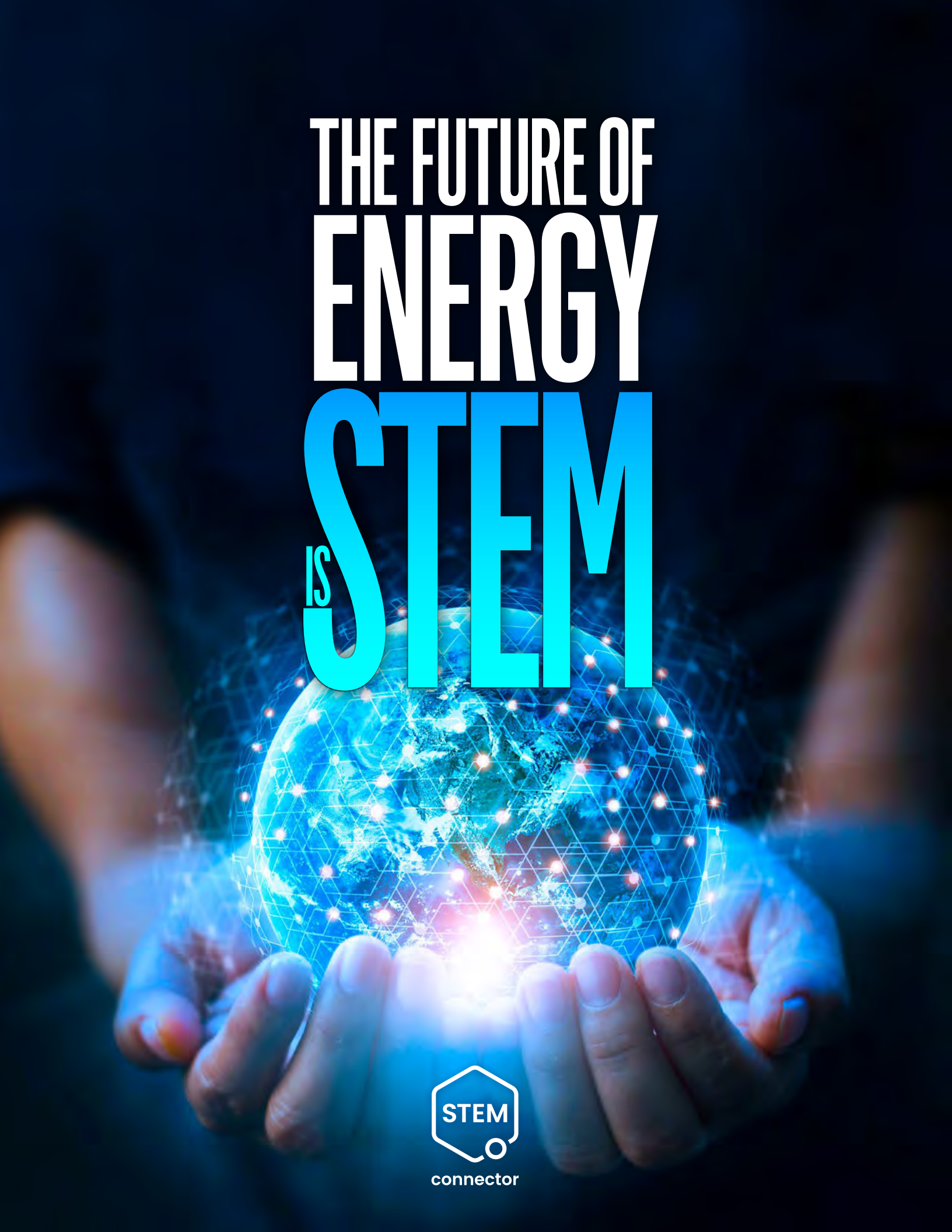

THE FUTURE OF
ENERGY
IS STEM
STEM
connector

THE FUTURE OF ENERGY IS STEM

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THE FUTURE OF ENERGY IS STEM

The United States' clean energy industry is hiring, faster than the overall national economy, and it's paying above-average wages.

Innovation in energy has changed the way companies offer sustainable products and services. These innovative energy segments include Concentrated Solar Energy, Carbon Storage, Nuclear Fusion, Smart Electricity Grids, Hydrogen Technologies, Energy Storage and Wind. Atomic energy, solar energy, and energy from wind and biofuels are just a few of the promising alternatives for a cleaner and greener future. Other relatively new sources of energy such as fuel cells, geothermal energy, and ocean energy are also being explored.

While companies will still produce fossil fuels in 2040, renewables could account for almost 70% of the world's energy mix, while nearly 80% less carbon will be emitted into the air, according to a report from global financial institution, ING.

In 2021, energy jobs grew 4.0% from 2020, outpacing overall U.S. employment, which climbed 2.8% in the same time. The energy sector added more than 300,000 jobs, increasing the total number of energy jobs from 7.5 million in 2020 to more than 7.8 million in 2021.

There were approximately 12 million jobs in the renewable energy industry worldwide in 2020. Nearly 3.1 million of the total energy sector jobs are in net-zero aligned industries, composing 41% of total energy jobs. Net-zero aligned jobs are related to renewable energy, grid technologies, transmission and distribution, energy storage, nuclear energy, biofuels, energy efficiency, and electric vehicles.

If sustainability and clean energy are of interest to you, working in the energy sector can give you the opportunity to work on many interesting and innovative projects that will truly make a difference in the world. Read on about the companies and people who are changing the future of energy.







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CEWD



GET INTO ENERGY. GET INTO STEM.



With the right education and training, you can begin a rewarding, well-paying energy career that benefits millions of people every day. The energy industry seeks natural problem-solvers and critical thinkers, looking for a stable career that will both charge and change their futures, and those who are interested in protecting our nation's resources, while serving their communities.

The energy industry is home to hundreds of kinds of meaningful, important, and essential, well-paying careers. There are jobs for thinkers and tinkerers, outdoor enthusiasts and office specialists, those who are wowed by drones and digitalization, engineers and environmentalists, those who like heights and those who want to work below the earth's surface, and athletes and mathletes. Find your path and discover why people who start in energy careers stay in energy Careers.

POWER YOUR PATH

There are a lot of educational paths you can take to pursue an energy career. Generally, Science, Technology, Engineering, and Math (STEM) classes will serve you well for any of our technical careers, as they require an understanding of how and why things work. For those looking to start work right out of high school or after



> "IN THE NEXT TWO YEARS, THERE WILL BE MORE THAN 250,000 WELDERS RETIRING, AND BUSINESSES ARE ALREADY SHORT-HANDED," HRUBES SAYS. "IT'S NOT AN EASY JOB, BUT IT'S SO REWARDING."
>
> *- Kylie Hrubes*

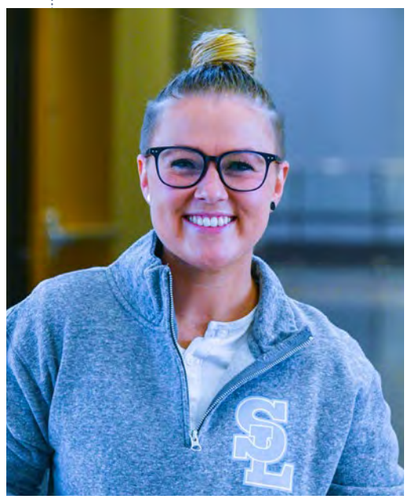
KYLIE HRUBES, WELDING TECHNICIAN, DOMINION ENERGY

Kylie Hrubes knew she wanted to be a welder since her time working on the family farm in Montana. She just didn't know that her love for welding would lead her to energy. "I fixed the bucket on a backhoe at 12 years old and fell in love with welding; they couldn't get me out of the shop," she says.

