

**STATE OF NEBRASKA
COORDINATING COMMISSION FOR
POSTSECONDARY EDUCATION**

PROPOSAL FOR NEW INSTRUCTIONAL PROGRAM

I. Descriptive Information

Institution: WESTERN NEBRASKA COMMUNITY COLLEGE

Name of the Program: CONSTRUCTION TECHNOLOGY

Degrees/Credentials to be Awarded:

- Associate of Applied Science (AAS) in Construction Technology
- Professional Skills Awards (PSA's) in:
 - Carpentry
 - Plumbing
 - Electrical
 - HVACR

CIP Codes:

- Associate of Applied Science in Construction Technology 46.0000
- Professional Skills Awards (PSA's) in:
 - Carpentry 46.0201
 - Plumbing 46.0302
 - Electrical 46.0503
 - HVACR 47.0201

Other Programs Offered by This Institution:

Non-credit construction courses in carpentry, plumbing, electrical, and HVACR, as approved by NCCER

Administrative Units for the Program:

Division of Applied Technology and Business

Proposed Delivery Sites and Type of Delivery:

Type of Delivery

Primary instruction in-person. The didactic portion of some courses can be taught hybrid or blended with online instruction with in-person labs

Delivery Sites

- Scottsbluff (main campus)
- Sidney (additional location)
- Alliance (additional location)
- Some partner high schools through dual credit

Proposed Date (Term/Year) the Program will be Initiated: Fall 2025

Program Description:

AAS – Construction Technology (61-63 credit hours)

The Construction Technology (CNST) program is designed to prepare students to enter residential and light commercial construction trades. Four professional skill awards (PSAs) – carpentry, plumbing, electrical, and heating, ventilation, air conditioning, and refrigeration (HVACR) – are available. Individual professional skills awards are comprised of courses that provide the student with basic knowledge, theory, and hands-on training in each of the sub-areas. PSA’s build toward the AAS. Upon successful completion of the individual PSA’s and/or program, students are prepared to begin careers working within the specialty PSA, and when combined, in the broader area of residential and light-commercial construction trades.

Program Outcomes

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of carpentry, plumbing, electrical, and HVACR concepts as a baseline for efficient and safe work conditions.
- Select, and utilize, the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Integrate individual and clustered skill sets for carpentry, plumbing, electrical, and HVACR systems that are part of residential and light-commercial building industries.
- Perform basic diagnostics, service, and maintenance relative to carpentry, plumbing, electrical, and HVACR.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Professional Skill Awards

Four (4) specialized certificates are offered as part of the Construction Technology program. Each certificate is designed as a stand-alone award and can be combined to fulfill the requirements of the AAS.

Note: PSA(s) will be awarded when required courses are successfully completed.

PSA Carpentry	15 credits
PSA Plumbing	15 credits
PSA Electrical	12 credits
PSA HVACR	13 credits

See Appendix A for proposed curriculum and Appendix B for proposed courses.

Date Approved by Governing Board: June 19, 2024

II. Review Criteria

A. Centrality to the Role and Mission

The mission of WNCC is “To provide learning opportunities—enriching lives, invigorating communities, and changing futures.” Central to this mission is workforce development, and the proposed Construction Technology program is designed to support the needs of the service area and provide training for high-demand jobs in the panhandle. A skilled labor force with construction knowledge and skills will enhance all of the communities in our service area. The potential of higher wages and good jobs will change each student’s future.

In accordance with the *Comprehensive Statewide Plan for Postsecondary Education*, “Community colleges provide educational options for students seeking career training or transfer to a four-year institution. The education program may culminate in an applied technology associate degree, diploma, or certificate; or an associate of arts or associate of science degree from an academic transfer program.” Again, the Construction Technology program with the Associate of Applied Science and corresponding PSAs fulfills this mission.

B. Evidence of Need and Demand

1. Need for the Program

Construction related occupations consistently are ranked in the Panhandle Economic Region’s list of high-demand, high-wage, and/or high-skill (H3) positions (see Appendix C).

According to Lightcast data from the fourth quarter of 2023 (see Appendix D), there were 858 jobs in the construction trades in the Panhandle of Nebraska. While national averages might suggest that this is lower than expected for an area of this size, the numbers may be misleading. That same report indicates that there were 0 job postings for Plumbers, Pipefitters, and Steamfitters in the region. However, it also reports that 7 people were hired in those positions in 2023. It may well be that, post-pandemic, employers in this area are unable to find skilled workers in the construction trades and are “making do” with unskilled labor in these trades.

This conclusion is further supported by the Lightcast data that reports that the “risk of retirement” is slightly above average. It is also borne out by self-report data from members of WNCC’s service area. In the spring of 2022, members of the WNCC leadership team engaged in “listening tour” stops in all 12 ½ of the counties of the College’s service area. The number one concern expressed by 10 of the 13 communities was training in the skilled trades – plumbers, electricians, HVACR technicians, masons, and framers. Very often, they identified affordable housing; lack of jobs for younger people; the aging, retiring workforce, and the aging infrastructure as critical issues in their communities. All of these-issues are addressed, at least partially, by a well-trained workforce in electrical, plumbing, carpentry and HVACR skills.

2. Demand for the Program

For the past five years, WNCC has allowed Mid Plains Community College to offer dual credit courses in construction trades at Gering High School through CCPE’s out-

of-service-area request process. Those courses have been well subscribed. Several other high schools, including Scottsbluff and Potter-Dix, have requested the construction trades classes through dual credit, as well.

As a result of the listening tour in 2022, WNCC started several of the construction trades programs as non-credit bearing programs. While they started off small, the numbers of students enrolling have continued to increase since then.

Since the inception of the non-credit programs, nine (9) students in Scottsbluff have completed electrical training and there are 15 students on the current waitlist for training in fall 2024. Three students participated in the first carpentry course in Sidney and an additional student has completed the plumbing course. All of these programs were constructed following the National Center for Construction Education and Research (NCCER) guidelines. Students successfully completing training in each specialty are awarded NCCER certifications in the respective specialty.

With increasing demand on the non-credit side and requests for dual credit programs, WNCC is proposing to expand the program as credit bearing, with several professional skills awards (PSAs) leading to an Associate of Applied Science in Construction Technologies. PSA are defined as short-term programs between nine and 15 credit hours, with no general education requirements. In developing the credit-bearing programs, WNCC has been deliberate in ensuring that the non-credit classes can be counted towards the credit program through established credit-for-prior learning processes.

Consequently, whether a student begins the program in high school or comes back as a returning student simply looking to enhance their skill set in a particular trade, the pathway is clear to the AAS degree and potentially a Bachelor of Applied Science through Chadron State College or other four-year partners. In this way, WNCC has broadened the program impact to attract different types of students with different goals, thus increasing future demand for the program.

C. Adequacy of Resources

1. Faculty and Staff Resources

Initially, the courses will be taught by part-time trainers certified by NCCER. Either through adjunct faculty positions, including qualified high school teachers, or contract-based training, the costs of faculty and other personnel will be covered by the revenue generated through tuition, fees, and state support.

2. Physical Facilities

Having a location will be a challenge in the short-term. The applied technology building on-campus is at capacity and the flexible space utilized on campus for some non-credit training will be under construction for the 2024-25 and 2025-26 school years to expand health sciences.

