December 4, 2023

Southeast Technical College
2320 N Career Ave.
Sioux Falls, SD 57107

RE: South Dakota Board of Technical Education Approval of:
Non-Substantive Program Application
Diploma in Off-Road Heavy Equipment

To whom it may concern:

After review, the executive director has approved above application.

Per Board Policy 303.3, the receipt of this letter completes the SDBOTE's approval process, and the technical college may proceed with program implementation.

The SDBOTE's approval is valid for three years upon the date of this letter. If a technical college does not implement an approved program within three years, approval is terminated.

A technical college must update the program's profile in the SDBOTE's Academic Program Database by June 30 prior to the year in which students are first enrolled or at least 30 days prior to enrolling students, whichever is first.

Sincerely,

Scott DesLauriers
Deputy Director
South Dakota Board of Technical Education
800 Governors Drive
Pierre, SD 57006
Scott.DesLauriers@state.sd.us
(605) 295-7033

PROGRAM DESCRIPTION

Institution	Southeast Technical College
Program Identifier Code (If applicable)	N/A
Program Title	Off Road Heavy Equipment
Program Award Level:	☐ Short-Term Certificate ☐ Long-Term Certificate ☒ Diploma ☐ Associate of Applied Science ☐ Associate of Applied Science Option
CIP Code (6 Digit)	01.0205
Projected Implementation Date	7/1/2024
Approved Parent Program Title (If applicable)	N/A
Approved Parent Program Identifier Code (If applicable)	N/A
Location	☒ Main Campus ☐ Other:

SUMMARY

Type of Non-Substantive Change	☐ Program created using subset of existing courses (B.1.1) ☐ Creation of associate of applied science option (B.1.2) ☐ Consolidation of existing programs (B.1.3) ☒ Program award level change (B.1.4) ☐ Other:

Describe the change the institution is seeking approval of.

Southeast Technical College (STC) is seeking approval to make a significant curriculum modification to the Off-Road Heavy Equipment program. We are transitioning from a two-year degree to a one-year Diploma. Fall to Fall attrition rate in the current program has been high. Students have been working in industry part-time while they are in school. Because of the many opportunities they have working in the field at Sioux Falls Equipment Dealerships and Independent shops, a significant portion choose to work full-time after the first year. We want the students to achieve the one-year Diploma and then pursue their full-time job in the marketplace. In addition, this diploma will allow students wanting to complete an AAS to be able to stack this diploma with the proposed Trucking Technology diploma to create an AAS in Diesel Technology.

CRITERION 2: DEMAND

The program leads to meaningful employment, adequate student enrollment, and/or fulfills needs not being met by existing education and training providers.

2.1. The program leads to high-wage occupations that have an average/mean wage greater than the median wage across all occupations.
2.2. The program leads to high-demand occupations that have project annual openings (a measure of demand for workers) greater than the average across all occupations or is shown as an economic and/or labor market emerging field for the state of South Dakota and its regions.
2.3. The program's student enrollment is adequate to justify program existence.
2.4. The program fulfills a demand not being met by existing education and training providers in the region and/or state.

2.1. Describe the wage projections for occupations associated with the proposed program by completing Appendix 2.A.

2.2. Describe the demand projections for occupations associated with the proposed program.

    A.   Complete Appendix 2.A.

    B.   If an emerging field for the state of South Dakota, describe the field. Letter(s) of support, detailing demand, should be attached as appendices.

This is not an emerging career field.

2.3. Describe projected student enrollment for the proposed program by completing Appendix 2.B.

2.4. Describe how the proposed program fulfills a demand not being met by existing education and training providers in the region and/or state.

    A.   Identify closely related program(s) that currently exist at other public higher education institutions in the system or state. If none, write "None."

Lake Area Technical College has an Ag/Industrial Tractor option, an AAS in 4 semesters and 69.5 credit

hours. CAT Think Big 4 semesters 1 summer session, AAS 75 credit hours

Kabota 4 semesters, 69.5 credit

hours John Deere 4 semesters,

68.5 credit hours

Michell Technical College has an Ag Power class that is 5 semesters and 76 credit hours

    B.   If applicable: Describe the ways in which the demand is not currently being met by the aforementioned program(s) and provide justification as to why the program should be approved by addressing the following conditions that warrant duplication (BP 303.2). Select all that apply.

☐ Unmet Demand (C.5.1.1)   ☒ Increases Student Access (C.5.1.3)
☒ Industry Partnership (C.5.1.2)   ☐ Other:

I.   For each condition selected above, provide a brief justification.

With Build Dakota scholarships and industry needs, the local and area truck dealerships and independent shops have been hiring and sponsoring students from the Diesel Technology Trucking program for the last several years.

We will be able to increase student access by allowing the student to obtain the proper education and to graduate in one year, which is what the industry needs. This will allow us to graduate up to 30 students in one year compared to 24 in our two-year degree program.

CRITERION 3: DESIGN

The program's learning assessment strategy, program of study, and delivery methods are designed to provide students with the necessary competencies, as demonstrated through program learning outcomes.

3.1. The program is aligned to competencies, as demonstrated through program learning outcomes, that are developed with and continually validated by relevant stakeholders.
3.2. The program has a learning assessment strategy to validate student mastery of the program learning outcomes.
3.3. The program has an integrated program of study designed to develop and reinforce the program learning outcomes.
3.4. The program, when appropriate, includes a work-based learning component that develops and reinforces the program learning outcomes.
3.5. The program, when appropriate, offers flexible delivery methods to increase student access.

3.0. Describe the proposed program's alignment with the program award level requirements established in BP 301.1.

A.   Does the program align with the requirements?

☒ Yes
☐ No (Requesting Exemption)

B.   If no: Provide a detailed rationale for program exemption. Specify which requirement(s) in BP 301.1 are not met; cite specific policy sections (e.g., B.3.4), when appropriate. If external organizations are involved (accreditation, regulatory, licensure, etc.), reference the organization name(s), specific requirements (including citations), and a justification for why the exemption should be approved.

N/A

3.1. Describe the program learning outcomes.

A.   Provide a list of program learning outcomes for each proposed award level. Learning outcomes should be specific to the program.

Technical Skills: Students will be able to explain industry-relevant concepts (knowledge) and demonstrate industry-relevant technical skills (performance).

Communication: Students will be able to define the purpose of the communication, organize and structure the communication, provide supporting material, demonstrate precision of language, and professionally deliver and format the communication.

Problem Solving & Critical Thinking: Students will be able to define the problem, analyze the problem, generate solutions, evaluate solutions, and select the best solution.

Professionalism: Students will be able to demonstrate a positive work ethic, collaborate as part of a team, adapt to change, adhere to professional standards, and model integrity and ethics.

B.   Describe the how the program learning outcomes were developed and validated.

The program learning outcomes were developed after consultation with industry experts and review of abilities and knowledge crucial for Diesel Technicians. Industry representatives with expertise in Diesel Technology provided input to developing program learning outcomes. The program learning outcomes align with the Southeast Technical College's broad student learning outcomes, aligning with the mission and vision of the institution.

STC uses a specific process to develop and validate learning outcomes based on the following six principles.

- Learning outcomes should have two parts: an action verb and a content area. Utilize the action verb to specify the desired student performance, followed by a specific description of the course-specific content target.

- Keep statements short and focused on a single outcome. This allows instructors to determine whether an objective has been met without distinguishing between partial completion or complete success.

- To ensure that learning outcomes are effective and measurable, avoid using verbs that are vague or cannot be objectively assessed. Use active verbs that describe what a student can do once learning has occurred.

- Learning outcomes should be SMART (specific, measurable, acceptable to the instructor, realistic to achieve, and time-bound with a deadline).

- Include complex or higher-order learning outcomes when they are appropriate. Most instructors expect students to go beyond memorizing facts and terminology; learning outcomes should reflect instructors' expectations for student performance.

- Utilize learning outcomes as a basis for course preparation. Learning outcomes should match instructional strategies and assessment requirements. To ensure the connection between various course activities, it is useful to construct a table highlighting the relationship.

3.2. Describe the program's learning assessment strategy.

A. Describe how students will demonstrate mastery of the program learning outcomes. Description should be specific to the program's learning assessment plan vs. the institutional assessment plan.

The Academic Leadership Team oversees Program Learning Outcomes (PLO) Assessment at STC. It is coordinated and facilitated by the Dean of Curriculum and Instruction and Institutional Effectiveness. STC utilizes Watermark's Planning & Self-Study software, allowing the college to plan, assess, report, review, and improve the program and institutional expected common learning outcomes. With the Watermark software, all faculty and administrators can review and manage each academic program's assessment outcomes year over year. The software allows everyone to gather actionable insights from various reports to decide how students learn and aid in making decisions on program changes.

