



OPPORTUNITIES IN ENERGY

IOWA CAREER PATHWAYS



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**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION

This project was completed by the Iowa Department of Education, in support of the Future Ready Iowa Initiative, through a public/private collaboration with the Iowa Energy Workforce Consortium (IEWC), Governor’s STEM Advisory Council, Iowa Association of Municipal Utilities (IAMU), Iowa Association of Energy Efficiency (IAEE), and Iowa Association of Electric Cooperatives (IAEC). Quantitative research was conducted to identify the most common occupations in energy-related fields in Iowa, in addition to a series of online surveys and virtual focus groups with employers, educators, and other stakeholders from around the state. This direct feedback and support was vital in building job descriptions and employer expectations, while the included education and wage levels are averaged based on labor market intelligence gathered from across the state.

FOREWORD

Whether flipping a switch to light a dark room, driving the kids to soccer practice, or lighting the burner on a stove to make a meal, Iowa’s energy industry forms the backbone of communities across the state. Steady demand for safe, affordable, and reliable electricity, natural gas, renewable energy, and other new or innovative technologies and power sources to fuel a growing economy, combined with a consistent need to repair and improve critical infrastructure or equipment, such as pipelines, power lines, wind turbines, and smart power grids, requires Iowans skilled and ready to energize our state.

To meet these and similar workforce needs of industries across Iowa, the Governor’s Office established the **Future Ready Iowa** Initiative with a goal of 70 percent of Iowans possessing education or training beyond high school by 2025. To support this important initiative, the Iowa Department of Education partnered with the Iowa Energy Workforce Consortium (IEWC), Governor’s STEM Advisory Council, Iowa Association of Municipal Utilities (IAMU), Iowa Association of Energy Efficiency (IAEE), and Iowa Association of Electric Cooperatives (IAEC) to develop these promotional materials and career pathways to highlight a wide range of exciting energy career opportunities here in Iowa.

A challenge to readers of this document, from students just beginning to learn about jobs to adults with extensive work experience who may be looking for a career change, is to drop any preconceived notions or ideas they may have about this industry. With an expansive list of career options, diverse work environments, and innovations in technology, this industry offers much more than most Iowans realize.

No matter your experience, background, personality, or interests, you will find great opportunities in energy and related careers that offer a good paycheck, pride in helping to power your community, huge potential for secure and long-term career growth, and the ability to transfer those skills anywhere in the world!

Download these pathways and additional resources at SectorPartnerships.EducateIowa.gov and FutureReadyIowa.gov.



WHAT ENERGY MEANS TO ME

Through a series of focus groups and surveys, we asked Iowans what it means to work in the energy sector. Below are a few examples of the responses we received from across the state. As reflected in the words and quotes provided, this industry is made up of proud, passionate, and hard-working people.

“ Every day is different and an opportunity to do something new. ”

“ There is a real sense of community in this industry that you don't see anywhere else. ”

“ I protect companies in Iowa from security threats around the world. ”

“ I was able to start my own business and now work on what I want, when I want. ”

“ I appreciate not having any student loans or being stuck in a boring office job all day. ”

“ We provide a win-win for our community by turning garbage into useable energy. ”

“ These are skills that can be used anywhere you decide to go. ”

“ I love being able to help our customers save money with energy improvements to their homes. ”

“ We make an honest living while helping those in our community. ”

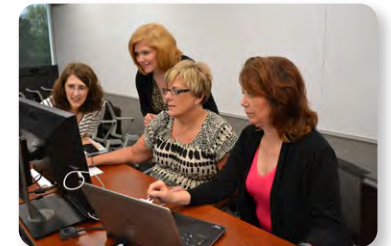
“ I literally power my community. How awesome is that? ”

“ I love driving by all the things I've helped build and power around town. ”

“ I come from a long line of electricians, and that means something. ”

“ Our work makes a difference each and every day. ”

“ We're making new types of fuel that don't exist anywhere else in the world. ”



WHAT ENERGY MEANS TO ME



JOHN VON HARZ - FOUNDER AND CEO OF RESOURCE REFINERY (DES MOINES, IA)

"I formed Resource Refinery in 2017 after seeing that the views on energy efficiency were unfortunately changing here in Iowa. I decided to pivot away from hunting for more efficiency and instead focus towards more cost-effective solutions to deploy existing efficiency programs. My first solution was to license an administrative software platform and to configure programs that were drawn from the state technical reference manual. We are now heavily invested in mobile solutions through our mobile app, DSMally, which is an in-field tool that enables installers and trade allies to register their efficient installations and also by salespersons and auditors to pre-enroll inefficient replacement opportunities."



DSMally™



SAVANNAH W. - APPRENTICE LABORER FOR THE WEITZ COMPANY (DES MOINES, IA)

"The laborers apprenticeship program has helped me in many ways, the biggest being that they gave me a chance. There are still some men who believe women shouldn't be in the trades, but it didn't feel that way when I walked in the door here. They offer a variety of different classes and if I didn't understand something, they took the time to walk me through it. I appreciate the program and without them I would not be a member of Laborers Local #177. Honestly, this isn't much different from any other job I've had and I hope to see more women in the trades in the future."



JOE H. - MANAGER OF SMART ELECTRIFICATION FOR CENTRAL IOWA POWER COOPERATIVE (CEDAR RAPIDS, IA)

"After I made some energy efficiency changes to my home and ended up cutting my energy bill in half, I knew this was the type of work for me and I wanted to help others do the same. I love running programs that help our members increase the safety and performance of their homes, while helping to keep our electricity supply reliable and affordable. I'm really excited for the future of this industry, particularly the continuous improvements in heat pumps, electric vehicles (EV's), and grid interactive technology that complements the additional renewable energy CIPCO is adding to our portfolio."



JP J. - PROFESSOR OF ELECTRICAL & RENEWABLE ENERGY TECHNOLOGY AT INDIAN HILLS COMMUNITY COLLEGE (OTTUMWA, IA)

"In addition to being an electrical engineering technologist and a licensed master electrician, I've also been the Professor of Electrical & Renewable Energy Technology at Indian Hills Community College since 2008. Although I have over 30 years of experience in this industry, I still love it and have a passion for educating the next generation of future experts in the electrical segment of the energy workforce. I'm particularly excited about energy efficiency & the automation of existing residential, commercial, industrial and municipal energy systems. I also try to volunteer and educate the general public whenever I can about this industry and the tremendous career potential."



TECHNOLOGIES OF THE FUTURE

Although there are already some amazing and innovative energy technologies in use across the state, below are a few additional examples that have the potential for creating new and exciting career opportunities. These technologies further fuel the need for a skilled workforce with advanced computers, information technology, and critical thinking abilities. Behind every new or improved technology are real people who set up, operate, and maintain them as we continue to power the future.

ADVANCED ROBOTICS AND DRONES

Advanced and collaborative robots, or “cobots”, provide a safer, quicker, and more efficient experience for energy and trade professionals by assisting with complicated data collection and analysis, handling heavy or hazardous materials or equipment, and working in extreme or severe weather conditions or environments. Many Iowa energy companies, utilities, and service providers have begun using new and improved drone technologies to safely and remotely monitor energy flow and usage patterns, survey potential building sites, and even inspect or repair power lines, wind turbines, and other components from the safety of the ground, service vehicle, and sometimes even the office hundreds of miles away. As these technologies continue to improve, so will the ways in which we can further use them to assist our skilled human workforce.



SECURITY & DATA ANALYTICS

Our interconnected world offers an immense and expanding amount of information, data, and analytics. Specialized professionals are needed to create programs, processes, or systems to collect, store, manage, and process this trove of information to help energy companies or service providers be more innovative, efficient, and successful, while also in compliance with any rules, regulations, and standards. Seemingly unrelated pieces of data like geographic location, regional energy usage patterns, and even global weather forecasts are carefully analyzed together to help keep customers connected, powered, and safe. This unfortunately also means that companies must be on guard around the clock to protect their products, systems, and customers from advanced cybersecurity attacks, data or system breaches, and other coordinated digital, physical, or combined threats. The need for trained security professionals is only going to increase as more systems, information, and other components are stored, accessed, or managed online, in the cloud, or other digital manner.



SMART BUILDINGS, INFRASTRUCTURE, & SYSTEMS

“Smart” homes, buildings, streets, and other structures, appliances, and vehicles that are connected to the Internet present a new frontier for careers that blend information technology with a growing need for accessible, secure, and reliable energy products and services. The continued electrification of cars, trucks, buses, trains, and other types of transportation is already beginning to tax our current energy grid and infrastructure system. To keep up with this growing demand, the specific areas of energy capture and storage will continue to advance and grow quickly. New or expanding rebates, tax credits, and other incentives could also further increase the demand for more sustainable and efficient building practices and products, such as geothermal heat pumps and hybrid energy systems.



COMMUNITY OF POWER – TOGETHER, ENERGY PROFESSIONALS MAKE A DIFFERENCE, AS WELL AS A GREAT PAYCHECK!

As reflected in quotes and testimonials throughout this resource, Iowa’s energy professionals play a critical and impactful role in their communities. Statements like “It’s a calling, not a job” and “We’re all just one big family” are proven true time and time again, particularly when faced with adversity like flooding, tornadoes, blizzards, fires, and other disruptive or severe weather patterns that are often difficult to predict or track. The unprecedented 2020 Iowa Derecho alone caused billions of dollars of damage across the state, leaving hundreds of thousands without power, disconnected, and afraid. Countless dedicated and courageous linemen, technicians, dispatchers, engineers, and other skilled energy professionals quickly rallied together, as they always do, to protect their neighbors, restore power, and begin pulling our state back together piece by piece. It’s not uncommon for these same Iowans to volunteer to answer the call from communities and colleagues across the country in their similar times of need. From coast to coast, Iowa energy professionals are known as some of the best!

Hidden under these often selfless and impactful acts of community is another great benefit of the energy industry: job security. Unlike the extreme weather cycles here in Iowa, there will always be demand for safe, secure, and reliable power and energy solutions. Although technologies, user preferences, and other aspects may change over time, skilled and trained energy professionals will always be needed to install, maintain, deliver, and support these resources throughout their communities.

Additional incentives such as paid employee benefits, tuition reimbursement, and performance-based bonuses allow workers in this industry to quickly make substantially more than some other industries, in addition to a real and lasting difference in their communities. Most employers also offer hard-working and dedicated employees the opportunity to earn overtime pay or shift differentials as a perk for working off hours or weekends. Workers can expect to earn their normal hourly wages plus an added bonus for these shifts (i.e. \$20 per hour base + \$10 per hour bonus = \$30 per hour total).



INNOVATIVE EDUCATION & TRAINING SOLUTIONS – REGISTERED APPRENTICESHIP PROGRAMS LET YOU EARN WHILE YOU LEARN!

A growing number of Iowa employers offer flexible training or work options to fit varying schedules, learning preferences, and career goals. Many careers highlighted in this document have a corresponding Registered Apprenticeship option that offers hands-on training and related technical instruction (RTI) that allows Registered Apprentices to earn a paycheck from day one. Look for the Earn & Learn logo for a career that is apprenticeable. Visit [EarnAndLearnIowa.gov](https://www.earnandlearniowa.gov) to learn more about these great opportunities, view testimonials from actual apprentices in Iowa, and fill out a form to be contacted by a representative from a local IowaWORKS field office for a direct conversation. Work is also underway to develop exciting training opportunities through youth apprenticeships and new Quality Pre-Apprenticeship Programs.



Iowa also consistently has the highest number of high school students jointly enrolled in a community college program in the nation, providing students the opportunity to earn college credit and sometimes even full industry-recognized credentials while still in school. A growing number of careers even include options to begin on-the-job training in high school or through one of Iowa's 15 community colleges, saving further time and money, allowing students and workers to begin planning for their future and earning a paycheck sooner. One such example is offered below, but there are many more across the state as Iowa's employers partner with education and training providers to develop the skilled energy workforce of the future.

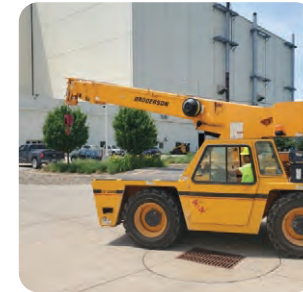
TWO NEW ALLIANT ENERGY PROGRAMS PROVIDE HANDS-ON ENERGY & UTILITY TRADES EXPERIENCE

Alliant Energy has a goal of delivering energy solutions and exceptional service to their customers and communities – safely, efficiently, and responsibly. To accomplish this goal well into the future, a skilled and dedicated workforce is needed. Two new and innovative approaches were launched in 2021 with the hopes of attracting, training and retaining top talent to feed future Alliant Energy apprenticeships and energy positions.

The Pre-Apprentice Laborer (PAL) program is an entry level position designed to train candidates with the skills needed to become successful apprentices. They assist power line, gas, and other field crews with many tasks, while focusing on training and learning the basics of the trade. The program can take up to 18 months, and after 6 months or upon successful completion of the full program, candidates can bid into a full-time apprenticeship position.

Another new program incorporates an online program for high school students that offers an overview of the energy and utility industry with the opportunity for program completers to receive a certificate and apply for paid internships with Alliant Energy. Held weekly and virtually, these classes are led by a combination of Alliant Energy and Iowa Valley Continuing Education professionals. Scholarships are available to interns who wish to continue their education and training.

The programs involved partnerships with Iowa Valley Community College, the Iowa Intermediary Network, and Iowa Jobs for America's Graduates (iJAG). Due to their success, the new programs will be expanded to other Alliant Energy service areas in Iowa in the future.



“These new programs allow us to continue building relationships with bright and talented people across Iowa while representing the communities Alliant Energy serves. There are many great careers in energy and amazing technologies for us all to continue to learn about all the time. Students are truly getting an inside view of the industry and the skills needed to prepare for technical careers, especially apprenticeships.”

— Lori Wildman, Training Specialist for Alliant Energy (Marshalltown, IA)



EXPERIENCE + ENTREPRENEURSHIP – A PATH TO BE YOUR OWN BOSS

The energy sector offers huge potential for starting a business and one day being your own boss. A mixture of hard work, skilled trade knowledge, and industry experience opens the door to business opportunities that often do not exist in other industries or that would take much longer and cost significantly more to achieve.

While education is a critical aspect of being successful in these fields, it is often to supplement what is being learned through shorter, more focused skill development opportunities and hands-on experiences from an internship, Registered Apprenticeship, or other direct work experience. Professional licensure or certification may also be necessary for some occupations, depending on aspects such as location or type of products and services being offered.

Budding entrepreneurs are able to market their services and speak directly to current and potential customers much more quickly, easily, and cheaply with social media and digital marketing tools. Specialized funding is also often available through partners like the [Iowa Economic Development Authority](#) and [U.S. Small Business Administration](#) to help plan, launch, and strengthen businesses within Iowa’s innovative and growing energy sector.

The diagram to the right highlights a common pathway for someone wanting to start a business as either their own company and direct service provider or that provides contracting and oversight services for other companies, processes, or technologies. Although not the only route for ambitious and driven entrepreneurs in Iowa, many appreciate learning on the job, having less student loan debt, and working at their own pace.



INTERNSHIP/TRAINING PROGRAM
(Electrician Apprentice)



WORK EXPERIENCE/ LEADERSHIP ROLE
(Electrician Foreman)



BUSINESS OWNER/ CONTRACTING
(Electrical Services Company)

IOWA ENERGY ENTREPRENEUR SPOTLIGHT



Brittin Wood—Chief Executive Officer (CEO) of Anura Energy (Des Moines, IA)

“My passion for the environment and sustainability began as a child growing up in the countryside of central Iowa. After pursuing an education in environmental sciences and public administration, my career path led me to work in energy efficiency programs across the country. Finding my way back to Iowa, I had the opportunity to share my experience and skills in a way that would benefit Iowa’s residents and businesses. I founded Anura Energy in 2016 to offer clients a different model for implementing comprehensive energy-efficiency projects and delivering real energy savings for utilities and their customers, specifically underserved markets. I’m most proud of providing an important service to individuals and communities that might not otherwise receive the resource efficiency, cost savings, and health and safety benefits that come from implemented projects. In addition, our company strives to provide value at every touch point with our team of enthusiastic and hardworking individuals.

The field of energy efficiency is constantly growing and evolving, with opportunities for all types of workers – from the hands-on types, to the thinkers – and I highly recommend anyone consider it for their own career pathway.”

Anura Energy



DIVERSE WORK ENVIRONMENT OPTIONS – YOU WORK WHERE?

The modern energy industry offers the ability to research, design, operate, maintain, and support a wide range of products, services, or projects and associated vehicles or equipment in a growing number of locations or work environments, either indoors or outdoors, year round. In addition to servicing power or gas service lines outdoors, these professionals may work in offices, labs, distribution centers, and maybe even from the comfort of their homes to power and improve the lives of those in their community.

