

Knowledge Transfer:

Attracting, Training, and Retraining the Next Generation

Agenda Overview

- Introduction
- Statistics of Current Situation
- Staffing Requirements
- What is an Operator?
- Workforce Development
- Cross-Training and Job Rotation
- You Get What You Pay For
- Recruitment and Retention Strategies

Panel Introductions



Dave "DJ" Teter, Utility Supervisor and Operator
Borough of Orwigsburg



Eric Moore, Chief Engineer
Entech Engineering



Greg Rapp
Lansdale Borough



Cora Shenk, LO, Compliance Manager
City of Lebanon Authority



Tori Morgan, LO, Director of Funding, Regulatory Relations & Compliance
Entech Engineering





Statistics of Current Situation

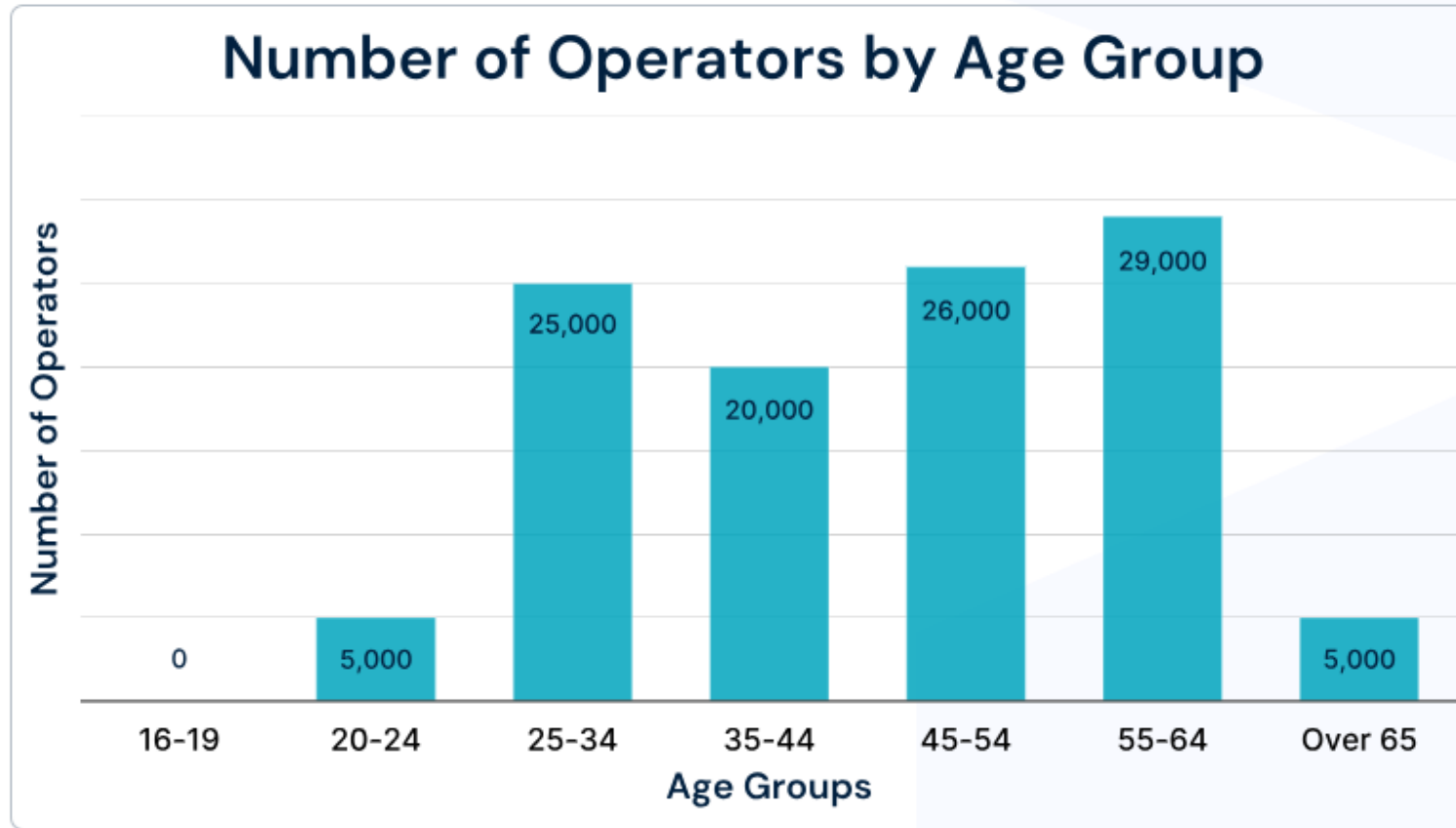
What is the Current Situation?