B. Is the program preparation for a professional licensure and/or certification examination?

☐ Yes (Detail in Appendix 4: Section 3)
☒ No

3.3. Describe the program of study by completing Appendix 3.

3.4. Describe the program's work-based learning component.

A. Does the program have a work-based learning component? If so, select all that apply.

☐ None   ☐ Clinical
☐ Apprenticeship   ☐ Capstone
☐ Internship or Externship   ☒ Other: Work part-time in industry.

B. If none, describe why.

Lends itself to apprenticeship.

3.5. Describe the program's delivery methods.

A. Select the program's primary delivery method(s)[1]. Select all that apply.

☒ On Campus   ☐ Apprenticeship
☐ Online   ☐ Other:
☐ Blended

B. Describe how flexible delivery methods are being leveraged to increase student access.

The program is a traditional face to face instruction. The program will be set up for Competency Based Education in the future.

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[1] *In Person*: 100 percent of courses are available in-person. *Online:* 100 percent of courses are available via distance learning. Delivery is only via the Internet. *Blended*: Delivery includes a required combination of both in-person and online courses. If a student has the option to take courses online, but is not required to do so, the program is not necessarily considered blended.

CRITERION 4: ALIGNMENT

The program is vertically aligned to an education and training pathway.

4.1.   The program is vertically aligned to an education and training pathway, reflecting efficient articulation of:
4.1.1.   Non-degree credential/industry certification
4.1.2.   Certificate to diploma
4.1.3.   Diploma to associate of applied science
4.1.4.   Associate of applied science to baccalaureate

4.1. Describe the alignment of the proposed program along an education and training pathway.

A.   Complete Appendix 4.

B.   Describe the projected alignment between the proposed program and existing academic programs within the technical college system.

The core curriculum delivered for students enrolled in the Off-Road Heavy Equipment Diploma program allows students the opportunity to transition to other Diesel Technology programs if indicated. The general education courses are transferrable within the STC college system. Students may transition to a different program at STC and transfer credits from the Off-Road Heavy Equipment program if other admission criteria are met. The Off-Road Heavy Equipment program aligns with the Trucking Technology program at Southeast Technical College to meet our region's industry needs and enhance graduates' versatility in employment. Nine general education and prerequisite requirements transition into several STC programs.

Students who want to achieve an AAS degree with six additional general education credits can stack the Trucking Technology and Heavy Equipment diplomas. Students can also stack the diploma into an AAS of Diesel Technology. Students also can take their diploma and create a customized AAS in Technical Studies.

C.   As applicable: Insert any additional comments here.

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 2.A: Labor Market Information

Southeast Technical Collage
Off Road Heavy Equipment

SOUTH DAKOTA

SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2018 EMPLOYMENT	2028 EMPLOYMENT	NUMERIC CHANGE: 2018-2028	PERCENT CHANGE: 2018-2028	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
00-0000	*Total, All Occupations*	*62,664*	*491,588*	*526,251*	*34,663*	*7.1*	*$36,823*	*$44,961*
49-3041	Farm Equipment Mechanics and Service Technicans		736	846	110	15		
49-3042	Heavy Equipment Mechanices		543	796	253	46.6		

NATIONAL

SOC* CODE	SOC* TITLE	AVERAGE ANNUAL OPENINGS	2018 EMPLOYMENT	2028 EMPLOYMENT	NUMERIC CHANGE: 2019-2029	PERCENT CHANGE: 2019-2029	MEDIAN: ANNUAL WAGE (2020)	AVERAGE: ANNUAL WAGE (2020)
49-3041	Farm Equipment Mechanics and Service Technicans		34,708	40,804	6,096	17.6		
49-3042	Heavy Equipment Mechanices		144,105	178,719	34,615	24		

SOURCE: South Dakota Department of Labor and Regulation, Labor Market Information Center (LMIC) (https://dlr.sd.gov/lmic/)
DATE:

NOTES:

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 2.B: Student Demand Projections

Southeast Technical College
Off Road Heavy Equipment

	YEAR 1	YEAR 2	YEAR 3
Student Full-Time Equivalent (FTE)	**15**	**20**	**24**
Headcount: Full-Time	15	20	24
Headcount: Part-Time			
Headcount: Total	**15**	**20**	**24**
Total Program or Site Capacity	24	24	24

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION
Appendix 3: Program of Study

Southeast Technical College
Off Road Heavy Equipment

MONTHS:	12
SEMESTERS:	2
TOTAL CREDITS:	35

PREFIX AND NUMBER	TITLE	CREDITS	DESCRIPTION	EXISTING COURSE
I. GENERAL EDUCATION CORE				
SSS100	Student Success Seminar	2	This course provides students with tools and techniques that will help them be successful in their program of study. The course focuses on interactive exercises which will help the learner identify personal strengths, learning styles, and support resources. Reading and study techniques will also be practiced. Additional Information: **Note**: Any student not transferring in 9 college credits from an accredited Institute will be required to take this course.	Y
ENGL 100	Communication in the Workplace	3	Includes essential computer hardware and software concepts as well as an introduction to the Internet (basic navigation and searching), and the web mail program used at Southeast Tech. Students will gain a proficiency in working in a wireless local area network environment and with the Microsoft Windows Operating System. File management skills will be reinforced as students create documents, spreadsheets, presentations and databases using the applications included in the Office suite. The class will utilize a hands-on, project-oriented approach that allows students to learn by example. Students will complete a variety of projects focused toward the objectives of their given program of study.	Y
MATH 100	Math Applications	3	A course covering the concepts and applications of mathematics, that includes: the arithmetic order of operations, percent problems, descriptive statistics and graphing, algebraic manipulations, solving linear equations, formula rearrangement, word problems, measurement, and applied plane and solid geometry. This course satisfies the institution's general education requirements for mathematics, but is not a transfer course.	Y
CSC 105	Introduction to Computers	3	Includes essential computer hardware and software concepts as well as an introduction to the Internet (basic navigation and searching), and the web mail program used at Southeast Tech. Students will gain a proficiency in working in a wireless local area network environment and with the Microsoft Windows Operating System. File management skills will be reinforced as students create documents, spreadsheets, presentations and databases using the applications included in the Office suite. The class will utilize a hands-on, project-oriented approach that allows students to learn by example. Students will complete a variety of projects focused toward the objectives of their given program of study.	Y
SUBTOTAL OF GENERAL EDUCATION CREDITS:		**11**	**TOTAL NEW COURSES:**	**0**
II. PROGRAM CORE				

Southeast Technical College
Off Road Heavy Equipment

ADM 230	Auxiliary Drive Theory	3	This class will cover the theory of operation, identification of ISO symbols, reading of schematics and diagnosis of system problems. The course will discuss industry standard auxiliary drive systems and many of the abnormalities in various agricultural and construction equipment, beyond the realm of standard drivetrain components.	Y
ADM 231	Auxiliary Drive Lab	3	Students will gain hands-on experience using modern diagnostic equipment to effectively test and diagnose faults in drive systems used in various agricultural and construction equipment.	Y
ADM 234	Electro-Hydraulics Theory	3	This course will cover the concept of electrical and fluid power working together to operate, control, monitor and adjust systems and sub-systems used in various agricultural and construction equipment. Advanced fluid power and electrical control concepts are introduced along with diagnosis and trouble-shooting using high-technology tools.	Y
ADM 235	Electro-Hydraulics Lab	3	Students gain hands-on experience using electrical and fluid power working together to operate, control, monitor and adjust systems and sub-systems used in various agricultural and construction equipment. Advanced fluid power and electrical control concepts are introduced along with diagnostics and trouble-shooting using industry standardized tools.	Y
ADM 238	Powertrain Theory	3	This course will cover the theory of drive methods used to power systems and sub-systems external of the main drive train. Included will be industry standard powertrain transmission, power take-off (PTO) drive options, hydraulic control and electro-hydraulically controlled implements.	Y
ADM 239	Powertrain Lab	3	Students gain hands-on experience working with drive methods used to power systems and sub-systems external of the main drive train. Included will be power take-off (PTO), hydraulic control and electro-hydraulically controlled implements.	Y
ADM 242	Total Machine Control Theory	3	This course will cover diagnostic concepts and techniques using factory software and other tools to trouble-shoot and diagnose faults and abnormalities in computer-controlled systems. Concepts in networking and multi-bus systems will be introduced and explored.	Y
ADM 243	Total Machine Control Lab	3	Students will employ hands-on diagnostic concepts and techniques using factory software and other tools to trouble-shoot and diagnose faults and abnormalities in computer-controlled systems. Concepts in networking and multi-bus systems will be applied.	Y
SUBTOTAL OF PROGRAM CREDITS:		**24**	**TOTAL NEW COURSES:**	**0**