The table below offers a few examples of some of the more common types of environments or areas of focus that offer some of these new and exciting opportunities. Each occupation description throughout this document is also clearly labeled to assist the reader with finding one that may fit their personality or interest type. As our world becomes more connected and technology continues to expand, so will these types of work environments and the ways in which we work. Which fits you best?

Work Environment	Description
Mobile/Remote	Professionals have the opportunity to be primarily outdoors while handling, transporting, and distributing energy products, goods, or services in a local, regional, or national area. May also include remote locations or emergency vehicle and equipment service, maintenance, or repair.
Commercial/Industrial	Power plants, substations, manufacturing facilities, construction sites, and other commercial or industrial settings that produce various energy goods, resources, and materials for use by different types of customers around the world. Offers a mix of indoor/outdoor work.
Residential/Personal	Homes, apartments, living communities, and other residential dwellings or facilities that involve interacting with members of the public while in the field. Mixture of indoor and outdoor work, depending on type of energy products or services being installed, maintained, or repaired.
Warehouse/Storage	Locations that focus on the safe, accurate, and secure handling and storage of electricity, gas, fuels, and other perishable or non-perishable energy or power goods, resources, and materials before they are sold, shipped, transmitted, or otherwise used. Most work will be conducted indoors, sometimes in a restricted, refrigerated, or other controlled environment.
Business/Office	Secure office environment with reliable access to power, telecommunications, inventory controls, and other computer or database systems. Advances in remote energy or power systems, vehicles, and monitoring will also expand this area. Most work will be conducted indoors, but may allow for some travel and outdoors work.
Laboratory/Research Facility	Secure and often sterile locations dedicated to the research, development, inspection, and other quality control efforts necessary to keep energy products, resources, and related vehicles or equipment safe, efficient, and desirable to customers. Most work is conducted indoors while observing, gathering, and testing samples or procedures, often in a controlled and monitored environment.
Agricultural/Resource Processing	Farms, livestock facilities, and other structures or locations involved primarily in the housing, production, and storage of agricultural, biomass, or materials, products, and resources used in the development of energy or power products and services. Offer a mix of indoor/outdoor work, sometimes in a refrigerated or other controlled environment.
Renewable Energy Site/Center	Solar, wind, geothermal, and biomass are growing areas of sustainable or alternative energy production that provide unique types of new or improved methods to collect, transport, store, and distribute power, fuels, and other natural resources to our communities. Most work will be conducted outdoors, often in remote areas, but could include some indoors. Terms like “solar farm” or “wind park” may also be used.
Specialized/HAZMAT	Some hazardous materials (HAZMAT), waste, or specialized locations and energy products, fuels, services, or projects may require advanced training, licensing or endorsements, tracking or monitoring, and clearance because of heightened security or safety concerns and special handling codes, rules, regulations, and laws. Most work likely conducted indoors, but could also include some outdoors.
Home/Telework	Many employers now allow professionals to work from home, a satellite office, and other de-centralized or branch locations that are located closer to home, school, daycare, or other convenient locations. Most work likely conducted indoors, but may include some outdoors. Employees may be expected to provide their own reliable and secure internet, phone service, and other equipment or technologies.

SOURCES OF POWER – THE SHOCKING WAYS ENERGY IS CREATED IN IOWA!

The electricity that courses throughout our state is generally created by turbine power generators, which can be as large as a house or as small as a backpack. The energy created by spinning, moving, or rotating blades, rollers, and other parts within these generators is converted to electrical energy, which is then either sent out immediately or stored for later use. The list below provides a broad overview of some of the ways in which these generators are powered. Continued advances in technology, science, and our general understanding of energy will continue to expand this list, in addition to unique, experimental, and innovative new sources of power in Iowa. Many of the occupations highlighted in this document will either specialize in one of these areas or work in many as a growing number of energy companies or service providers explore ways to supplement current sources or production practices to increase efficiency, lower costs, and provide greater reliability to their customers. Which fits you best?



BIOMASS/BIOFUELS — Organic or renewable materials like corn, grasses, wood, and even garbage or sewage waste can be used to create electricity, gases, or fuels through different methods, such as burning, fermenting, or bacterial digestion. This area has potential for large and rapid growth, while also assisting with more responsible and sustainable waste management practices.



FOSSIL FUELS/GASES — Many types of aerosol or liquified gases, fuels, oil, or coal are used to power generators to create electricity, burned to provide heat, or used in combination with other sources for more efficient hybrid systems. This is currently the most common source of power in Iowa, but concerns about climate change, sustainability, and supply volatility in global markets may decrease market share in the future.



GEO THERMAL — Naturally occurring heat or thermal energy stored deep underground can be used to directly control temperatures, produce steam to power generators, or supplement other sources of power and systems. This area is growing rapidly with more efficient and cost effective heat pumps, installation procedures, and building practices.



NUCLEAR — Although limited in current potential and availability in Iowa, nuclear power can be obtained from various types of nuclear fission, decay, and fusion reactions within a specialized and highly secure power plant or system. Requires advanced precautions for the development, handling, and storage as both a power source and related hazardous waste products or materials.



SOLAR — Sunlight can be used not only as a direct source of light to lessen our demand for electricity, but also as both an active and passive power source. Photovoltaic (PV) cells on solar panels use microprocessor chips to convert the sun's bright light into electricity, while the warmth of the light can also be used to heat the air, water, or other gases and liquids to produce steam, power generators, or supplement other power sources and equipment.



WATER — The force of falling or moving water from Iowa's rivers, streams, lakes, and other natural or man-made bodies of water can be used to spin generator turbines as part of hydroelectric dams or underwater systems and also be converted to steam by heating and pressurizing at extreme temperatures. Water is also used to help regulate temperatures within power plants, vehicles, and other mechanical or electrical systems. Some specialized jobs focus on the handling, treatment, and storage of the water used and "wastewater" produced from these various processes.



WIND — The natural power of the wind is used to spin large vertical or horizontal turbine blades to create electricity, often with a traditional windmill design on land, but also sometimes positioned in rivers, lakes, or other bodies of water out of the way. New technologies mimic the efficiency and design of kites or wind sails that take advantage of strong and consistent winds high up in the skies. Iowa is a national leader in wind energy and demand continues to grow.

CAREER INTEREST TYPES - WHAT TYPE OF CAREER MATCHES YOUR PERSONALITY AND INTERESTS?

We are born with certain character traits, while some are developed as we grow and experience new things. There are many different tests or assessments available to help us determine what careers might match our personality or interests. The most common test includes six interest themes based on research by John Holland that can be taken for free at [FutureReadyIowa.gov](https://www.futurereadyiowa.gov). These include the Realistic (R), Investigative (I), Artistic (A), Social (S), Enterprising (E), and Conventional (C) groups, reflected in the diagram to the right.

After identifying the top three preferred interest areas, a user is left with an interest type, such as RIA, CES, or ECR. Occupations in this document have been labeled with these codes to help readers better understand potential matches for further research and investigation. Don't worry if a career doesn't match exactly to your code as this is not an exact science, but rather a starting point to help guide users in their career exploration process. There are careers for everyone in Iowa's innovative and growing energy sector!



R

REALISTIC

You like to work with your hands and use physical skills including repairing and making things with tools and machines. You prefer working on projects you can see and feel, not what can be imagined or theorized.

I

INVESTIGATIVE

You tend to focus on ideas and enjoy collecting and analyzing information. You are curious and tend to prefer situations with minimal rules or regulations. You tend to like math and science.

A

ARTISTIC

You focus on artistic self-expression, value independence, and are not afraid to experiment with ideas. You enjoy variety and tend to feel cramped in structured situations. Creativity guides you.

S

SOCIAL

You are highly concerned with people, make friends easily, and are a good communicator. You enjoy working with others to identify and solve problems. You are helpful, friendly, and trustworthy.

E

ENTERPRISING

You are goal-oriented and often provide leadership and a high degree of energy when working with others. You tend to get bogged down by too much science, data, and analytical thinking. You are more comfortable selling and negotiating.

C

CONVENTIONAL

You pay close attention to detail and work well with numbers and data. You prefer following the rules and working with clear expectations.

USING THESE CAREER PATHWAYS

The information in these pathways is not intended to cover every type of energy occupation in Iowa. Rather, it is intended to provide the student, job-seeker, parent, educator, and others with a high-level view of some in-demand or growing positions. Information has been averaged to help guide the reader in evaluating which of these jobs are of interest and worthy of further research through the online [Future Ready Iowa Career Coach](#) tool, which allows readers to customize wages, education needs, and other information based on their location within the state. Additional recommendations for next steps and a career exploration action plan are included at the end of the document.

Occupations have been grouped into the following three levels based on factors such as typical education, experience, and wages. Many workers in this industry do not follow a direct pathway within the same occupation family, but rather enter and progress through a wide range of different careers from each area of focus. Actual education requirements, job duties, and wage levels will vary from employer to employer around the state. Leadership and management opportunities are also available in all families, but may not be reflected in these materials.



ENERGY OCCUPATION FAMILIES

There are many roles to play in the process of planning, producing, transmitting, and supporting safe, quality, and reliable energy and power solutions in Iowa. The occupation families below outline how these various roles will be grouped by general job duties for purposes of this project. With a growing number of new and innovative energy technologies, products, and services across the state, everyone can find a place somewhere in the energy industry. Which fits you best?



CRAFT & SKILLED TRADES - THE CREATORS

[Common Interest Types: Realistic, Investigative, Conventional]

You enjoy creating things! Your ability to work with your hands to build, install, and fix things make you an invaluable part of the energy cycle. You are truly a master of your craft and take great pride in seeing the direct impact on the community you help build, connect, and power.



PLANNING & DESIGN - THE VISIONARIES

[Common Interest Types: Investigative, Realistic, Conventional]

You can see the bigger picture! People present you with a problem, idea, or goal and you find a way to get it done by pulling together all of the necessary energy professionals, systems, technologies, and services in a timely and efficient manner. Your ideas, designs, and solutions lead the way.



PRODUCTION & OPERATIONS - THE PRODUCERS

[Common Interest Types: Conventional, Realistic, Investigative]

You are the master of power! Your attention to detail, curiosity for how things work, and ability to work with different types of people, materials, and technology ensure that energy products and services are produced that improve the lives of those in your community every day and in accordance with all applicable rules, laws, and regulations.



TRANSMISSION & DISTRIBUTION - THE CONNECTORS

[Common Interest Types: Conventional, Enterprising, Realistic]

You keep everyone and everything connected and working! Every home, business, and community needs energy to be successful. You provide a reliable, safe, and secure method to access or connect these products, tools, or services to customers, suppliers, coworkers, and other partners around the world. Without your attention to detail and problem-solving skills, everything else would fall apart.



SECURITY & INFORMATION SOLUTIONS - THE ANALYZERS

[Common Interest Types: Conventional, Investigative, Enterprising]

You catch things that others miss! Your eye for detail, ability to work with theories or concepts, and critical thinking skills help ensure the proper, safe, and secure handling of data, technologies, and other sensitive or valuable resources, networks, and systems. You keep companies informed, protected, and ready to address system outages and dangerous cyberattacks launched by criminals from around the world.



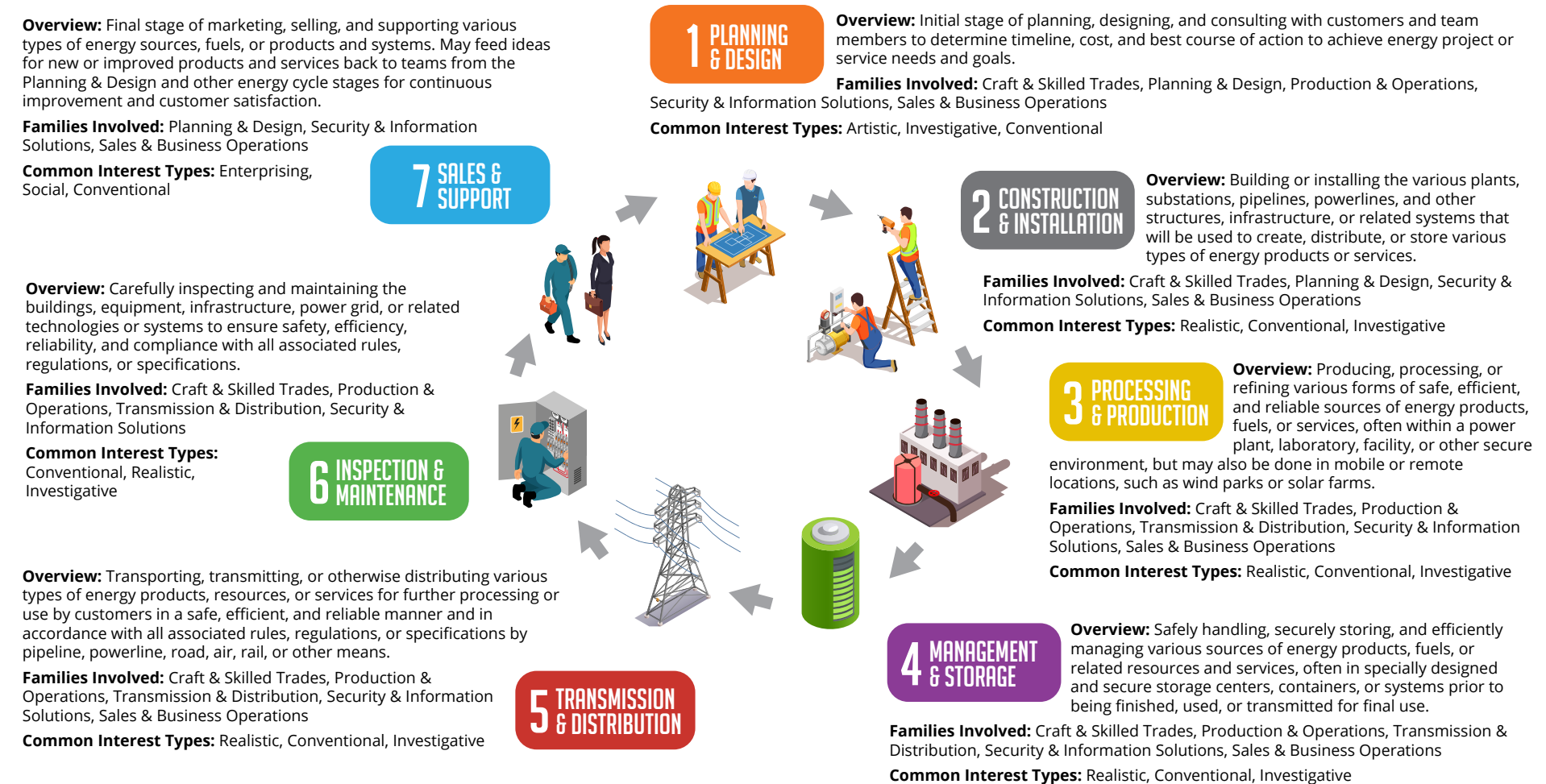
SALES & BUSINESS OPERATIONS - THE CLOSERS

[Common Interest Types: Enterprising, Conventional, Social]

You seal the deal! Your outgoing personality, competitive nature, and desire to understand customer needs helps companies create energy products and services that will be valued and purchased. You also serve as the connector between your company and customers, providing support and services so that everyone wins.

THE ENERGY CYCLE - AN ENERGIZING PROCESS TO POWER OUR COMMUNITIES!

The occupations outlined in this document are part of a modern, complex, and interconnected energy usage cycle. The diagram below showcases some of the general stages from initial design to final sales and offers a brief description of what is being done, which families are likely involved, and how they interact with one another towards the successful, safe, and reliable powering of our communities. Which fits your personality and interest type best?





Professionals in the *Craft & Skilled Trades* family receive specialized training in a specific area, such as electricity, plumbing, or gas line service and will work together to build or create great things. Some career opportunities involve learning multiple skill sets, but most are designed to learn and perfect a single craft over time.

These professionals are often involved throughout the entire energy cycle and can be found in a wide range of work environments, both indoors and outdoors. They help to design an energy grid or system, build the power plants and stations, install equipment and the cable or pipeline to distribute the power, and finally to service or repair all of the related machines, infrastructure, and technology.

Most of these occupations require little formal education, and instead opt for an “earn and learn” training model where skills are learned on the job observing and assisting a licensed master trades professional, while also taking necessary courses in areas such as applied mathematics, job site safety, and other specialized skills. These occupations offer a good entry into the energy industry with huge potential for advancement with focus, hard work, and a willingness to learn.

Someone who enjoys working with their hands, likes to see and feel their work, and doesn't want to sit in an office all day would fit well in these careers. They take pride in building, installing, maintaining, and repairing the energy grid and systems that power our communities and make our lives easier each and every day.