Over the short term, several of the high schools have shop facilities that will be used for the dual credit offerings. Leased space through industry partners has been identified in Scottsbluff, Sidney, and Alliance.

Over the long-term, when the health sciences remodeling is under way, the next project in the long-term campus master planning is to expand the facilities for all of the skilled and technical sciences—not just construction, but welding, automotive, diesel technologies, and other programs needed in the service area. Architects have explored initial space needs with the skilled and technical science faculty, and the WNCC Foundation has determined the project will be the focus of its next capital campaign.

3. Instructional Equipment and Informational Resources

While developing the non-credit construction technologies programs, the college invested trailers outfitted with complete tool kits that can be used in a variety of locations as needed. For example, the electrical training trailer has all of the tools and a supply of materials that can be used for training in that trade wherever there is student demand for the program. As a result, much of the instructional equipment has already been purchased. The institutional budget for 2024-25 includes an operational budget line to assist with acquiring additional equipment and consumables as necessary. Combined with the partnerships with local high schools and their facilities and equipment, the equipment needs will be met as the program begins.

4. Budget Projections

TABLE 1: PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

	(FY25) Year 1		(FY26) Year 2		(FY27) Year 3		(FY28) Year 4		(FY29) Year 5		Total	
	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost	FTE	Cost
Personnel												
Faculty ¹	1	\$91,308	1	\$91,308	1	\$91,308	1	\$91,308	1	\$91,308	1	\$456,540
Professional ²											0	\$0
Graduate assistants											0	\$0
Support staff											0	\$0
Subtotal	1	\$91,308	1	\$91,308	1	\$91,308	1	\$91,308	1	\$91,308	1	\$456,540
Operating												
General Operating ³												\$0
Equipment ⁴												\$0
New or renovated space ⁵		\$45,667		\$45,667		\$45,667		\$45,667		\$45,667		\$228,335
Library/Information Resources ⁶												\$0
Other ⁷												\$0
Subtotal		\$45,667		\$45,667		\$45,667		\$45,667		\$45,667		\$228,335
Total Expenses	1	\$136,975.00	1	\$136,975.00	1	\$136,975.00	1	\$136,975.00	1	\$136,975.00	1	\$684,875.00

TABLE 2: REVENUE SOURCES FOR PROJECTED EXPENSES - NEW INSTRUCTIONAL PROGRAM

	FY(25) Year 1	(FY26) Year 2	(FY27) Year 3	(FY28) Year 4	(FY29) Year 5	Total
Reallocation of Existing Funds ¹	\$24,000	15,000	15,000	15,000	11,107	\$80,107
Required New Public Funds ²						\$0
1. State Funds						\$0
2. Local Tax Funds (community colleges)						\$0
Tuition and Fees ³	\$75,360	\$132,352	\$132,352	\$132,352	\$132,352	\$604,768
Other Funding ⁴						\$0
1						\$0
2						\$0
3						\$0
Total Revenue ⁵	\$99,360	\$147,352	\$147,352	\$147,352	\$143,459	\$684,875

³ 15 first year students each FY taking 33 credits each at \$128 T&F PLUS 13 second year students in FY's 2 to 5 each taking 28 credits at \$128 T&F. ALSO includes per student course fees of \$800.00/year.

D. Avoidance of Unnecessary Duplication

The table below shows the individual stackable certificate programs towards the AAS Construction Trades and the community colleges in Nebraska that offer them for certificate/associates degree awards.

Program	Institution	Certificate offered	Associates Degree offered
Carpenter (46.0201)	Metropolitan Community College, Omaha	✓	
Electrician (46.0302)	Central Community College, Grand Island	✓	✓
	Metropolitan Community College Area, Omaha	✓	✓
	Mid-Plains Community College, North Platte	✓	✓
	Northeast Community College, Norfolk		✓
Plumber (46.0503)	Northeast Community College, Norfolk		
	Southeast Community College Area, Lincoln	✓	
HVAC (47.0201) (Heating, Air Conditioning, Ventilation and Refrigeration Maintenance Technology/Technician, HAC, HACR, HVAC, HVACR)	Central Community College, Grand Island	✓	✓
	Metropolitan Community College Area, Omaha	✓	✓
	Mid-Plains Community College, North Platte	✓	✓
	Northeast Community College Norfolk		✓
	Southeast Community College Area, Lincoln		✓

These are the programs in the states bordering the Panhandle (Colorado and Wyoming):

Carpenter (46.0201)

- Aims Community College, Greeley, Colorado
- Central Wyoming College, Riverton, Wyoming
- Northern Wyoming Community College District, Sheridan

Electrician (46.0302)

- Casper College, Casper, Wyoming
- Central Wyoming College, Riverton, Wyoming
- Laramie County Community College, Cheyenne, Wyoming
- Northern Wyoming Community College District, Sheridan, Wyoming
- Red Rocks Community College, Lakewood, Colorado

Plumber (46.0503)

Not offered in these states.

Refrigeration Maintenance Technology/Technician (47.0201, HAC, HACR, HVAC, HVACR)

- Front Range Community College, Westminster
- Laramie County Community College, Cheyenne
- Pikes Peak State College, Colorado Springs

E. Consistency with the *Comprehensive Statewide Plan for Postsecondary Education*

Offering construction technology programs through WNCC contributes to a number of the Major Statewide goals outlined by the CCPE (pp. 1-9 and 1-10).

Major Statewide Goals

- *“Nebraska’s institutions and policymakers will increase participation and success in postsecondary education, particularly for low-income and underrepresented populations, and ensure that all Nebraskans are able to access and successfully complete postsecondary education appropriate to their individual needs and abilities . . .”*

WNCC’s plan for the Construction Technology programs will expand the reach of these trades to students throughout the 17,000 square mile, 12.5 county service area, making the programs more accessible and affordable to Nebraskan students at this end of the state.

- *“Nebraska colleges and universities will foster critical thinking skills and provide their graduates with the knowledge and workplace skills needed to be successful employees, innovative entrepreneurs, and responsible citizens on a global stage.”*

As students nationwide are becoming more interested in workforce development opportunities through community colleges, the programs in Construction Technologies will provide the workplace skills to be successful employees and potential future entrepreneurs.

- *“Postsecondary education institutions will assess evolving needs and priorities of the students and people of Nebraska in a timely manner and will adopt new methods and technologies to address them.”*

The Construction Technology program grew in response to the needs expressed by members of the communities in the WNCC service area. In less than two years, WNCC is prepared to offer the programs via traditional formats and credit-bearing programs, through dual credit offerings, and non-credit/short-term trainings to any student who wants them.

- *“Postsecondary education will serve the state by preparing individuals for productive, fulfilling lives and by developing and nurturing the citizens and future leaders of Nebraska.”*

Regardless of the student’s background or career goals in these areas, the programs at WNCC will assist them in gaining well-paying jobs that will, consistent with the WNCC mission, enrich their lives, invigorate their communities, and change their futures.

- *“Postsecondary education institutions will work as partners with one another and with other entities, including those in the private sector, whenever appropriate to share resources and deliver programs cooperatively to enhance learning opportunities for students.”*

WNCC has partnered with local employers and service providers on identifying space, hiring qualified instructors, and gathering the equipment necessary to provide learning opportunities for students in the construction trades programs. These programs will not compete with similar programs at other colleges; rather, they will make training in the construction trades more accessible to students who would not otherwise have the opportunity to participate. Indeed, students who pursue the AAS to BAS route with a partner institution have a clear pathway from postsecondary education to career.