- ❑ 5,200 licensed water and wastewater operators in PA
- ❑ Mean hourly wage is \$28.46
- ❑ Average salary in PA range from \$45,100 to \$70,200
- ❑ As of 2015, the majority of operators were in the 50-59 age range.
 - ❑ Drinking water operators: 64.5% were over 50 years old and less than 3% were under 30
 - ❑ Wastewater operators: 64.7% were over 50 years old and less than 3% were under 30

*Bureau of Labor and Statistics, pa.gov



Operator Demographics



Operator demographics per Bureau of Labor Statistics 2019 estimate

Bureau of Labor and Statistics

Water and Wastewater Treatment Plant and System Operators


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Water and Wastewater Treatment Plant and System Operators

PRINTER-FRIENDLY 

Summary

What They Do

Work Environment

How to Become One

Pay

Job Outlook

State & Area Data

Similar Occupations

More Info


Summary

Quick Facts: Water and Wastewater Treatment Plant and System Operators

2023 Median Pay 	\$54,890 per year \$26.39 per hour
Typical Entry-Level Education 	High school diploma or equivalent
Work Experience in a Related Occupation 	None
On-the-job Training 	Long-term on-the-job training
Number of Jobs, 2023 	124,700
Job Outlook, 2023-33 	-6% (Decline)
Employment Change, 2023-33 	-7,500



<https://www.bls.gov/ooh/production/water-and-wastewater-treatment-plant-and-system-operators.htm#tab-1>



Staffing Requirements: What does it take?

Treatment Works Staffing

- Different size Plants have different operating requirements
- The size and complexity of a plant are key factors in determining operator requirements.
- Larger plants may require more operators to manage the plant 24/7, while smaller plants might be able to operate with fewer operators or even rely on part-time or on-call staff
- Not all operators working at the system are required to be certified. These non-certified operators cannot make process control decisions.
- Proper staffing goes beyond Operators-Administrative, Laboratory, Maintenance, etc





What is an Operator?

What is an Operator?

- ☐ Types – water, wastewater, collection, industrial, etc.
- ☐ Experience and Educational Requirements
- ☐ Credentials vary from State to State
- ☐ Continuing Education



Roles and Responsibilities

What are the Roles and Responsibilities of a LO?

- ☐ What are roles and responsibilities of LO?
 - ☐ Ensuring the proper operation and maintenance of the system
 - ☐ Complying with all applicable laws, rules, and regulations
 - ☐ Approving Standard Operating Procedures (SOPs)
 - ☐ Reporting any known violations or system conditions to the system owner
 - ☐ Maintaining compliance with drinking water regulations
- ☐ Essential employees
- ☐ PA DEP requirements
- ☐ System operations



Workforce Development And Succession Planning

What is Workforce Development and Succession Planning

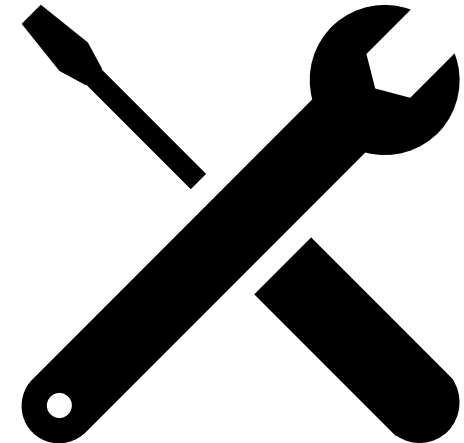
- To recruit successful candidates there needs to be a pool of potential employees who are interested in the profession. These employees must be trained or developed for operational excellence and potential long-term leadership positions to replace employees leaving the profession.
- Succession Planning