CAREER SPOTLIGHT:

Ron B. - Line Mechanic for MidAmerican Energy Company (Altoona, IA)

“In my role as a line mechanic, I am a first responder to all different kinds of customer problems. I troubleshoot to determine what is causing the problem and then use my knowledge and training to restore power as quick as I can. Sometimes it's as easy as switching the source of power around the problem, while other times it might be a more difficult solution by actually repairing the power line to the customer's home. It is incredibly satisfying when the problem is fixed and I see the customer's lights come back on!”





NOVICE/ENTRY LEVEL

Apprentice, Intern,
Assistant, Helper,
Technician

High School Diploma

Years 0 - 4

INTERMEDIATE/MID-LEVEL

Journeyman, Supervisor,
Coordinator, Foreman

High School Diploma +
Training & Professional
License

Years 5 - 9

ADVANCED/SENIOR LEVEL

Master, Manager,
Superintendent, Engineer

High School Diploma
+ Advanced Training &
Professional License

Years 10+

	NOVICE/ENTRY LEVEL	INTERMEDIATE/MID-LEVEL	ADVANCED/SENIOR LEVEL
Alternative Energy - Solar	\$14 - \$18/hr	\$22 - \$28/hr	\$30 - \$40/hr
Alternative Energy - Wind	\$17 - \$21/hr	\$25 - \$38/hr	\$42 - \$50/hr
Electricity - Low Voltage	\$15 - \$19/hr	\$31 - \$39/hr	\$42 - \$52/hr
Electricity - High Voltage	\$17 - \$23/hr	\$33 - \$41/hr	\$44 - \$56/hr
Equipment Operation/Maintenance (Light Duty)	\$13 - \$16/hr	\$21 - \$29/hr	\$33 - \$48/hr
Equipment Operation/Maintenance (Heavy Duty)	\$15 - \$20/hr	\$26 - \$38/hr	\$40 - \$54/hr
Fleet Service/Repair (Automotive)	\$13 - \$17/hr	\$22 - \$30/hr	\$35 - \$50/hr
Geothermal Heating/Cooling (HVAC)	\$13 - \$18/hr	\$26 - \$36/hr	\$41 - \$51/hr
Insulation/Weatherization	\$13 - \$17/hr	\$26 - \$34/hr	\$39 - \$49/hr
Labor/Installation	\$12 - \$15/hr	\$22 - \$30/hr	\$35 - \$47/hr
Line Service/Repair - Power/Electrical	\$19 - \$24/hr	\$28 - \$39/hr	\$43 - \$58/hr
Line Service/Repair - Natural Gas/Propane	\$17 - \$24/hr	\$26 - \$35/hr	\$38 - \$49/hr
Metal Working/Welding (Iron/Steel)	\$12 - \$16/hr	\$24 - \$32/hr	\$37 - \$47/hr
Plumbing/Pipefitting	\$17 - \$21/hr	\$34 - \$42/hr	\$47 - \$57/hr



ALTERNATIVE ENERGY - SOLAR

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$14 - \$40/hour

Design, assemble, install, and maintain solar photovoltaic (PV), thermal, storage, and related alternative energy systems and components in open areas or on roofs, walls, or other structures to meet sustainability, efficiency, or design specifications. May also plan, cut, assemble, and secure necessary structural framing, wiring, plumbing, and other components, testing when necessary to ensure compliance and safety.

Knowledge & Skills:

- 1) Electricity & Solar Energy
- 2) Basic Building & Construction
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Safety & Inspection
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Solar Panel Installer, Solar Energy Technician, Solar Energy Specialist, Solar Engineer, PV Design and Installation Tech, Solar Maintenance Technician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

ALTERNATIVE ENERGY - WIND

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$17 - \$50/hour

Inspect, diagnose, maintain, or repair wind turbines, generators, storage centers, and related systems and components individually or as part of expanded wind farm systems to meet sustainability, efficiency, or design specifications. May also assist with design, installation, or other necessary wiring, plumbing, and other components, often working outdoors in extreme heights or weather conditions.

Knowledge & Skills:

- 1) Electricity & Wind Energy
- 2) Basic Building & Construction
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Safety & Inspection
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Wind Turbine Service Technician, Wind Energy Technician, Wind Energy Specialist, Wind Engineer, Wind Farm Support Specialist, Wind Maintenance Tech

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

ELECTRICITY - LOW VOLTAGE

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$15 - \$52/hour

Design, install, and maintain low voltage residential or commercial electrical wiring, equipment, fixtures, and control systems in accordance with all appropriate safety, regulatory, and compliance codes or guidelines. Inspect, test, and repair related systems and components to resolve hazards, defects, or other performance concerns. May also install, maintain, or repair above and underground wiring or fiberoptic cables for security, sound, TV, networking, and other telecommunications systems or components.

Knowledge & Skills:

- 1) Electricity & Electronics
- 2) Building & Construction
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Electrician, Residential Electrician, Electrical Apprentice, Electrical Systems Engineer, Light Current Electrician, Electrical Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



ELECTRICITY - HIGH VOLTAGE

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$17 - \$56/hour.

Design, install, and maintain high voltage commercial or industrial electrical wiring, equipment, fixtures, and control systems in accordance with all appropriate safety, regulatory, and compliance codes or guidelines. Inspect, test, and repair related systems and components to resolve hazards, defects, or other performance concerns. May also install, service, or repair above and underground power lines, transformers, utilities, and other components outdoors in extreme heights or weather conditions.

Knowledge & Skills:

- 1) Electricity & Electronics
- 2) Building & Construction
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Electrician, Industrial Electrician, Electrical Apprentice, Electrical Engineer, Heavy Current Electrician, Commercial Electrician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized

EQUIPMENT OPERATION/MAINTENANCE – LIGHT DUTY

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$13 - \$48/hour

Safely and accurately operate small or light-duty power equipment and vehicles, such as trucks, skid loaders, forklifts, and tractors equipped with a wide range of attachments or tools to load, transport, and otherwise manage or assist with various types of energy or construction projects. May also inspect, repair, and maintain equipment to keep operational and running smoothly, safely, and efficiently.

Knowledge & Skills:

- 1) Mechanical, Digital, & Diagnostic Tools
- 2) Machine Operation & Maintenance
- 3) Critical Thinking & Problem Solving
- 4) Safety & Inspection
- 5) Math & Measuring
- 6) Computers & Technology



Similar Roles/Titles:

Light Equipment Operator, Equipment Operator, Light Equipment Specialist, Operation Apprentice, Industrial Machinery Mechanic, Small Engine Mechanic

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized

EQUIPMENT OPERATION/MAINTENANCE – HEAVY DUTY

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$15 - \$54/hour

Safely and accurately operate large or heavy-duty power equipment and vehicles, such as graders, bulldozers, cranes, pile drivers, dump trucks, or front-end loaders to excavate, move, or grade work sites, erect structures or systems, and other related energy or construction projects. May also inspect, repair, and maintain equipment to keep operational and running smoothly, safely, and efficiently.

Knowledge & Skills:

- 1) Mechanical, Digital, & Diagnostic Tools
- 2) Machine Operation & Maintenance
- 3) Critical Thinking & Problem Solving
- 4) Safety & Inspection
- 5) Math & Measuring
- 6) Computers & Technology



Similar Roles/Titles:

Operating Engineer, Crane Operator, Equipment Operator, Heavy Equipment Mechanic, Truck Mechanic, Operation Apprentice

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized



FLEET SERVICE/REPAIR (AUTOMOTIVE)

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$13 - \$50/hour

Inspect, test drive, repair, and service automotive or fleet vehicles that have been damaged or are in need of routine maintenance, such as oil changes, brake replacement, and tire alignments. Use digital, diagnostic, and hand tools to identify current and potential issues or malfunctions, providing recommendations for updates or repairs. May specialize in certain models, types, or systems, such as transmissions, tractor trailers, or foreign vehicles.

Knowledge & Skills:

- 1) Vehicle Maintenance & Repair
- 2) Critical Thinking & Problem Solving
- 3) Hand, Mechanical, & Digital Tools
- 4) Computers & Technology
- 5) Customer & Personal Service
- 6) System Diagnostics & Attention to Detail



Similar Roles/Titles:

Account Coordinator, Service Advisor, Account Administrator, Business Services Rep, Account Success Advisor

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized

GEOHERMAL HEATING/COOLING (HVAC)

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$13 - \$51/hour

Design, assemble, install, and maintain heating, ventilation, & air conditioning (HVAC), refrigeration, or geothermal systems, and related equipment, heat pumps, ductwork, plumbing, and wiring. Cut, bend, shape, straighten, and join sheet metal pieces, pipes, or components with hand, power, and soldering or welding tools. Inspect, test, and repair equipment and systems to ensure safety, efficiency, and compliance.

Knowledge & Skills:

- 1) Geothermal & HVAC Systems
- 2) Plumbing & Electrical Work
- 3) Hand, Power, & Welding Tools
- 4) Math & Measuring
- 5) Attention to Detail & Inspection
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Geothermal Service Technician, HVAC Service Technician, Sheet Metal Fabricator, Heating and Cooling Specialist, Geothermal Energy Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

INSULATION/WEATHERIZATION

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$13 - \$49/hour

Line, cover, and apply insulating materials to structures, pipes, ductwork, or other mechanical and refrigeration systems to help control and maintain temperature or climate. Determine the amounts, types, and installation methods of insulation needed based on factors such as location, surface shape, and equipment use. Safely and accurately measure, cut, and fit batt, roll, spray, or blown insulation materials with hand and power tools.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Math & Measuring
- 3) Insulation & Weatherization
- 4) Attention to Detail & Inspection
- 5) Critical Thinking & Problem Solving
- 6) Computers and Technology



Similar Roles/Titles:

Insulator, Heat & Frost Worker, Insulation Apprentice, Weatherization Worker, Insulation Installer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



LABOR/INSTALLATION

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$47/hour

Assist a wide range of energy, construction, and trade professionals with tasks involving physical or skilled labor in the preparation, building, remodeling, or demolition of buildings, infrastructure, pipelines, and other types of energy systems or projects. Use hand or power tools and operate equipment to assist on projects as-needed, including clean-up procedures to ensure a safe, secure, and efficient job site.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Physical & Manual Labor
- 3) Hand & Power Tools
- 4) Math & Measuring
- 5) Critical Thinking & Problem Solving
- 6) Listening & Following Instructions



Similar Roles/Titles:

Construction Laborer, Construction Worker, Teamster Worker, Labor Apprentice, Skilled Labor

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

LINE SERVICE/REPAIR - POWER/ELECTRICAL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$19 - \$58/hour

Design, install, and service above and underground power lines, transformers, switches, and other equipment or machinery used in electrical power or distribution systems, often outdoors in extreme heights or weather conditions. Inspect, test, and repair related systems and components to fix hazards, service disruptions, or other concerns. May also assist with inspecting and erecting utility poles, transmission towers, or other relay and control equipment or machinery.

Knowledge & Skills:

- 1) Electricity & Power Basics
- 2) Hand, Power, & Digital Tools
- 3) Math & Measuring
- 4) Computers and Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Lineman, Electrical Lineman, Electrical Lineworker, Utility Lineman, Lineman Apprentice

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized

LINE SERVICE/REPAIR - NATURAL GAS/PROPANE

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$17 - \$49/hour

Design, install, and service above and underground natural gas, propane, biofuels, and other types of aerosol or liquid fuel pipelines, valves, and other equipment or machinery used in gas power or distribution systems, often outdoors and in extreme weather conditions. Inspect, test, and repair related systems and components to prevent corrosion, maintain service, and ensure safety. May also assist with the installation and maintenance of relays, substations, and other remote service systems.

Knowledge & Skills:

- 1) Gas & Fuel Basics
- 2) Hand, Power, & Digital Tools
- 3) Math & Measuring
- 4) Computers & Technology
- 5) Inspection & Safety
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Lineman, Gas Lineman, Gas Service Technician, Corrosion Technician, Lineman Apprentice, Utilities Lineman

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized



METAL WORKING/WELDING (IRON/STEEL)

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience

Wage Range: \$12 - \$47/hour

Lift, position, and join iron or steel girders, beams, pipes, and other metal pieces to form walls, service lines, infrastructure, or completed structures and energy grids or systems. Verify vertical and horizontal alignment of parts and connect using bolts, rivets, welds, and other temporary or permanent methods, dismantling when necessary to correct or modify. Read specifications or blueprints to determine locations, quantities, and sizes of required materials.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Metal Working & Cutting
- 3) Hand, Power, & Welding Tools
- 4) Critical Thinking & Problem Solving
- 5) Math & Measuring
- 6) Attention to Detail & Inspection



Similar Roles/Titles:

Iron/Steel Worker, Fitter, Welder, Iron/Steel Apprentice, Metals Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Laboratory, Processing, Renewables, Specialized

PLUMBING/PIPEFITTING

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED + Hands-On Experience + Professional License

Wage Range: \$17 - \$57/hour

Assemble, install, and maintain pipes, fittings, fixtures, and other materials used for water, heating, cooling, fuels, lubrication, waste removal, or drainage systems. Inspect, test, and repair plumbing systems for defective materials, leaks, clogs, corrosion, and other potential hazards, replacing or fixing components and materials when necessary. Cut, bend, and join metal, plastic, and other types of above and underground pipes with various hand tools, power equipment, and other fasteners and adhesives.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Pipe Bending, Working, & Cutting
- 3) Hand, Power, & Welding Tools
- 4) Water, Gas, & Fluid Dynamics
- 5) Math & Measuring
- 6) Attention to Detail & Inspection



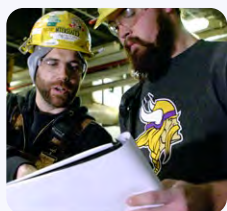
Similar Roles/Titles:

Plumber, Pipefitter, Steamfitter, Plumbing Specialist, Plumbing/Pipefitting Apprentice

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

PROFESSIONALS IN ENERGY SPOTLIGHT:



Austin S. - Electrical Superintendent for Interstates (Sioux Center, IA)

"I was looking for a career that offered challenging work and opportunities for advancement and took advantage of an apprentice program to learn the electrical trade. I like that every day is different and offers that challenge. I've already begun working in more of a supervisory and project management role at Interstates and want to continue training and building up other employees. I have no plans to give up my tools though. I still very much enjoy the physical work that it takes to build industrial products. I've been able to travel and visit facilities across the country that most people will never see."



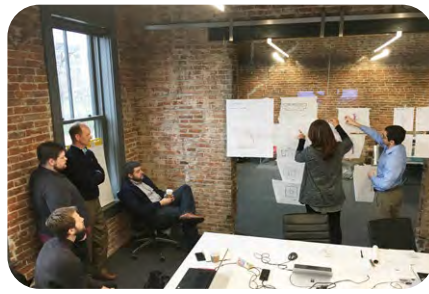
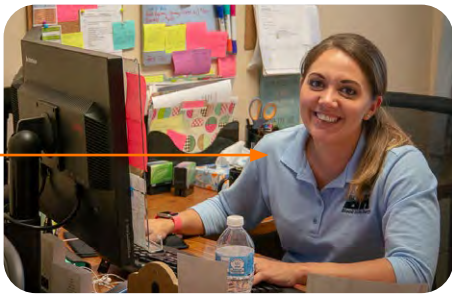


Occupations in the *Planning & Design* family focus on turning ideas or concepts into reality!

These professionals use their vision and creativity to work with customers to assess energy or power needs, develop 3D structural or system blueprints, and provide detailed project design plans that will be used by other skilled and trade professionals throughout the energy cycle for installation, building, and maintenance service needs.

Many of these occupations require a higher level of formal education, such as an associate or bachelor's degree, but some only require a technical certificate and little or no industry experience. A growing number of these careers offer an "earn and learn" option as well, such as an internship or apprenticeship.

Someone who is creative, enjoys working with technology, and doesn't mind working mostly in an office setting will do well in these careers. Travel may be required to survey or visit potential energy grid or work sites, but advances in satellite imagery, global positioning systems (GPS), and smart drone technology are changing and expanding how many of these careers are practiced. Artificial intelligence and cloud computing will also continue to improve the accuracy, efficiency, and ease of use for many of the technologies and tools used by these professionals.