- *“Postsecondary education will work effectively with elementary and secondary schools to improve teaching and learning at all levels of education, provide opportunities for early college enrollment, and ensure the college and career readiness of all high school graduates.”*

WNCC has worked closely with the 25 school districts in its service area to develop dual credit opportunities in the construction trades. Over the next few years, the ability to serve more high schools and their students through these programs is expected to increase dramatically.

APPENDIX A

Construction Technology

Associate of Applied Science (AAS.46.0000)

Professional Skill Awards

- Carpentry (PSA.46.0201)
- Plumbing (PSA.46.0302)
- Electrical (PSA.46.0503)
- HVACR (PSA.47.0201)

Scottsbluff

The Construction Technology (CNST) program is designed to prepare students to enter residential and light commercial construction trades. Four certificates, Carpentry, Plumbing, Electrical, and Heating, Ventilation, Air Conditioning, and Refrigeration (HVACR) are available. Individual certificates are comprised of courses that provide the student with basic knowledge, theory, and hands-on training in each of the sub-areas. Certificates build toward the Diploma and AAS. Upon successful completion of the individual certificates and/or program, students are prepared to begin careers working within the specialty certificate, and when combined, in the broader area of residential and light-commercial construction trades.

PROGRAM OUTCOMES

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of carpentry, plumbing, electrical, and HVACR concepts as a baseline for efficient and safe work conditions.
- Select, and utilize the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Integrate individual and clustered skill sets for carpentry, plumbing, electrical, and HVACR systems that are part of residential and light-commercial building industries.
- Perform basic diagnostics, service, and maintenance relative to carpentry, plumbing, electrical, and HVACR.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Associate of Applied Science

AAS.46.0000 (61 - 63 credits)

For the Associate of Applied Science in construction technology, students will complete 61 - 63 credits that include a minimum of 15 general education requirements.

Program Requirements

AAS General Education Core 15-17 credits

Class	Credits
Written Communication*	3
Oral Communication	3
Quantitative Reasoning*	3-4
Social or Lab Science	3-4
Personal Development	3

*Written Communication and Quantitative Reasoning course selections are dependent on writing and math proficiency based on assessment. Students should consult with their academic advisor about specific general education courses required.

Core Program Requirements 46 credits

Total AAS Requirements 61 – 63 Credits

Recommended Plan of Study

		<i>Instructor Contact</i>		
		Credits	<i>Hours</i>	
1st Semester (fall)				
Instructor contact hrs.				
1	CNST-1600 – Introduction to Construction Technology	3	75	
2	CNST-1610 – Materials, Plans, Site, and Floors	3	75	
3	CNST-1611 – Wall, Roof, and Stair Construction	3	90	
4	CNST-2610 – Exterior Finishing, Roofing Application	3	75	
5	CNST-2611 – Drywall, Trim, Cabinet, Door, Selection and Installation	3	75	390
	GEN ED #1	3		
Total Semester Credits		18		
2nd Semester (spring)		Credits		
6	CNST-1620 – Introduction to Plumbing, Tools, & Residential Drawings	3	75	
7	CNST-1621 – Plumbing Distribution and Disposal	3	75	
8	CNST-2620 – Plumbing Installation, Testing, and Commercial Drawings	3	75	
9	CNST-2621 – Advanced Plumbing, Distribution & Testing, Fixtures	3	75	300
	GEN ED #2	3		
Total Semester Credits		15		

3rd Semester (fall)		Credits	
10	CNST-1630 – Electrical Theory, Safety, and Distribution	3	75
11	CNST-1631 – Basic Electrical Installation	3	75
12	CNST-2630 – Intermediate Electrical Installation	3	105 255
	GEN ED #3	3-4	
	GEN ED #4	3	
Total Semester Credits		15 - 16	

4th Semester (spring)		Credits	
13	CNST-1640 – Introduction to Heating and Cooling	4	120
14	CNST-2640 – HVACR Equipment Systems	3	105
15	CNST-2641 – HVACR Distribution Systems and Maintenance	3	75 300
	GEN ED #5	3 - 4	
Total Semester Credits		13 - 14	

Professional Skills Awards (PSA's)

PSA.46.0201 (15 credits) – Carpentry

PSA.46.0302 (15 credits) – Plumbing

PSA.46.0503 (12 credits) – Electrical

PSA.47.0201 (13 credits) – HVACR

Four (4) specialized certificates are offered as part of the Construction Technology program. Each certificate is designed as a stand-alone award and can be combined to fulfill the requirements of the diploma or AAS.

Recommended Plans of Study

Carpentry

Program Outcomes

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of carpentry concepts as a baseline for efficient and safe work conditions.
- Select, and utilize the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Semester (fall)		Credits	
1	CNST-1600 - Introduction to Construction Technology	3	
2	CNST-1610 – Materials, Plans, Site, and Floors	3	
3	CNST-1611 – Wall, Roof, and Stair Construction	3	

4	CNST-2610 - Exterior Finishing, Roofing Application	3
5	CNST-2611 – Drywall, Trim, Cabinet, Door, Selection and Installation	3
	Total Semester Credits	15

Plumbing

Program Outcomes

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of plumbing concepts as a baseline for efficient and safe work conditions.
- Select, and utilize the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Integrate individual and clustered skill sets for plumbing systems that are part of residential and light-commercial building industries.
- Perform basic diagnostics, service, and maintenance relative to plumbing.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Semester (spring)		Credits
1	CNST-1600 - Introduction to Construction Technology	3
6	CNST-1620 – Introduction to Plumbing, Tools, & Residential Drawings	3
7	CNST-1621 – Plumbing Distribution and Disposal	3
8	CNST-2620 – Plumbing Installation, Testing, and Commercial Drawings	3
9	CNST-26XX – Advanced Plumbing, Distribution & Testing, Fixtures	3
	Total Semester Credits	15

Electrical

Program Outcomes

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of electrical concepts as a baseline for efficient and safe work conditions.
- Select, and utilize the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Integrate individual and clustered skill sets electrical systems that are part of residential and light-commercial building industries.
- Perform basic diagnostics, service, and maintenance relative to electrical systems.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Semester (fall)	Credits
1 CNST-1600 - Introduction to Construction Technology	3
10 CNST-1630 – Electrical Theory, Safety, and Distribution	3
11 CNST-1631 – Basic Electrical Installation	3
12 CNST-2630 – Intermediate Electrical Installation	3
Total Semester Credits	12

HVACR

Program Outcomes

- Develop safe working habits and skills necessary for an understanding of safety guidelines and principles.
- Demonstrate functional working knowledge of HVACR concepts as a baseline for efficient and safe work conditions.
- Select, and utilize the appropriate hand and power tools, materials, and equipment for construction trades.
- Integrate information and instructions to work cooperatively with groups of individuals to accomplish actual workplace tasks.
- Integrate individual and clustered skill sets for HVACR systems that are part of residential and light-commercial building industries.
- Perform basic diagnostics, service, and maintenance relative to HVACR.
- Demonstrate a professional work ethic and cooperative attitude needed for successful employment.