SOUTH DAKOTA BOARD OF TECHNICAL EDUCATION

Appendix 4: Alignment Projection

Southeast Technical Collage
Off Road Heavy Equipment

TOTAL CREDITS IN PROPOSED PROGRAM:

35

I. STACKABLE OPPORTUNITIES								
Trucking Technology		Short-term Certificate		Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?	
		Long-term Certificate	X	Forthcoming				
	X	Diploma						
		AAS				35	9	
Diesel Technology		Short-term Certificate	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?	
		Long-term Certificate		Forthcoming				
		Diploma						
	X	AAS				65	35	
Technical Studies		Short-term Certificate	X	Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?	
		Long-term Certificate		Forthcoming				
		Diploma						
	X	AAS				60	35	
PROGRAM NAME		Short-term Certificate		Existing	If Forthcoming: Projected Timeline	Total Credits in Stackable Program	How many PROPOSED PROGRAM credits are in this stackable program opportunity?	
		Long-term Certificate		Forthcoming				
		Diploma						
		AAS						

II. ARTICULATION AGREEMENTS (BACCALAUREATE)						
PROGRAM NAME	**COLLEGE OR UNIVERSITY**	Existing	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?	
		Forthcoming				
PROGRAM NAME	**COLLEGE OR UNIVERSITY**	Existing	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?	
		Forthcoming				
PROGRAM NAME	**COLLEGE OR UNIVERSITY**	Existing	If Forthcoming: Projected Timeline	Total Credits in Bachelor's Degree	How many PROPOSED PROGRAM credits are projected to be accepted in the articulation agreement?	
		Forthcoming				

III. LICENSURE AND CERTIFICATION OPPORTUNITIES		
The PROPOSED PROGRAM will qualify students to pursue the following licensure and/or certification opportunities:		
LICENSURE/CERTIFICATION	**OVERSIGHT ORGANIZATION**	Will the licensure/certification require reporting per SDCL 13-1-61?
LICENSURE/CERTIFICATION	**OVERSIGHT ORGANIZATION**	Will the licensure/certification require reporting per SDCL 13-1-61?
LICENSURE/CERTIFICATION	**OVERSIGHT ORGANIZATION**	Will the licensure/certification require reporting per SDCL 13-1-61?

Farm Equipment Mechanics and Service Technicians
in the United States

Contents

What is Lightcast Data?

Lightcast data is a hybrid dataset derived from official government sources such as the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. Leveraging the unique strengths of each source, our data modeling team creates an authoritative dataset that captures more than 99% of all workers in the United States. This core offering is then enriched with data from online social profiles, resumés, and job postings to give you a complete view of the workforce.

Lightcast data is frequently cited in major publications such as *The Atlantic*, *Forbes*, *Harvard Business Review*, *The New York Times*, *The Wall Street Journal*, and *USA Today*.

Report Parameters

1 Occupation

49-3041	Farm Equipment Mechanics and Service Technicians

1 Nation

0	United States

Class of Worker

QCEW Employees

The information in this report pertains to the chosen occupation and geographical area.

Executive Summary

Average Job Posting Demand Over an Average Supply of Regional Jobs
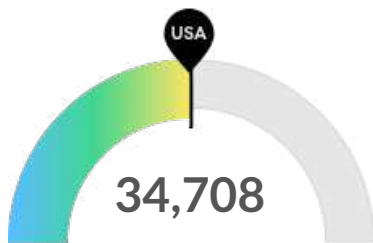
34,708

Jobs (2018)

United States is about average for this kind of job. The national average for an area this size is 34,708* employees, while there are 34,708 here.

$48,006

Compensation

Earnings are about average in United States. The national median salary for Farm Equipment Mechanics and Service Technicians is $48,006, compared to $48,006 here.
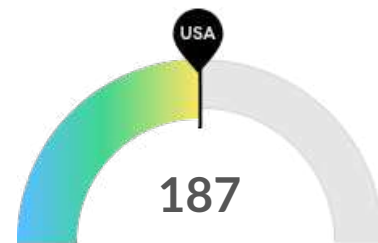
187

Job Posting Demand

Job posting activity is about average in United States. The national average for an area this size is 187* job postings/mo, while there are 187 here.

*National average values are derived by taking the national value for Farm Equipment Mechanics and Service Technicians and scaling it down to account for the difference in overall workforce size between the nation and United States. In other words, the values represent the national average adjusted for region size.

Jobs

Regional Employment Is About Equal to the National Average

An average area of this size typically has 34,708* jobs, while there are 34,708 here.
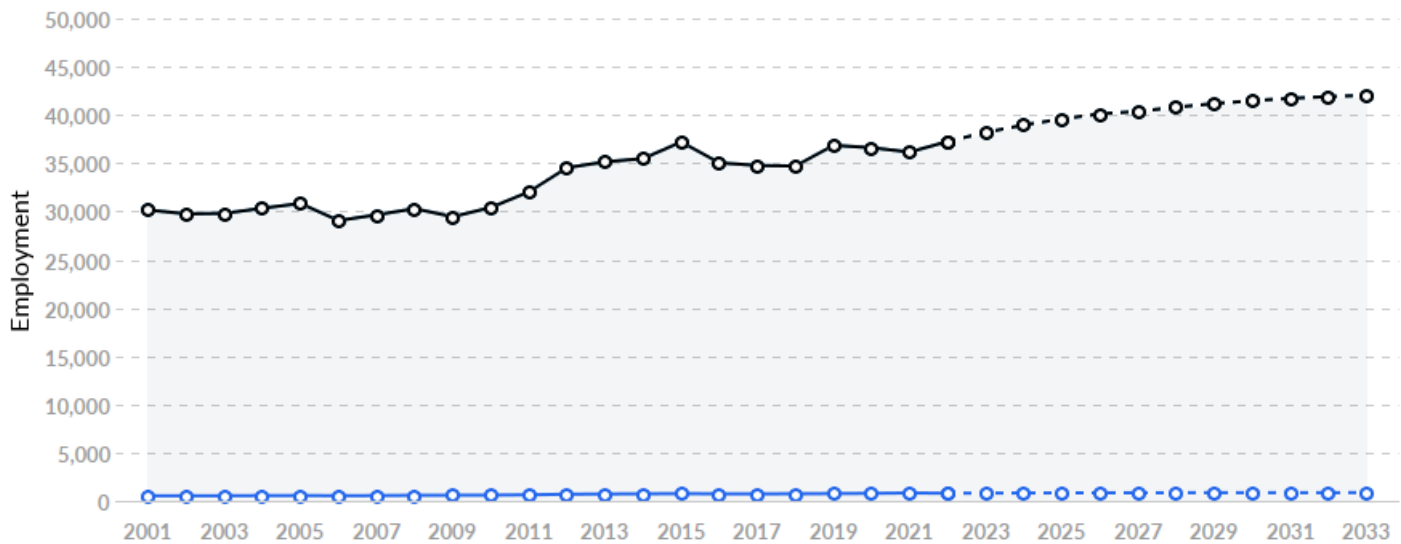
	Region	2018 Jobs	2028 Jobs	Change	% Change
●	United States	34,708	40,804	6,096	17.6%
●	National Average	34,708	40,804	6,096	17.6%
●	South Dakota	736	846	110	15.0%

*National average values are derived by taking the national value for Farm Equipment Mechanics and Service Technicians and scaling it down to account for the difference in overall workforce size between the nation and United States. In other words, the values represent the national average adjusted for region size.