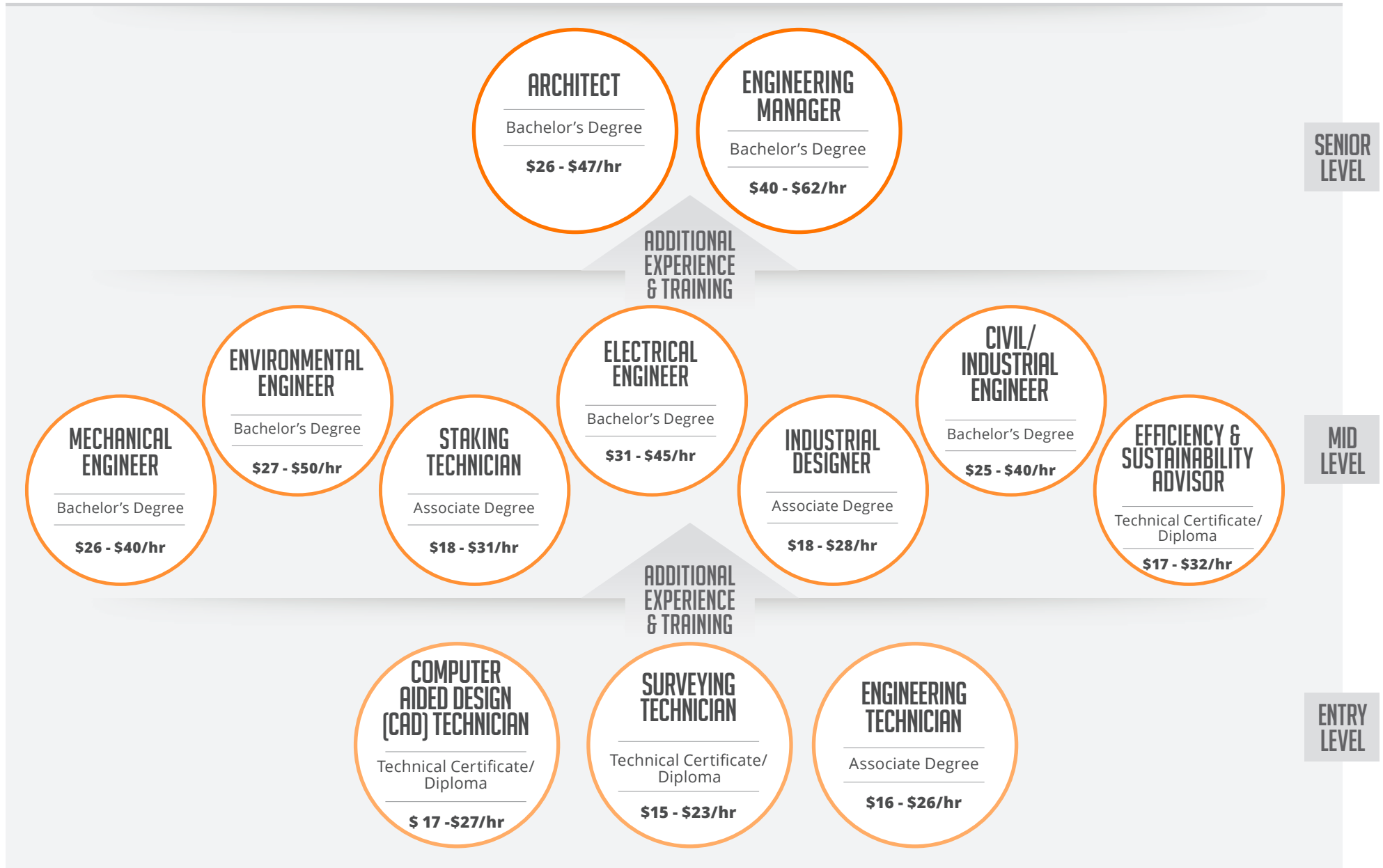


CAREER SPOTLIGHT:

Nichole S. - Utility Construction Planner at Black Hills Energy (Spencer, IA)

"I had two friends employed at Black Hills Energy who talked about it frequently. It sounded like an interesting field with a lot of opportunities to advance. When a position opened up, I jumped at it and am glad I did! As a Utility Construction Planner, I work closely with our current and potential customers, contractors, developers, city planners, engineers, and several others to coordinate, design and schedule construction work for to the installation of new and replacement natural gas service and distribution line projects. Each day presents new opportunities to learn and is a fun, fast-paced, and challenging career. I plan to continue to learn and grow with a goal of becoming an Operations Supervisor. There are so many opportunities to work in energy and there is likely a position that could appeal to anyone, regardless of background, race, age, or gender. My husband also works in the industry as a Journeyman Lineman and is just as passionate about his career as I am. At Black Hills Energy, we provide safe, reliable energy to improve over a million lives each day. Being a part of something so vital is very rewarding."







SURVEYING TECHNICIAN

ENTRY LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$15 - \$23/hour

Research, conduct, and document property measurements, elevations, and relation to natural features, structures, and other physical barriers with various hand tools, electronic instruments, and drones or advanced surveying technology. Make sketches or maps, enter data into software tools or applications, and analyze or compare findings to other sources, such as satellite imagery, energy grid schematics, and infrared heat scans.

Knowledge & Skills:

- 1) Engineering & Geography
- 2) Building & Construction Basics
- 3) Math & Measuring
- 4) Surveying Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Computers & Technology



Similar Roles/Titles:

Survey Crew, Engineering Technician, Surveying Instrument Assistant, Surveying Specialist, Instrument Operator

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

ENGINEERING TECHNICIAN

ENTRY LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$16 - \$26/hour

Assist with the planning, design, and oversight of the construction and maintenance of energy systems or grids and related structures, lines, and facilities, usually under the direction of engineering staff. Collect, analyze, and report data research findings, often with detailed dimensional drawings, maps, and diagrams created and managed with advanced or 3D modeling and design software or applications.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) CAD/AutoCAD & Design Software
- 3) Math & Measuring
- 4) Mechanical Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Comprehend & Follow Instructions



Similar Roles/Titles:

Civil Designer, Engineering Assistant, Design Technician, Engineer Technician, Civil Engineering Technician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

COMPUTER-AIDED DESIGN (CAD) TECHNICIAN

ENTRY LEVEL

RIA - REALISTIC, INVESTIGATIVE, ARTI

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$17 - \$27/hour

Assist designers, drafters, and engineers with the development, review, and analysis of detailed design drawings and specifications for energy grid or system construction and installation projects, using computer-aided design (CAD) equipment and other advanced design software. Consult and coordinate with other workers to design, layout, or detail systems and related components and to resolve problems to ensure high levels of quality and safety.

Knowledge & Skills:

- 1) CAD/AutoCAD & Design Software
- 2) System Design & Creative Drawing
- 3) Engineering & Technology
- 4) Math & Measuring
- 5) Building & Construction Basics
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

CAD Designer, CAD Drafter, Drafting Assistant, Design Drafter, Civil Drafting Technician

Typical Work Environments:

Office, Laboratory, Renewables, Specialized, Home



INDUSTRIAL DESIGNER

MID LEVEL

ARI - ARTISTIC, REALISTIC, INVESTIGATIVE

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$28/hour

Prepare and deliver detailed drawings, designs, charts, and plans for buildings, structures, and other energy grid or system construction or installation projects according to specifications provided by architects and engineers with computer-aided design (CAD) equipment, 3D modeling, and other interactive design tools. Consider and analyze building codes, site or spacing limitations, utility or line locations, and other factors to keep projects on track and within budget.

Knowledge & Skills:

- 1) Engineering, Design, & Technology
- 2) CAD/AutoCAD & Design Software
- 3) Math & Measuring
- 4) Mechanical Tools & Equipment
- 5) Analytical Thinking & Problem Solving
- 6) Comprehend & Follow Instructions



Similar Roles/Titles:

Drafter, Architectural Designer, Civil Drafter, Draftsman, Civil Designer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

STAKING TECHNICIAN

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$31/hour

Direct, conduct, or verify land or site surveys and related studies, including data relevant to the electrical or member service needs for line extensions, system improvements, and avoidance of service disruptions or outages, often in collaboration with architects, engineers, and other trades professionals. May also assist with property boundary investigations or disputes with drones, GPS, and other technologies.

Knowledge & Skills:

- 1) Engineering & Geography
- 2) Building & Construction
- 3) Math & Measuring
- 4) Surveying Tools & Equipment
- 5) Attention to Detail & Inspection
- 6) Analytical Thinking & Problem Solving



Similar Roles/Titles:

Surveyor, Site Surveyor, GPS Technician, Survey Project Manager, Site Preparation Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

EFFICIENCY & SUSTAINABILITY ADVISOR

MID LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$17 - \$32/hour

Advise design, construction, and engineering teams on energy efficiency, sustainability, and environmentally friendly building or business practices. Review plans, provide audits, and make recommendations to improve the operation, maintenance, or energy efficiency of new or existing structures and systems. May also assist with financial impact studies, permits or contracts, and attaining financial assistance or rebates.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Inspection & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Math & Measuring
- 5) Energy Efficiency & Sustainability
- 6) Data Collection & Analysis

Similar Roles/Titles:

Energy Advisor, Energy Efficiency Consultant, Sustainability Specialist, Sustainable Building Consultant

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



CIVIL/INDUSTRIAL ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$25 - \$40/hour

Research, design, and oversee the construction and maintenance of buildings, facilities, and other structures, such as roads, railroads, bridges, pipelines, and water or sewage systems with advanced design and modeling tools. May inspect work and project sites to ensure compliance with design specifications, budget, timeline, and other regulatory or safety guidelines.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) Project & Time Management
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Building & Construction
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

Hardscape Engineer, Civil Engineering Manager, Infrastructure Engineer, Structural Engineer, City Planner

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

MECHANICAL ENGINEER

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$26 - \$40/hour

Research, plan, and design machines, tools, engines, turbines, controls, and other equipment or technology and how they interact with one another as part of a larger interconnected energy grid, system, or related projects and services. Oversee installation, operation, maintenance, and repair of equipment or machinery throughout the entire energy cycle based on factors like power, budget, efficiency, time, and quality needs.

Knowledge & Skills:

- 1) Critical Thinking & Problem Solving
- 2) Engineering & Technology
- 3) Machine Repair & Maintenance
- 4) Drafting & System Design
- 5) CAD/AutoCAD & Design Software
- 6) Math & Physics

Similar Roles/Titles:

Mechanical Drafter, Systems Engineer, Application Engineer, Equipment Engineer, Mechanical Design Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

ENVIRONMENTAL ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$27 - \$50/hour

Research needs, design solutions, and advise energy and trade professionals on the prevention, control, or remediation of environmental hazards using various engineering principles, strategies, and technologies. May inspect work and project sites to ensure compliance with design specifications, budget, timeline, and other environmental safety or regulatory guidelines, such as the handling of hazardous materials, water, and waste treatment or storage.

Knowledge & Skills:

- 1) Engineering & Technology
- 2) Environmental Science & Protection
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Hazardous Materials & Waste Handling
- 6) Analytical Thinking & Problem Solving

Similar Roles/Titles:

Pollution Control Engineer, Environmental Project Engineer, Wastewater Engineer, Environmental Remediation Specialist, Sanitary Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



ELECTRICAL ENGINEER

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$31 - \$45/hour

Design, develop, and supervise the installation of electrical equipment, components, and other technologies individually or as part of a larger energy grid or system. Consult with engineers, customers, and other stakeholders to identify needs and discuss solutions. Test electrical equipment and components to ensure compliance with safety and environmental rules or regulations and make repairs, improvements, or other recommendations when needed.

Knowledge & Skills:

- 1) CAD/AutoCAD & Design Software
- 2) Electricity & Electronics
- 3) Power Generation & Management
- 4) Math & Measuring
- 5) Advanced Computers & Technology
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Electrical Project Manager, Electrical Controls Engineer, Power Systems Engineer, Instrumentation & Controls Engineer, Project Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

ARCHITECT

SENIOR LEVEL

AIE - ARTISTIC, INVESTIGATIVE, ENTERPRISING

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$26 - \$47/hour

Research, plan, and design energy grids or systems and related structures, such as power plants, substations, storage facilities, buildings, and related infrastructure projects with advanced design and modeling tools in accordance with environmental, safety, and other regulations. Consult with customers, develop contracts, and direct or oversee activities of technicians, contractors, and other project staff to ensure customer needs and goals are met on time and within budget.

Knowledge & Skills:

- 1) Architecture & System Design
- 2) Project & Time Management
- 3) Math & Measuring
- 4) Data Collection & Analysis
- 5) Analytical Thinking & Problem Solving
- 6) Advanced Computers & Technology

Similar Roles/Titles:

Design Architect, Principal Architect, Project Architect, Senior Architectural Designer, Systems Architect

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

ENGINEERING MANAGER

SENIOR LEVEL

ERI - ENTERPRISING, REALISTIC, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$40 - \$62/hour

Build, supervise, and manage teams of designers, technicians, engineers, and other related energy or engineering professionals. Provide guidance and oversight to staff, contractors, and other stakeholders on both day-to-day activities or operations and periodic system update or improvement projects. Consult with other departments and present proposals, reports, or findings to clients or upper management.

Knowledge & Skills:

- 1) Analyze Test Results & Data
- 2) Engineering & Technology
- 3) Management & Leadership
- 4) Personnel & Human Resources
- 5) Advanced Math & Physics
- 6) Communication & Project Management

Similar Roles/Titles:

Chief Engineer, Director of Engineering, Plant Engineer, Project Research Manager, Lead Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



Occupations in the *Production & Operations* family are able to produce and control the amazing power of electricity, gas, fuels, and other types of energy!

These professionals ensure the safe, secure, and efficient production, storage, and management of various types of energy across a growing number of traditional and non-traditional energy sources or production practices. They must stay on their toes to keep up with new technologies or regulations, changing consumer preferences or demands, and both planned and unplanned system or production outages.

Some occupations may allow for some flexibility, but most will focus on a specific type of production process, technology, or fuel type, such as renewable energy or biofuels like ethanol. Due to the nature and complexity of this work, many of these occupations will require an advanced degree like an associate or bachelor's degree. A growing number, however may only require a high school diploma or equivalent and a willingness to learn through an "earn and learn" program like an internship or apprenticeship.

Amazing new advances in energy storage technology, increasing worldwide demand for reliable energy, and strict safety and environmental regulations will continue to change how these occupations are practiced here in Iowa. Attention to detail, inspection, and problem-solving skills are also necessary to ensure the production process runs smoothly and high-quality products and services are delivered to customers.

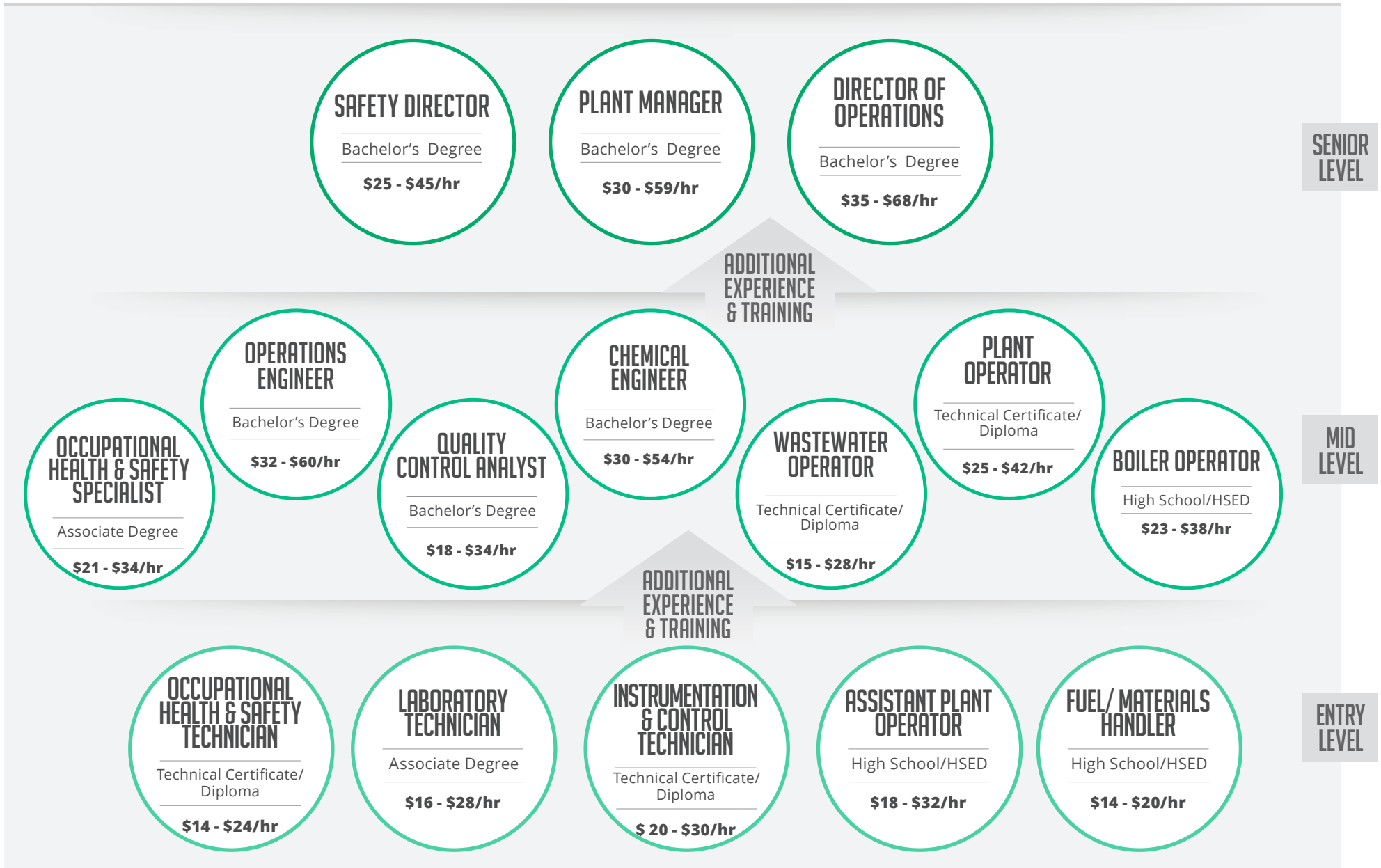


CAREER SPOTLIGHT:

Jon K. - Water & Resource Recovery Facility Director for the City of Muscatine (Muscatine, IA)

"After 20 years in the water industry, I can't see myself ever doing anything else. With the versatility of this industry I am also able to break into the renewable energy arena with the most exciting work out there...waste to energy. At the Muscatine Waste & Resource Recovery Facility (wastewater plant previously) we are pioneering the recovery of energy from things previously considered waste. We are even recovering food waste to increase our biogas production. It is the most exciting time in our industry where we get to explore biology, physics and chemistry in action every day while bringing people clean water and renewable energy."