Semester (spring)	Credits
1 CNST-1600 – Introduction to Construction Technology	3
13 CNST-1640 – Introduction to Heating and Cooling	4
14 CNST-2640 – HVACR Equipment Systems	3
15 CNST-2641 – HVACR Distribution Systems and Maintenance	3
Total Semester Credits	13

APPENDIX B

COURSE DESCRIPTIONS

1 CNST-1600 - Introduction to Construction Technology

Prerequisites/Co-requisites: None

This course prepares individuals with foundational knowledge and basic skills for construction technology. Includes introductory construction math, drawings, materials handling, overview of hand and power tools, and employability skills.

(3/30/0/45/0/0/0/0/0/0)

2 CNST-1610 – Materials, Plans, Site, and Floors

Prerequisite: 1 or permission of the instructor

Co-requisite: 3 or permission of the instructor

This introductory course includes carpentry fundamentals, building materials and fasteners. Residential construction plans & documents, principles of site & building layout, and floor systems are covered.

(3/30/0/45/0/0/0/0/0/0)

3 CNST-1611 – Wall, Roof, and Stair Construction

Prerequisite: 1 or permission of the instructor.

Co-requisite: 2 or permission of the instructor

This course introduces basic wall systems & steps of layout including both wood and steel framing. Common roof types and framing components, rafter layout and roof sheathing are covered. Stair types, components, essential construction techniques, and introduction to building envelope systems for moisture and insulation are included.

(3/22.5/0/67.5/0/0/0/0/0/0)

4 CNST-2610 - Exterior Finishing, Roofing Application

Prerequisite: 1, 2, 3 or permission of the instructor.

Co-requisite: 5 or permission of the instructor

This course encompasses steel framing, exterior finish materials and installation. Selection & installation of thermal and moisture barriers, roofing preparation and installation are covered.

(3/30/0/45/0/0/0/0/0/0)

5 CNST-2611 – Drywall, Trim, Cabinet, Door Selection & Installation

Prerequisite: 1, 2, 3 or permission of the instructor.

Co-requisite: 4 or permission of the instructor

This course includes multiple aspects of interior finish including door selection and installation, drywall selection, tools, fasteners, installation, and finishing. Interior trim selection and installation, and cabinet installation are covered.

(3/30/0/45/0/0/0/0/0/0)

6 CNST-1620 – Introduction to Plumbing, Tools, & Residential Drawings

Prerequisite: **1** or permission of the instructor.

Co-requisite: **7** or permission of the instructor

This introductory course will familiarize the student with plumbing fundamentals, safety and identification of hazards, specialty tools and plumbing drawings and interpretation. Introduction to major features and functions of water distribution components and basic plumbing math are covered.

(3/30/0/45/0/0/0/0/0/0/0)

7 CNST-1621 – Plumbing Distribution & Disposal

Prerequisite: **1** or permission of the instructor.

Co-requisite: **6** or permission of the instructor

This course builds upon introductory water distribution and introduces drainage components and venting. Piping types and selection, and introduction to plumbing fixtures are included.

(3/30/0/45/0/0/0/0/0/0/0)

8 CNST-2620 – Plumbing Installation, Testing, and Commercial Drawings

Prerequisite: **1, 6, 7** or permission of the instructor.

Co-requisite: **9** or permission of the instructor

This intermedia level course includes plumbing math, reading and interpreting commercial drawings. Interpretation of civil, architectural, structural, HVAC/mechanical, plumbing, and electrical drawings are included. Introduction to adjusting structural members, insulating pipe, fire-barriers, installation and testing of drain, waste, and vent system are incorporated.

(3/30/0/45/0/0/0/0/0/0/0)

9 CNST-2621 – Advanced Plumbing, Distribution and Testing, Fixtures

Prerequisite: **1, 6, 7** or permission of the instructor.

Co-requisite: **8** or permission of the instructor

This advanced course covers installation of roof, floor and area drains, installation of complete water service and distribution systems. Installation of valves and fixtures, water heaters, and techniques for safe handling of natural gas, liquefied petroleum gas, and fuel oil.

(3/30/0/45/0/0/0/0/0/0/0)

10 CNST-1630 – Electrical Theory, Safety, and Distribution

Prerequisite: **1** or permission of the instructor.

Co-requisite: **11** or permission of the instructor

This introductory course covers electrical safety and theory, introduction to circuits, and the National Electrical Code® (NEC). Basic electrical construction documents, and residential wiring including basic load calculations and NEC requirements, and testing are covered.

(3/30/0/45/0/0/0/0/0/0/0)

11 CNST-1631 – Basic Electrical Installation

Prerequisite: **1** or permission of the instructor.

Co-requisite: **10** or permission of the instructor

This course covers electrical installation including conduit and bending, wireways and raceways, fittings. Identification, selection of conductors, and installation are encompassed.

(3/30/0/45/0/0/0/0/0/0/0)

12 CNST-2630 – Intermediate Electrical Installation

Prerequisite: **1, 10, 11** or permission of the instructor.

Co-requisite: None

This course includes exposure to basic alternating current (AC) circuits and Ohm's law. Motor theory and application, principals of lighting, light sources and characteristics of light are covered. Instillation of junction boxes, conductor splices, termination, grounding, and bonding are incorporated. Fundamental concepts of control systems, circuit breakers and fuses are introduced.

(3/15/0/90/0/0/0/0/0/0/0)

13 CNST-1640 – Introduction to Heating and Cooling

Prerequisite: **1** or permission of the instructor.

Co-requisite: **14, 15** or permission of the instructor

This course covers basic principles of heating, ventilating, air conditioning, and refrigeration, including the fundamentals of heating systems and combustion, operating concepts of refrigeration, and distribution. Identification and selection of basic copper and plastic piping, and fittings, soldering and brazing, and identification of carbon steel piping and fittings are encompassed.

(4/30/0/90/0/0/0/0/0/0/0)

14 CNST-2640 – HVACR Equipment Systems

Prerequisite: **1** or permission of the instructor.

Co-requisite: **13, 15** or permission of the instructor

Covers theory and operation of transformers, single- and three-phase power distribution; Operation of compressors; Refrigerant types, leak detection, evacuation, recovery, and charging. Covers the principles and operation, installation, and servicing of heat pumps.

(3/15/0/90/0/0/0/0/0/0/0)

15 CNST-2641 – HVACR Distribution Systems and Maintenance

Prerequisite: **1** or permission of the instructor.