Regional Breakdown

State	2018 Jobs
South Dakota	736

Most Jobs are Found in the Machinery, Equipment, and Supplies Merchant Wholesalers Industry Sector

Industry	% of Occupation in Industry (2018)
● Machinery, Equipment, and Supplies Merchant Wholesalers	75.6%
● Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	5.6%
● Support Activities for Crop Production	5.2%
● Lawn and Garden Equipment and Supplies Retailers	4.5%
● Miscellaneous Nondurable Goods Merchant Wholesalers	1.1%
● Services to Buildings and Dwellings	0.9%
● Other	7.0%

Compensation

Regional Compensation Is the Same Cost as the Nation

In 2022, the median compensation for Farm Equipment Mechanics and Service Technicians in the United States is $48,006.
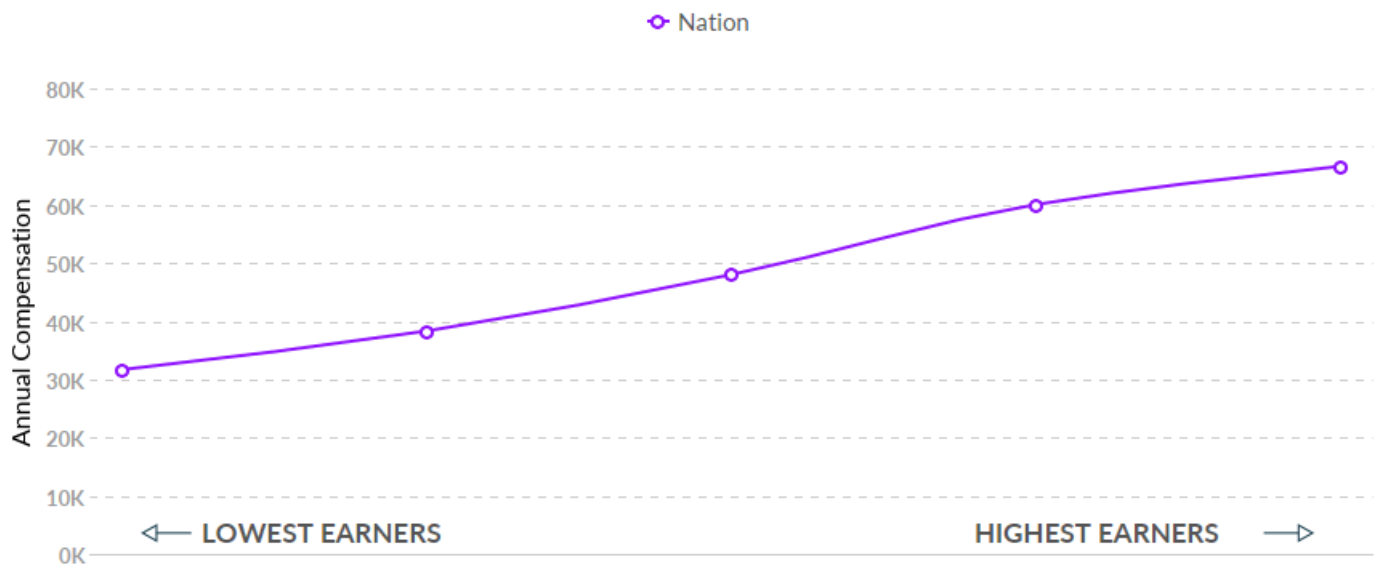
Job Posting Activity

12,706 Unique Job Postings

The number of unique postings for this job from Jan 2018 to Aug 2023.

1,484 Employers Competing

All employers in the region who posted for this job from Jan 2018 to Aug 2023.

33 Day Median Duration

Posting duration is 5 days longer than what's typical in the region.

● Monthly Unique Postings   ● Estimated Hires Per Month*
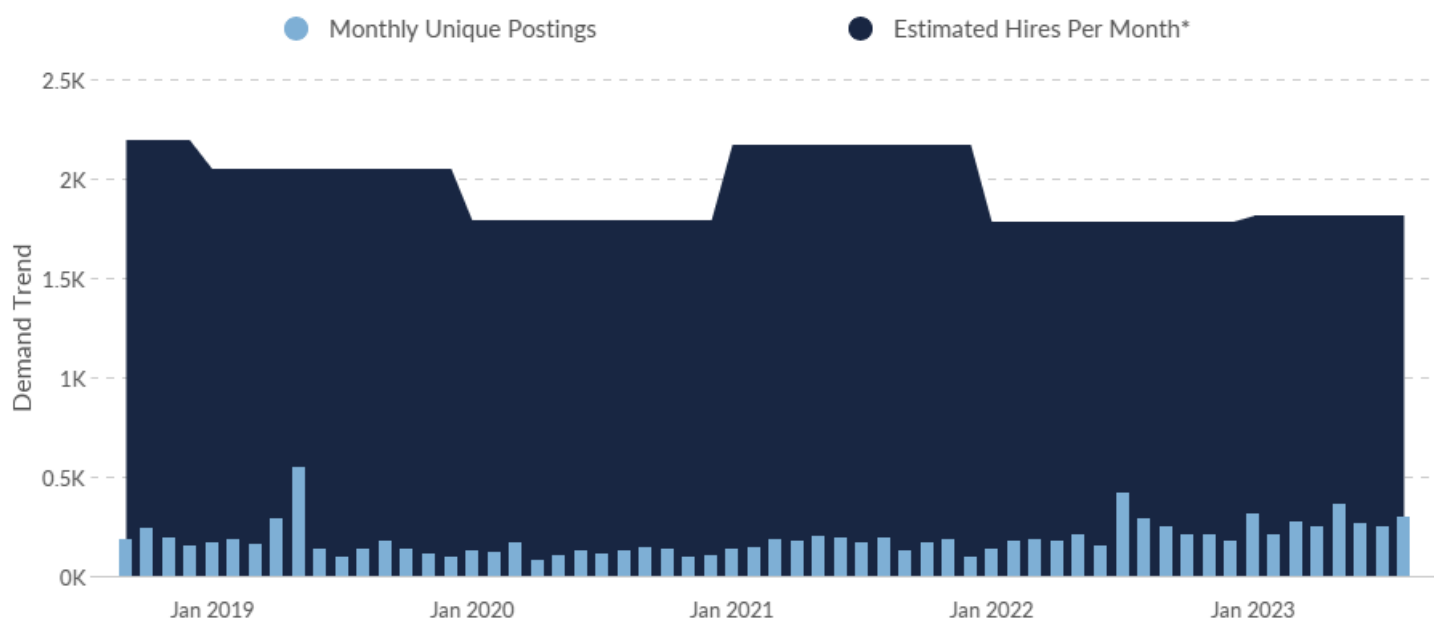
Occupation	Avg Monthly Postings (Jan 2018 - Aug 2023)	Avg Monthly Hires (Jan 2018 - Aug 2023)
Farm Equipment Mechanics and Service Technicians	188	1,946

*A hire is reported by the Quarterly Workforce Indicators when an individual's Social Security Number appears on a company's payroll and was not there the quarter before. Lightcast hires are calculated using a combination of Lightcast jobs data, information on separation rates from the Bureau of Labor Statistics (BLS), and industry-based hires data from the Census Bureau.

Top Companies	Unique Postings		Top Job Titles	Unique Postings	
Labor Services	858	▬▬	Shop Mechanics	4,159	▬▬
West Side Transport	566	▬	Trailer Technicians	1,959	▬
H&E Equipment Services	489	▬	Field Service Mechanics	1,539	▬
Ahern Rentals	406	▬	Tractor Technicians	1,294	▬
JB Hunt	256	▪	Equipment Service Technicians	424	▪
Crete Carrier Corporation	219	▪	Farm Equipment Operators	404	▪
Marten Transport	218	▪	Bike Mechanics	285	▪
Archrock	209	▪	Service Mechanics	284	▪
Butler Machinery	189	▪	Outdoor Specialists	128	∣
Recreational Equipment	135	▪	Agriculture Mechanics	98	∣

Top Distinguishing Skills by Demand

An occupation's Distinguishing Skills are the advanced skills that are called for occasionally. An employee with these skills is likely more specialized and able to differentiate themselves from others in the same role.
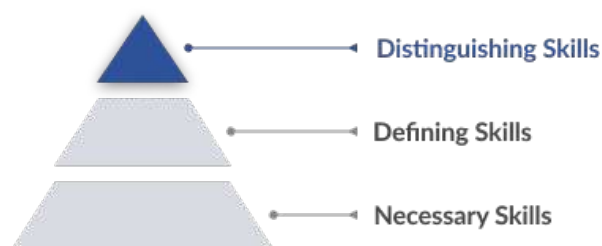
Skill	Salary Boosting	Job Postings Requesting
Bicycle Repair	❌	253

Top Defining Skills by Demand

An occupation's Defining Skills represent the day-to-day tasks and responsibilities of the job. An employee needs these skills to qualify for and perform successfully in this occupation.