As she grew older, Kylie veered away from welding, listening to her small-town neighbors tell her it was untraditional for women to pursue. She enrolled in the local community college to obtain her welding degree. Two weeks later, Hrubes met a female HR executive who works for Dominion Energy. She told Hrubes about a conference opportunity at Dominion Energy. The event was only open to 125 students and since Hrubes was just beginning her welding degree, she didn't have high hopes of earning a spot, but she filled out the application anyway.

Not only did Hrubes earn her spot, but she was one of the 50 students Dominion hired for internships at the end of the conference. As the only welder in the room and one of the few females, Hrubes stood out, impressing Dominion leadership. The six-week internship turned into a 12-week internship and then a part-time job while Hrubes finished school. After graduation, she was offered a full-time position as a welding technician, a new position Dominion created for her.





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earning a GED, the industry offers entry level positions that provide all the training you will need to advance your career. For those who want to join the industry after a two or four year college program, you, too, have a lot of paths to consider. The industry is always in need of engineers of all types. We need those who study environmental science, energy (of course), natural and sustainable resources, even marine biology, supply chain management, cyber-security, and infrastructure systems. Check out schools that offer energy-related programs and scholarships here.

FAST FACTS

- The energy industry supports 7 million jobs
- There are hundreds of apprenticeship programs offered by energy companies
- Average compensation for key industry jobs is $75,000 with and without a college degree
- Many careers focus on environmental stewardship
- Energy companies want to be as diverse as the communities they serve

STEM TRENDS IN ENERGY

ELECTRIC CARS

According to some statistics, electric cars are reaching an annual growth rate of about 40%. If that pace continues, electric cars could account for one in every five vehicle sales in the United States by 2025! We already expect nearly a dozen new types of electric cars to hit the market over the next three years.

ENERGY FROM VOLCANOES

Geothermal energy uses heat below the earth's surface to create electricity. But what about the heat created when molten rock and lava meet? This can create 10 times more geothermal energy! It's already being done in Iceland, and Hawaii is exploring it as a source of renewable energy.

NUCLEAR FUSION

Nuclear fusion is being researched in many countries as a viable, future energy source. The fusion of hydrogen atoms to release energy is what powers the sun. If our technology can harness this process safely and efficiently, nuclear fusion could offer a potentially endless source of energy.



SMART METERS

Smart meters measure electricity, water, and gas consumption and communicate this information to the utility that serves the home or business. The installation of these devices in the residential and commercial sectors can help in lowering CO_2 emissions by reducing the use of electricity during the busiest, or "peak," times of day.

ENERGY CAREERS OFFER COMPETITIVE COMPENSATION

The energy sector pays competitively because of the knowledge, skills and abilities needed in its workforce. In many instances, wages and salaries are well above national levels. For technical and skilled trade positions, the average median hourly wage for energy employees is $25.60 — 34% higher than the national median hourly wage of $19.14. Some segments of the energy industry pay as much as 53% above the median hourly wage.* In addition to strong offerings for employees in technical positions, industry companies provide rich employment packages to attract professionals who can lead and support the business of energy.

YES SHE CAN: THE NUMBER OF WOMEN IN ENERGY IS GROWING

The energy sector provides opportunity for all people and a diverse array of skill sets and interests. Despite making up 48% of the global labor force, women account for just 22% of jobs in the energy sector. When it comes to senior roles at utilities, women account for 17% of total board members, 21% of non-executive board members, 6% of executive board members and 15% of senior management team members.
Studies have shown that companies with strong female leadership deliver a 36% higher return on equity and that companies with at least one female executive board member outperformed those with male-only boards. These numbers demonstrate there is a tremendous need and opportunities for women in the energy sector.

CEWD: THE CENTER FOR ENERGY WORKFORCE DEVELOPMENT

The Center for Energy Workforce Development (CEWD) is a non-profit consortium of energy companies, contractors, associations, unions, educators, and business partners working together to ensure a skilled, diverse workforce pipeline to meet future industry needs. CEWD's coordinated approach to workforce development has united electric, natural, gas, and nuclear firms since 2006 and in 2021, in response to the need for expanded collaboration, the Center expanded its umbrella to include the workforce development needs of those working in renewables, electric vehicle infrastructure, and energy storage. The CEWD has a wealth of resources for anyone interested in a career in energy. Learn more at GetIntoEnergy.org





THE SCIENCE OF ELECTRICITY



Electrons and Atoms. Electricity is the movement of electrons between atoms. The electrons in the shells closest to the nucleus have a strong force of attraction to the protons. Sometimes, the electrons in an atom's outermost shells do not have a strong force of attraction to the protons. These electrons can be pushed out of their orbits. Applying a force can make them shift from one atom to another. These shifting electrons are electricity.

Lightning is a form of electricity. Lightning is electrons moving from one cloud to another or electrons jumping from a cloud to the ground.

Have you ever felt a shock when you touched an object or had your hair stand up? When this happens, a stream of electrons has jumped from an object to you. This is static electricity.

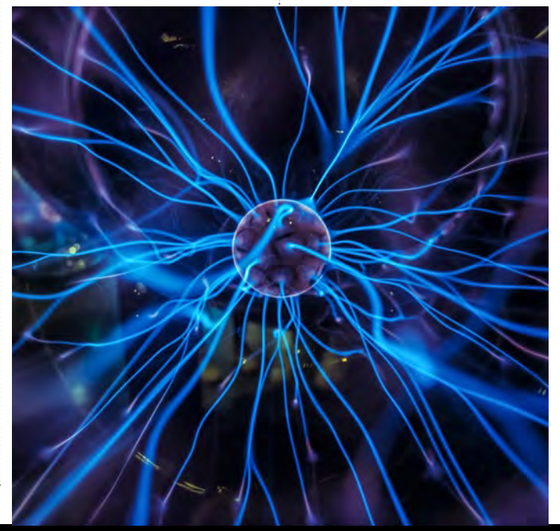
THE DEPARTMENT OF ENERGY

As a science agency, the Energy Department plays an important role in the innovation economy. The Energy Department's National Laboratories serve as leading scientific institutions for scientific innovation. They tackle the critical scientific challenges of our time -- from combating climate change to discovering the origins of our universe -- and possess unique instruments and facilities, many of which are found nowhere else in the world. They address large scale, complex research and development challenges with a multidisciplinary approach that places an emphasis on translating basic science to innovation.

STEM Rising is your go-to resource for all-things-STEM at the U.S. Department of Energy. Science, Technology, Engineering and Mathematics are the essential building blocks to accomplishing the U.S. Department of Energy's mission.

TURBINE GENERATION

Most of U.S. and world electricity generation is from electric power plants that use a turbine to drive electricity generators. In a turbine generator, a moving fluid—water, steam, combustion gases, or air—pushes a series of blades mounted on a rotor shaft.



The force of the fluid on the blades spins/rotates the rotor shaft of a generator. The generator, in turn, converts the mechanical (kinetic) energy of the rotor to electrical energy. Different types of turbines include steam turbines, combustion (gas) turbines, hydroelectric turbines, and wind turbines.

STEAM TURBINES

Most of the largest U.S. electric power plants use steam turbines. Approximately 44% of U.S. electricity in 2020 was generated with steam. Most steam turbines have a boiler in which a fuel is burned to produce hot water and steam in a heat exchanger, and the steam powers a turbine that drives a generator. Nuclear power reactors use nuclear fuel rods to produce steam. Solar thermal power plants and most geothermal power plants use steam turbines.