Developing the Workforce of the Future

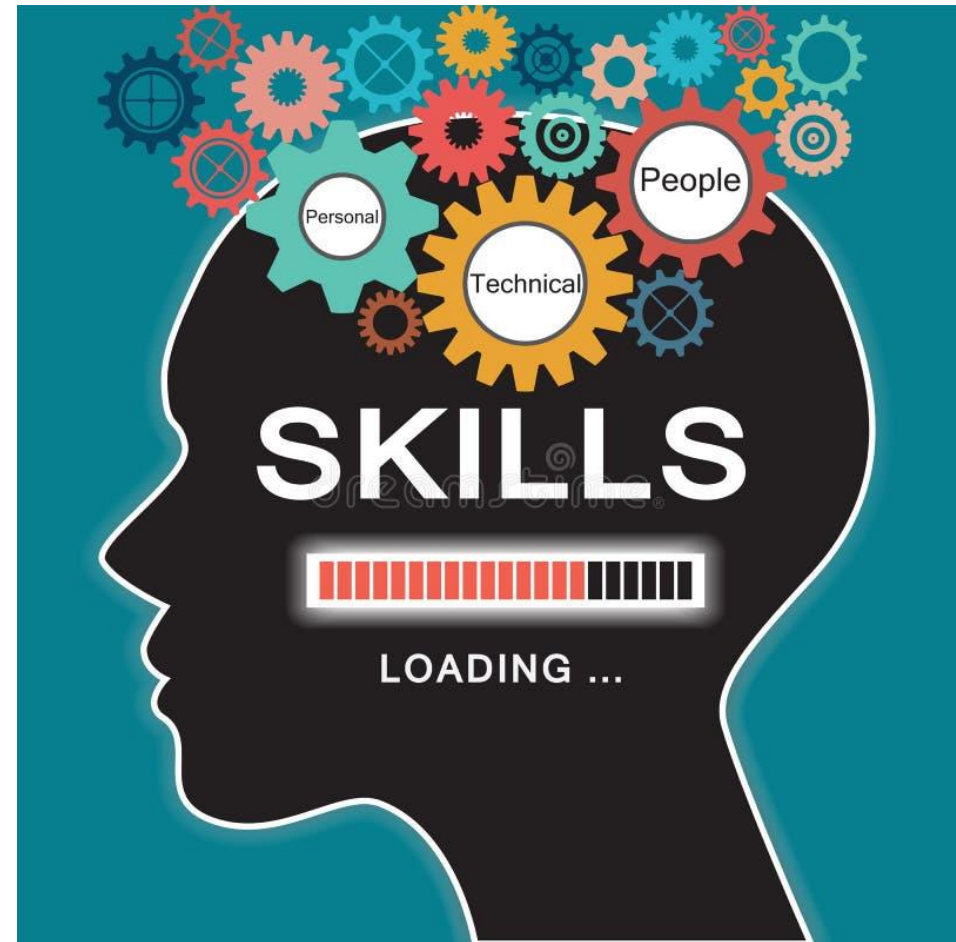
The industry needs to use all available tools to develop a sustainable workforce:

1. Outreach and branding
2. Workforce planning and organizational change
3. Job analysis and staffing
4. Recruiting, Hiring, Onboarding
5. Performance Evaluations
6. Organizational Learning and Knowledge Transfer
7. Training and Education
8. Soft Skills and Team Building
9. Mentoring and Leadership Development
10. Retention and Succession Planning



21st Century Skills

1. Critical Thinking
2. Creativity and Problem Solving
3. Teamwork and Collaboration
4. Communication
5. Adaptability
6. Attention to detail
7. Time Management
8. Safety Consciousness
9. Customer Service Orientation
10. Flexibility





Efficient Utilization of Workforce Talent

Cross-Training and Job Rotation



- ❑ Team building, cross training, and appreciate for organization's mission and goals
- ❑ Broaden skill set, exposure to different aspects, deeper understanding of operations, foster collaboration and promote knowledge sharing



Building Workforce Culture

Communities of Practice

- ❑ Provide a platform for collaboration, knowledge sharing and idea exchange
- ❑ Foster a culture of continuous learning
- ❑ Get all staff involved in various industry organizations, online forums organized around specific topics, discussion boards, and more.