Distinguishing Skills

Defining Skills
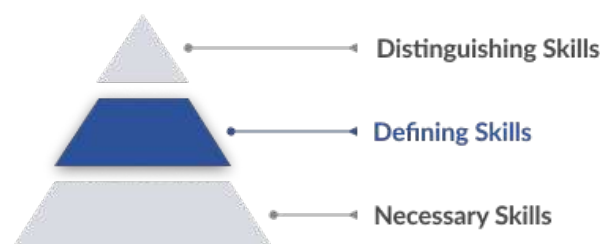
Necessary Skills

Skill	Salary Boosting	Job Postings Requesting
Mechanics	❌	3,097
Valid Driver's License	❌	3,041
Equipment Repair	❌	1,895
Technical Communication	✅	1,224

Top Necessary Skills by Demand

An occupation's Necessary Skills are the specialized skills required for that job and relevant across other similar jobs. An employee needs these skills as building blocks to perform the more complex Defining Skills.

Distinguishing Skills

Defining Skills

Necessary Skills
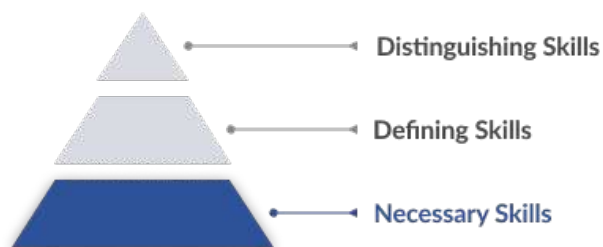
Skill	Salary Boosting	Job Postings Requesting
Hydraulics	❌	2,533
Heavy Equipment	❌	2,449
Diesel Engines	❌	2,074
Hand Tools	❌	1,936
Field Service Management	❌	1,723
Preventive Maintenance	❌	1,622
Fleet Maintenance	❌	907
Air Brakes	❌	429
DOT Certification	❌	316

Demographics

Retirement Risk Is About Average, While Overall Diversity Is About Average

9,621

Retiring Soon
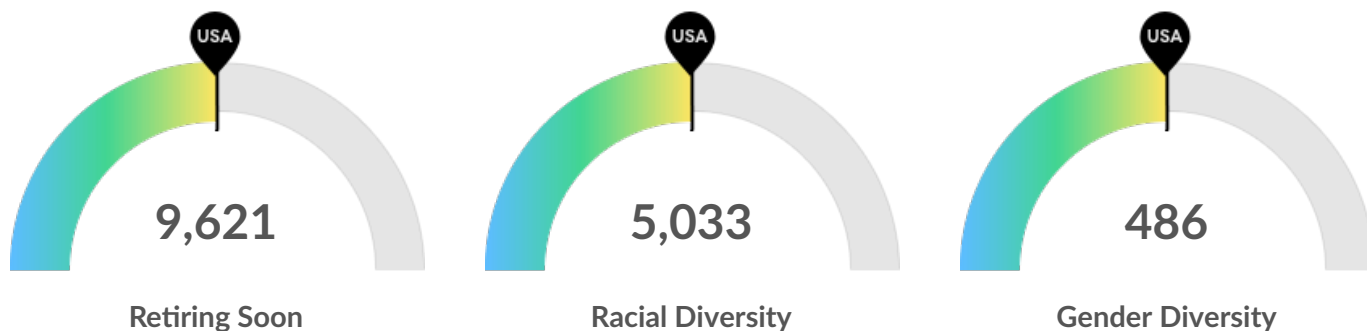
Retirement risk is about average in the United States. The national average for an area this size is 9,621* employees 55 or older, while there are 9,621 here.

5,033

Racial Diversity

Racial diversity is about average in the United States. The national average for an area this size is 5,033* racially diverse employees, while there are 5,033 here.

486

Gender Diversity

Gender diversity is about average in the United States. The national average for an area this size is 486* female employees, while there are 486 here.

*National average values are derived by taking the national value for Farm Equipment Mechanics and Service Technicians and scaling it down to account for the difference in overall workforce size between the nation and the United States. In other words, the values represent the national average adjusted for region size.

Occupation Age Breakdown

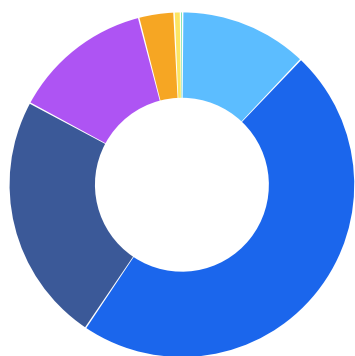|	% of Jobs	Jobs
14-18	0.8%	307
19-24	8.3%	3,093
25-34	20.8%	7,745
35-44	22.5%	8,384
45-54	21.7%	8,099
55-64	19.9%	7,416
65+	5.9%	2,205
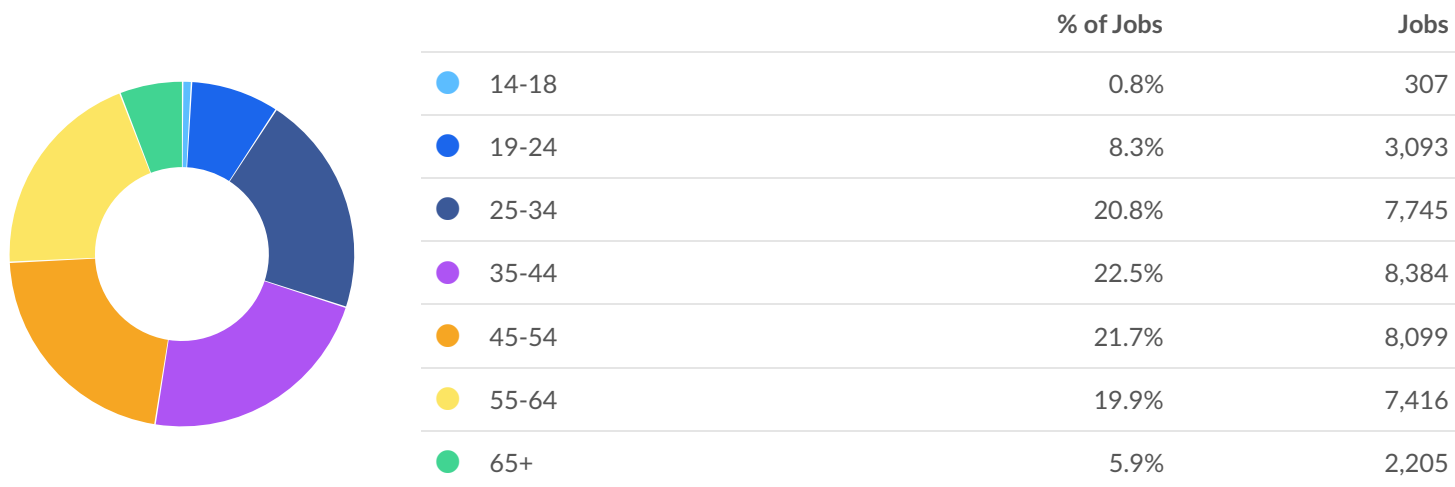
Occupation Race/Ethnicity Breakdown
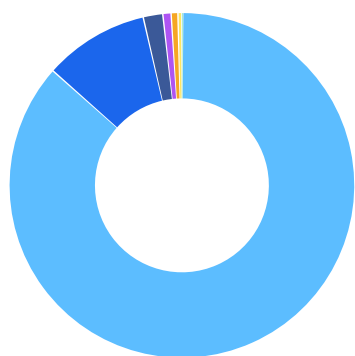
		% of Jobs	Jobs
●	White	86.5%	32,217
●	Hispanic or Latino	9.8%	3,664
●	Black or African American	1.8%	683
●	Two or More Races	0.8%	287
●	Asian	0.6%	235
●	American Indian or Alaska Native	0.4%	131
●	Native Hawaiian or Other Pacific Islander	0.1%	33

Occupation Gender Breakdown
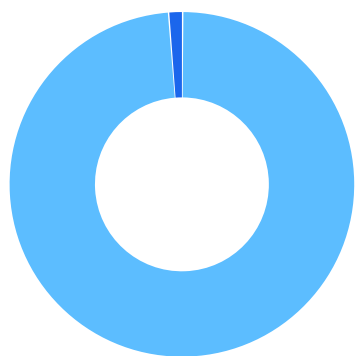
		% of Jobs	Jobs
●	Males	98.7%	36,764
●	Females	1.3%	486

National Educational Attainment

		% of Jobs
🔵	Less than high school diploma	12.0%
🔵	High school diploma or equivalent	47.3%
🔵	Some college, no degree	23.4%
🟣	Associate's degree	13.1%
🟠	Bachelor's degree	3.3%
🟡	Master's degree	0.6%
🟢	Doctoral or professional degree	0.2%

Occupational Programs

6 Programs

Of the programs that can train for this job, 6 have produced completions in the last 5 years.