MEASURING ELECTRICITY

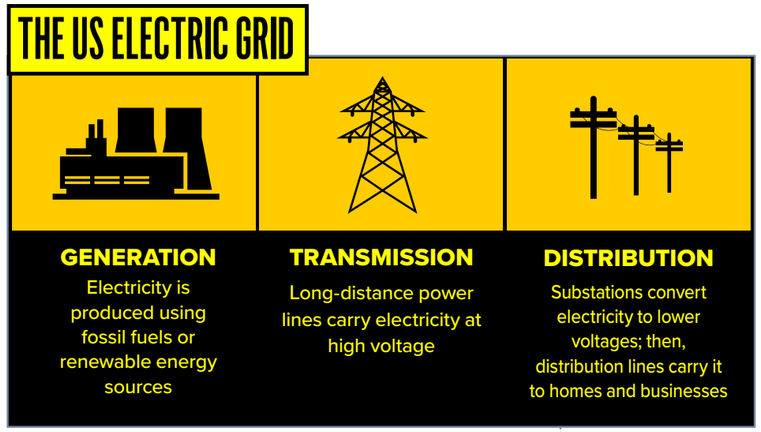
A standard unit for measuring electricity is the kilowatt (kW), which is equal to 1,000 Watts. A Watt is a measure of energy named after the Scottish engineer James Watt. One kW of electricity generated or used over the course of one hour is a kilowatthour (kWh). Other units for measuring electricity capacity and electricity generation and consumption are:

Megawatt (MW) = 1,000 kW; megawatthour (MWh) = 1,000 kWh
Gigawatt (GW) = 1,000 MW; gigawatthour (GWH) = 1,000 MWh



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THE GRID EXPLAINED



The power grid has been described as the largest machine on earth. It is made of eleven thousand power plants, three thousand utilities and more than two million miles of power lines. That is enough power lines to wrap around the earth eighty times!

There are three grids in the U.S., each of them self-contained connections of power production and transmission: Eastern grid, Western grid and the Texas grid.

HOW DOES THE U.S. POWER GRID WORK?

Each power grid has three main components: generation, transmission, and distribution.

WHERE DOES ELECTRICITY COME FROM?

Electric utilities generate electricity from three types of resources: fossil fuels such as natural gas or coal, nuclear power and renewable sources including solar, wind and hydropower.

WHO REGULATES THE GRID?

Constructing the power infrastructure is expensive. Only large companies can afford the investment required to transmit and distribute to an entire market. As a result, most energy utilities have control over a specific market with the requirement to provide low-cost, reliable energy to the public.

Historically, most utilities controlled everything from the power plant all the way to the household electrical outlet. In 1978, Congress passed legislation to partially deregulate the sector, allowing for non-utility power generators to enter the market. The 1992 Energy Policy Act allowed further deregulation for the separation of power generation from transmission and distribution to promote competition and lower energy prices.

The 2005 Energy Policy Act designated the Department of Energy's Federal Energy Regulatory Commission (FERC) as the primary authority over power generation and transmission across the United States. However, jurisdiction of local-level retail power distribution, which delivers the power to end users, remains in the hands of state and municipal governments.







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CLIMATE CHANGE SOLUTIONS

Producing power without damaging our environment is a continuing challenge. Greenhouse gases that blanket the Earth and trap the sun's heat are generated in part through energy production. Fossil fuels, such as coal, oil, and gas, are by far the largest contributor to global climate change, accounting for over 75 percent of global greenhouse gas emissions and nearly 90 percent of all carbon dioxide emissions.

To avoid the worst impacts of climate change, emissions need to be reduced by almost half by 2030 and reach net-zero by 2050. To achieve this, we need to end our reliance on fossil fuels and invest in alternative sources of energy that are clean, accessible, affordable, sustainable, and reliable. STEM is leading the way to cleaner sources of energy by capturing the power of solar, wind, water, geothermal, bioenergy, nuclear and hydrogen fuel cells.



WIND

Wind turbines work on a simple principle: instead of using electricity to make wind—like a fan—wind turbines use wind to make electricity. Wind turns the propeller-like blades of a turbine around a rotor, which spins a generator, which creates electricity. Wind turbines, like windmills, are mounted on a tower to capture the most energy. At 100 feet (30 meters) or more above ground, they can take advantage of the faster and less turbulent wind. Turbines catch the wind's energy with their propeller-like blades. Usually, two or three blades are mounted on a shaft to form a rotor.

There are three main ways to harness solar energy: photovoltaics, solar heating & cooling, and concentrating solar power. Photovoltaics generate electricity directly from sunlight via an electronic process and can be used to power anything from small electronics to homes and large commercial businesses. Solar heating & cooling (SHC) and concentrating solar power (CSP) applications both use the heat generated by the sun to provide space or water heating, or to run traditional electricity-generating turbines.



SOLAR

Solar power is energy from the sun that is converted into thermal or electrical energy. Solar energy is the cleanest and most abundant renewable energy source available, and the U.S. has some of the richest solar resources in the world. Solar technologies can harness this energy for a variety of uses, including generating electricity.

There are three main ways to harness solar energy: photovoltaics, solar heating & cooling, and concentrating solar power. Photovoltaics generate electricity directly from sunlight via an electronic process and can be used to power anything from small electronics to homes and large commercial businesses. Solar heating & cooling (SHC) and concentrating solar power (CSP) applications both use the heat generated by the sun to provide space or water heating, or to run traditional electricity-generating turbines.

WATER

Hydropower is a clean, renewable, domestic source of energy and provides significant benefits to the grid. Hydropower's flexibility allows it to integrate with other energy sources and act as a force multiplier for other renewables, making it an invaluable resource for powering the grid after an outage. Hydropower is a well-established technology but still has potential and opportunity for growth.

HYDROGEN FUEL CELLS

Hydrogen fuel cells produce electricity by combining hydrogen and oxygen atoms. The hydrogen reacts with oxygen across an electrochemical cell, like a battery, to produce electricity, water, and small amounts of heat. Large fuel cells can supply electricity to electric power grids, supply backup or emergency power in buildings, and supply electricity in places that are not connected to electric power grids.

GEOTHERMAL

Geothermal energy is heat within the earth. The word geothermal comes from the Greek words geo (earth) and therme (heat). Geothermal energy is a renewable energy source because heat is continuously produced inside the earth. Mile-or-more-deep wells can be drilled into underground reservoirs to tap steam and very hot water that can be brought to the surface for use in a variety of applications, including electricity generation, direct use, and heating and cooling. In the United States, most geothermal reservoirs are in the western states.

BIOENERGY

Bioenergy is one of many diverse resources available to help meet our demand for energy. It is a form of renewable energy that is derived from recently living organic materials known as biomass, which can be used to produce transportation fuels, heat, electricity, and products. Biomass is derived from plant and algae-based materials. Biopower can offset the need for carbon fuels burned in power plants, thus lowering the carbon intensity of electricity generation.

NUCLEAR

Nuclear is a zero-emission clean energy source generating power through fission, which is the process of splitting uranium atoms to produce energy. The heat released by fission is used to create steam that spins a turbine to generate electricity without the harmful byproducts emitted by fossil fuels.

According to the Nuclear Energy Institute (NEI), nuclear energy replaced 471 million metric tons of carbon dioxide emissions in 2020. This is more than all other clean energy sources combined.



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BRIGHT SOLAR FUTURES

POWERCORPS PHL



Founded in 2013, PowerCorpsPHL provides career-connected education and paid work experiences in collaboration with AmeriCorps and the city of Philadelphia, and is powered by EducationWorks. Working closely with Philadelphia Parks & Recreation, the Philadelphia Water Department, and industry partners in the public and private sectors, PowerCorpsPHL builds opportunities for young people to create promising futures by tackling pressing environmental challenges and developing the skills required to secure meaningful work.

In 2020, PowerCorpsPHL launched Bright Solar Futures, a collaborative training program facilitated by the Philadelphia Energy Authority, Solar States, and the Energy Coordinating Agency that engages young adults across Philadelphia in careers in renewable energy, specifically solar.

Bright Solar Futures offers a paid, 680-hour, hands-on training experience for young adults (18-30), with a focus on youth of color who are unemployed or underemployed. For about six months, the program offers a curriculum that consists of foundational construction and work site safety training, in addition to lessons on energy systems and conservation. Participants receive training on energy and power sources, electricity and photovoltaic systems, environmental impact, and solar project design and management.

