,320
Bottom 10% of workers earn (<=)	$45,500	$37,440
Top 10% of workers earn (>=)	$80,610	$76,780
	Hourly wage[6, 7]	
Average	$31.67	$26.92
Median	$30.35	$26.12
	Davis-Bacon hourly wages[8]	
Journeyman	$45.70-$50.92	-
Apprentice	$27.42-$30.55	-

This table reflects wages as reported by the US Department of Labor, the US Bureau of Labor Statistics, and the Davis-Bacon pay scale.

In the industry, the earnings ratio for women (i.e., women's average annual earnings as a percentage of men's earnings), is 72% (2022 Alaska Department of Labor and Workforce wages data). It is important to remember that this number does not reflect differences in hourly wages; it means that a woman in the industry, on average, takes home 72% of the pay earned by a man. However, women and men may have different work patterns (e.g., they may work on different types of projects or locations which have different hours or pay rates) that affect take home pay.

Alaska worker profile

Table 42
Alaska's truck driver workforce, 2022

	% of workers
Age Group	
55 and over	25%
35-55	41%
18-35	25%
Unknown/Other*	10%
Gender	
Female	7%
Male	84%
Unknown/Other*	9%
Place of Residence	
Anchorage-Matsu	43%
Gulf Coast	10%
Interior	16%
Northern	3%
Southeast	5%
Southwest	3%
Unknown/Other*	21%

Source: 2022 Alaska Department of Labor and Workforce Development suppressed 2022 cohort
**Unknown/other mostly reflects nonresidents of Alaska.*

Right now you can get hired straight out of trucking school. Back in the day you had to have driven for a few years before you could even dare get a trucking job. And it's not like that now, there's so much work.

- Alaska employer

Projected growth

In the next 10 years, Alaska is expected to add 310 new jobs for truck drivers (increasing the current workforce by 11%), which is a faster rate of growth than the rest of the nation. Several training providers and employers noted the Alaska projection seemed low, and anticipate retirements for the aging truck driver workforce, which will require additional training to develop new workers.

Table 43
Projected growth for truck drivers

	Alaska (2022-2032)	Nationwide (2022-2032)
Current employment	2,570 employees	2,192,300 employees
Projected employment in 10 years	2,860 employees	2,281,500 employees
Projected 10-year growth	11%	4%
Projected annual job openings over the next 10 years	310 jobs	241,200 jobs

Alaska source: Projections Central 2022-2032 long-term projections. United States source: Bureau of Labor Statistics 2022-2032 employment projections. "Projected growth" represents the estimated change in total employment over the projections period. "Projected annual job openings" represent openings due to growth and replacement.

Recruitment & retention

Five years ago, 34% of today's truck drivers were working in the industry. Three percent of truck drivers were working as operating engineers in Alaska, 37% were in other construction jobs in Alaska, 3% were in non-construction jobs in Alaska, and 23% were working outside of Alaska. Table 44 reflects the industry's ability to retain truck drivers, and what other occupations feed into the truck driver workforce.

Table 44 Movement in and out of truck driver jobs		
How many 2017 truck drivers are still in the field?	Occupation	What were 2022's truck drivers doing 5 years ago?
31%	Truck driver in Alaska	34%
7%	Operating engineer in Alaska	3%
25%	Other construction occupation in Alaska	37%
2%	Non-construction occupation in Alaska	3%
35%	Unknown or outside Alaska workforce	23%

Source: Alaska Department of Labor and Workforce Development suppressed 2017 and 2022 cohort transition data. Other construction occupations include construction helpers; general maintenance and repair workers; freight, stock, and material movers; and office and administrative staff.

Training overview

Requirements & certifications

An entry-level job as a heavy and tractor-trailer truck driver requires a commercial driver's license (CDL A or B). Some jobs may require a high school diploma or equivalent and job-related experience. Heavy and tractor-trailer truck drivers learn the trade through truck-driving schools, vocational schools, apprenticeships, and on-the-job training. Formal training is recommended by employers.

Alaska's postsecondary training programs

Truck driver training programs in Alaska include skills training, pre-apprenticeships, and apprenticeships. Many students will continue to get additional training after completing a preliminary training program and while actively working in the field, for example by participating in apprenticeships and moving towards a journeyman certification. It takes approximately two to three years for a truck driver apprentice to reach journeyman status.

Alaska recognizes federally registered apprenticeships through the Department of Labor; they include joint training programs and individually registered apprenticeships through employers.[9] In 2023, Alaska had 29 truck driver apprentices enrolled in apprenticeship programs registered with the US Department of Labor.[10] The union bases its training capacity on industry needs, and over the past 2-3 years, it has admitted approximately 35 trainees per year. Additionally, other programs that provide skills training and pre-apprenticeship training enrolled an additional 289 trainees annually. The reported annual retention rate (i.e., the proportion of individuals entering training programs who ultimately complete them) across these programs was 92%.

There is one union training program for truck drivers, the Alaska Teamster Employer Service Training Trust, which has training facilities in Anchorage and Fairbanks. Additionally, we collected survey data from nine other programs that provide skills training for truck drivers.