FUEL/MATERIALS HANDLER

ENTRY LEVEL

REI - REALISTIC, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$20/hour

Assist with the shipping and receiving of raw materials and finished energy goods or products, such as liquid fuels, aerosol gases, and other potentially hazardous or flammable chemicals and resources by hand or with forklifts, power jacks, or other assistive technologies. Review shipping logs, inspect materials, and attach tags or mark containers with identifying information. Read work orders and record numbers of units stored, handled, or moved with production and tracking sheets or tickets.

Knowledge & Skills:

- 1) Attention to Detail & Organization
- 2) Gather & Analyze Data
- 3) Computers & Technology
- 4) Hazardous Chemicals & Waste Management
- 5) Communication & Critical Thinking
- 6) Safety & Quality Control

Similar Roles/Titles:

Materials Receiver, Materials Tender, Merchandise Pickup/Receiving Associate, Shipping and Receiving Materials Handler, Warehouse Worker

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

OCCUPATIONAL HEALTH & SAFETY TECHNICIAN

ENTRY LEVEL

RCS - REALISTIC, CONVENTIONAL, SOCIAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$14 - \$24/hour

Observe, collect, and maintain data on work environments for analysis by engineers, analysts, and health and safety specialists, providing recommendations where necessary for improvements or modifications, such as to limit chemical, physical, biological, and ergonomic risks to workers. May assist in training employees in-person or virtually on work site safety equipment and policies.

Knowledge & Skills:

- 1) Health & Safety Regulations
- 2) Customer & Personal Service
- 3) Critical Thinking & Problem Solving
- 4) Active Listening & Questioning
- 5) Math, Physics, & Measuring
- 6) Inspection & Data Analysis

Similar Roles/Titles:

Safety Consultant, Environmental, Health, and Safety (EHS) Technician, Health and Safety Tech, Project Safety Assistant, Production Safety Professional

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

LABORATORY TECHNICIAN

ENTRY LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$16 - \$28/hour

Conduct chemical, physical, and other types of tests to assist scientists in analyzing solid, liquid, and aerosol materials to be used in the energy cycle or finished energy and fuel products for quality control and safety purposes. Maintain, clean, or sterilize laboratory instruments or equipment to ensure a safe, secure, and efficient work environment. May also assist with experimental or theoretical applications to develop new or improved products and services.

Knowledge & Skills:

- 1) Chemistry & Math
- 2) Testing & Measuring
- 3) Safety & Quality Control
- 4) Computers and Technology
- 5) Inspection & Accuracy
- 6) Critical Thinking & Problem Solvin_



Similar Roles/Titles:

Chemical Technician, Lab Analyst, Research Technician, Fuel Technician, Assistant Scientist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



ASSISTANT PLANT OPERATOR

ENTRY LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$18 - \$32/hour

Assist plant operators, engineers, and other staff with monitoring energy production and operations. Ensure machines, equipment, facilities, or building grounds are repaired and in safe and optimal working order. Diagnose mechanical, structural, or safety problems and determine how to correct them quickly and efficiently by checking system blueprints, repair manuals, technical journals, or parts catalogs.

Knowledge & Skills:

- 1) Energy Systems & Production
- 2) Gather & Analyze Data
- 3) Mechanical & Digital Tools
- 4) Computers & Technology
- 5) Machine & Facilities Maintenance
- 6) Safety & Inspection

Similar Roles/Titles:

Assistant Operator, Assistant Plant Manager, Maintenance Technician, Assistant Facilities Manager, Plant Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

INSTRUMENTATION & CONTROL TECHNICIAN

ENTRY LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$20 - \$30/hour

Research, inspect, and diagnose mechanical and electrical problems and perform preventive and corrective maintenance of gas, electric, wastewater, or other instrumentation and control systems. Install, test, and calibrate or configure automated machinery or equipment to be optimized and in compliance with identified temperature, pressure, level, and flow rate performance goals or system limitations.

Knowledge & Skills:

- 1) Electricity & Electronics
- 2) Hand, Power, & Diagnostic Tools
- 3) Computers & Technology
- 4) Machine Maintenance & Repair
- 5) Critical Thinking & Problem Solving
- 6) Inspection & Safety



Similar Roles/Titles:

Instrumentation Specialist, Repair Technician, Maintenance Tech, Engineering Technician, Electrical Technician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

WASTEWATER OPERATOR

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$15 - \$28/hour

Oversee and assist with the use of water resources and the collection, testing, treatment, and disposal of wastewater used to produce energy products or services, heat or cool machinery and equipment, and various other production, operations, or maintenance uses. Track and analyze findings, prepare reports, and advise on necessary facility, system, or other component repairs or maintenance to remain in compliance with local, state, and federal health or environmental laws, rules, and regulations.

Knowledge & Skills:

- 1) Water & Wastewater Systems
- 2) Data Research & Analysis
- 3) Math & Chemistry
- 4) Computers & Technology
- 5) Waste Treatment & Disposal
- 6) Safety & Inspection



Similar Roles/Titles:

Wastewater Plant Operator, Water Operator, Water Treatment Specialist, Water Engineer, Wastewater Engineer

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



QUALITY CONTROL ANALYST

MID LEVEL

CIR - CONVENTIONAL, INVESTIGATIVE, REALISTIC

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$34/hour

Perform tests, inspections, and monitoring on energy products, services, and related work activities to ensure high levels of quality, safety, and efficiency at all times. Conduct routine and on-the-spot audits of materials, processes, equipment, and components to identify any current or potential issues. Analyze findings and write technical reports or documentation such as testing protocols and trend analyses for review by engineers, managers, and other teams.

Knowledge & Skills:

- 1) Quality Assurance & Control
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Quality Assurance Analyst, Quality Control Technician, Quality Control Auditor, Lab Analyst, Quality Control Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

OCCUPATIONAL HEALTH & SAFETY SPECIALIST

MID LEVEL

ICR - INVESTIGATIVE, CONVENTIONAL, REALISTIC

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$21 - \$34/hour

Review and evaluate work environments, policies, and practices for health and safety concerns. Make recommendations and design programs or procedures to help protect workers from potentially hazardous chemical, physical, and environmental factors. May conduct inspections, enforce laws and regulations, and provide training to ensure the health and safety of all employees within a company, work site, or facility.

Knowledge & Skills:

- 1) Health & Safety Regulations
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Active Listening & Questioning
- 5) Math, Physics, & Measuring
- 6) Inspection & Data Analysis

Similar Roles/Titles:

Safety Officer, Environmental, Health, and Safety (EHS) Officer, Health and Safety Manager, Safety Consultant, Health & Safety Technician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

BOILER OPERATOR

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 4 - 7 years

Wage Range: \$23 - \$38/hour

Operate and maintain boiler and steam generation systems to ensure safety, efficiency, & reliability. Monitor temperatures, pressures, and flow rates on all systems and ensure production goals or targets are met. Inspect and repair boiler and steam fixtures or equipment. Test, analyze, and record chemical content in steam and water systems, providing treatment or remediation when necessary and according to guidelines.

Knowledge & Skills:

- 1) Steam Power & Generation
- 2) Computers & Technology
- 3) Inspection & Attention to Detail
- 4) Math & Measuring
- 5) Machine Maintenance & Repair
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Boiler Technician, Operating Engineer, Plant Utilities Engineer, Steam Engineer, Utilities Operator

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized



PLANT OPERATOR

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$25 - \$42/hour

Control, operate, or maintain machinery, equipment, and other technologies and resources used to generate and manage electricity, gas, or other types of energy products and services. Monitor power production and usage, adjusting equipment or controls to meet energy needs or to regulate the flow of power or gas between generating stations and substations. Gather data, create reports or logs, and advise management of proposed system and equipment updates or recommendations.

Knowledge & Skills:

- 1) Electricity & Power Generation
- 2) Computers & Technology
- 3) Leadership & Communication
- 4) Math & Data Analysis
- 5) Mechanical Tools & Equipment
- 6) Safety & Inspection Procedures



Similar Roles/Titles:

Power Plant Operator, Plant Control Operator, Station Operator, Gas Plant Operator, Production Manager

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized

CHEMICAL ENGINEER

MID LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$30 - \$54/hour

Oversee, analyze, and provide technical and engineering support to develop energy or fuel products, process or separate components of liquids or gases, or generate electrical currents using controlled chemical reactions. Develop and provide chemical safety procedures or training for production and operations workers. Conduct research to develop new and improved chemical processes related to power generation and transmission.

Knowledge & Skills:

- 1) Chemistry & Engineering
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Advanced Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Chemist, Process Engineer, Research Engineer, Process Control Engineer, Scientist

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

OPERATIONS ENGINEER

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$32 - \$60/hour

Provide oversight and guidance to ensure energy plants, grids, systems, and other related components are operating efficiently. Prepare reports and design continuous improvement projects or plans to assist with current or improved plant operations. Provide operating procedures and line orders to ensure safe, reliable, and secure plant operations. Utilize power flow software to analyze the impact that equipment outages and contingencies have on the system.

Knowledge & Skills:

- 1) Engineering & Operations
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Inspection & Attention to Detail
- 5) Advanced Math & Measuring
- 6) Data Research & Analysis

Similar Roles/Titles:

Systems Engineer, Instrumentation Engineer, Process Engineer, Electrical Engineer, Plant Engineer

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized



SAFETY DIRECTOR

SENIOR LEVEL

ERC - ENTERPRISING, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Plan, direct, and coordinate the activities of an organization to ensure compliance with safety, regulatory, and quality standards throughout the entire energy cycle, from raw materials to final sale and regular maintenance or upkeep. Oversee the health, safety, and quality control teams, provide related employee training programs, and consult with other department heads and governing or legislative groups to remain updated and in compliance.

Work Experience: 8+ years

Knowledge & Skills:

- 1) Health, Safety, & Quality Control
- 2) Management & Leadership
- 3) Listening & Communication
- 4) Math & Finance
- 5) Energy Production & Management
- 6) Critical Thinking & Problem Solving

Wage Range: \$25 - \$45/hour

Similar Roles/Titles:
Compliance Officer, Occupational Health Director, Site Safety Director, Project Superintendent, Director of Compliance

Typical Work Environments:
Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

PLANT MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Direct the efforts of plant personnel to meet all established safety, quality, performance, and delivery or service level agreements and goals. Develop budgets and direct or initiate cost savings efforts to meet financial objectives. Inspect print and digital records, logs, and performance data to assess plant production and operations. Strategize, communicate, or coordinate with management and teams from other departments, sites, or plants.

Work Experience: 8+ years

Knowledge & Skills:

- 1) Management & Leadership
- 2) Plant Operations & Production
- 3) Communication & Negotiation
- 4) Critical Thinking & Problem Solving
- 5) Sales & Negotiation
- 6) Human Resources & Contracts

Wage Range: \$30 - \$59/hour

Similar Roles/Titles:
Production Manager, General Production Manager, Manufacturing Manager, Production Control Manager, Plant Superintendent

Typical Work Environments:
Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized

DIRECTOR OF OPERATIONS

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Oversee and manage a single unit or multiple departments or divisions within an energy company, collaborative, or system to ensure profitability and long-term growth. Plan, direct, and coordinate the work of the organization and all related personnel. Research, administer, and coordinate the development and execution of any capital improvement or service expansion projects.

Work Experience: 8+ years

Knowledge & Skills:

- 1) Production & Operations
- 2) Management & Leadership
- 3) Communication & Corporate Strategy
- 4) Complex Critical Thinking & Problem Solving
- 5) Sales & Negotiation
- 6) Contracts, Budgets, & Finance

Wage Range: \$35 - \$68/hour

Similar Roles/Titles:
Business Manager, General Manager (GM), Operations Director, Operations Manager, Director of Generation

Typical Work Environments:
Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized

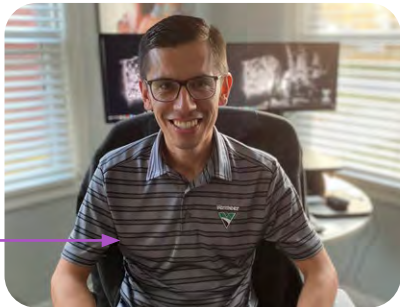


Occupations in the *Transmission & Distribution* family focus on getting things where they need to go! They are a critical part of the energy cycle that equips all of the other energy professionals with the power, supplies, and other resources to be successful.

These professionals transmit, distribute, or otherwise transport energy products or services throughout the community and across the world in a safe, efficient, and reliable manner. They need to be prepared for severe weather, natural disasters, and other unexpected or unplanned circumstances that can quickly cause service disruptions or outages.

Many of these careers require a high school diploma or equivalent and a specialized certification or training to be successful. Similar to the *Craft & Skilled Trades* family, these occupations can be a good entry into the energy industry, with huge potential for advancement with focus, hard work, and a willingness to learn.

Someone with initiative, enjoys supporting others, and is able to deal with uncertainty will do well in these careers. An eye for detail and ability to think quickly is also often needed to solve sudden issues and stay ahead of potential power and supply shortages.

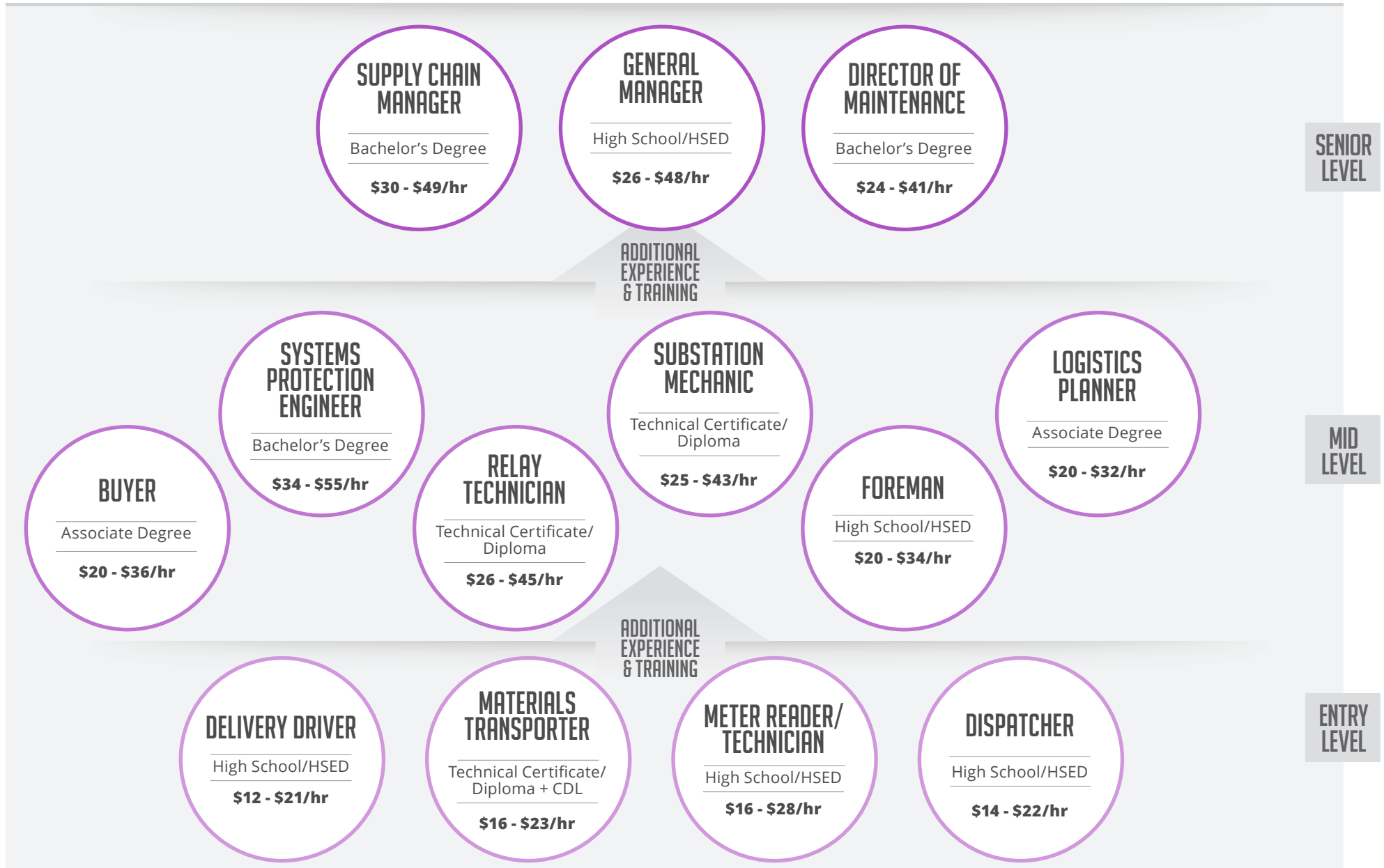


CAREER SPOTLIGHT:

Carlos C. - Buyer for Vermeer Corporation (Pella, IA)

"I was attracted to supply chain because I like to see and understand how the overall business is behaving with inbound and outbound operations and processes. My goal is to meet our customers' expectations and have parts ready when and where they need them. This requires reviewing part availability, placing orders to meet lead times and avoid backorders, negotiating with our vendors to replenish supplies, and confirming parts are received by our customers. Every day presents a new challenge and problem to solve! I'm currently working on finishing my master's degree in industrial management and plan to get my certification in supply chain management. This profession is very broad and gives you a lot of range to move around and be challenged."