Co-requisite: **13, 14** or permission of the instructor

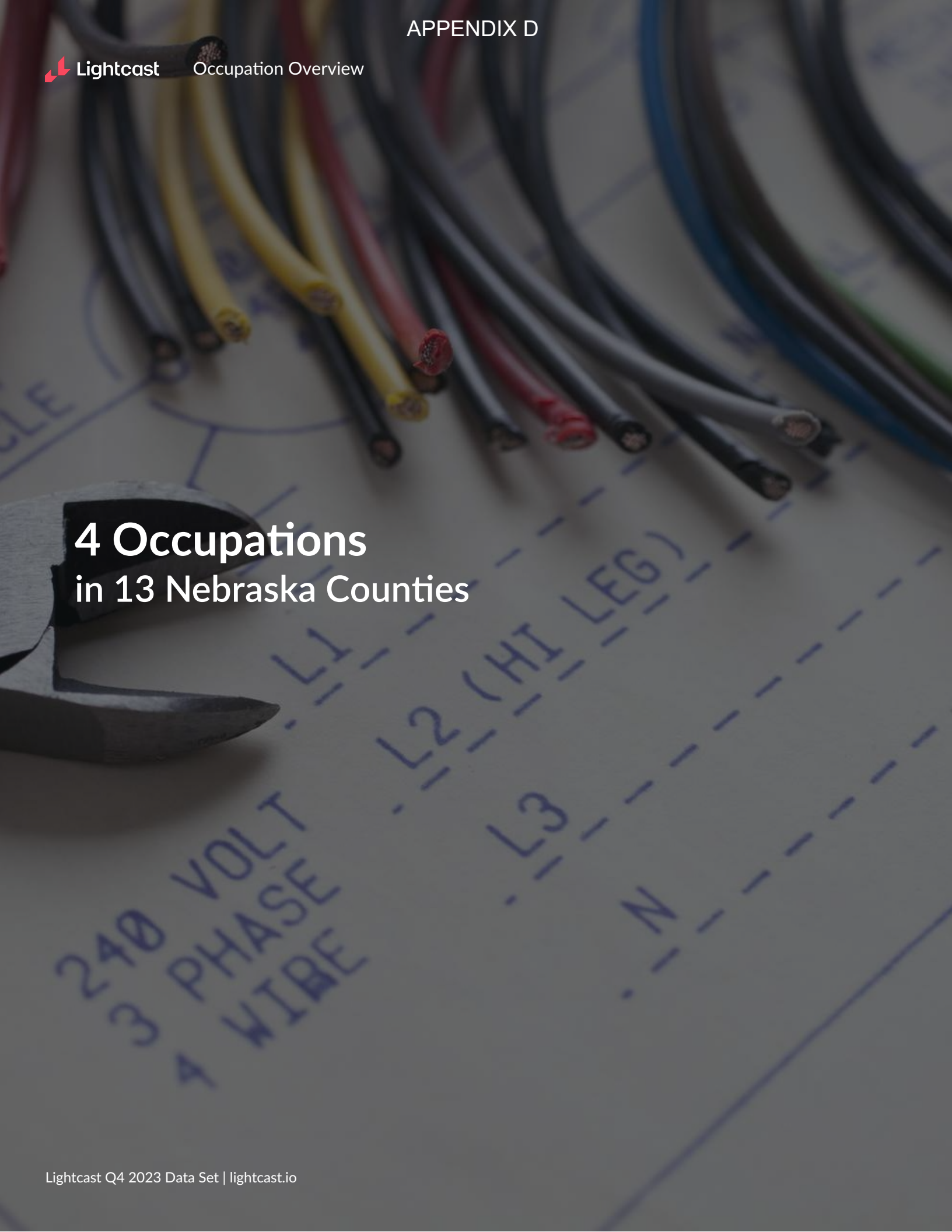
This course covers guidelines, inspection, and maintenance of HVACR systems. Basic installation of sheet metal and fiberglass duct systems are included. Introduction to commercial airside systems and air quality equipment are included. Includes introduction to hydronic systems.

(3/30/0/45/0/0/0/0/0/0/0)

APPENDIX C

Long-term Occupational Projections, 2020-2030 with High Wage, Skill, and Demand (H3) Indicators - Panhandle Economic Region

Demand RANK	H3 Rank	SOC	SOC Title	High Demand	High Skill	High Wage	H3	2020 Estimated Employ	2030 Projected Employ	Numeric Change = J-I	Percent Change = (J-I)/I	Labor Force Exits	Annual Labor Force Exits	Occupational Transfer	Annual Occupational Transfer	Growth Opening	Avg Annual Growth Opening	Total Opening =M+O+Q	Avg Annual Opening =N+P+R	Entry Annual Wage	Median Annual Wage	Experienced Annual Wage
41		47-2061	Construction Laborers	★				251	271	20	8.0%	77	8	176	18	20	2	273	28	\$30,474	\$38,761	\$44,380
222		47-2081	Drywall and Ceiling Tile Installers	★				29	30	1	3.5%	7	1	17	2	1	0	25	3	NA	NA	NA
64	14	47-2111	Electricians	★	★	★	✔	132	144	12	9.1%	40	4	101	10	12	1	153	15	\$35,171	\$48,968	\$59,364
69	18	47-2152	Plumbers, Pipefitters, and Steamfitters	★	★	★	✔	150	156	6	4.0%	45	4	110	11	6	1	161	16	\$31,825	\$49,059	\$62,117
142		47-2181	Roofers	★				56	59	3	5.4%	14	1	40	4	3	0	57	5	\$29,990	\$38,628	\$42,747
379.5		47-2211	Sheet Metal Workers		★	★		16	15	-1	-6.3%	4	0	10	1	-1	0	13	1	\$34,394	\$47,070	\$59,921
346		47-3013	Helpers--Electricians					15	15	0	0.0%	4	0	13	1	0	0	17	1	NA	NA	NA
241.5		47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	★				20	20	0	0.0%	6	1	17	2	0	0	23	3	\$26,764	\$47,044	\$45,852



4 Occupations in 13 Nebraska Counties

Contents

What is Lightcast Data?	1
Report Parameters	2
Executive Summary	3
Jobs	4
Compensation	7
Job Posting Activity	8
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Occupational Programs	15
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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, resumé, 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

4 Occupations

47-2111 Electricians

47-2152 Plumbers, Pipefitters, and Steamfitters

47-2031 Carpenters

49-9021 Heating, Air Conditioning, and
Refrigeration Mechanics and Installers

13 Counties

31007 Banner County, NE

31013 Box Butte County, NE

31031 Cherry County, NE

31033 Cheyenne County, NE

31045 Dawes County, NE

31049 Deuel County, NE

31069 Garden County, NE

31075 Grant County, NE

31105 Kimball County, NE

See Appendix A for all 13 Counties

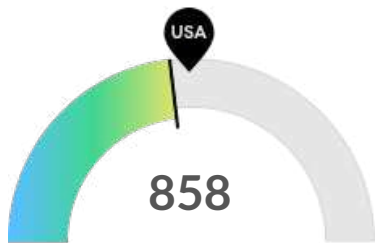
Class of Worker

QCEW Employees, Non-QCEW Employees, Self-Employed, and
Extended Proprietors

The information in this report pertains to the chosen occupations and geographical areas.

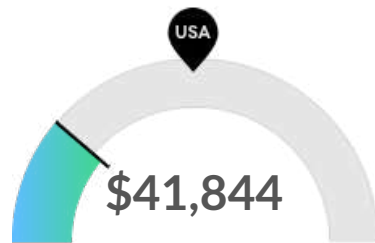
Executive Summary

Light Job Posting Demand Over a Thin Supply of Regional Jobs



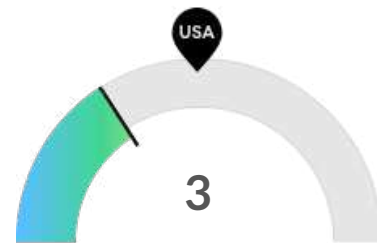
Jobs (2023)

Your area is not a hotspot for this kind of job. The national average for an area this size is 958* employees, while there are 858 here.



Compensation

Earnings are low in your area. The national median salary for your occupations is \$51,540, compared to \$41,844 here.



