CWWA Utility Leadership

Workforce Development

A Guidance Document

Developed by the Utility Leadership Committee of
the Canadian Water and Wastewater Association
March 2022

About this Guide

This document has been created by and for water, wastewater and stormwater utility managers -- to offer guidance for addressing the challenges of recruiting, training and retaining qualified staff to maintain a resilient and sustainable utility.

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Introduction

Science and technology continually advance. Yet it is still our people, the water/wastewater professionals, that are the most critical factor in providing safe drinking water to our communities and protecting our water environment. Ironically, this "people factor" also continues to be the most difficult aspect for utility leaders to manage.

Recognizing vital aspects of planning, developing and managing your workforce, the Canadian Water and Wastewater Association's (CWWA's) Utility Leadership Committee formed a Working Group to create this Guidance Document for water/wastewater utility managers. The purpose of this document is to assist you, as a utility manager. It is intended as a guide to setting up and implementing a workable process for developing your employees that ensures continuity of operations as staff leave or retire. It identifies several key themes to focus on and recommends some Best Practices. As a working guide, you'll find helpful checklists to assess you and your team's starting point and how to track progress. Mixed in, to inspire, we offer a few profiles of successful utility leaders and their initiatives – examples of what's possible.

The first step for the CWWA Working Group was to survey our own members, Canada's utility leaders, to get a sense of the issues they find are most critical and to identify the challenges they face. The creation of this document was shaped by the results of that national industry survey. A full report of the survey results is attached at the end of this document.

Recent workforce studies were undertaken in the water and wastewater utility sector - one in the US by the American Water Works Association (AWWA) and another in Canada by the Environmental Operators Certification Program (EOCP) and the British Columbia Water and Wastewater Association (BCWWA). The studies indicate that the coming decade will see a large number of utility managers retiring. CWWA's own survey of utility leaders reconfirmed these findings. It is imperative that the replacement of managers and leaders must be carefully planned, from recruiting and initial training through to career development, in order to ensure continuity of operations and smooth transitions.

How resilient is your utility? Key factors to consider in workforce development include: understanding a younger workforce; recognizing new technologies and the need for different education and skills; and creating a workplace of equity, inclusivity and diversity.

How to use this Guide

This CWWA Workforce Development Guidance Document provides Best Practices and helpful resources to walk you through the following:

Your Starting Point – A Gap Analysis

Overview:

What have you already done? What needs to get done? Is there an order to doing these things? For example, addressing emerging matters like inclusiveness and diversity and technologies new to your team.

To build your Workforce Development Plan, you need to understand where to start relative to the themes and best practices identified in this Guidance Document. By performing a Gap Analysis and setting priorities, you and your resource team can develop a path forward on a strategy. Consider your organization's job descriptions, strategic plan, mission and values. Also, identify the new skills your organization might need in coming years. For instance, you could survey team members on what skills they think are missing and any initiatives from the best practices in this document.

It is likely that your utility has already made advances on many of the items identified in the Best Practices and Checklists in this document. Build on what has been accomplished so far!

Your Starting Point – A Gap Analysis

The themes related to workforce development plans are primarily "internal", e.g., succession planning, employee development and training. As such, they are within your organization's control. You and your resource team can develop programs to suit your organization's needs. Although the responses to recruitment efforts are not directly within your control, the recruitment process and your efforts to build on inclusiveness and diversity are. This Guidance Document is intended to aid you in considering each of these themes.

There is a logic to the development of workforce plans. For example, without a sound employee development program, it would be challenging to implement a succession plan for a particular position or to recruit externally without first identifying the development needs essential to ensuring a candidate can succeed in a future role.