DELIVERY DRIVER

ENTRY LEVEL

RES - REALISTIC, ENTERPRISING, SOCIAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$21/hour

Deliver different types of energy supplies, fuels, equipment, and other packages safely and in accordance with all transportation rules, laws, and regulations. May assist with the collection of money, offering product or route recommendations, and building relationships with customers. May include the potential for sales or performance-based wage compensation. Vehicle size, cargo, and length of routes may require specialized license or certification, such as a Class C CDL.

Knowledge & Skills:

- 1) Driving & Operating Vehicles
- 2) Reliability & Time Management
- 3) Transportation Safety & Laws
- 4) Sales & Negotiation
- 5) GPS & Route Logging Technology
- 6) Customer & Personal Service



Similar Roles/Titles:

Driver, Deliveryman, Route Driver, Sales Route Driver, Truck Driver

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

DISPATCHER

ENTRY LEVEL

CRE - CONVENTIONAL, REALISTIC, ENTERPRISING

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$14 - \$22/hour

Schedule, monitor, and dispatch gas and electric service or repair workers, sometimes in emergency situations, and drivers, equipment, and vehicles to transport or distribute products, materials, and other resources. Use various forms of radio, digital, telecommunications, and advanced technology to interact with teams, provide weather or hazardous alerts, and remotely monitor vehicle factors like location, speed, and service or repair needs.

Knowledge & Skills:

- 1) Communication & Active Listening
- 2) Computers & Technology
- 3) Accurate Time & Record Keeping
- 4) Transportation & Remote Monitoring
- 5) Data Gathering & Analysis
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Route Dispatcher, Dispatch Manager, Operations Dispatcher, Route Controller, Truck Dispatcher

Typical Work Environments:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home

MATERIALS TRANSPORTER

ENTRY LEVEL

RCS - REALISTIC, CONVENTIONAL, SOCIAL

Typical Education/Training: Technical Certificate/Diploma & Commercial Driver's License (CDL)

Work Experience: 0 - 3 years

Wage Range: \$16 - \$23/hour

Drive trucks to transport raw materials, fuels, and other finished or unfinished goods or resources. Check vehicles to ensure that mechanical, safety, and emergency equipment is in good working order. Maneuver trucks into loading or unloading positions, following signals from loading crew and checking that vehicle and loading equipment are properly positioned. Vehicle size, cargo, and length of routes may require specialized license or certification, such as a Class A CDL or HAZMAT endorsement.

Knowledge & Skills:

- 1) Driving & Operating Vehicles
- 2) Comprehend & Follow Instructions
- 3) Loading & Unloading Cargo
- 4) Safety Regulations & Procedures
- 5) Reliability & Problem Solving
- 6) Transportation Technology & GPS Systems



Similar Roles/Titles:

Materials Hauler, Delivery Driver, Line Haul Driver, Over the Road Driver (OTR Driver), Heavy Truck Driver Apprentice

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized

TRANSMISSION & DISTRIBUTION

THE CONNECTORS



METER READER/TECHNICIAN

ENTRY LEVEL

CRI - CONVENTIONAL, REALISTIC, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$16 - \$28/hour

Collect, analyze, and monitor data from gas, electric, or other utility meters either in-person or remotely with advanced computer data management and monitoring systems. Travel to inspect meters, prevent unauthorized use or tampering, deliver notices to customers, or repair broken, malfunctioning or outdated equipment. May provide recommendations for service needs or modifications based on observed usage, reliability, and other trends or patterns.

Knowledge & Skills:

- 1) Inspection & Attention to Detail
- 2) Data Monitoring & Analysis
- 3) Critical Thinking & Problem Solving
- 4) Safety & Security
- 5) Computers & Technology
- 6) Customer & Personal Service



Similar Roles/Titles:

Field Technician, Utilities Technician, Member Services Technician, Utility Service Specialist, Meter Data Analyst

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

LOGISTICS PLANNER

MID LEVEL

ECR - ENTERPRISING, CONVENTIONAL, REALISTIC

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$20 - \$32/hour

Analyze and coordinate the overall logistical functions for an energy product or services company, including the purchase, receipt, and distribution or delivery of both raw materials and finished energy goods or services to, from, and within designated sites or systems. Maintain and develop positive business relationships with customers and vendors to assist in long term business growth and success.

Knowledge & Skills:

- 1) Analyze Data & Information
- 2) Logistics & Supply Chain
- 3) Project & Time Management
- 4) Critical Thinking & Problem Solving
- 5) Communication & Coordination
- 6) Inspection & Attention to Detail



Similar Roles/Titles:

Logistician, Logistics Team Lead, Supply Chain Planner, Logistics Analyst, Resource Engineer

Typical Work Environments:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home

FOREMAN

MID LEVEL

ERC - ENTERPRISING, REALISTIC, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 4 - 7 years

Wage Range: \$20 - \$34/hour

Directly supervise, coordinate, and schedule the activities of energy and skilled trade professionals involved in the installation and maintenance of buildings, infrastructure, or energy systems to ensure reliable and secure transmission and distribution to customers or end users. Inspect work progress, equipment, and sites to verify safety and ensure that projects are meeting time and budget guidelines. May also assist with training in work practices, operation of equipment, safety procedures, and company culture or policies.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Listening & Communication
- 3) Project & Time Management
- 4) Math & Measuring
- 5) Attention to Detail & Inspection
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Station Supervisor, Front Line Supervisor, Field Supervisor, Trades Manager, Site Supervisor

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



BUYER

MID LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$20 - \$36/hour

Purchase or contract all necessary materials, equipment, or services to ensure the business runs smoothly and profitably. Analyze past buying trends, sales records, price, and quality of merchandise to determine value and yield. Select, order, and authorize payment for equipment and supplies according to contractual agreements and forecasting estimations to avoid service disruptions, poor quality, and or other negative impacts on customers.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Computers & Technology
- 3) Data Analysis & Forecasting
- 4) Business & Finance
- 5) Critical Thinking & Problem Solving
- 6) Contracts & Communication

Similar Roles/Titles:

Materials Purchaser, Purchasing Specialist, Purchasing Agent, Procurement Agent, Resource Broker

Typical Work Environments:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home

SUBSTATION MECHANIC

MID LEVEL

RIC - REALISTIC, INVESTIGATIVE, CONVENTIONAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$25 - \$43/hour

Monitor, analyze, and perform routine operations and maintenance of electrical and mechanical equipment and systems at electrical substations. Serve as an expert on how a substation works and its equipment. Read electrical diagrams and troubleshoot malfunctioning electrical systems. Disassemble mechanical equipment and replace malfunctioning parts.

Knowledge & Skills:

- 1) Electronics & Equipment Repair
- 2) Math & Measuring
- 3) Computers & Technology
- 4) Critical Thinking & Problem Solving
- 5) Electricity & Engineering
- 6) Inspection & Attention to Detail



Similar Roles/Titles:

Electrical and Instrumentation Technician, Electrical Technician, Instrument and Controls Technician, Wireman, Controls Technician

Typical Work Environments:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized

RELAY TECHNICIAN

MID LEVEL

RCI - REALISTIC, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$26 - \$45/hour

Assist in the installation, maintenance, programming and functional testing of protective relays or control circuits, revenue metering, and additional equipment. Inspect and test equipment, switches, and circuits to identify problems using special diagrams and testing devices, performing adjustments or repairs when needed often outdoors and sometimes at extreme heights. Maintain, track, and update installation, inspection, and maintenance records.

Knowledge & Skills:

- 1) Electronics & Equipment Repair
- 2) Math & Measuring
- 3) Computers & Technology
- 4) Critical Thinking & Problem Solving
- 5) Electricity & Engineering
- 6) Inspection & Attention to Detail



Similar Roles/Titles:

Electrical and Instrumentation Technician, Electrical Technician, Instrument and Controls Technician, Wireman, Controls Technician

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized



SYSTEMS PROTECTION ENGINEER

MID LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$34 - \$55/hour

Assist in supervising and training of technicians and other staff in maintaining and improving gas and electric transmission facilities and equipment. Analyze, monitor, and improve manual and automated protection and control systems to ensure security, safety, reliability, and integrity. Minimize the potential for system outages and preserve the delivery of quality energy products or services to customers. Assists in preparing protective relay equipment specifications and settings coordination.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Computers & Technology
- 3) Data Analysis & Forecasting
- 4) Business & Finance
- 5) Critical Thinking & Problem Solving
- 6) Contracts & Communication

Similar Roles/Titles:

Electrical Engineer, Systems Engineer, Power Systems Engineers, Safety Engineer, Systems Protection Specialist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized

DIRECTOR OF MAINTENANCE

SENIOR LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$24 - \$41/hour

Plan, direct, and coordinate the activities of all workers involved in the maintenance of structures, vehicles, facilities, and interconnected or related energy or power grids and systems. Assist in the planning, research, and implementation of operations, including overseeing higher level safety, financial, and regulatory compliance aspects with front-line supervisory staff and their teams.

Knowledge & Skills:

- 1) Facilities & Equipment Maintenance
- 2) Management & Leadership
- 3) Finance & Accounting
- 4) Critical Thinking & Problem Solving
- 5) Sales & Negotiation
- 6) Safety Regulations & Procedures

Similar Roles/Titles:

Maintenance Manager, Fleet Manager, Operations Manager, Facilities Maintenance Coordinator, Director of Facilities

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

GENERAL MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 8+ years

Wage Range: \$26 - \$48/hour

Plan, direct, and coordinate the activities of all workers involved in the transmission and distribution of energy products, services, and related systems or resources. Assist in the planning, research, and implementation of general or specialized energy projects, including overseeing higher level safety, financial, and regulatory compliance aspects with foremen, supervisors, contractors, and other energy and trades professionals and support staff.

Knowledge & Skills:

- 1) Electricity, Gas, & Utilities
- 2) Management & Leadership
- 3) Listening & Communication
- 4) Accounting & Finance
- 5) Time & Project Management
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Superintendent, Project Executive, Project Superintendent, Construction Manager, General Contractor

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



SUPPLY CHAIN MANAGER

SENIOR LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$49/hour

Direct or coordinate the purchasing, storage, and distribution of all finished energy products or services and the raw materials or supplies used to create, finish, or improve them. Provide inventory management and financial forecasting activities to limit service disruptions, cut costs, and improve accuracy, customer service, or safety. Stay updated on industry trends, energy usage patterns, and global demand to stay ahead of costly and disruptive impacts to the long-term success and growth of the company.

Knowledge & Skills:

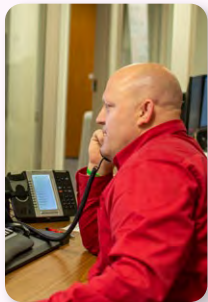
- 1) Management & Leadership
- 2) Computers & Technology
- 3) Sales & Negotiation
- 4) Critical Thinking & Adaptability
- 5) Communication & Coordination
- 6) Supply Chain & Logistics

Similar Roles/Titles:

Supply Chain Director, Procurement Manager, Logistics Manager, Logistics Solution Manager, Director of Sourcing

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



PROFESSIONALS IN ENERGY SPOTLIGHT

Ben D. - Transportation Broker at Stutsman Logistics (Cedar Rapids, IA)

"I work as the broker or connector between our customers and all of the other departments and locations throughout a logistics network to make sure we get shipments to where they need to go on time. I originally applied for a sales job, but found that I really liked this work. When you look around your house, office, and community, most of the goods or products you see were at some point transported over the road. Helping provide the service to deliver those products to the consumer is a satisfying feeling. I plan to continue to build on the success of our business at Stutsman Logistics and expand my leadership role within the organization to eventually lead our Logistics Team."



ENERGY INTERN SPOTLIGHT

Paige H. - Energy Intern from Iowa Lakes Community College

While studying energy at Iowa Lakes Community College, Paige secured a paid internship with William Charles Construction at the Upland Prairie Wind Farm located in nearby Spencer with a few other Iowa Lakes students. The energy industry provides a wide variety of employment opportunities in Iowa. Data analytics, installation, maintenance, compliance, safety, and the list goes on and on. Although she started in a construction area, the sky is the limit to where she can go next to help power her community and make a difference every day.



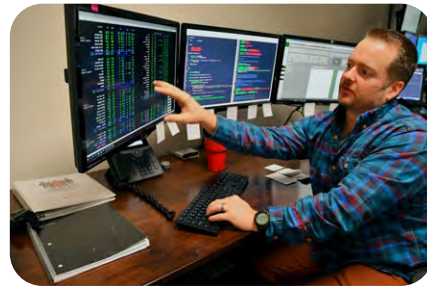


Occupations in the *Security & Information Solutions* family work to keep everything and everyone safe, secure, informed, and working efficiently in our physical, digital, and increasingly blended realities.

Many of these occupations will require some formal education and a specialized certification or training to stay updated and ready to address a growing number of security, privacy, and data analysis challenges in our interconnected world. Like other occupation families, however, a growing number of companies are embracing “earn-and-learn” models like internships and apprenticeships to train and develop their skilled workforce. These occupations can also be a good entry into IT for anyone without a strong tech background, since a large aspect of modern security measures involves psychology, social engineering, and other human behavior factors that lead people to either commit cybercrimes or fall prey to them.

New and exciting advances in areas like artificial intelligence, smart power grids, and remote system monitoring will continue to change how we practice these types of occupations. Many companies have to be on guard around the clock to update, protect, patch, or otherwise repair products, networks, or services to meet a growing consumer demand, changes in technology or regulations, and increasingly intelligent and evasive malicious or criminal attacks with viruses, ransomware, phishing, hacking, and other complex system breach schemes.

Someone with an eye for detail, enjoys understanding how people and things work, and likes to solve problems will do well in these careers. Remaining updated on security trends or threats and an appreciation for following checklists, policies, and procedures will also be important for long-term success.



CAREER SPOTLIGHT:

Dawson M. - Security Engineer I for ProCircular (Coralville, IA)

“Computers and technology have always been a fascination for me. I started a computer club at my small, rural high school that turned into a cybersecurity club when we participated in Iowa State University’s cyber defense competition. It is an adrenaline pumper when you first start seeing real hackers attack your network. After participating in the competitions, it made me realize how exciting it would be to do something that in most instances would be illegal but, in this case, is legal since you have been granted permission to break into organizations. I often compare it to Mission Impossible, except here you have to document your process. In both the attack and defense sides of cybersecurity, you get to think outside the box, learn new techniques, and most of all have fun!”