2,176 Completions (2021)

The completions from all regional institutions for all degree types.

8,770 Openings (2021)

The average number of openings for an occupation in the region is 34,529.

CIP Code	Top Programs	Completions (2021)	
47.0302	Heavy Equipment Maintenance Technology/Technician	882	
01.0205	Agricultural Mechanics and Equipment/Machine Technolog...	687	
01.0201	Agricultural Mechanization, General	448	
01.0204	Agricultural Power Machinery Operation	113	
47.0399	Heavy/Industrial Equipment Maintenance Technologies/Tec...	35	
01.0299	Agricultural Mechanization, Other	11	

Top Schools	Completions (2021)	
Lincoln College of Technology-Nashville	155	
Reedley College	150	
University of Northwestern Ohio	112	
Cossatot Community College of the University of Arkansas	67	
South Georgia Technical College	66	
Wake Technical Community College	66	
State Technical College of Missouri	61	
Merced College	54	
Iowa State University	54	
San Joaquin Delta College	51	

Appendix A

Farm Equipment Mechanics and Service Technicians (SOC 49-3041):

Diagnose, adjust, repair, or overhaul farm machinery and vehicles, such as tractors, harvesters, dairy equipment, and irrigation systems. Excludes Bus and Truck Mechanics and Diesel Engine Specialists (49-3031).

Sample of Reported Job Titles:

Farm Equipment Mechanic
Mechanic
Tractor Technician
Tractor Mechanic
Harvester Mechanic
Field Technician
Farm Equipment Technician
Shop Mechanic
Service Technician
Farm Equipment Service Technician

Related O*NET Occupation:

Farm Equipment Mechanics and Service Technicians (49-3041.00)

Appendix B - Data Sources and Calculations

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

Emsi occupation employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates are also affected by county-level Emsi earnings by industry.

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Cost of Living Data

Emsi's cost of living data is based on the Cost of Living Index published by the Council for Community and Economic Research (C2ER).

Lightcast Job Postings

Job postings are collected from various sources and processed/enriched to provide information such as standardized company name, occupation, skills, and geography.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Mobile Heavy Equipment Mechanics, Except Engines
in the United States

Contents

What is Lightcast Data?

Lightcast data is a hybrid dataset derived from official government sources such as the US Census Bureau, Bureau of Economic Analysis, and Bureau of Labor Statistics. Leveraging the unique strengths of each source, our data modeling team creates an authoritative dataset that captures more than 99% of all workers in the United States. This core offering is then enriched with data from online social profiles, resumés, and job postings to give you a complete view of the workforce.

Lightcast data is frequently cited in major publications such as *The Atlantic*, *Forbes*, *Harvard Business Review*, *The New York Times*, *The Wall Street Journal*, and *USA Today*.

Report Parameters

1 Occupation

49-3042	Mobile Heavy Equipment Mechanics, Except Engines

1 Nation

0	United States

Class of Worker

QCEW Employees

The information in this report pertains to the chosen occupation and geographical area.

Executive Summary

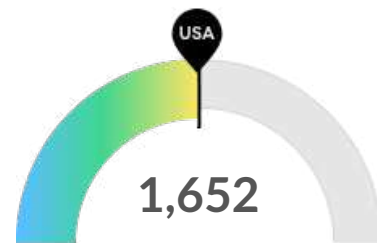## Average Job Posting Demand Over an Average Supply of Regional Jobs
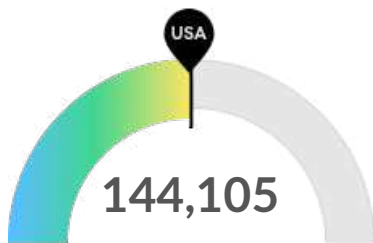
144,105

Jobs (2018)

United States is about average for this kind of job. The national average for an area this size is 144,105* employees, while there are 144,105 here.

$59,446

Compensation

Earnings are about average in United States. The national median salary for Mobile Heavy Equipment Mechanics, Except Engines is $59,446, compared to $59,446 here.


1,652

Job Posting Demand

Job posting activity is about average in United States. The national average for an area this size is 1,652* job posting/mo, while there is 1,652 here.

*National average values are derived by taking the national value for Mobile Heavy Equipment Mechanics, Except Engines and scaling it down to account for the difference in overall workforce size between the nation and United States. In other words, the values represent the national average adjusted for region size.

Jobs

## Regional Employment Is About Equal to the National Average

An average area of this size typically has 144,105* jobs, while there are 144,105 here.
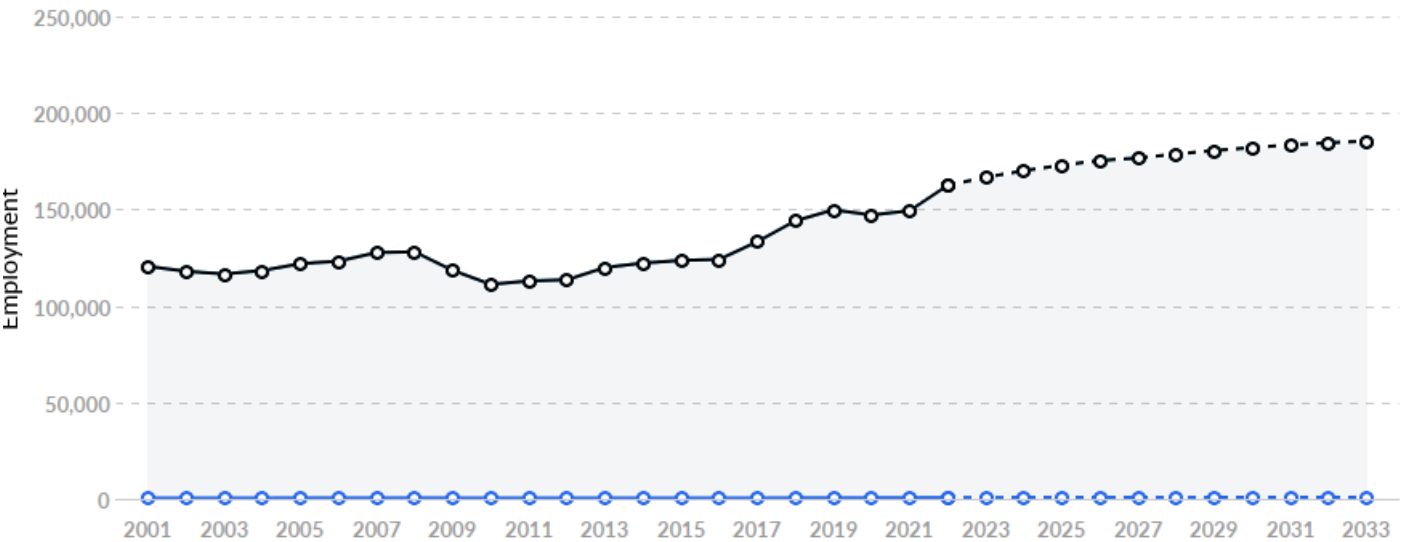
	Region	2018 Jobs	2028 Jobs	Change	% Change
●	United States	144,105	178,719	34,615	24.0%
●	National Average	144,105	178,719	34,615	24.0%
●	South Dakota	543	796	253	46.6%

*National average values are derived by taking the national value for Mobile Heavy Equipment Mechanics, Except Engines and scaling it down to account for the difference in overall workforce size between the nation and United States. In other words, the values represent the national average adjusted for region size.