Benefits:

- Your Gap Analysis gives you a roadmap of what needs to be done
- Assessing what is important to your utility will ensure that you focus on the priorities
- Your Gap Analysis provides an accountability framework to drive improvement
- By setting realistic goals, you can make incremental progress towards effective workforce development across all the themes

Best Practices:

- Use the **Gap Analysis Table** (GA1) in the appendices, to start with a high-level look at your organization to determine the readiness or maturity to implement the best practices.
    - In some cases, you and your resource team may need to work within the organization to develop standardized programs.
- Prioritize - decide on where to focus your effort to gain the best return.
- Once you have determined opportunities for improvement at the organization level, you need to identify key or critical positions based on set criteria to focus your efforts. The criteria you consider will be specific to your utility, but may include:
    - Likelihood of vacancies (turnover, retirement)

- Specialty skill sets
- Unique requirements
- Challenges to attracting qualified candidates

- Realizing part way through interviews that a different skill set is required will set you back, wasting resources as well as time - yours and the candidates'!
- From there, you need to determine if this is an internal or external recruitment process:
  - If there are qualified people internally or internal people who can attain the qualifications in the timeframe required, then refer the Gap Analysis Table (GA2) as an example of how to measure your readiness for those critical positions across the best practices.
  - If there are no suitable internal candidates, then you will need to look outside of the organization. Refer to the external themes and checklists in this document to develop a recruiting and related communications plan.

Recommended Resources:

- An up-to-date organizational structure chart/map
- Up-to-date position descriptions
- A cross-functional resource team to support the program including Human Resources (HR) and Operational Departments

Timing:

A gap analysis is a fundamental first step which can be done at any time. It should be updated on a routine basis to ensure response to changes and alignment within the organization.

As for the rest of these themes, they are all inter-related. Succession planning needs development and training plans, while such plans are influenced by your succession needs. Successful recruiting draws from all these plans to search for the right person.

Succession Planning

Succession Planning is…

A strategy and process for identifying and developing future leaders who can be replaced at all levels, when leaders leave or retire

Planning helps your utility prepare for all contingencies by developing high potential workers for advancement.

Benefits:

- Helps retain organizational knowledge
- Supports the assessment of potential managers on a continual basis
- Increases the availability of experienced and capable employees
- Prepares employees to readily step into roles of increased responsibility as they become available which can help with employee retention

Succession Planning

Best Practices:

- Identify staff at all levels who can potentially retire within the next 5 to 10 years
- Identify skills needed now and in the next 10 years (see Pam Law Success Story following)
- Implement a strategy to support an internal development culture and identify a leadership champion process
- Develop a list and an application process (depending on collective agreement language) of high potential candidates for all leadership positions, bearing in mind the benefits of equity and diversity
- Develop an internal program focused on inclusivity, equity and diversity throughout the organization to ensure a workplace that is fair and supports the success of all
- Identify and assign mentors to support leadership development
- Use your Gap Analysis to identify both technical and leadership training courses. You and your resource team should ensure people are scheduled for training on an annual basis
- Identify a plan for experiential skills development (e.g., special assignment, backup supervisor/ manager coverage during holidays, volunteers for committees, etc.)
- Produce employee development plans completed with all succession planning candidates
- Complete an annual review of all high potential leadership candidates at a leadership meeting of all candidates with the utility's general manager/senior management
- Establish the expectation of current leaders to ensure that succession plans are developed for their direct reports

Recommended Resources:

- A cross-functional resource team to support the program including Human Resources (HR) and Operational Departments.
- Current supervisors or managers with employee development experience and succession planning experience

The following is an example of a beneficial succession planning situation -- Success Story, Pam Law.

Success Story Profile:

Pam Law, P. Eng.
Manager of Engineering and Planning,
Water Services, Region of Waterloo, Ontario

Pam graduated from the University of Guelph in 2002 with a degree in Environmental Engineering. After 8 years in the engineering consulting field working on municipal water and wastewater projects she joined the Region of Waterloo, Water Services Division as an Engineer in the Engineering & Planning group in 2010.

In her role as Engineer, Pam managed projects that identified solutions to ensure the Region's water and wastewater facilities would meet any future requirements. As she gained more experience, learning to manage projects more effectively and efficiently, she was then promoted to a Senior Engineer as part of the Region's Engineering Progression Program.

In 2018, the Manager of Engineering and Planning announced his plans for retirement in the following year. This was an opportunity for further progression within the organization. Pam was able to reach out for guidance from HR and senior management within Water Services to identify leadership development opportunities to improve her skill sets, as well as to learn what changes to expect with a transition from Engineer to Management.