SECURITY OFFICER

ENTRY LEVEL

RCE - REALISTIC, CONVENTIONAL, ENTERPRISING

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$22/hour

Guard, patrol, or monitor products or premises to prevent theft, violence, or infractions of other rules, regulations, and laws. Monitor and authorize entrance and departure of employees, visitors, and other persons, including any associated materials, baggage, and other inventory or resources. Utilize metal detectors, security cameras, x-ray machines, and other surveillance technology and equipment. Collaborate with local law enforcement professionals.

Knowledge & Skills:

- 1) Public Safety & Security
- 2) Computers & Technology
- 3) Attention to Detail & Monitoring
- 4) Customer & Personal Service
- 5) Accurate Record & Time Keeping
- 6) Critical Thinking & Problem Solving



Similar Roles/Titles:

Security Guard, Security Agent, Security Management Specialist, Loss Prevention Officer, Site Security Specialist

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized

NETWORK TECHNICIAN

ENTRY LEVEL

REC - REALISTIC, ENTERPRISING, CONVENTIONAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$15 - \$26/hour

Receive, document, communicate, and track network or system support and service requests from internal teams and external customers or users to network operators, analysts, engineers, or other professionals. May assist with monitoring, testing, and system or network patching or repair needs either virtually or in-person. Prepare reports based on observations and data analysis for technology, staffing, or network improvements.

Knowledge & Skills:

- 1) Computers & Networking
- 2) Digital & Diagnostic Testing
- 3) Inspection & Attention to Detail
- 4) Data Management & Storage
- 5) Critical Thinking & Problem Solving
- 6) Time & Project Management



Similar Roles/Titles:

Computer Network Technician, Tech Support, Communications Tech Support, System Support Analyst, IT Generalist

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

INFORMATION SECURITY ANALYST

ENTRY LEVEL

CIA - CONVENTIONAL, INVESTIGATIVE, ARTISTIC

Typical Education/Training: Associate Degree

Work Experience: 0 - 3 years

Wage Range: \$23 - \$47/hour

Monitor, inspect, test, and protect computer networks, databases, and other related technologies, systems, or sources of information against security breaches, viruses, and other spyware, phishing, or data hostage scenarios. Utilize a combination of technical programs, digital forensics, or software tools and an understanding of psychology, social engineering, and other human factors to provide full security support and guidance to address increasingly complex physical and cyber security threats.

Knowledge & Skills:

- 1) Inspection & Attention to Detail
- 2) Computers & Technology
- 3) Critical Thinking & Problem Solving
- 4) Psychology & Sociology
- 5) Analytical, Test, & Scientific Software
- 6) Data Collection & Analysis



Similar Roles/Titles:

Cybersecurity Analyst, Information Security Officer, Information Security Specialist, IT Security Analyst, Security Analyst

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



BUSINESS INTELLIGENCE ANALYST

MID LEVEL

IEC - INVESTIGATIVE, ENTERPRISING, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$17 - \$35/hour

Research, combine, and analyze various sources of market or business intelligence to identify data patterns or trends that can be used to determine changing consumer needs or preferences, competitive pricing structures, and effective methods for the marketing or distribution of products or services. Prepare data files, reports, and recommendations for sales, marketing, design, compliance, and other business operations or client relations teams.

Knowledge & Skills:

- 1) Data Research & Analysis
- 2) Deductive & Inductive Reasoning
- 3) Critical Thinking & Problem Solving
- 4) Advanced Computers & Technology
- 5) Inspection & Attention to Detail
- 6) Communication & Project Management

Similar Roles/Titles:

Market Intelligence Analyst, Business Intelligence Specialist, Commercial Intelligence Analyst, Competitive Intelligence Analyst, Data Compliance Consultant

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

AUDITOR

MID LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$23 - \$38/hour

Oversees and audits purchases of materials, supplies, and other resources to ensure legal, safety, and regulatory compliance guidelines are being followed by departments and personnel. Monitor purchase activity to identify or prevent cybersecurity threats or criminal activities. Prepare and present detailed reports on findings and recommendations. Advise on financial and regulatory matters or trends impacting the industry and associated contracts or partners.

Knowledge & Skills:

- 1) Accounting & Math
- 2) Financial Regulations & Laws
- 3) Advanced Computers & Technology
- 4) Analytical & Critical Thinking
- 5) Inspection & Attention to Detail
- 6) Contracts & Procurement Procedures

Similar Roles/Titles:

Procurement Auditor, Purchasing Auditor, Compliance Auditor, Financial Auditor, Internal Audit Director

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

SECURITY ENGINEER

MID LEVEL

CIA - CONVENTIONAL, INVESTIGATIVE, ARTISTIC

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$23 - \$47/hour

Plan, implement, upgrade, or monitor security measures for the protection of computer networks, databases, and other related technologies, systems, or sources of information. Inspect and test security systems, firewalls, and other measures to ensure security controls are in place and working correctly to protect digital files, information, and vital electronic infrastructure. Quickly and efficiently respond to computer security breaches, viruses, and other spyware, phishing, or data compromise scenarios.

Knowledge & Skills:

- 1) Database Management & Networking
- 2) Computers & Telecommunications
- 3) Inspection & Attention to Detail
- 4) Critical Thinking & Problem Solving
- 5) Analytical, Test, & Scientific Software
- 6) Data Collection & Analysis

Similar Roles/Titles:

System Security Engineer, IT Security Manager, Senior Security Analyst, Lead Cybersecurity Analyst, Firewall Engineer

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



SYSTEMS PROGRAMMER/ANALYST

MID LEVEL

ICR - INVESTIGATIVE, CONVENTIONAL, REALISTIC

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$24 - \$50/hour

Design, develop, and test software that control computer, network, or system operation, production, storage, and other processes or routines. Set operational or performance specifications, research and identify solutions, and utilize various software tools, programming languages, and design concepts to achieve desired goals or outcomes. Review and provide modifications, upgrades, or improvements to software to adapt to new hardware, security, interfaces, or user needs and preferences.

Knowledge & Skills:

- 1) Computers & Technology
- 2) Programming & Development
- 3) Math & Engineering
- 4) Attention to Detail & Inspection
- 5) Critical Thinking & Problem Solving
- 6) Deductive & Inductive Reasoning

Similar Roles/Titles:

Programmer, Software Developer, Systems Software Developer, Software Engineer, Systems Engineer

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

DATABASE ADMINISTRATOR

MID LEVEL

CIA - CONVENTIONAL, INVESTIGATIVE, ARTISTIC

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$25 - \$50/hour

Administer, implement, test, and patch or repair computer databases to assist in the storage of sensitive data, inventory control records, and other sources of information that need to be referenced or accessed by various staff, programs, and other systems or networks. Stay updated on advances in technology, cybersecurity needs, and industry trends to ensure data is safeguarded, accessible, and private at all times.

Knowledge & Skills:

- 1) Database Management & Networking
- 2) Computers & Technology
- 3) Communication & Project Management
- 4) Critical Thinking & Problem Solving
- 5) Analytical & Scientific Software
- 6) Data Collection & Analysis



Similar Roles/Titles:

Data Architect, Data Controls Manager, Database Coordinator, Information Systems Manager, Database Manager

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

DIRECTOR OF COMPLIANCE

SENIOR LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$48/hour

Plan, direct, and coordinate the activities of an organization to ensure compliance with safety, regulatory, and quality standards throughout the entire energy cycle, from the purchase of raw materials to the packaging and transportation or transmission of final products or services. Research, review, and consult with other department directors or leads on financial, budgetary, and forecasting findings to ensure profitability and long-term growth.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Computers & Technology
- 3) Sales & Negotiation
- 4) Accounting & Finance
- 5) Quality & Safety Control
- 6) Compliance & Regulatory Affairs

Similar Roles/Titles:

Compliance Manager, Regulatory Affairs Manager, Quality Control Manager, Director of Safety, Compliance Officer

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



IT ARCHITECT

SENIOR LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$60/hour

Research, design, and implement computer and information systems and networks, such as local area networks (LAN), wide area networks (WAN), intranets, extranets, and other data communications networks. Oversee the routine maintenance and staged system or network outages, failures, or cyberattacks in coordination with other department heads. Stay updated on industry trends, user preferences or needs, and recommend new or improved network and data communications hardware and software.

Knowledge & Skills:

- 1) Advanced Computers & Technology
- 2) Complex Network & Telecommunication Systems
- 3) Leadership & Management
- 4) Research & Business Intelligence
- 5) Critical Thinking & Problem Solving
- 6) Deductive & Inductive Reasoning

Similar Roles/Titles:

Director of IT, Information Systems Architect, Lead Network Engineer, Senior Systems Engineer, Telephony Architect

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

SECURITY ADMINISTRATOR

SENIOR LEVEL

IRC - INVESTIGATIVE, REALISTIC, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$39 - \$72/hour

Oversee the purchase, installation, testing, and management of an organization's IT security systems, personnel, and solution strategies. Stay updated on news, trends, and security threats to ensure the continued safety, integrity, and reliability of information, networks, systems, and related programs, applications, or products and services. Collaborate with other department heads to develop security policies and training programs to ensure all staff are aware of and practicing safe data handling, communication, and general working habits.

Knowledge & Skills:

- 1) Advanced Security & Data Management
- 2) Leadership & Management
- 3) Crisis & Emergency Planning
- 4) Advanced Computers & Technology
- 5) Psychology & Social Engineering
- 6) Complex Critical Thinking & Problem Solving

Similar Roles/Titles:

Security Director, Information Security Manager, Network Security Manager, Security Architect, Director of Cybersecurity

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

PROFESSIONALS IN ENERGY SPOTLIGHT



Jessica G. - Procurement Auditor for MidAmerican Energy Company (Des Moines, IA)

"I spend most of my time reviewing purchases of fuel, equipment, and other supplies needed for our workers to do their job. I like working with numbers and data, so this is a perfect fit for me. I work with lots of different types of people from various departments or locations around the state also, so no two days are the same. My goal is to continue to learn and advance into a senior level management position here at MidAmerican. The sky is the limit for these types of careers!"





Occupations in the *Sales & Business Operations* family market, sell, and manage customer expectations for energy products and services to keep a company profitable and competitive!

Simply having great products or services isn't enough to be successful if no one is aware of or wants to purchase them. These professionals work directly with customers, clients, or end users to provide education or training, resolve complaints or issues, and promote new or improved products and services to ensure customer satisfaction and long-term success. Advances in technology, a growing demand for reliable energy, and the mixing of our physical and digital identities will continue to change how customer relationships are managed and many of these occupations are practiced.

Many of these occupations will require advanced education or training in addition to a high school diploma or equivalent. Experience in the industry may serve as a replacement, however, to help professionals "speak the language" when selling or consulting on projects. Experience with social media and digital communications tools is often a must as client and customer relationship management preferences change in a digital or virtual environment. An added perk for some of these occupations is that they may include the opportunity for increased wages through commissions based on sales performance or service level agreements, allowing workers to make substantially more than their base pay.

Someone who works well with others, has a competitive side, and doesn't mind the uncertainty of interacting with potentially unhappy customers will do well in these roles. Although sometimes working behind the scenes, these professionals help ensure the business runs smoothly and customers are happy and more likely to return for future business or refer others.

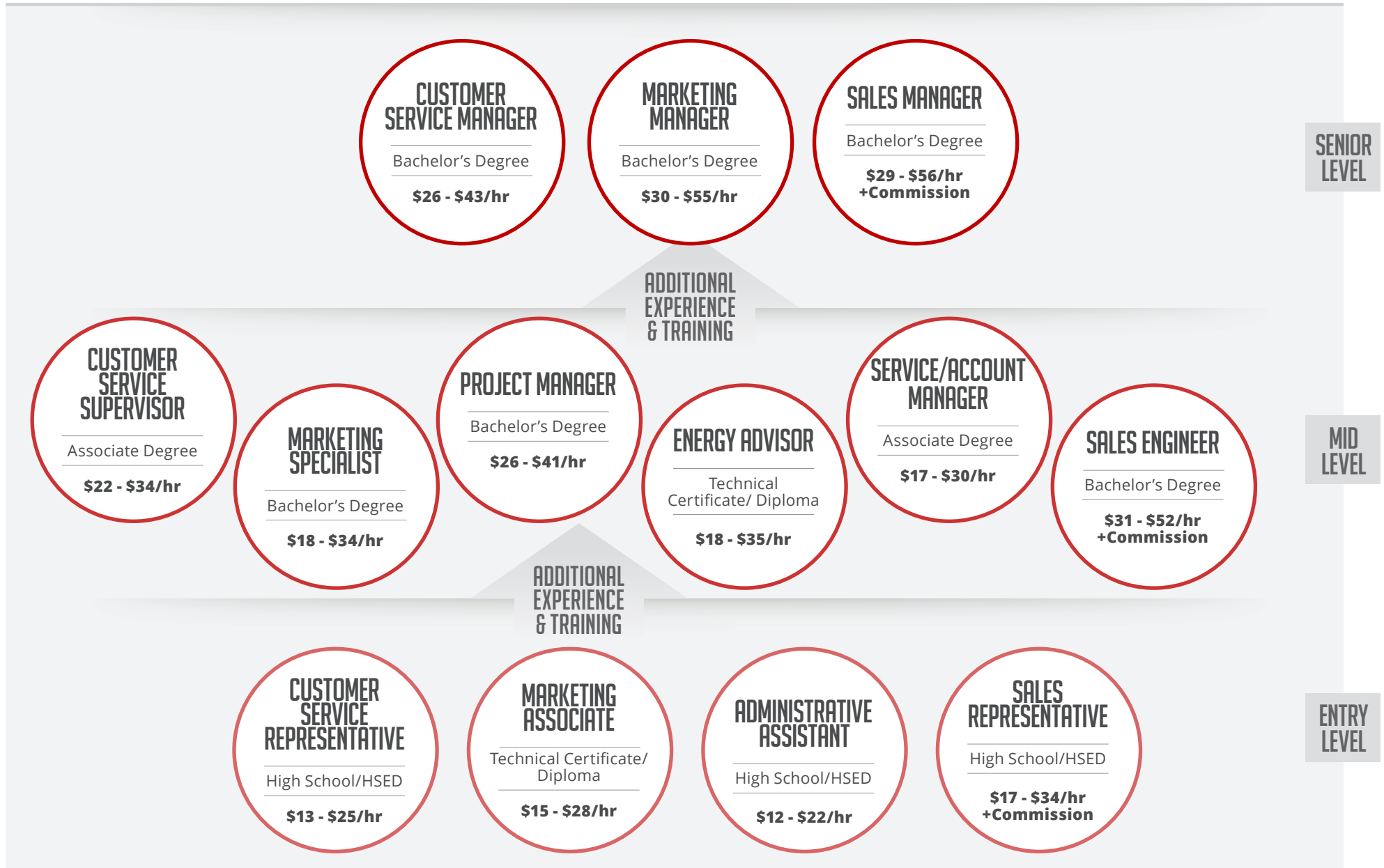


CAREER SPOTLIGHT:

Jesse D. — Electrical Project Engineer at Interstates (Sioux Center, IA)

"I first learned about careers in energy when my grandfather would drive us around town to show us all of these big projects his company had worked on. I thought that was so cool and I wanted to have that same pride in my work. I now work with clients to design or modify electrical systems to meet the needs of their facilities projects, specifically to make sure their electrical equipment will have the power it needs to run while still meeting all the necessary codes and regulations. I enjoy working with clients and our project teams to make the client's needs a reality. I enjoy the challenges that this line of work has to offer and not working on the same thing day in and day out."







ADMINISTRATIVE ASSISTANT

ENTRY LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$12 - \$22/hour

Provide administrative or clerical support for specific staff, departments, or teams, such as handling communication, facilitating information between team members, scheduling meetings or team events, and writing, editing or organizing billing, financing, or other paperwork and digital records. May also assist in training or onboarding of new employees.

Knowledge & Skills:

- 1) Computers & Technology
- 2) Account & Project Management
- 3) Written & Oral Communication
- 4) Customer & Personal Service
- 5) Critical Thinking & Problem Solving
- 6) Inspection & Record Keeping

Similar Roles/Titles:

Admin Assistant, Secretary, Administrative Aide, Administrative Associate, Office Aide

Typical Project Types:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home

CUSTOMER SERVICE REPRESENTATIVE

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$13 - \$25/hour

Interact with customers by phone, email, online, and in person to provide information in response to inquiries about products and services. Handle, record, and resolve complaints when necessary, weighing the needs of the customer and the company for long-term growth and success. May provide recommendations for new or improved product and service offerings.

Knowledge & Skills:

- 1) Customer & Personal Service
- 2) Critical Thinking & Problem Solving
- 3) Sales & Negotiation
- 4) Communication & Social Media Tools
- 5) Active Listening & Understanding
- 6) Conflict Management & Resolution



Similar Roles/Titles:

Customer Service Agent, Customer Care Representative, Customer Service Specialist, Member Services Representative, User Assistance Agent

Typical Project Types:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home

MARKETING ASSOCIATE

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 0 - 3 years

Wage Range: \$15 - \$28/hour

Assist with researching market conditions, gathering information, producing reports, and providing competitive analysis data to sales, marketing, and other communications professionals. May lead or assist with focus groups, surveying, and other data collection techniques or initiatives. Provide recommendations for areas of improvement or need to expand product or service offerings to keep pace with changing customer needs, technology, or other aspects.