Job Posting Demand

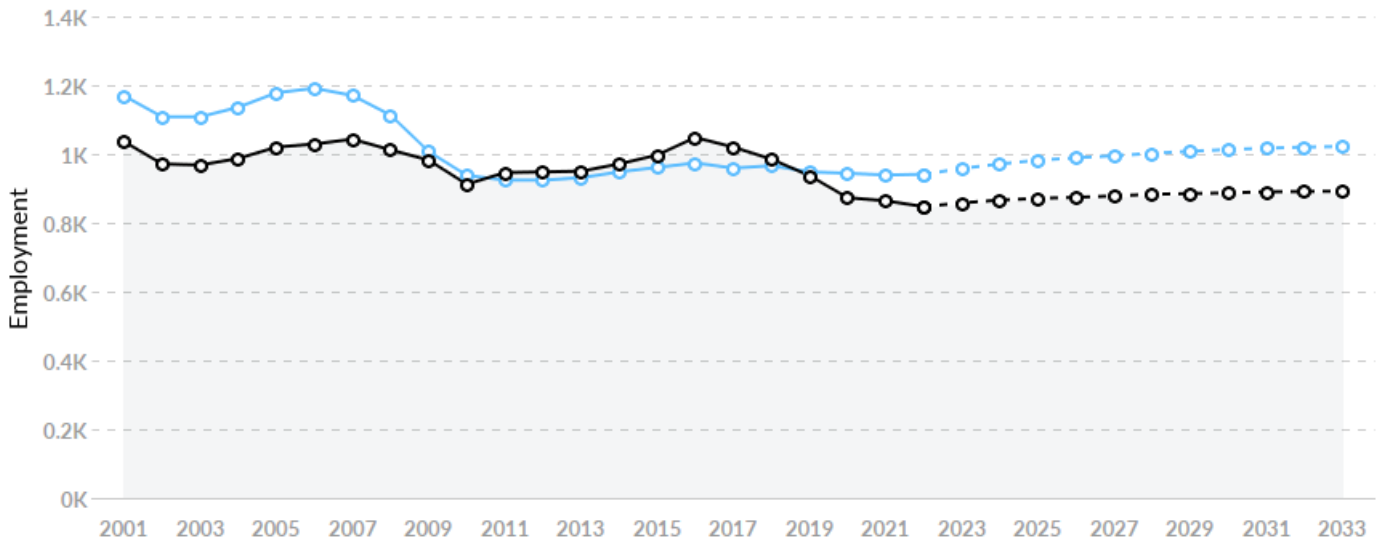
Job posting activity is low in your area. The national average for an area this size is 6* job postings/mo, while there are 3 here.

*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Jobs

Regional Employment Is Lower Than the National Average

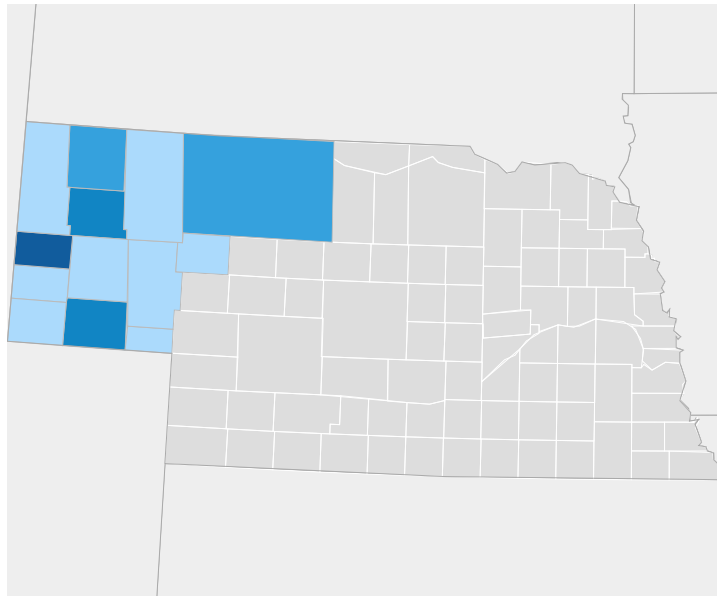
An average area of this size typically has 958* jobs, while there are 858 here. This lower than average supply of jobs may make it more difficult for workers in this field to find employment in your area.



Region	2023 Jobs	2033 Jobs	Change	% Change
● 13 Nebraska Counties	858	892	34	4.0%
● National Average	958	1,022	64	6.7%

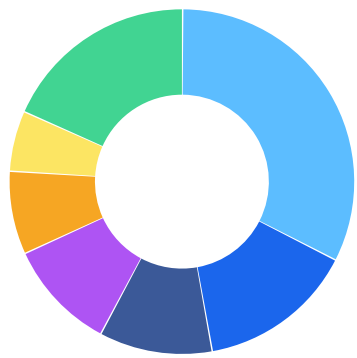
*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.








Regional Breakdown



County	2023 Jobs
Scotts Bluff County, NE	377
Cheyenne County, NE	100
Box Butte County, NE	97
Dawes County, NE	74
Cherry County, NE	69

Most Jobs are Found in the Building Equipment Contractors Industry Sector

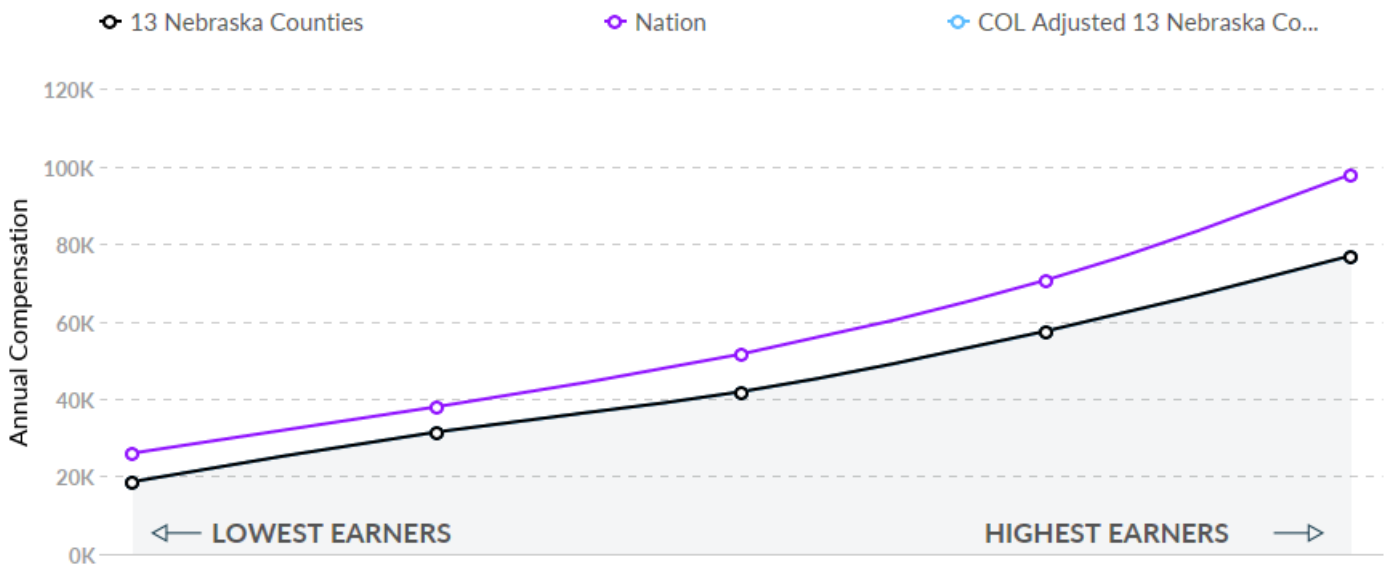


Industry	% of Occupation in Industry (2023)
 Building Equipment Contractors	32.4%
 Residential Building Construction	14.7%
 Other Specialty Trade Contractors	10.6%
 Building Finishing Contractors	10.4%
 Foundation, Structure, and Building Exterior Contractors	7.8%
 Nonresidential Building Construction	5.7%
 Other	18.4%

Compensation

Regional Compensation Is 19% Lower Than National Compensation

For your occupations, the 2022 median wage in your area is \$41,844, while the national median wage is \$51,540.