Table 45 depicts characteristics of students who participate in these truck driver training programs in key target characteristics for increased representation.

Table 45
Under-represented groups' participation in Alaska's truck driver training programs

Students of color	56%
Women	29%
Rural	39%

Data sources: Surveys of eight education or training providers. Percentages reflect weighted averages by program size for all training programs that provided data to our survey.

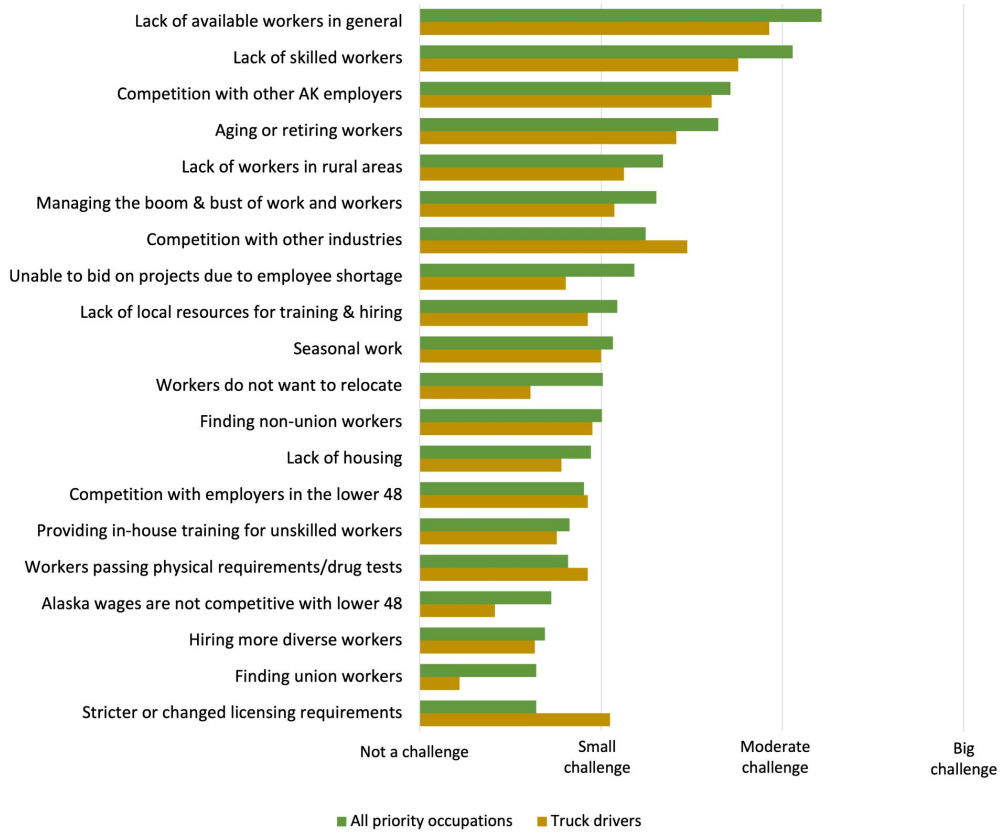
Employer challenges/perspectives

We completed eight key informant interviews and collected survey data from 63 active Alaska businesses that employ truck drivers. Figure 8 depicts how those employers of truck drivers characterized their hiring challenges, as compared to other priority industries. The challenges are listed in rank order (largest to smallest) across all 8 priority industries (green bars). The brown bars show how employers of truck drivers rated each item; when the brown bar is longer than the green bar, it indicates that employers of truck drivers have a greater challenge in this area than the average of all 8 priority industries. Top challenges for employers of truck drivers were lack of available workers and lack of skilled workers. Employers of truck drivers in the construction industry were more likely to report that they lost workers to other industries, and to note that stricter licensing requirements affected their ability to hire.

It's been several years already of pulling folks together to see: how do we work together with all the resources that we have locally and across different organizations to provide a training spectrum to get folks into these jobs that are here now?

- Alaska training provider

Figure 9. **Recruitment & retention challenges for truck driver employers**



Opportunities

Key employer and training provider recommendations for growing the truck driver workforce include:

- Promoting the value, need, and impact of the work truck drivers do
- Targeting outreach and support for recruiting underrepresented groups
- Creating pathways that support youth in attaining their instructional permits through to their CDLs
- Streamlining licensing requirements
- Funding and expanding access and support for targeted training and employment of underrepresented groups; including flexible training options and partnering with agencies that provide support
- Using technology to improve training, such as simulators
- Providing competitive wages and benefits for workers and instructors
- Developing partnerships with industry so that retirees and instructors who still work in the field can have flexible work/training schedules
- Developing and streamlining career pathways for workers and instructors
- Developing partnerships between industry and education partners to provide cross training for new skills to create a more flexible and capable workforce

Endnotes: Truck drivers

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2. McDowell Group (2016). *Cross-Industry Workforce Development Priorities.* https://alaskacrossindustryplan.org/resources/2016_AK_cross_industry_skills_McDowell_report.pdf

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