Working with a number of training partners, who are industry experts, students are also given access to active job sites, labs, technology, and equipment that reflects current industry standards. As a PowerCorpsPHL program, there is also an emphasis on job readiness and soft skills that demonstrate professionalism, like collaboration, work ethic, and time management.

Those who complete the training program earn initial certifications that are required for the industry and are placed in internships that for many led to jobs. Since the program's start, Bright Solar Futures has engaged 47 young adults, with 23 completing training and 26 gaining paid employment.

Isaiah Smith, completed the Bright Solar Future Program and is now working at Solar States, one of the program partners and an industry leader in Philadelphia, specializing in solar installation.

Learn more about PowerCorpsPHL and EducationWorks



Photos provided by PowerCorpsPHL



Photos provided by PowerCorpsPHL



Photos provided by PowerCorpsPHL

> "MENTORSHIP IS A HUGE ASPECT OF THIS PROGRAM. FOR ME, I WAS ABLE TO SEE PEOPLE WHO LOOK LIKE ME IN THIS INDUSTRY AND TO HAVE THOSE REAL CONNECTIONS AND ACCESS TO PEOPLE, WAS A HUGE THING FOR ME. I HAVE A DEGREE, BUT IT WAS REALLY HARD TO FIND A JOB WITHIN THE CLEAN ENERGY INDUSTRY. IT WAS HARD TO GET MY FOOT IN THE DOOR AND FIND A PATH THAT MADE SENSE FOR ME, BUT THIS PROGRAM PROVIDED ME WITH A STARTING POINT."
>
> *— Isaiah Smith*
> *Alumnus, Bright Solar Futures*

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CONFRONTING CLIMATE CHANGE
CONSTELLATION

Constellation Energy Corporation (Nasdaq: CEG) is the nation's largest producer of clean, carbon-free energy and a leading supplier of energy products and services to millions of homes, institutional customers, the public sector, community aggregations and businesses, including three fourths of Fortune 100 companies. A Fortune 200 company headquartered in Baltimore, our fleet of nuclear, hydro, wind and solar facilities has the generating capacity to power approximately 15 million homes, providing 10 percent of all carbon-free energy on the grid in the U.S. Our fleet is helping to accelerate the nation's transition to clean energy with more than 32,400 megawatts of capacity and annual output that is nearly 90 percent carbon-free. We have set a goal to achieve 100 percent carbon-free power generation by 2040 by leveraging innovative technology and enhancing our diverse mix of hydro, wind and solar resources paired with the nation's largest nuclear fleet. Follow Constellation on Twitter @ConstellationEG.

POWER TO THE COMMUNITY

Constellation has a strong track record of powering communities by making an impact across a range of fronts in the communities we serve and where our employees live and work. Our employees have shown incredible leadership in giving back, and we are committed to encouraging this culture. In 2021 alone, Constellation contributed $5.2 million to non-profit efforts, and our employees donated an additional $5 million in support of more than 4,000 organizations. Plus, our employees provided 64,800 volunteer hours across 34 states.

INTERNS AT CONSTELLATION

To help fuel their mission to create the nation's cleanest, lowest cost energy, Constellation is looking to invest in the development of the next generation of leaders.

The Constellation internship program provides students with opportunities to gain first-hand knowledge of the industry and learn how their unique talents can help contribute to the future clean energy and sustainable solutions for our communities. Students can get real-world experience in the evolving energy industry.

Constellation's 10-week summer internship program is an ideal way for students pursuing degrees in engineering, computer science/CIS, finance, business administration and other disciplines to explore an exciting career path. [For more information click here]

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CONSTELLATION ENERGY CORPORATION SPOTLIGHT



Ashley Admire
Outage Specialist / Fleet Planner

My role is focused on the work order management and inventory control for Texas, Oklahoma and Kansas. My role is intertwined with STEM because I am familiar with the processes within electrical engineering, civil engineering, supervisory control and data acquisition (SCADA) integration, network design/security and engineering, procurement, and construction (EPC) best practices and how they relate to work processes.

Q What career path did you take to get to your current role? (Prior education, internships, programs, etc.)

A I graduated with a Bachelors in Business Administration – Computer Information Systems in 2011 and I accepted an administration position at a local wind farm to get my foot in the door of an exciting industry. I quickly realized my interest in the renewable energy industry and continued my education with on-the-job training. I've been with Constellation for five years now, and recently accepted a promotion as Fleet Planner/Outage Specialist.

Q How did you become interested in a career in Energy?

A On-the-job experiences and my involvement in larger projects such as decommissioning a wind site have played a big role in my growing interest and passion for the industry.

Q What new role(s) do you see in the future for the Energy sector?

A It is now possible to efficiently create hydrogen through a clean process called electrolysis, which uses carbon-free electricity from renewable, nuclear and hydroelectric energy to separate water molecules into hydrogen and oxygen. Unlike fossil fuel processes, electrolysis is pollution-free. In fact, in addition to clean hydrogen, electrolysis actually creates an environmentally beneficial byproduct – oxygen. The U.S. Department of Energy (DOE) has recognized the importance of Hydrogen in addressing the climate crisis and has announced a program seeking to create Hydrogen Hubs across the country, including projects using nuclear energy. The DOE intends to provide significant funding for multiple hydrogen hubs. Each will be a network of hydrogen producers and consumers with connective infrastructure.

Q What advice would you give to someone interested in pursuing a career in Energy?

A Education is important but resources are invaluable. A person can't know everything, but if they know the resources to reach out to for guidance they can accomplish anything they set their mind on.

WE COMMIT TO PROVIDING 100 PERCENT OF OUR COMMERCIAL AND INDUSTRIAL (C&I) CUSTOMERS WITH CUSTOMER-SPECIFIC INFORMATION ON THEIR GREENHOUSE GAS (GHG) IMPACT FOR FACILITIES CONTRACTING FOR POWER AND GAS SUPPLY FROM CONSTELLATION, INCLUDING MITIGATION OPPORTUNITIES THAT INCLUDE 24/7 CLEAN ELECTRIC USE. *— Constellation*





CONSTELLATION ENERGY CORPORATION
SPOTLIGHTS



Jaleesa Kindred
Regional Operation & Maintenance Manager

I manage four sites totaling 79 turbines. I'm involved with the daily operation and maintenance of the turbines and work closely with our technical team on major failures. STEM plays a big role in our line of work, from mechanical and electrical failures to data analysis.

Q What career path did you take to get to your current role? (Prior education, internships, programs, etc.)

A I have a degree in mechanical engineering. After graduation, I interned with Exelon (now Constellation) in the renewables division. When my internship was over, I was offered a full-time position as a field service engineer for our wind sites in Michigan. During my time as a field engineer, I successfully graduated from the Emerging Leaders Program Constellation offers. Shortly after I was offered the position of Regional O&M Manager here in Missouri.

Q How did you become interested in a career in Energy?

A I grew up with a family full of electricians. My dad was a contract electrician at the local nuclear station and would have some of the coolest stories to tell. He would do some occasional side work for family and neighbors in which I would tag along with to help. I knew at a young age I wanted to be out in a field somewhere working.



Q What advice would you give to someone interested in pursuing a career in Energy?

A Take the option that scares you the most. I never thought I was qualified to be an intern at such a large company let alone be hired for an actual engineering position for them. It absolutely scared me to death to take the internship and the job because it was so far outside of my comfort zone! But that is exactly where you need to be in order to grow, develop and become successful. You will be your biggest enemy when it comes to your personal and professional growth. Don't listen to the tiny voice inside your head saying you can't do it or that you aren't qualified enough. Just take the opportunity, you won't regret it.



Casey Ashby
Manager of Integration

My role is to move new generation sites from construction into commercial operations. STEM is integral in my role, as my position requires me to be familiar with electrical engineering, civil engineering, SCADA integration, network design/ security and EPC best practices.

Q What career path did you take to get to your current role? (Prior education, internships, programs, etc.)