Job Posting Activity



37 Unique Job Postings

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



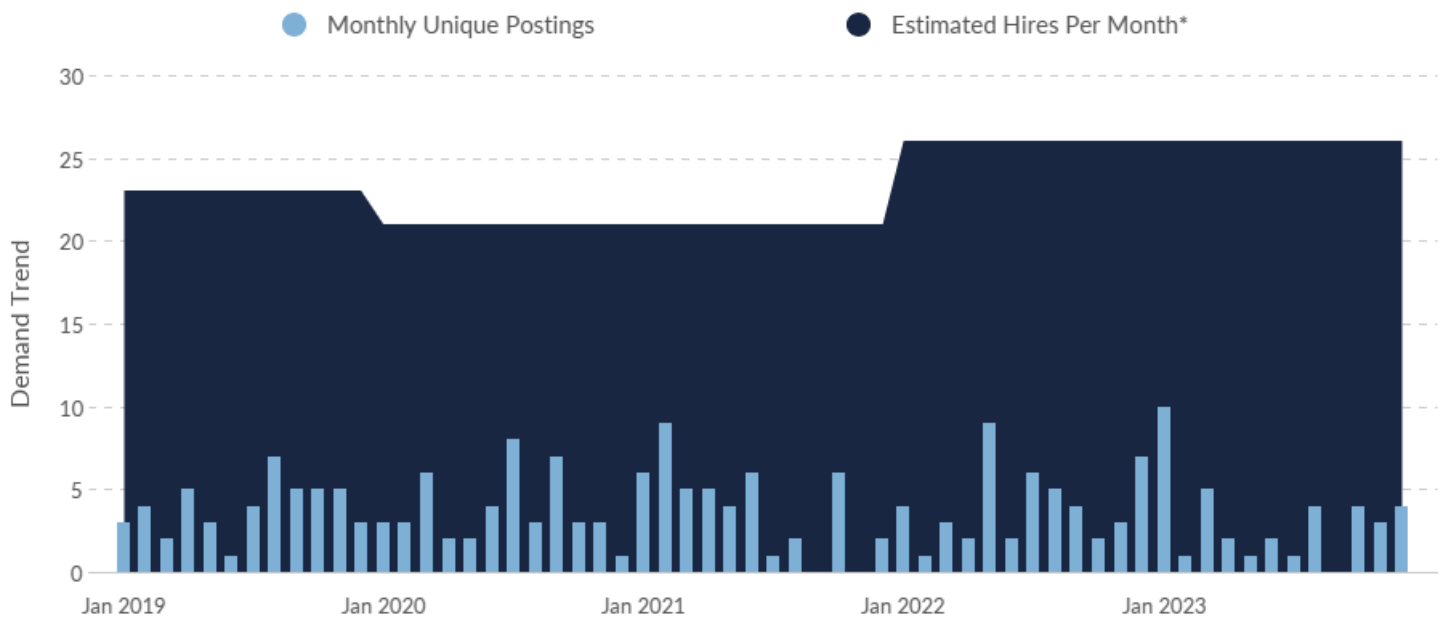
21 Employers Competing

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























44 Day Median Duration

Posting duration is 17 days longer than what's typical in the region.



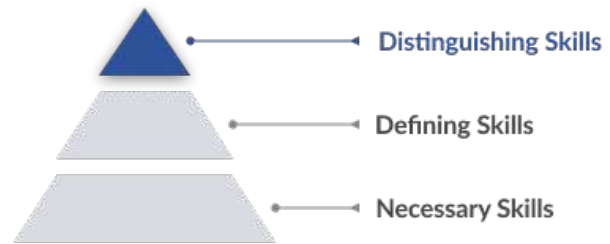
Occupation	Avg Monthly Postings (Jan 2023 - Dec 2023)	Avg Monthly Hires (Jan 2023 - Dec 2023)
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	1	4
Electricians	1	6
Carpenters	0	9
Plumbers, Pipefitters, and Steamfitters	0	7

*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
Pearce Services	4 	HVAC Technicians	5 
Regional West Health Services	3 	Electricians	4 
BNSF Railway	2 	High Voltage Electricians	4 
Best Heating & Cooling	2 	Carpenters	3 
Parker Hannifin	2 	Diesel Engine Electricians	2 
Randstad	2 	HVAC Service Technicians	2 
Tri-State Generation And Transm...	2 	Maintenance Workers	2 
United States Department of En...	2 	Substation Electricians	2 
Western Area Power Administra...	2 	Building Mechanics	1 
Your Home Improvement Comp...	2 	Carpentry Instructors	1 

Top Distinguishing Skills by Demand

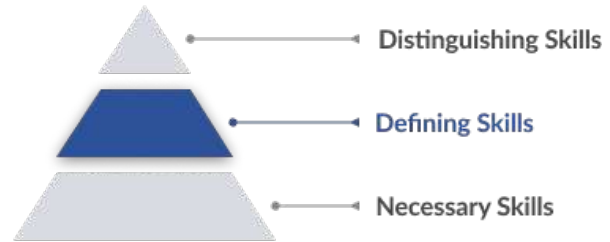
An occupation's Distinguishing Skills are the advanced skills that are called for occasionally. An employee with these skills is likely more specialized and able to differentiate themselves from others in the same role.



Skill	Salary Boosting	Job Postings Requesting
Switchgear	✓	6
Wiring Diagram	✓	6
Ice Machines	✗	3
Concrete Forming	✗	3
Journeyman Electrician	✗	3
Electric Motors	✓	3
Furnaces	✗	3
HVAC Repair And Maintenance	✗	2
Residential Plumbing	✗	2
HVAC Certification	✗	2

Top Defining Skills by Demand

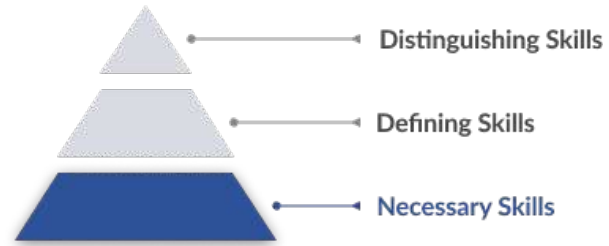
An occupation's Defining Skills represent the day-to-day tasks and responsibilities of the job. An employee needs these skills to qualify for and perform successfully in this occupation.