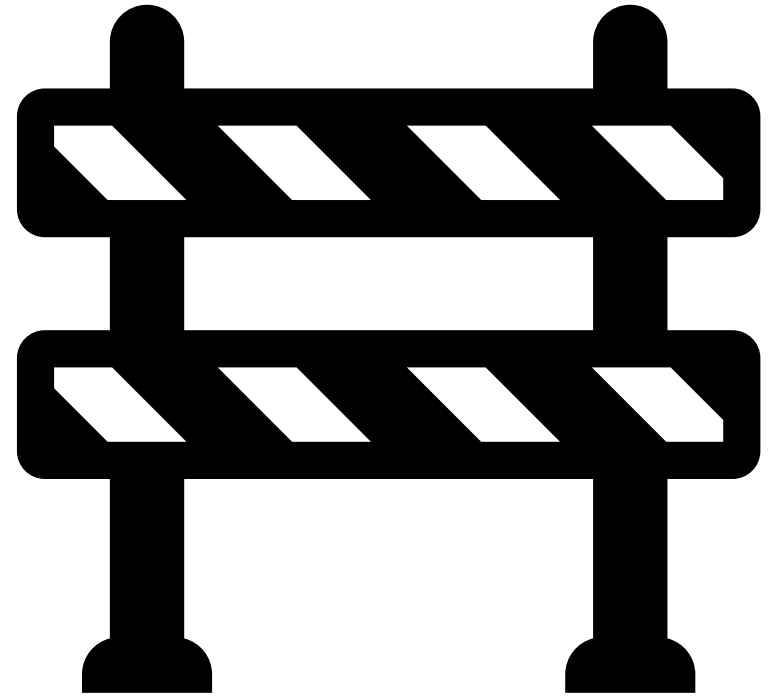




Workforce Challenges

Address the Challenges

- ☐ Resource Constraints
- ☐ Legal Responsibilities
- ☐ Technological Barriers
- ☐ Retention & Succession



Opportunities and Options



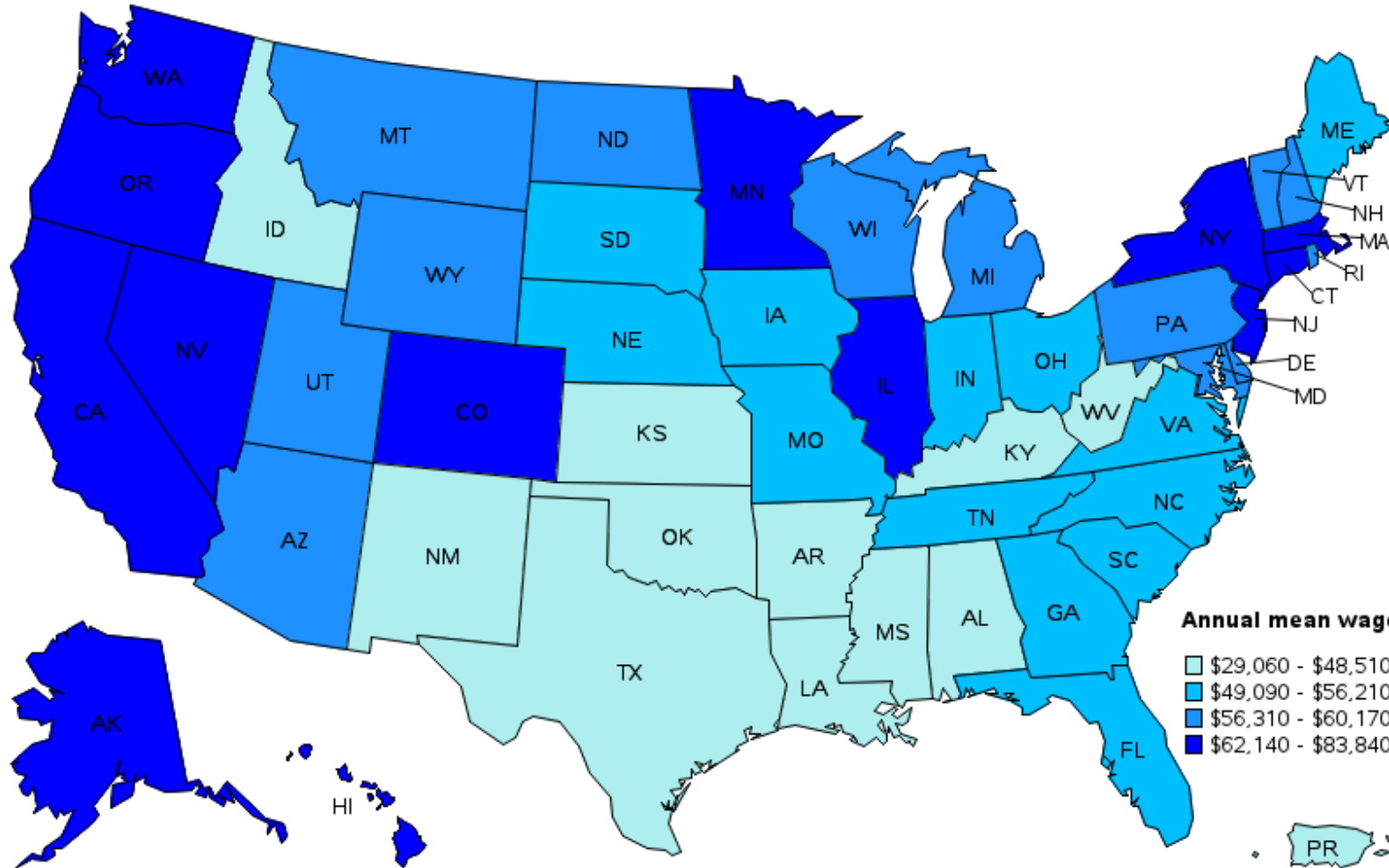
How will you address the challenges that you have identified?