Pam was promoted to Manager in December 2019, having a month overlap with her predecessor to learn from him some of the job requirements. Following this period, she met with her Director to develop a transition plan to identify goals and actions to be successful in her new position.

With the support of senior management and her management peers, Pam has become successful in her new role, furthering advancements in innovation and alignment within Water Services.

Employee Development

Employee Development is …

The process by which employees get the professional training needed to improve their skills and advance their knowledge. It is critical that a utility carefully design this development process to ensure the right people are receiving the right training and support.

Benefits:

- Developing the appropriate skill level of operators, maintenance employees, engineering, supervisors and managers, supports the effective operation of the utility
- Developing your current workforce employees is vital to ensuring adequate skills exist, both now and into the future as key employees leave your utility or retire

Best Practices:

- Identify potential career paths for the current and future utility needs – considering both office (management and support) and field (more direct operations)
- Create a corporate culture for the utility that promotes employee development and then complete regular employee assessments to ensure you're in alignment with that culture
- Identify each of the management and non-management groups requiring development (eg., operators, engineers, supervisors)
- Identify leadership skills required for management and non-management positions
- Through Succession Planning, identify skills currently needed, as well as future skill requirements
- Create an Employee Development Gap Analysis by comparing:
    - Identified skills required, with
    - The skills of current staff and those with growth potential
- Assess the current state of training programs and of individual employees
- Identify the approaches available to provide the required training (e.g., online training; in-person training; hands on training; coaching; mentoring; training rotation programs). Confirm the process to determine effectiveness (e.g., tests after training to ensure knowledge transfer and learning retention) (See Success Story, Danielle Holder below)
- Identify approaches to address industry-wide and regulatory overview training (e.g., attendance of conferences, webinars, and volunteering on industry committees)
- Initiate a Development Plan for each person/position identified above
- Utilize an Annual Performance Review to develop a personal development chart for each employee

Workforce development is not a one-time initiative, but rather an on-going responsibility of managers with an expectation of a minimum yearly review. Appropriate timing during the year for these reviews should be considered as part of building in the time for these processes to be completed effectively.

Recommended Resources:

- A cross-functional resource team to support the program including Human Resources (HR) and Operational Departments
- Involve appropriate managers, and look for a 'champion' supervisor or manager within the utility to take personal leadership and drive this effort
- Association of Boards of Certification (ABC) Certification programs and Provincial Continuing Education Units (CEU) requirements
- Effective Utility Management (EUM) Training (see Development Checklists MS1) for details of Core Attributes and Competencies as developed by WEF, AWWA, Et al.
- AWWA/WEF programs including Young Professionals
- Other non-technical management training programs (University/College)

The following is a Success Story Profile of Danielle Holder demonstrating the benefits of a Training Rotation Program.

Success Story Profile:

Danielle Holder

P. Eng. Project Manager

Toronto Water, The City of Toronto, Ontario

Danielle Holder is a Project Manager working in the Capital Works Delivery unit of Toronto Water.

Danielle has been working with Toronto Water for almost 5 years. She started as an Engineer-in-Training (EIT) in Toronto Water's EIT Rotation Program. As an EIT, she was able to gain diverse work experience by working in 4 different sections of Toronto Water. She spent one year supporting projects and senior engineers in each of the following sections: Water Treatment & Supply, Stormwater Management, Wastewater Treatment, and Process Control Systems. This experience enabled her to better understand how Toronto Water functions as a whole.

Now, as a Professional Engineer, she is working as a Project Manager to assist in delivering studies, as well as design and construction projects across all sections of Toronto Water. She is responsible for providing technical expertise and project management skills, controlling time, scope, budget, and facility impacts of her projects, while maintaining client relationships.

Danielle's participation in Toronto Water's Engineer-in-Training Rotation Program prepared her with the necessary skills for her permanent role as a Project Manager. Her chemical engineering degree paired with the contacts and technical skills she obtained in each section are invaluable in her current role. This is a testament to the structure of Toronto Water's Rotation Program and demonstrates how future talent can be groomed for success.

To build her network and ensure Toronto Water remains at the forefront of innovation, Danielle volunteers with Water Environment Association of Ontario as a Young Professional on the Professional Development Committee. She plans webinars, site tours, and other informative sessions for students and young professionals. Danielle also volunteers with Society of Women Engineers in the Membership Committee to welcome new volunteers and ensure the membership database is kept up to date. Danielle is looking forward to continued growth with Toronto Water, and they are happy to have her on board!