Skill	Salary Boosting	Job Postings Requesting
HVAC	✗	16
Valid Driver's License	✗	12
Electrical Wiring	✗	10
Circuit Breakers	✓	6
Electrical Equipment	✓	6
Power Tool Operation	✗	5
Hand Tools	✗	4
Construction	✓	4
Carpentry	✗	4
Relays	✓	4

Top Necessary Skills by Demand

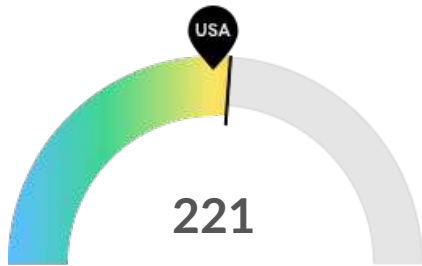
An occupation's Necessary Skills are the specialized skills required for that job and relevant across other similar jobs. An employee needs these skills as building blocks to perform the more complex Defining Skills.



Skill	Salary Boosting	Job Postings Requesting
HVAC	✗	16
Electrical Wiring	✗	10
Control Systems	✗	7
Wiring Diagram	✓	6
Power Tool Operation	✗	5
Electronic Components	✗	5
Preventive Maintenance	✗	5
Network Switches	✗	5
Hand Tools	✗	4
Construction	✓	4

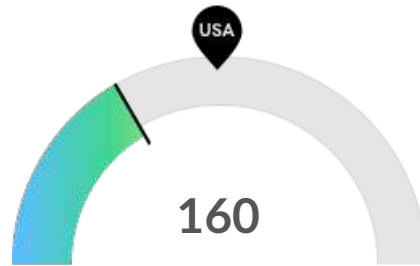
Demographics

Retirement Risk Is About Average, While Overall Diversity Is Low



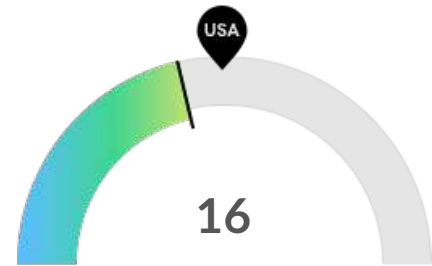
Retiring Soon

Retirement risk is about average in your area. The national average for an area this size is 207* employees 55 or older, while there are 221 here.



Racial Diversity

Racial diversity is low in your area. The national average for an area this size is 275* racially diverse employees, while there are 160 here.

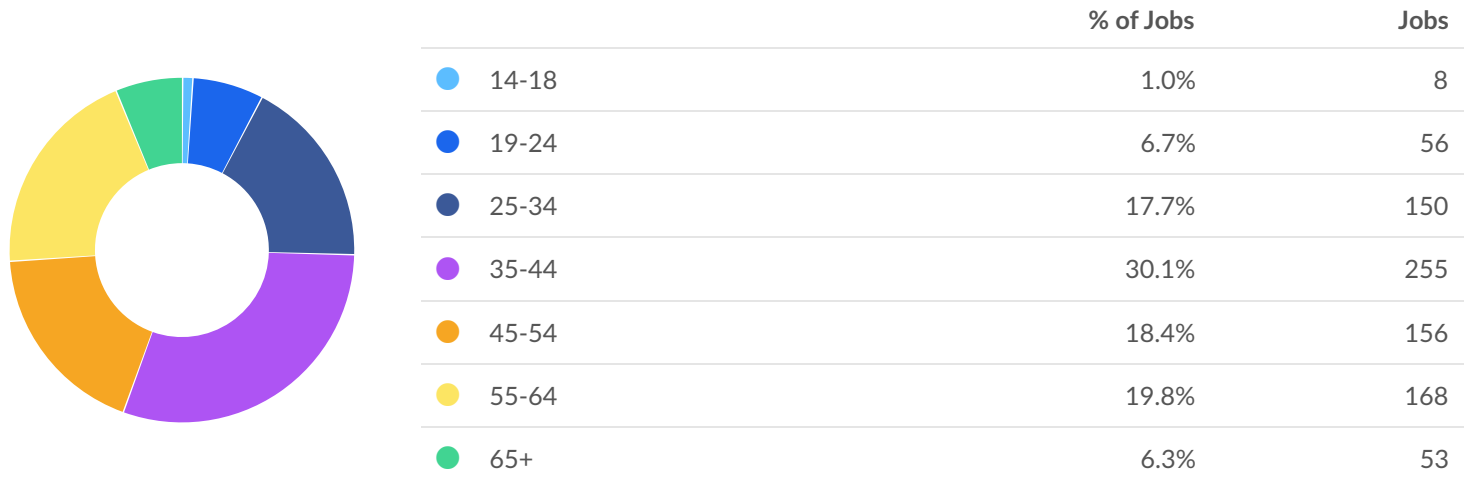


Gender Diversity

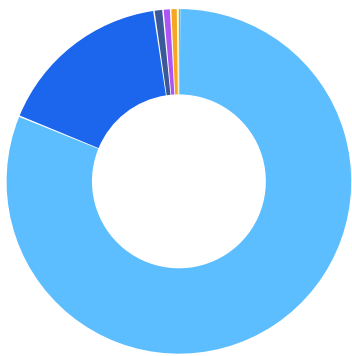
Gender diversity is low in your area. The national average for an area this size is 20* female employees, while there are 16 here.

*National average values are derived by taking the national value for your occupations and scaling it down to account for the difference in overall workforce size between the nation and your area. In other words, the values represent the national average adjusted for region size.

Occupation Age Breakdown

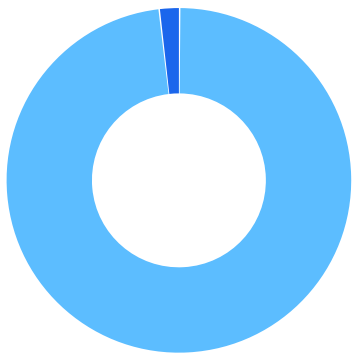


Occupation Race/Ethnicity Breakdown



	% of Jobs	Jobs
White	81.1%	687
Hispanic or Latino	16.5%	140
Two or More Races	0.8%	7
Black or African American	0.7%	6
American Indian or Alaska Native	0.6%	5
Asian	0.2%	1
Native Hawaiian or Other Pacific Islander	0.0%	0

Occupation Gender Breakdown



	% of Jobs	Jobs
Males	98.1%	831
Females	1.9%	16

Occupational Programs



1 Program

Of the programs that can train for this job, 1 has produced completions in the last 5 years.



33 Completions (2022)

The completions from all regional institutions for all degree types.



88 Openings (2022)

The average number of openings for an occupation in the region is 10.

CIP Code	Top Programs	Completions (2022)
48.0508	Welding Technology/Welder	33 <div style="width: 33%;"></div>
Top Schools		Completions (2022)
Western Nebraska Community College		33 <div style="width: 33%;"></div>

Appendix A (Geographies)

Code	Description
31007	Banner County, NE
31013	Box Butte County, NE
31031	Cherry County, NE
31033	Cheyenne County, NE
31045	Dawes County, NE
31049	Deuel County, NE
31069	Garden County, NE

Code	Description
31075	Grant County, NE
31105	Kimball County, NE
31123	Morrill County, NE
31157	Scotts Bluff County, NE
31161	Sheridan County, NE
31165	Sioux County, NE