- Funding opportunities and grants for workforce training and tools
- Co-op and internships
- Third party consultation
- Defined incentive programs
- Regional opportunities (share responsibilities and resources)



You Get What You Pay For

Annual mean wage of water and wastewater treatment plant and system operators by state, May 2023



Blank areas indicate data not available.

Top Paying States:

- ☐ Nevada
- ☐ California
- ☐ Washington
- ☐ Connecticut
- ☐ Alaska

In Pennsylvania:

- ☐ Workers on average earn **\$59,520**.
- ☐ 10% of workers earn **\$38,670 or less**.
- ☐ 10% of workers earn **\$78,390 or more**.

Pennsylvania Wages for: 51-8031.00 - Water and Wastewater Treatment Plant and System Operators

Source: Bureau of Labor Statistics 2023 wage data - <https://www.bls.gov/oes/>

Location	Annual Low (10%)	Annual QL (25%)	Annual Median (50%)	Annual QU (75%)	Annual High (90%)	Hourly Low (10%)	Hourly QL (25%)	Hourly Median (50%)	Hourly QU (75%)	Hourly High (90%)
United States	\$36,680	\$44,720	\$54,890	\$67,790	\$83,090	\$17.64	\$21.50	\$26.39	\$32.59	\$39.95
Pennsylvania	\$38,670	\$48,410	\$59,520	\$68,610	\$78,390	\$18.59	\$23.27	\$28.62	\$32.99	\$37.69
Allentown-Bethlehem-Easton, PA-NJ	\$44,190	\$47,660	\$60,790	\$65,760	\$80,080	\$21.25	\$22.92	\$29.23	\$31.62	\$38.50
Altoona, PA	\$43,630	\$48,580	\$58,640	\$60,060	\$60,060	\$20.97	\$23.36	\$28.19	\$28.87	\$28.87
Bloomsburg-Berwick, PA	\$41,860	\$47,580	\$61,150	\$61,730	\$95,620	\$20.12	\$22.88	\$29.40	\$29.68	\$45.97
Chambersburg-Waynesboro, PA	\$40,050	\$48,360	\$57,930	\$61,570	\$67,480	\$19.26	\$23.25	\$27.85	\$29.60	\$32.44
East Stroudsburg, PA	\$40,090	\$58,750	\$63,670	\$70,830	\$78,190	\$19.28	\$28.24	\$30.61	\$34.05	\$37.59
Erie, PA	\$43,840	\$47,440	\$61,230	\$63,590	\$74,600	\$21.08	\$22.81	\$29.44	\$30.57	\$35.87
Harrisburg-Carlisle, PA	\$46,860	\$49,410	\$59,450	\$64,930	\$74,050	\$22.53	\$23.75	\$28.58	\$31.22	\$35.60
Johnstown, PA	\$30,000	\$37,600	\$44,780	\$47,060	\$56,760	\$14.42	\$18.08	\$21.53	\$22.63	\$27.29
Lancaster, PA	\$44,630	\$50,740	\$61,620	\$65,560	\$72,130	\$21.46	\$24.40	\$29.63	\$31.52	\$34.68
Lebanon, PA	\$45,590	\$50,630	\$61,600	\$63,180	\$66,090	\$21.92	\$24.34	\$29.62	\$30.38	\$31.77
New York-Newark-Jersey City, NY-NJ-PA	\$47,540	\$60,090	\$73,620	\$87,530	\$104,160	\$22.85	\$28.89	\$35.40	\$42.08	\$50.08
Northern Pennsylvania nonmetropolitan area	\$36,160	\$38,390	\$56,090	\$65,500	\$66,890	\$17.39	\$18.46	\$26.97	\$31.49	\$32.16
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	\$45,560	\$56,390	\$64,130	\$76,680	\$81,460	\$21.91	\$27.11	\$30.83	\$36.86	\$39.17
Pittsburgh, PA	\$45,910	\$50,830	\$64,420	\$74,380	\$87,390	\$22.07	\$24.44	\$30.97	\$35.76	\$42.02
Reading, PA	\$43,260	\$49,800	\$58,470	\$65,990	\$71,560	\$20.80	\$23.94	\$28.11	\$31.73	\$34.40
Scranton--Wilkes-Barre--Hazleton, PA	\$35,940	\$47,330	\$62,330	\$71,120	\$73,760	\$17.28	\$22.76	\$29.96	\$34.19	\$35.46
Southern Pennsylvania nonmetropolitan area	\$36,500	\$45,940	\$48,820	\$57,200	\$63,870	\$17.55	\$22.09	\$23.47	\$27.50	\$30.71
State College, PA	\$36,220	\$48,410	\$58,150	\$64,040	\$74,460	\$17.41	\$23.28	\$27.96	\$30.79	\$35.80
Western Pennsylvania nonmetropolitan area	\$34,320	\$38,220	\$49,030	\$61,600	\$65,060	\$16.50	\$18.38	\$23.57	\$29.61	\$31.28
Williamsport, PA	\$38,600	\$50,280	\$55,550	\$58,230	\$63,760	\$18.56	\$24.17	\$26.71	\$27.99	\$30.66
York-Hanover, PA	\$44,210	\$48,600	\$53,930	\$63,690	\$70,010	\$21.26	\$23.37	\$25.93	\$30.62	\$33.66
Youngstown-Warren-Boardman, OH-PA	\$37,440	\$44,880	\$50,770	\$58,050	\$67,020	\$18.00	\$21.58	\$24.41	\$27.91	\$32.22