Knowledge & Skills:

- 1) Basic Marketing & Advertising
- 2) Critical Thinking & Problem Solving
- 3) Sales & Negotiation
- 4) Research & Data Analysis
- 5) Communication & Social Media Tool
- 6) Time & Project Management



Similar Roles/Titles:

Marketing Assistant, Marketing Representative, Marketing Support Analyst, Market Research Technician, Marketing Intern

Typical Project Types:

Remote, Industrial, Storage, Office, Processing, Renewables, Specialized, Home



SALES REPRESENTATIVE

ENTRY LEVEL

ESC - ENTERPRISING, SOCIAL, CONVENTIONAL

Typical Education/Training: High School Diploma/HSED

Work Experience: 0 - 3 years

Wage Range: \$17 - \$34/hour + Commission

Identify the needs of current and potential customers through direct and indirect interaction and research. Match customer needs with product or service offerings, negotiate sales, and train customers to operate, manage, or maintain services or technology and related supplies, materials, or equipment. Estimate or quote prices, credit or contract terms, and service level agreements or timelines. Opportunity for increased wages through commissions based on sales performance.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Social Media & Marketing
- 3) Customer & Personal Service
- 4) Computers & Technology
- 5) Critical Thinking & Problem Solving
- 6) Communication & Relationship Management



Similar Roles/Titles:

Sales Associate, Outside Sales, Inside Sales, Service Representative, Tech Sales Specialist

Typical Project Types:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

SERVICE/ACCOUNT MANAGER

MID LEVEL

CES - CONVENTIONAL, ENTERPRISING, SO

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$17 - \$30/hour

Research issues, identify solutions, and advise customers, operators, suppliers, and other internal coworkers or external users with administrative or technical support, such as reviewing energy product or service needs, project progress or goals, and maintenance or repair needs. Build or strengthen important customer relationships to ensure continued or expanded business. May also train and supervise project, administrative, or clerical staff.

Knowledge & Skills:

- 1) Project & Time Management
- 2) Sales & Negotiation
- 3) Computers & Technology
- 4) Written & Oral Communication
- 5) Critical Thinking & Problem Solving
- 6) Customer & Personal Service

Similar Roles/Titles:

Account Coordinator, Service Advisor, Service Writer, Client Relations Manager, Client Relationship Manager

Typical Project Types:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

MARKETING SPECIALIST

MID LEVEL

IEC - INVESTIGATIVE, ENTERPRISING, CONVENTIONAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$18 - \$34/hour

Research market conditions and gather information to determine user needs and sales potential for energy products or services. Measure the effectiveness of marketing, advertising, and communications programs and strategies, including social media, search engine optimization, and other digital tools or strategies. Collect and analyze data on competition, customer base, and advances in energy-related technologies.

Knowledge & Skills:

- 1) Research, Data, & Analytics
- 2) Customer & Personal Service
- 3) Critical Thinking & Problem Solving
- 4) Sales & Marketing
- 5) Social Media & Communication Tool
- 6) Computers & Technology



Similar Roles/Titles:

Marketing Analyst, Communications Specialist, Market Research Analyst, Social Media Specialist, Digital Marketing Strategist

Typical Project Types:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



ENERGY ADVISOR

MID LEVEL

CEI - CONVENTIONAL, ENTERPRISING, INVESTIGATIVE

Typical Education/Training: Technical Certificate/Diploma

Work Experience: 4 - 7 years

Wage Range: \$18 - \$35/hour

Set-up, conduct, and analyze results of energy audits of homes, buildings, power grids, pipelines, and other related systems or infrastructure. Make recommendations to improve the operation, maintenance, or energy efficiency of new or existing structures. May also assist with financial impact studies and pursuing grants, tax credits, rebates, and other financial incentives to cover associated costs of repairs, improvements, or new equipment.

Knowledge & Skills:

- 1) Basic Building & Construction
- 2) Inspection & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Math & Measuring
- 5) Energy Efficiency & Sustainability
- 6) Data Collection & Analysis

Similar Roles/Titles:

Building Energy Consultant, Home Energy Advisor, Energy Efficiency Consultant, Sustainability Specialist, Sustainable Building Consultant

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

CUSTOMER SERVICE SUPERVISOR

MID LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Associate Degree

Work Experience: 4 - 7 years

Wage Range: \$22 - \$34/hour

Plan, direct, and coordinate the activities of customer service agents and representatives of the organization who answer questions, address complaints, and may handle billing for customers. Handle complex or elevated cases and customer complaints. Monitor and trends in product or service requests, identify common problems or complaints, and provide updates or recommendations for related solutions.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Customer & Personal Service
- 3) Project & Time Management
- 4) Advanced Conflict Management & Negotiation
- 5) Critical Thinking & Problem Solving
- 6) Computers & Technology

Similar Roles/Titles:

Administrative Supervisor, Office Supervisor, Client Facing Supervisor, Customer Service Lead, Shift Manager

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

PROJECT MANAGER

MID LEVEL

ECI - ENTERPRISING, CONVENTIONAL, INVESTIGATIVE

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$26 - \$41/hour

Consult and negotiate with internal coworkers and external customers to determine the need for new or existing projects and related details, budgets, and deadlines. Coordinate projects and delegate tasks across various design, operations, and distribution teams. Use data and analytics to forecast potential setbacks or limitations. Monitor, gather, and assess information for project status reports, ensuring compliance with regulations and keeping projects on time and within budget.

Knowledge & Skills:

- 1) Time & Project Management
- 2) Communication & Attention to Detail
- 3) Critical Thinking & Problem Solving
- 4) Computers & Technology
- 5) Basic Engineering & Design
- 6) Sales & Negotiation

Similar Roles/Titles:

Project Lead, Project Owner, Senior Project Engineer, Project Development Lead, Project Director

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



SALES ENGINEER

MID LEVEL

ERS - ENTERPRISING, REALISTIC, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 4 - 7 years

Wage Range: \$31 - \$52/hour + Commission

Sell products or services requiring extensive technical expertise or support for installation and use, such as advanced computer or network systems, infrastructure electrification modifications or improvements, and smart power grid or storage solutions. Prepare and deliver presentations that explain products or services to customers, sometimes at work sites, trade shows, and on live production floors. May include opportunity for increased wages through commissions based on sales performance.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Education & Training
- 3) Social Media & Digital Marketing
- 4) Advanced Technology & Computer Systems
- 5) Communication & Data Analysis
- 6) Critical Thinking & Problem Solving

Similar Roles/Titles:

Senior Sales Representative, Technical Sales Lead, Solutions Analyst, Product Sales Engineer, Account Executive

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

CUSTOMER SERVICE MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$26 - \$43/hour

Oversee the management and coordination of all customer service agents, administrative staff, and other employees who interact directly or indirectly with customers. Monitor customer trends, review and negotiate contracts or service level agreements, and enact staffing, training, or budgetary solutions to ensure long-term organizational success and growth.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Advanced Customer & Personal Service
- 3) Contracts, Budgets, & Financial Models
- 4) Communication & Human Resources
- 5) Complex Critical Thinking & Problem Solving
- 6) Sales & Marketing

Similar Roles/Titles:

Customer Service Coordinator, Customer Service Director, Client Facing Manager, Administrative Officer, Business Administrator

Typical Work Environments:

Remote, Industrial, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

SALES MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$29 - \$56/hour + Commission

Plan, direct, and coordinate sales activities, goals, and strategies, including the establishment of associated training programs for sales representatives and support staff. Analyze sales statistics, market intelligence data, and product or service request trends to determine variables such as sales potential, inventory or service requirements, and changing customer preferences or regulatory and political guidelines.

Knowledge & Skills:

- 1) Management & Leadership
- 2) Advanced Sales & Negotiation
- 3) Contracts, Budgets, & Financial Models
- 4) Market Research & Data Analysis
- 5) Complex Critical Thinking & Problem Solving
- 6) Social Media & Communication

Similar Roles/Titles:

National Sales Manager, Regional Sales Manager, Sales and Marketing Vice President, Sales Director, Client Solutions Manager

Typical Work Environments:

Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home



MARKETING MANAGER

SENIOR LEVEL

ECS - ENTERPRISING, CONVENTIONAL, SOCIAL

Typical Education/Training: Bachelor's Degree

Work Experience: 8+ years

Wage Range: \$30 - \$55/hour

Plan, develop, and coordinate marketing policies and programs, such as determining product demand and competitive market analysis. Develop pricing strategies with the goal of maximizing profits or share of the market while ensuring customer satisfaction. Oversee energy product or project development and monitor trends that indicate the need for new or improved power sources, production processes, service lines, and other products or services.

Knowledge & Skills:

- 1) Sales & Negotiation
- 2) Management & Leadership
- 3) Advanced Communication & Marketing
- 4) Market Research & Analytics
- 5) Advanced Computers & Technology
- 6) Social Media & Digital Marketing Tools

Similar Roles/Titles:

Director of Marketing, Brand Manager, Business Developer, Marketing Officer, Marketing Planner

Typical Work Environments:

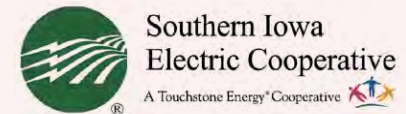
Remote, Industrial, Residential, Storage, Office, Laboratory, Processing, Renewables, Specialized, Home

PROFESSIONALS IN ENERGY SPOTLIGHT



Natalie P. - Energy Extern for Southern Iowa Electric Cooperative (Bloomfield, IA)

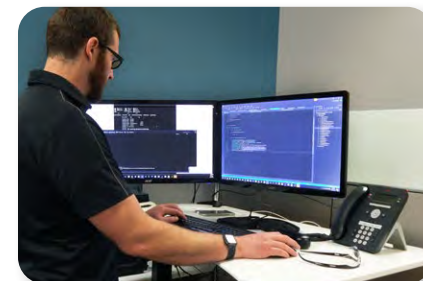
"Although I currently work as a math teacher for Davis County High School, I was able to take advantage of a summer teacher externship opportunity through the Governor's STEM Advisory Council and was placed with the Southern Iowa Electric Cooperative. I wanted to help them use data to be more efficient and successful. I created a computer program to identify any issues with reliability in the service lines so the technicians could address them and keep things running smoothly for the customers. Even as a math teacher I didn't realize how important algebra and geometry are in IT and the energy industry. Yes, you really will use math in the real world!"



ADDITIONAL CAREER OPTIONS - THERE IS A CAREER FOR EVERYONE IN ENERGY!

Don't see a career you like? This document is not meant to cover every possible energy career option in Iowa, so don't worry if you don't see something that immediately grabs your attention or seems to match your career interest type. There are a wide range of additional career options available that are necessary for all types of businesses, regardless of industry, size, or location. Below are just a few examples of where you might also fit within this exciting and growing industry that powers our communities every day.

- **INFORMATION TECHNOLOGY** – A wide range of additional careers that focus on the use of computers and other technology to receive, store, transmit, and work with different types of information and data.
HELP DESK TECHNICIANS, SOFTWARE DEVELOPERS, GRAPHIC DESIGNERS, WEB DEVELOPERS, AND DATA SCIENTISTS.
- **HUMAN RESOURCES** – Those in charge of overseeing various aspects of employment for a company, such as recruitment, employee benefits, and compliance with labor laws.
HIRING MANAGERS, BENEFITS COORDINATORS, TRAINING AND DEVELOPMENT SPECIALISTS, PAYROLL ADMINISTRATORS, AND RECRUITERS.
- **ADMINISTRATIVE AND FINANCIAL SERVICES** – A group of support careers that assist in the day-to-day operations of a successful company, such as keeping track of finances, monitoring government regulations, and administrative support to other departments.
ACCOUNTANTS, FINANCIAL ANALYSTS, ORDER ASSOCIATES, FINANCIAL ADVISORS, AND SUPPORT CLERKS.
- **EXECUTIVE MANAGEMENT** – A team of individuals at the highest level of management of an organization who oversee the mission, vision, and general tasks of managing an organization.
PRESIDENTS, VICE PRESIDENTS, CHIEF OPERATIONS OFFICERS (COO), CHIEF INFORMATION OFFICERS (CIO), AND CHIEF EXECUTIVE OFFICERS (CEO).



NEXT STEPS & PLANNING RECOMMENDATIONS

This document was meant to begin the conversation about the great energy career opportunities available in Iowa. Below are some additional recommendations for next steps readers can take to continue their career exploration journey. Utilize the basic career exploration plan and notes sections of the next few pages to begin putting thought into action. Links have been provided to help guide readers to additional online resources. There are many great resources to help prepare Iowans for careers in energy!

STUDENTS AND JOB SEEKERS

- **FUTURE READY IOWA CAREER COACH** – The free interactive Career Coach tool at FutureReadyIowa.gov is a great way for students and job seekers of all ages to learn more about their career interests and research specific occupations in energy and related industries, including the ability to customize labor market information, education offerings, and employer listings to their specific geographic location. The new [Clearinghouse for Work-Based Learning](#) also allows students to tackle projects to learn more about different industries and gain real-world experience.
- **VOLUNTEER, JOB SHADOWS, OR TOURS** – Contact an employer directly to ask questions, learn about current openings, and to request either a site tour or job shadow opportunity for a better idea of what it would be like to work for them. Internships and volunteering are also great opportunities to earn experience, build up a resume, and test out a career before making any long-term and expensive career decisions. Consult with counselors and educators for local opportunities or visit VolunteerIowa.org to search for additional openings.
- **EARN SKILLS AND CERTIFICATIONS** – Many careers in this industry will rely on some foundational skills and certifications that can be earned relatively easily and affordably by students and job seekers proactively before entering the workforce. Some schools even have dual-enrollment or pre-apprenticeship agreements that allow students to earn college credit, apprenticeship technical requirements, and even full work certifications before graduating. Having these skills, experience, and certifications will increase your chances of landing a great job compared to others who have not taken any such action to improve themselves. Ask a guidance or career counselor for more information and begin exploring available in-person and virtual options.

EMPLOYERS, EDUCATORS, AND COMMUNITY SUPPORT PARTNERS

- **WORK-BASED LEARNING INTERMEDIARY NETWORK** – The Iowa Intermediary Network is made up of 15 regional networks that serve as a single one-stop point of contact by connecting businesses and schools with work-based learning opportunities. These can include job shadows, internships, site tours, guest speakers, and educator externships. Contact your regional [Intermediary](#) and access the [Work-Based Learning Guide](#) to learn more about setting up a successful local work-based learning experience. With adult supervision and appropriate privacy and safety measures, youth under the age of 18 can work in this industry.
- **IOWA STEM TEACHER EXTERNSHIPS** – Teachers across Iowa have the opportunity to take advantage of an externship program, where during the summer, they work side-by-side with knowledgeable and skilled energy professionals who help bring the classroom curriculum to life. Teacher Externships are full-time, six-week temporary summer positions in local businesses and agencies for secondary STEM educators. Teachers earn a stipend of up to \$4,800 (including two days of professional development), as well as one graduate credit through the University of Northern Iowa's Continuing Education program. Teacher Externships provide educators with the exposure to answer questions about real-world application, prepare students for careers they may have in the future, and improve educational experiences. Visit IowaSTEM.gov/externships to learn more and apply for these great opportunities.
- **SECTOR PARTNERSHIPS AND BOARDS** – Employers, educators, and other community support partners can take a more active role in training and developing their local workforce by meeting to collaborate on local education, economic, and community issues. These employer-led groups are often referred to as sector partnerships or sector boards. There are currently over 60 of them spread throughout Iowa, with a growing number devoted exclusively to various aspects of energy and the skilled trades. More information, group locations, contact information, and resources can be found at SectorPartnerships.EducateIowa.gov.

MY CAREER EXPLORATION ACTION PLAN

Use the following template to create a career exploration action plan for taking the next steps towards a fun, exciting, and fulfilling career in energy!

	What is the goal?	Who is involved?	How will it be completed?	Where will it be completed?	When will it be completed?
Goal Example	I want to actually see what it is like to be an Electrician.	Me, my teacher, my parents, and an Electrician.	I will watch videos online and call a local electrical company or union to set up a job shadow opportunity to sit with and observe an Electrician at work.	Online and in-person at a local training center or job site.	Summer 2023
Goal #1					
Goal #2					
Goal #3					
Goal #4					



**COMMUNITY COLLEGES &
WORKFORCE PREPARATION**
PROSPERITY THROUGH EDUCATION

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