Regional Breakdown
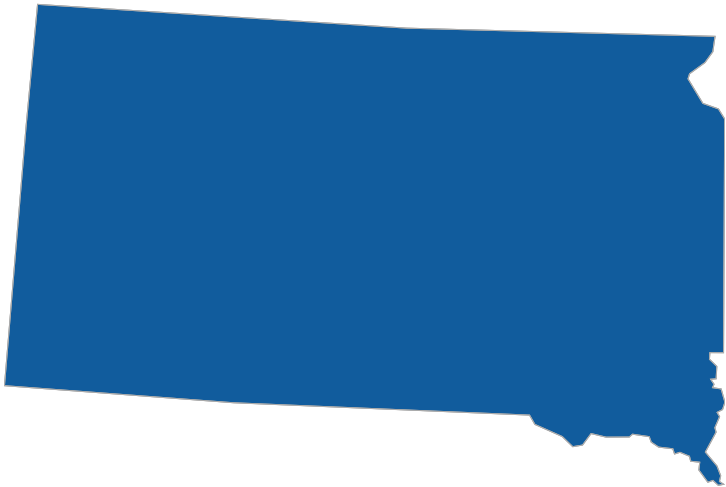
State	2018 Jobs
South Dakota	543

Most Jobs are Found in the Machinery, Equipment, and Supplies Merchant Wholesalers Industry Sector

Industry	% of Occupation in Industry (2018)
🔵 Machinery, Equipment, and Supplies Merchant Wholesalers	27.5%
🔵 Other Specialty Trade Contractors	7.9%
🔵 Local Government, Excluding Education and Hospitals	5.5%
🟣 Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	4.8%
🟠 Highway, Street, and Bridge Construction	4.5%
🟡 Federal Government, Civilian	4.5%
🟢 Other	45.2%

Compensation

Regional Compensation Is the Same Cost as the Nation

In 2022, the median compensation for Mobile Heavy Equipment Mechanics, Except Engines in the United States is $59,446.
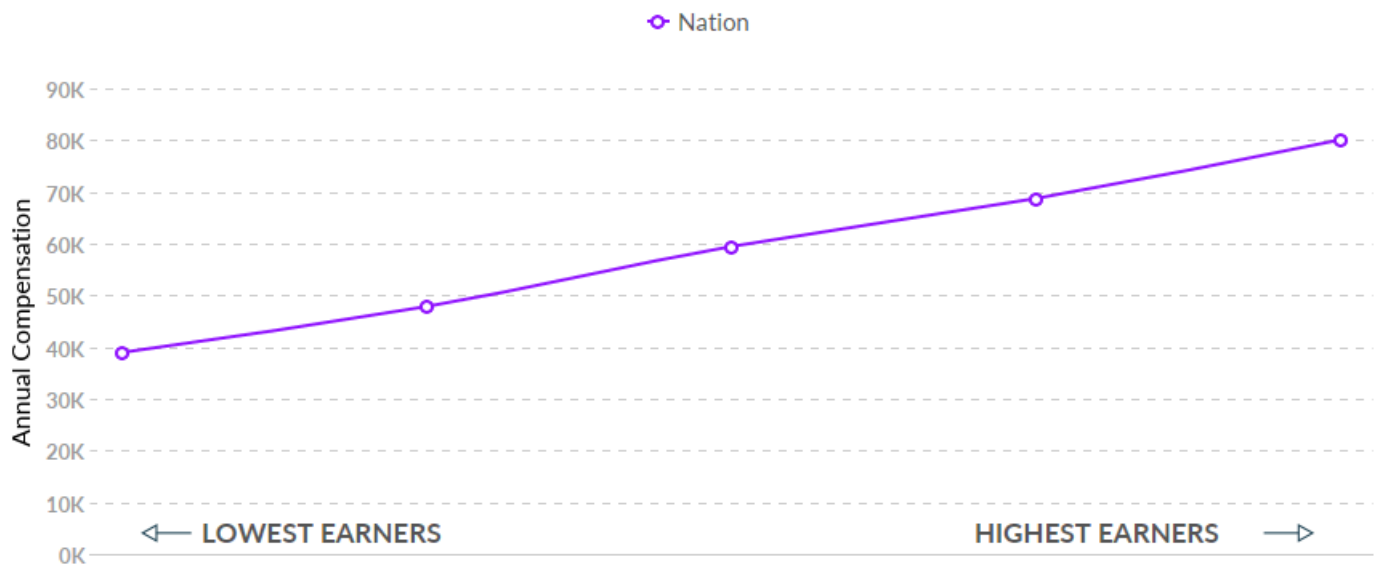
Job Posting Activity

112,348 Unique Job Postings

The number of unique postings for this job from Jan 2018 to Aug 2023.
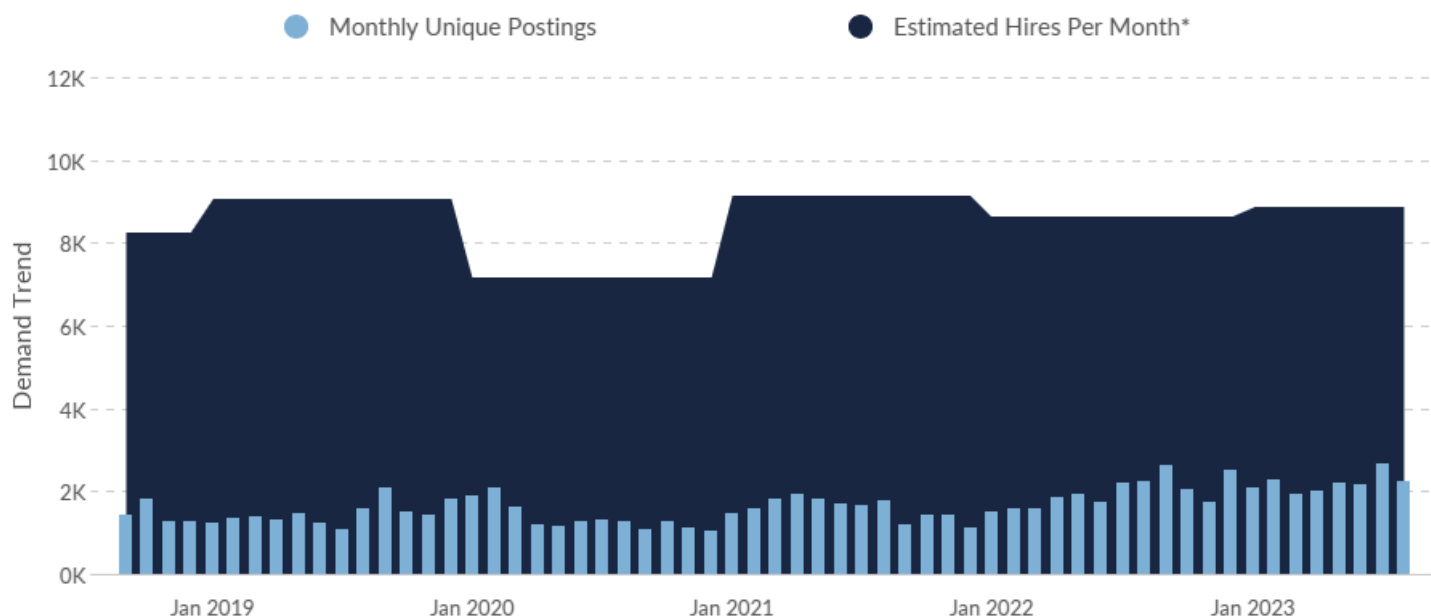
8,749 Employers Competing

All employers in the region who posted for this job from Jan 2018 to Aug 2023.

30 Day Median Duration

Posting duration is 2 days longer than what's typical in the region.

Occupation	Avg Monthly Postings (Jan 2018 - Aug 2023)	Avg Monthly Hires (Jan 2018 - Aug 2023)
Mobile Heavy Equipment Mechanics, Except Engines	1,666	8,532

*A hire is reported by the Quarterly Workforce Indicators when an individual's Social Security Number appears on a company's payroll and was not there the quarter before. Lightcast hires are calculated using a combination of Lightcast jobs data, information on separation rates from the Bureau of Labor Statistics (BLS), and industry-based hires data from the Census Bureau.

| Top Companies	Unique Postings		Top Job Titles	Unique Postings	
GPAC	3,688	▬	Heavy Equipment Mechanics	26,856	▬
Crown Equipment Corporation	2,608	▬	Equipment Mechanics	10,180	▬
Altec Industries	2,215	▬	Heavy Equipment Technicians	8,152	▬
Waste Management	2,103	▬	Forklift Mechanics	6,771	▬
Sunbelt Rentals	1,784	▬	Heavy Equipment Diesel Mecha...	3,998	▪
EquipmentShare	1,722	▬	Heavy Equipment Shop Technici...	3,692	▪
United Rentals	1,696	▬	Forklift Operators	3,599	▪
Aerotek	1,226	▬	Heavy Duty Mechanics	3,180	▪
Republic Services	1,036	▪	Heavy Equipment Field Mechan...	2,699	▪
Mechanics Hub	847	▪	Heavy Equipment Field Service ...	2,344	▪

Top Distinguishing Skills by Demand

An occupation's Distinguishing Skills are the advanced skills that are called for occasionally. An employee with these skills is likely more specialized and able to differentiate themselves from others in the same role.