A I started in the energy field after graduating from a utility trade school. I contracted for numerous utilities for five years before taking a field manager role with an independent power producer and developer focused on the renewables market. I moved to Constellation nine years ago as a Regional Operations/ Maintenance Manager in the renewables division.

Q How did you become interested in a career in Energy?

A An elementary school field trip to a hydroelectric dam is what initially interested me in the energy field. In high school, I was fascinated with live line utility work and had a few friends already in the field.

Q What advice would you give to someone interested in pursuing a career in Energy?

A I would pursue multiple education paths in engineering and skilled trades and be willing to travel for at least five years to diversify your skillset.



Michael Daycock
Senior Manager, Renewables

I oversee and manage the operations, and maintenance of a diverse group of renewables assets (wind, solar, battery, and biogas).

Q What career path did you take to get to your current role?

A I received my Bachelors of Science in Chemical Engineering from Penn State University. I interned at the Department of Environmental Protection (in PA) during college, focusing on fracking and coalbed methane water treatment programs. I began working at Constellation as a process engineer directly out of college.

I spent seven years in various capacities as a project engineer, performing new builds, distressed asset recovery, and program oversight. While working in engineering, I obtained a Master's Degree in Mechanical Engineering from Johns Hopkins University. After seven years in engineering, I moved into operations as a Shift Manager, overseeing gas turbine facilities.

After four years overseeing gas turbines, I had an opportunity to oversee a combined cycle facility (combined gas turbine and steam plant) and was promoted to Operations and Maintenance Manager. Four years after that, I was promoted to Senior Manager of our renewables group in my current position.

Q How did you become interested in a career in Energy?

A I have always been fascinated with sustainability and the energy problems that face our world. During college I had a focus on "Energy and Fuels" within the chemical engineering degree program, which better prepared me for some of the challenges that we faced in this industry.

Q What role(s) do you see in the future for the Energy sector?

A Data and data analytics are going to be key to optimizing the workforce challenges in the future and will be used to drive engineering decisions more effectively. Roles in programming, AI/ machine learning/computer vision development, robotics, and data analytics will support roles in all fields of engineering and result in expanded STEM opportunities in the energy field.

Q What advice would you give to someone interested in pursuing a career in Energy?

A Energy is an extremely challenging and rewarding field. In addition to innovation and cutting-edge problems, there are also the constant challenges of maintaining and improving America's existing infrastructure and preparing us for the eventual need for reduced / elimination of fossil fuels.

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SHELL

POWERING PROGRESS

Around the world, Shell serves more than 1 million commercial and industrial customers, and around 32 million customers at 46,000 retail service stations daily. Their strategy is to accelerate the transition of their business to net-zero emissions, purposefully and profitably, in step with society. Shell's purpose is to power progress by providing more and cleaner energy solutions.



GENERATING INNOVATION

Shell is also expanding their network of hydrogen refueling stations. By the end of 2021, there were around 50 hydrogen refueling stations at Shell-branded outlets in Europe and North America where drivers can fill up their vehicles with hydrogen fuel.

In the USA, Shell has added to their renewable generation capabilities by acquiring Savion, a US-based solar and energy storage specialist. As well as liquid biofuels, the company is developing the supply of renewable natural gas (RNG). Their newly operational Junction City RNG plant in Oregon is the largest plant in the USA to produce natural gas from agricultural residues, with an annual capacity of 736,000 million British thermal units.

Through subsidiary Shell Recharge Solutions, Shell started providing electric charging infrastructure for trucks as part of a project led by Volvo Group and South Coast Air Quality Management District.

CONSERVATION INITIATIVE

Shell strategically invests in conservation initiatives that are guided by scientific understanding and research of the environmental impact of their operations. In the last two decades, Shell USA has helped restore and protect more than 13 million acres of wetlands, installed nature-based infrastructure solutions to mitigate flooding and slow coastal erosion, created artificial reefs to promote wildlife and support local economies, cleaned miles of shoreline with Shell volunteers removing 600,000 pounds of debris, and conserved more than 1.8 million acres of land. The company has also shared much of their collected data so that others can learn from and leverage their efforts.

PYROLYSIS OIL PROJECT

Shell aims to recycle one million tons of plastic waste in their chemical facilities by 2025. In order to achieve this goal the company has begun exploring different technologies that use plastic waste to create usable products alongside implementing new practices within the industry to reduce plastic waste in the supply chain. In response to demands for more chemical products with less virgin hydrocarbons Shell and other industry partners are developing and investing in chemical recycling. A special heating process called pyrolysis transforms hard to recycle plastic waste into a liquid stock known as pyrolysis oil. This oil can then be used to create chemicals, plastics, and other products. Moving forward, Shell hopes that chemical recycling proves to be a valuable and viable solution to tackling plastic waste and aid in preserving our environment.

Learn more about Shell's sustainability initiatives here



> "OUR AMBITION IS THAT ANY GREENHOUSE GAS EMISSIONS FROM MAKING OUR PRODUCTS THAT CANNOT BE AVOIDED - THROUGH ENERGY EFFICIENCY OR USING LOWER-CARBON FUEL - WILL BE BALANCED WITH REMOVAL FROM THE ATMOSPHERE USING TECHNOLOGY AND NATURE."
>
> *-Shell*

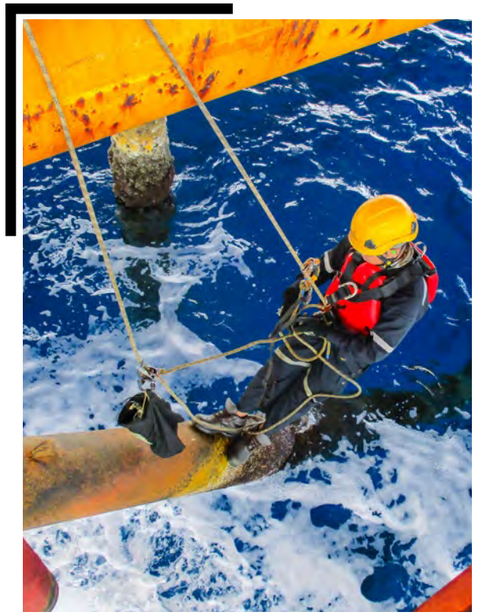
THE ASSESSED INTERNSHIP AT SHELL

The Shell Assessed Internship program is designed to give talented students and graduates a real role in business by focusing on completing a major project with clear deliverables and outcomes. During an Assessed Internship, you will have a formal mid-term review and end of internship review with your mentor and supervisor to discuss further opportunities.

Wondering which pathway to pursue? Check out Shell's Degree Matcher to discover which career paths you can follow in the Assessed Internship with your qualifications. When you apply, you can use the results from the Degree Matcher to indicate the career area within Shell you are most interested in. Click here for details on Shell Graduate Program https://www.shell.us/careers/about-careers-at-shell/shell-graduate-program.html and Assessed Internship Program https://www.shell.us/careers/about-careers-at-shell/assessed-internships.html minimum qualifications.



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“MY OBJECTIVE IN OBTAINING AN ENGINEERING DEGREE WAS TO BE ABLE TO USE MATH AND SCIENCE TO FACILITATE PEOPLE’S LIVES. I WAS ATTRACTED TO A CAREER IN ENERGY BASED ON THE OPPORTUNITIES I WOULD HAVE AS A YOUNG PROFESSIONAL TO WORK ON THE DESIGN AND EXECUTION OF PROJECTS THAT PROVIDE ENERGY FOR TODAY AND THE FUTURE.” *- Deandre*

DEANDRE

Well Delivery Team Lead

Deandre’s job is to lead the engineering teams responsible for the design and execution of oil/ gas wells in the Deepwater Gulf of Mexico.

Q What career path did you take to get to your current role?

A I’ve earned engineering degrees from the University of Michigan in Chemical and Mechanical Engineering. During my time at Michigan, I interned with Shell three times. Each experience was in a different department within the company. Upon graduating, I joined Shell full-time as a Drilling Engineer. Since joining Shell, I have held the roles of Business Advisor (EVP Deepwater) and Operations Safety Manager and earned my MBA from the University of Chicago.