Recruiting and Retention Strategies

Get Involved in Local Workforce Organizations

- ❑ <https://www.dli.pa.gov/Businesses/Workforce-Development/Pages/default.aspx>
- ❑ The commonwealth's workforce development strategy targets education and training investments to High Priority Occupations (HPOs).
- ❑ HPOs are job categories that are in demand by employers, have evolving skill needs, and are likely to provide family-sustaining wages
- ❑ 16 of 21 Workforce Development Associations (WDAs) identify Water/Wastewater Treatment Plant & System Operators as HPOs (up from 9 in 2022)

Career Link



Online virtual job matching system for job seekers and employers in PA

<https://www.pacareerlink.pa.gov/jponline/>

Apprenticeships

- ❑ Over 90% retention (per Apprenticeship USA - <https://www.apprenticeship.gov/>)
- ❑ WIOA funds available - ITAs for classroom instruction & 50-75% for OTJ.
- ❑ WEF National Guidelines for Wastewater Systems Operator Apprenticeship Standards (Approved by DOL 2012) – 3,520 Hours OTJ & 480 Hours Instruction
 - <https://www.doleta.gov/oa/pdf/national.pdf>
- ❑ Currently 67 Registered Apprenticeship (RA) programs across the US in affiliated WW apprenticeships
- ❑ Central Pennsylvania Institute of Science and Technology – Reg.Apprenticeship (ID: 1133)
 - Wastewater-Treatment- Plant Operator - 2,488-Hours
 - <https://cpi.edu/programs/>



Regional Partnerships and Internships

Water & Wastewater Internship Program (WWIP)

- ✓ 9-week program during the summer
- ✓ Regional example of water and wastewater authorities participating in a program:

- ☐ Chalfont-New Britain Township Sewer Authority
- ☐ Forest Park Water Treatment Plant
- ☐ Montgomery Township Sewer Authority
- ☐ North Penn Water Authority
- ☐ North Wales Water Authority
- ☐ Warminster Township Water & Sewer Authority
- ☐ Warwick Township Water & Sewer Authority



Forest Park Water Treatment Plant in Chalfont, PA

<http://water-wastewater-internship-program.com/sample-page>

Higher Education Partnerships

- ❑ Thaddeus Stevens College of Technology – Lancaster, PA
 - AAS Degree – Water & Environmental Technology (70 Credits – 1,408-Hours)
 - DEP Accredited Associate's Degree
- ❑ Central Pennsylvania Institute of Science and Technology – Pleasant Gap, PA
 - Water and Wastewater Utility Operator Diploma Program (1-Year - 1,023-Hours)
- ❑ DEP Accredited Certificate Programs (2 Semesters – 180 Hours)
 - Reading Area Community College – WW
 - Delaware County Community College – WW & DW
 - Harrisburg Area Community College- WW
 - Community College of Beaver County - WW
 - Northern Pennsylvania Regional College - WW
 - Edinboro University of Pennsylvania - WW

QUESTIONS?