Distinguishing Skills
Defining Skills
Necessary Skills
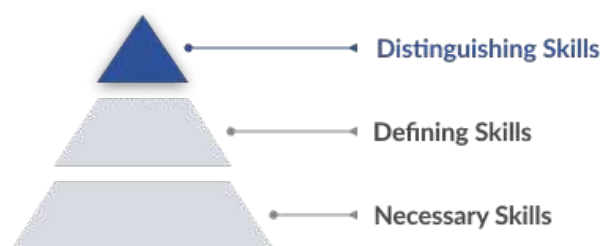
Skill	Salary Boosting	Job Postings Requesting
Internal Combustion Engines	❌	3,798

# Top Defining Skills by Demand

An occupation's Defining Skills represent the day-to-day tasks and responsibilities of the job. An employee needs these skills to qualify for and perform successfully in this occupation.

Distinguishing Skills

Defining Skills
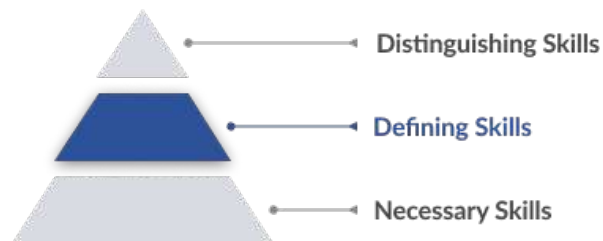
Necessary Skills

| Skill	Salary Boosting	Job Postings Requesting
Heavy Equipment	❌	60,787
Valid Driver's License	❌	44,226
Hydraulics	❌	32,386
Diesel Engines	❌	24,216
Mechanics	❌	23,350

Top Necessary Skills by Demand

An occupation's Necessary Skills are the specialized skills required for that job and relevant across other similar jobs. An employee needs these skills as building blocks to perform the more complex Defining Skills.

Distinguishing Skills

Defining Skills

Necessary Skills
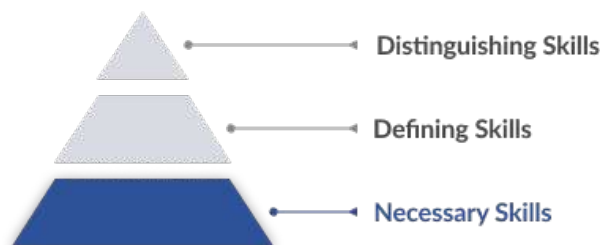
| Skill	Salary Boosting	Job Postings Requesting
Electrical Systems	✖	18,894
Forklift Truck	✖	18,276
Equipment Repair	✖	18,257
Preventive Maintenance	✖	16,790
Machinery	✖	15,384
Hand Tools	✖	15,351
Construction	✖	15,223
Commercial Driver's License (CDL)	✖	14,372
Field Service Management	✖	12,230
Welding	✖	10,876

Demographics

Retirement Risk Is About Average, While Overall Diversity Is About Average
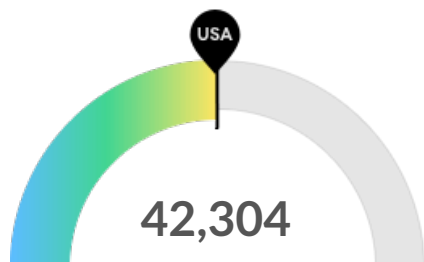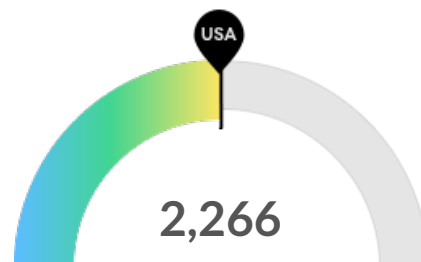
42,304

Retiring Soon

Retirement risk is about average in the United States. The national average for an area this size is 42,304* employees 55 or older, while there are 42,304 here.
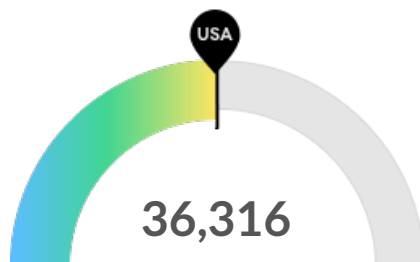
36,316

Racial Diversity

Racial diversity is about average in the United States. The national average for an area this size is 36,316* racially diverse employees, while there are 36,316 here.

2,266

Gender Diversity

Gender diversity is about average in the United States. The national average for an area this size is 2,266* female employees, while there are 2,266 here.

*National average values are derived by taking the national value for Mobile Heavy Equipment Mechanics, Except Engines and scaling it down to account for the difference in overall workforce size between the nation and the United States. In other words, the values represent the national average adjusted for region size.

Occupation Age Breakdown
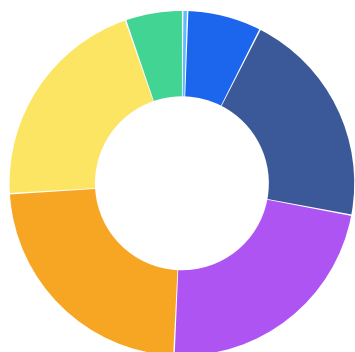
	% of Jobs	Jobs
14-18	0.5%	754
19-24	6.9%	11,288
25-34	20.5%	33,282
35-44	22.8%	37,010
45-54	23.3%	37,855
55-64	20.7%	33,586
65+	5.4%	8,718

Occupation Race/Ethnicity Breakdown
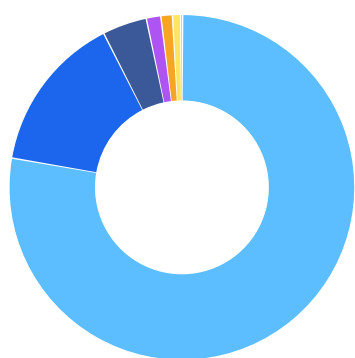
		% of Jobs	Jobs
●	White	77.7%	126,176
●	Hispanic or Latino	14.8%	24,050
●	Black or African American	4.2%	6,768
●	Two or More Races	1.4%	2,208
●	Asian	1.1%	1,753
●	American Indian or Alaska Native	0.8%	1,233
●	Native Hawaiian or Other Pacific Islander	0.2%	305

Occupation Gender Breakdown
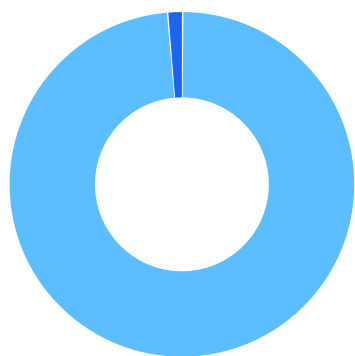
		% of Jobs	Jobs
●	Males	98.6%	160,227
●	Females	1.4%	2,266

National Educational Attainment
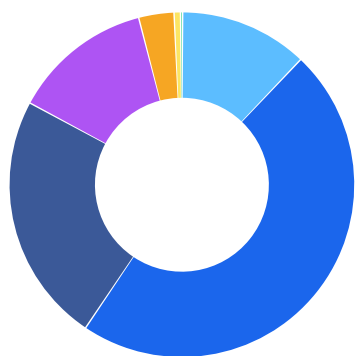
		% of Jobs
🔵	Less than high school diploma	12.0%
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🔵	Some college, no degree	23.4%
🟣	Associate's degree	13.1%
🟠	Bachelor's degree	3.3%
🟡	Master's degree	0.6%
🟢	Doctoral or professional degree	0.2%

Occupational Programs

4 Programs

Of the programs that can train for this job, 4 have produced completions in the last 5 years.

2,052 Completions (2021)

The completions from all regional institutions for all degree types.

30,420 Openings (2021)

The average number of openings for an occupation in the region is 34,529.

CIP Code	Top Programs	Completions (2021)	
47.0302	Heavy Equipment Maintenance Technology/Technician	882	
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Merced College	54	
Iowa State University	54	
San Joaquin Delta College	51	

Appendix A

Mobile Heavy Equipment Mechanics, Except Engines (SOC 49-3042):
Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and mining. Excludes Bus and Truck Mechanics and Diesel Engine Specialists (49-3031) and Rail Car Repairers (49-3043).

Sample of Reported Job Titles:
Heavy Equipment Mechanic
Equipment Mechanic
Crane Mechanic
Construction Equipment Mechanic
Mechanic
Maintenance Mechanic
Heavy Duty Mechanic
Forklift Technician
Field Service Technician
Equipment Technician

Related O*NET Occupation:
Mobile Heavy Equipment Mechanics, Except Engines (49-3042.00)

Appendix B - Data Sources and Calculations

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

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