Q What roles do you see in the future for the Energy sector?

A In the near future, a key role in the space of Energy Security is providing reliable access to the energy supplies needed to power lives across the globe. Moving forward I see our industry continuing to support Energy Security and playing a leading role in fighting climate change through technological innovation and partnerships with governments and other industries.

Q What advice would you give to someone interested in pursuing a career in Energy?

A The industry is a dynamic one yet grounded in a need for top technical talent. Take the time to equip yourself with a strong technical foundation. The industry is broad- do your research to find the area of the industry that you are interested in. Digitalization will continue to grow as an enabler for efficiency and innovation. Think through how you can increase your digital skill sets through formal or self-upskilling.



“THE ENERGY INDUSTRY NEEDS YOUR CREATIVITY AND FRESH IDEAS TO SOLVE COMPLEX PROBLEMS.” *— Carina*

CARINA

HSE Onshore Power

Carina is a HSE (Health, Safety, Environment) Lead Onshore Power who works with project managers to identify and manage health, safety, and environmental risks associated with solar and battery storage projects in the US.

Q What career path did you take to get to your current role?

A I was studying environmental engineering at the Polytechnic University of Puerto Rico when I started looking for internships. I landed my first internship in 2010 with NOAA, where I worked with researchers in Mississippi to assess sediment flow impacts into the Gulf of Mexico. The next year, I got an internship with Shell as an environmental engineer for Wind Energy projects in 2011. Then, I passed my assessment for a second internship in 2012 with the Environmental and Regulatory in the Appalachian region. I was hired by the same team into Shell in 2013. I played various roles in oil and gas environmental permitting, commercial and operations before I moved onto the renewable power business supporting solar and battery storage deals, and most recently moved into projects.

Q How did you become interested in a career in Energy?

A I was active through the Society of Hispanic Professional Engineers (SHPE) and attended their annual conference, where I met my recruiter from Shell. She explained the role of an environmental engineer within the energy industry, and I fell in love with the possibility of having such an impact.

Q What roles do you see in the future for the Energy sector?

A The energy sector faces a challenge to meet world’s increased demand, while transforming itself to be a carbon neutral business. This is a complex topic and there will be a need for more problem solvers/engineers thinking outside the box and working across integrated teams.

Q What advice would you give to someone interested in pursuing a career in Energy?

A The energy industry needs your creativity and fresh ideas to solve complex problems. Research the different renewable power technologies and see if you can further narrow down your interest (i.e. solar, batteries, low carbon fuels, hydrogen, nature based solutions). Then give yourself a chance to start! I did and never looked back. There are many opportunities to learn and move across businesses within energy. Do not limit yourself to what you know about the industry right now, we are in a transitional period, and you need to be part of the evolution.



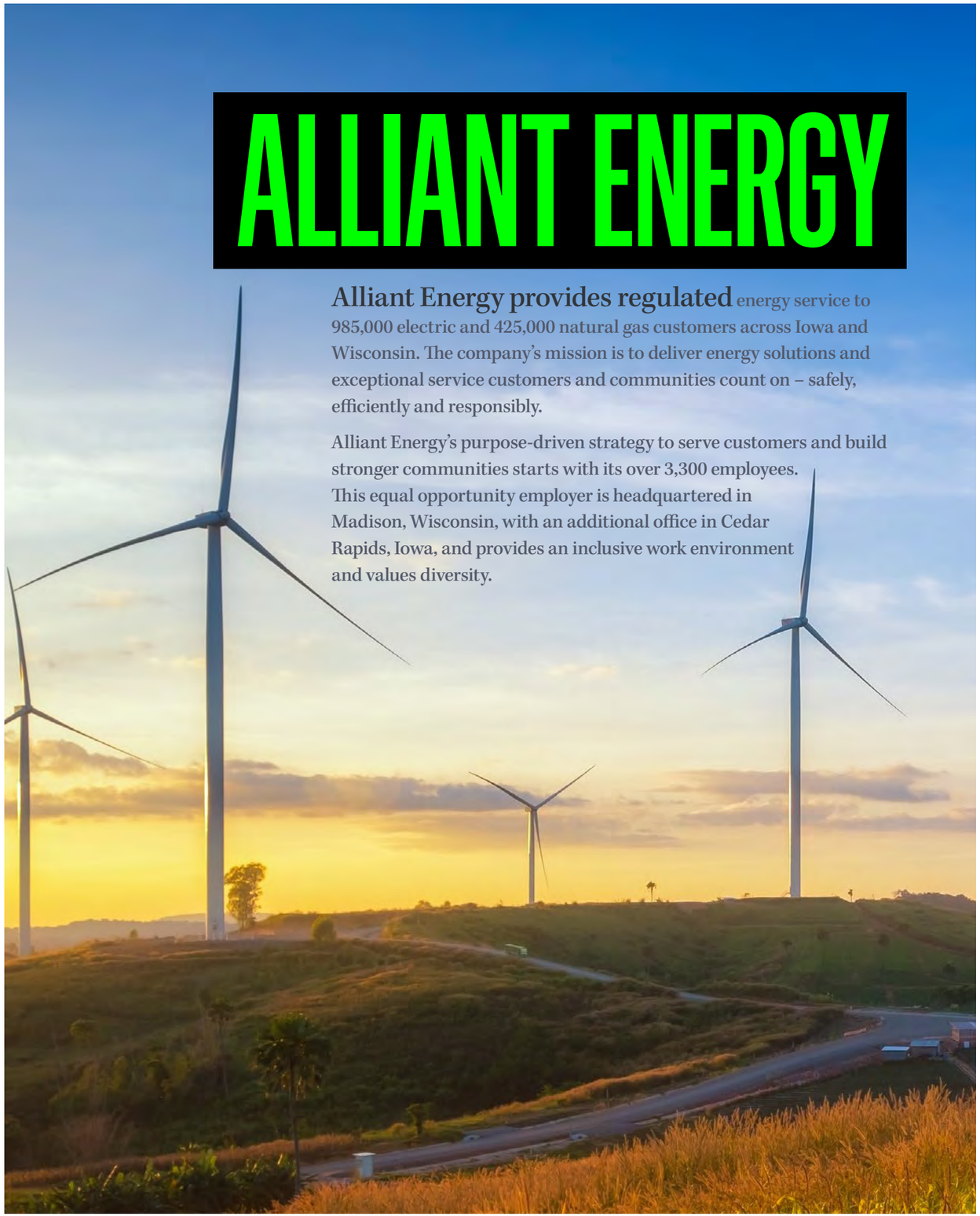


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ALLIANT ENERGY

Alliant Energy provides regulated energy service to 985,000 electric and 425,000 natural gas customers across Iowa and Wisconsin. The company's mission is to deliver energy solutions and exceptional service customers and communities count on – safely, efficiently and responsibly.

Alliant Energy's purpose-driven strategy to serve customers and build stronger communities starts with its over 3,300 employees. This equal opportunity employer is headquartered in Madison, Wisconsin, with an additional office in Cedar Rapids, Iowa, and provides an inclusive work environment and values diversity.





ALLIANT ENERGY SPOTLIGHT

MICHELLE YUN

Senior Manager for Strategy and Electrification

Michelle Yun was born and raised in Wisconsin. She went to Princeton University and graduated in 2006 with a degree in chemical engineering, and a minor in materials science. She started studying energy her freshman year of college and wrote her senior thesis on steam generator corrosion in nuclear power plants. She worked as an engineer in nuclear power plants for three years, then went to law school at the University of Wisconsin, graduating in 2012. She has been practicing energy law for almost 10 years. She recently took on a role to help develop company strategy and oversee the electrification program.

