

Career Pathway Spotlight

Discover a Career in Hydropower

Discover your career in energy!

Hydropower workers — from dam safety engineers to plant technicians and pumped storage specialists — keep the country's largest source of renewable energy flowing safely and reliably, and ready to power the grid.

Hydroelectric Plant Operations

Inside powerhouses at dams across the country, hydroelectric plant technicians and operators run the turbines, generators, and control systems that turn falling water into electricity. They monitor performance, perform routine maintenance, and respond to alarms around the clock.

Dam Safety and Engineering

Dam safety engineers, civil engineers, and mechanical and electrical engineers inspect aging dams, design improvements, and supervise major repairs. Their work involves modeling water flow, analyzing structural integrity, and protecting downstream communities through strict federal and state oversight.

Pumped Storage and the Energy Transition

Pumped storage hydro is the largest form of grid energy storage in the country. Engineers, operators, and technicians are building, modernizing, and running these facilities to store renewable power and provide reliable backup for a cleaner future grid.

CAREER PATH

Start with:

- » A high school diploma or GED

Get Educated:

- » A community college, vocational program, or a bachelor's degree in engineering (civil, mechanical, or electrical)
- » A military pathway with relevant experience (e.g., Navy CE, Army Combat Engineer, or Air Force Civil Engineer)

Specialize With:

Certificates or credentials

- » Professional Engineer (PE) license
- » North American Electric Reliability Corporation (NERC) operator certifications
- » Association of State Dam Safety Officials (ASDSO)

Knowledge in:

- » Dam safety and structural integrity
- » Hydroelectric plant operations and maintenance
- » Pumped storage and grid integration
- » Environmental compliance and fish passage
- » Civil, mechanical, and electrical engineering for hydro

OCCUPATIONAL SKILLS

- » Strong analytical and problem-solving abilities
- » Sharp attention to detail and safety focus
- » Clear communication across operators, engineers, and inspectors
- » Physical stamina for plant work and field inspections
- » Adaptability across shifts, sites, and weather conditions
- » Comfort with technical systems, modeling software, and SCADA
- » Curiosity about water, structures, and renewable

BENEFITS

These energy industry careers offer:

- » Varied opportunities across energy sectors
- » Upward and continued career growth
- » Work-life balance — your work stays at work
- » Opportunities for skill development and specialization
- » Unionization and leading benefits packages
- » Good pay and hands-on, critical work
- » Job stability in a growing energy industry

What Might You Do In Hydropower?

ENTRY LEVEL

1-4 years

What you will do:

- » Assisting senior operators and engineers with daily inspections and routine maintenance
- » Recording turbine, generator, and water level readings throughout each operating shift
- » Supporting dam safety inspections and structural condition reports
- » Operating gates, valves, and basic plant equipment under direct supervision
- » Helping engineers with hydraulic modeling, drafting, and field data collection
- » Following lockout/tagout, confined space, and OSHA safety procedures

MID- CAREER

5-8 years

- » Independently operating turbine units, scheduling generation, and managing daily plant performance
- » Leading routine dam inspections and writing detailed condition assessment reports
- » Designing minor upgrades, civil works, or electrical retrofits at the plant
- » Using digital twin and AI-assisted modeling tools to optimize plant performance
- » Coordinating with grid operators, regulators, and environmental compliance teams
- » Training entry-level operators and engineers as they ramp up to journey level

EXPERIENCED

8+ years

- » Leading hydropower projects, modernization efforts, and major dam safety programs
- » Setting engineering standards, safety policies, and operating procedures companywide
- » Driving pumped storage development and grid integration strategy
- » Adopting new technology like AI inspection drones, digital twins, and predictive analytics
- » Coordinating with FERC, state regulators, tribes, and major customers
- » Mentoring mid-career operators and engineers and shaping training programs companywide

What knowledge, skills and abilities will you need to succeed?

- » Listen and follow directions from senior operators and engineers
- » Comfort lifting equipment, working outdoors, and in confined spaces
- » Basic understanding of electrical, mechanical, and hydraulic systems
- » Strong attention to detail when recording and reporting plant data
- » Eagerness to earn operator certifications or engineer credentials

- » Active operator certifications or progress toward a Professional Engineer license
- » Working knowledge of dam safety standards and hydro plant systems
- » Fluency in SCADA, hydraulic modeling, and structural analysis tools
- » Clear communication with crews, regulators, and engineering teams
- » Composure during alarms, outages, and emergency drawdowns
- » Familiarity with FERC licensing and environmental requirements

- » Deep expertise across dam safety, hydro plant operations, and engineering
- » Leadership and people-management skills for multi-site teams
- » Strategic communication with executives, regulators, and tribes
- » Strong financial judgment for major capital projects
- » Mastery of change management as hydropower modernizes and grows
- » Senior credentials such as PE, ASDSO certifications, or NERC RC

GET PAID!

For salary information on Hydropower roles, please refer back to the Get Into Energy Explorer.

Get Into Energy Explorer



ENERGY INDUSTRY CAREERS OFFER:

- » Excellent salaries
- » Opportunities for advancement
- » Job growth & stability
- » Professional development and training
- » Great benefits

Scan to view our Job Board