As senior manager for strategy and electrification, Michelle spends most of her time conducting research, planning and collaborating with others. This work helps her define a vision for Alliant Energy decades from now. She also focuses on Alliant Energy's electrification strategy and develops solutions to make more of our lives run on electricity. Her primary focus is partnering with businesses and communities interested in expanding electric vehicle infrastructure, like electric vehicle charging stations. By understanding the level of infrastructure needed, providing information on

"STEM IS A LOT OF THINGS, NOT JUST THAT COMMON PICTURE OF LAB COATS AND TEST TUBES. THERE'S SOMETHING IN STEM FOR EVERYONE. EVEN IF YOU THINK YOU ARE A CREATIVE, NOT A MATH OR SCIENCE PERSON, CONTINUE TO EXPLORE AND ASK QUESTIONS. SO MUCH CREATIVITY GOES INTO STEM CAREERS. DON'T LET ANYONE CONVINCE YOU IT ISN'T FOR YOU."



– Michelle Yun
Senior Manager of Strategy and Electrification



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ALLIANT ENERGY





rebates and other funding options and much more, Michelle and the Alliant Energy team provide a variety of resources to make the process easier for customers.

THE POWER CHRONICLES

Michelle Yun is the voice of engineer and solar innovator Eden Full Goh in Alliant Energy's Power Chronicles audiobook. Michelle's also a real-life engineer obsessed with how energy has changed the world, enabling technology that profoundly shifted how humans interact and how far a person can reach from a laptop or phone. An early Biography of Energy seminar in college inspired her commitment to the energy industry, "because it's an invisible but powerful force in our lives and behaviors." Her present position at Alliant Energy has her thinking about where energy will take us next.

ALLIANT ENERGY INTERNSHIP OPPORTUNITIES

As a fully paid intern at Alliant Energy, you will experience the day-to-day and behind-the-scenes action in the energy industry.

- Tour a hydro-plant that's more than 100 years old and still an important part of our portfolio.
- See how they make electricity at the natural gas-powered generating facilities.
- Visit a wind farm and see solar power in action.
- Network with other interns at social events.
- Meet executives at networking events.
- Get to know the community through volunteering.





Internship opportunities exist across many different areas including:

- Engineering (mechanical, electrical, chemical, civil and more)
- Construction
- Wind technicians.
- Accounting/finance/audit
- Informational technology
- Human resources
- Safety
- Public relations/ marketing/ communications
- Community affairs
- Customer experience
- Legal
- Consumer pricing and sales forecasting (economics/statistics)

WHERE DO ALLIANT ENERGY INTERNS WORK?

Most internships are in Madison, Wisconsin, and the Alliant Energy Tower in Cedar Rapids, Iowa. There are also interns based at generating stations throughout service areas in Wisconsin and Iowa. The location of an internship is dependent upon business needs and the type of work assigned to the intern.

WHAT OPPORTUNITIES ARE CURRENTLY AVAILABLE?

Internships are available year-round, but the program is most active during the summer months. The duration of internships is based on your schedule. Alliant Energy posts all internship opportunities on its careers site as they become available.



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CHEVRON: THE FUTURE OF ENERGY IS LOWER CARBON, IT'S ONLY HUMAN

Chevron is one of the world's leading integrated energy companies and they are focused on defining energy in human terms. Access to energy helps improve lives by driving human progress and enabling the benefits of modern society. Chevron is a leading provider of reliable, affordable, and ever-cleaner energy for the millions around the world. A leading producer of crude oil and natural gas, transportation fuels, lubricants, petrochemicals, and developing technologies that enhance the energy industry, Chevron believes the future of energy is lower carbon and intends to be a leader in efficient and lower-carbon production of traditional energy. For more information about Chevron click here.

PROFESSIONAL SPOTLIGHT



"WORKING WITH LEADING EDUCATION ORGANIZATIONS SUCH AS STEMCONNECTOR, CHEVRON HAS A TREMENDOUS OPPORTUNITY TO ELEVATE THE IMPORTANCE OF SCIENCE, TECHNOLOGY, ENGINEERING, AND MATH (STEM) TO THE FUTURE WORKFORCE. IF COMMUNITIES ARE TO THRIVE, EDUCATION AND JOB TRAINING ARE OF CRITICAL IMPORTANCE. A WORKFORCE ARMED WITH THE SKILLS NEEDED TO SUCCEED IN THE JOBS OF TOMORROW IS IMPORTANT TO THE SUCCESS OF OUR BUSINESS AND THE GLOBAL MARKETPLACE."

— Rhonda Morris
Vice President and Chief Human Resources Officer

ADDRESSING SUSTAINABILITY & CLIMATE CHANGE: CHEVRON NEW ENERGIES

In 2021 Chevron announced the formation on a new business unit, Chevron New Energies with the goal of helping their customers meet lower carbon goals and reducing the carbon intensity of Chevron's operations. As the world's demand for energy will continue to increase, Chevron's strategy is to combine their traditional oil and gas business with faster-growing lower carbon businesses including:

- Carbon capture, utilization and storage (CCUS)
- Hydrogen
- Renewable fuels
- Carbon offsets
- Geothermal

CAREERS AT CHEVRON

Chevron is looking for critical thinkers, question-raisers, problem solvers, and creative innovators to help define what energy looks like today and tomorrow. Chevron employs over 37,000 people and offers jobs across a broad array of fields including Finance, Earth Science, Engineering, HR, and Information Technology. As a global employer, they have countless opportunities to work with people all over the world and gain hands-on experience on all kinds of projects.

Working at Chevron provides students and recent graduates the skills and foundational experience they need to begin building a career in their chosen field. Chevron offers focused career development programs that begin on your first day of employment and continue throughout your career. Development programs offer a variety of professional experiences within a structure that provides opportunities to learn, grow, and ultimately succeed.

INTERN AT CHEVRON

Internships are available across the enterprise and in various disciplines. At Chevron, we know that skills equal career growth and development. So, we provide countless opportunities for our people to grow their skills and gain entirely new ones. As a global employer, we have countless opportunities to work with people.

The intern experience at Chevron involves hands-on experiences–real responsibilities to solve real challenges. Are you ready to transform the world through human energy? Apply today at careers.chevron.com



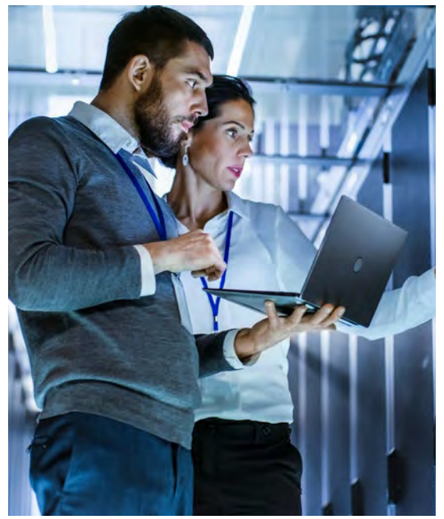


"CHEVRON'S COMMITMENT TO SUSTAINABILITY HAS NEVER BEEN STRONGER. OUR APPROACH IS INTEGRATED THROUGHOUT OUR BUSINESS TO STRIVE TO PROTECT THE ENVIRONMENT, EMPOWER PEOPLE, AND GET RESULTS. AFFORDABLE, RELIABLE, AND CLEANER ENERGY IS ESSENTIAL TO ACHIEVING A MORE PROSPEROUS AND SUSTAINABLE WORLD."

— Chevron







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SPOTLIGHT

Jorrion Wilson

Regional Engineer

Jorrion Wilson is a Regional Engineer for Chevron's Americas Fuels & Lubricants group. He supports different fuels terminals and lubricants plants along the east coast of the United States, specifically in Florida, Georgia, and South Carolina. In his role he manages various projects including facilitating inspections, maintenance work, and putting new equipment within facilities.

Q What career path did you take to get to your current role?

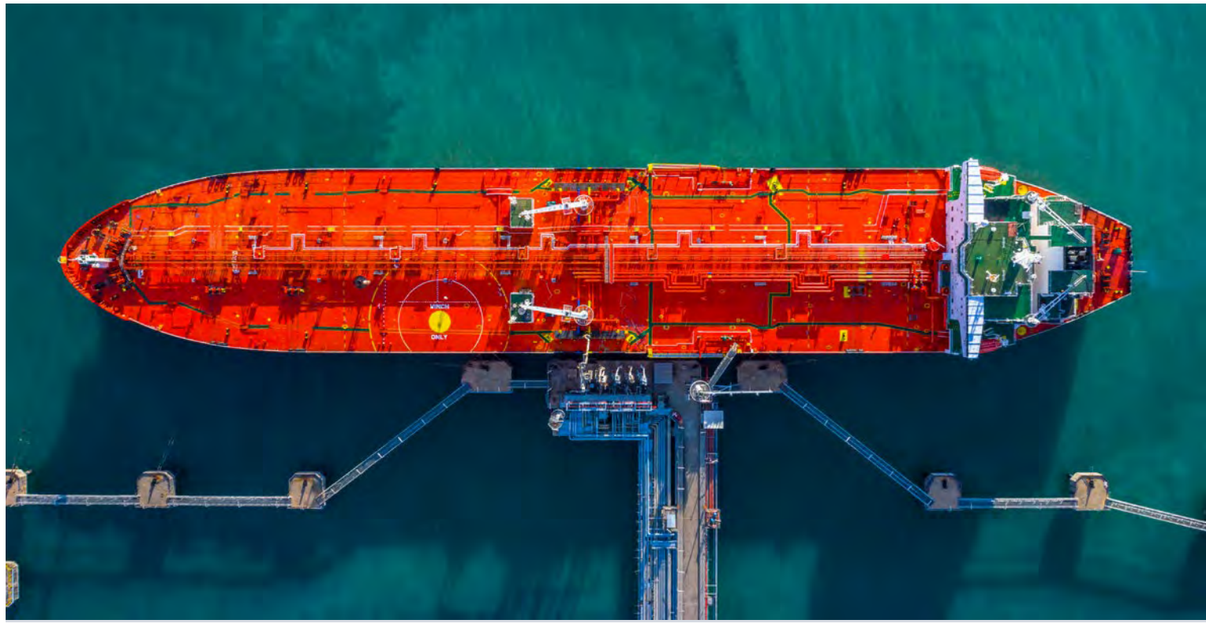
A I graduated from Harvard University in 2018 with a Bachelor of Science in Mechanical Engineering. While in school I completed three internships. My first internship was with Broadwind Energy, which manufactures wind turbine towers, in Abilene, TX. My second internship was with Orrex Plastics in Odessa, TX, and my third internship was with the Massachusetts Department of Transportation in Boston, MA.

Q How was your intern experience at Chevron?

A Following my graduation in 2018, I interned with Chevron in our Health, Safety, and Environment department. At the completion of my internship, I was fortunate enough to join Chevron full time within our technology center where I worked as an integrity engineer, supporting our digital data analysis team. I spent approximately eighteen months in this role before heading West to Bakersfield California where I worked as a project engineer. Bakersfield offered a great opportunity for me to learn and develop my engineering skill sets as I got to experience what I call, the "bread and butter" of the oil and gas business. Most recently I took on the role of regional engineer and I am based in Charleston, SC.

Q How did you become interested in a career in Energy?

A I grew up in Odessa, TX. Odessa is known for football, oil, and gas! My first direct exposure to the industry followed my senior year in high school when I took a summer job working for a company called Rig Works that manufactures well servicing rigs from the ground up. Working in the energy industry was attractive to me firstly because of the work. Every day we create energy and products that allow people to live the lives they aspire to. Furthermore, the size and scale of the equipment you get to work with has always been exciting.



Q What roles do you see in the future for the Energy sector?

A Currently, I am focused on developing my competencies around our business and how we operate. I aspire to be a team lead and eventually a manager within the company, so having these core competencies and capabilities will allow me to better lead and develop others in the future.

Q What advice would you give to someone interested in pursuing a career in Energy?

A For anyone who may be interested in the energy industry, I first encourage them to do their research to better understand what they want to focus on. There are many different forms of energy production, so understanding what you are interested in is the best place to start. Consider doing an internship with an energy company. Internships are a great way to determine whether you like a specific type of work and if you like the company. Chevron is an EXCELLENT place to intern to learn more about energy and how we are striving to lead in the industry!

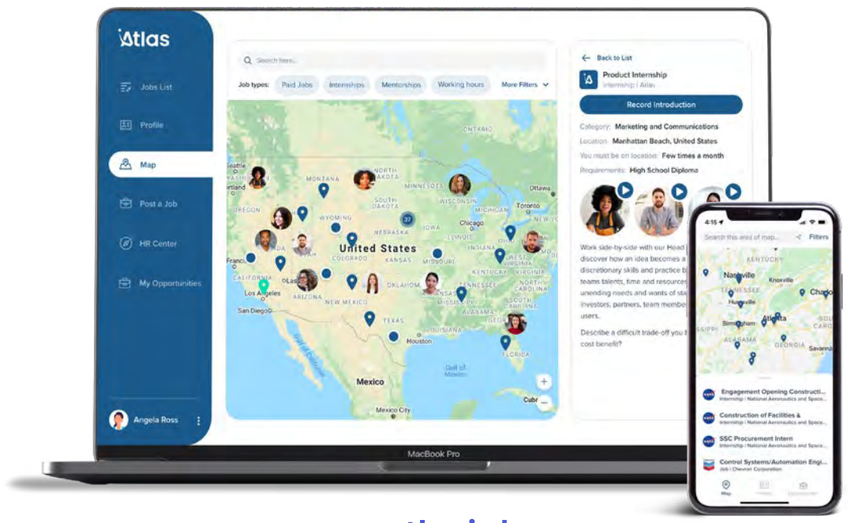




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AtlasJobs

DISCOVER INTERNSHIPS AND CAREER OPPORTUNITIES IN THE ENERGY INDUSTRY ON ATLASJOBS



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RESOURCES & CONTRIBUTORS

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RESOURCES

Council on Foreign Relations

Just Energy

U.S. Energy Information Administration

Department of Energy

STEM Rising

Solar Energy Industries Association

National Renewable Energy Laboratory

Nuclear Energy Institute

The Power Chronicles

Plastic Waste Management and Initiatives as Shell

EDUCATION AND CAREER RESOURCES

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CENTER FOR ENERGY WORKFORCE DEVELOPMENT (CEWD)
www.getintoenergy.org/why-work-in-energy/

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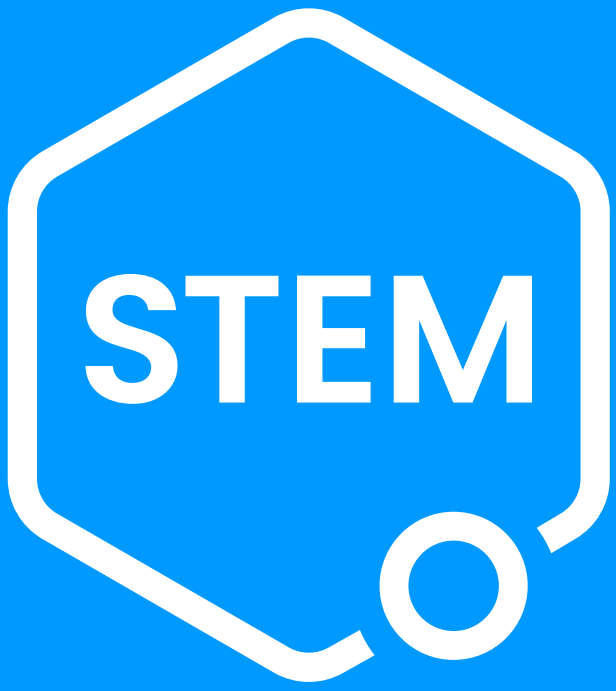
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