Training for New Technology

Training for New Technology is …

A specific training plan to support the introduction of new technologies that ensure the utility has the full skills and certifications required. Such a targeted training plan is a critical part of technology selection and implementation and is most effectively done in conjunction with the technology supplier.

As regulations become more stringent, the water and wastewater industry has been faced with implementing more complex technologies. Not only does this complicate the design and construction of processes and facilities, it also complicates operations and maintenance. The advancement of such technologies can potentially lead to a skill deficit and/or an advancement of required certification levels.

At pre-design, when the technology is identified and confirmed, your organization needs to provide the responsible individuals with the required, specific training at appropriate frequencies (initial and refresher). This training needs to be included in the tender package and/or imbedded into training plans and materials with a review on knowledge transfer. Potential upgrades should form part of your planning considerations for building a resilient organization.

Training for New Technology

Benefits:

- New technology can lead to better stewardship of the environment by producing better water quality and/or wastewater effluent
- Having staff knowledgeable and skilled on advancing technologies can lead to more informed and well-rounded operators, millwrights and engineers among others
- Opportunities for professional growth can translate into employee retention
- Your organization should be considering the "system perspective" to ensure one solution doesn't create another concern such as higher greenhouse gases (GHG's)

Best Practices:

- **Tender Documents** - There needs to be a section within the contract document requiring the contractor to provide training for all disciplines and shifts. This training will then form part of the initial capital costs.
- **New Technology** – Identify which new technologies require specific training.
- **Positions** - Identify the positions requiring training such as, but not inclusive of: operators, supervisors, operations & maintenance managers, electricians, millwrights.
- **Execution -** Determine if the training is most effectively delivered in-house or by a third party with a view to potential resource risk:
    - If expertise is held internally, ensure they receive "train-the-trainer" instruction.
    - Consider how to cluster groups most effectively for training sessions, e.g., by teams or by roles related to the technology.
    - Be cognizant that staff may be training their peers requiring relevant skills with support from their management.
    - If third party contractors are required, consult your purchasing by-law and adhere to the requirements.
    - All trainers need to evaluate the requirement for hands-on training and in-class instructions considering diversity and inclusion.
    - Developing and training to standard operating procedures will be key to consistency.
    - Training content should encompass all regulatory and system impacts as well as functionality, operation and required maintenance.
    - Determine the most effective and feasible mode(s) for training based on the current conditions. (See Success Story – Anna Lacourt following.)

Training for New Technology

- **Frequencies** - Identify the training frequencies required by following regulations and/or those required by your organization. When determining frequency, ensure all factors are considered. If a more stringent frequency is internally created, it may be harder to adhere to the minimum standard as precedence may have been set, leaving the corporation in potential risk.
- **Training Plan** – Incorporate new technology training into your training plans ensuring that support materials are easily accessed and updated with changes in practice between training sessions.
- **Monitoring -** Have one person dedicated to monitoring all training compliance. In some provinces/territories adopting new technology leads to documentation required for certification/ licence renewals and advancements. Key performance indicators should be developed to ensure your corporation is on target.
- **Timing** – Initial training for new technology is best implemented before commissioning. Depending on the complexity, more direct and specific training may be required as follow-up. If possible, build in pilot training in time to offer feedback on any major challenges in implementation. It is important to align more specific training with initial commissioning, as well as capturing new staff as they come onboard. Existing staff may also benefit from refresher training depending on the technology.

Recommended Resources:

- Trainers, training coordinators, manufacturers, engineers and attendees are all required to 'jointly' execute training for new technology
- The key is to have the training relevant, manageable and directly related to the positions

Success Story Profile:

Anna Lacourt

M.Eng., P.Eng., Process Optimization Engineer
The Regional Municipality of York, Ontario

Anna Lacourt is a Process Optimization Engineer working in the York Region Wastewater Operations Group. Anna has been working with York Region for almost 4 years, assisting the operations team with troubleshooting day-to-day process challenges; identifying and implementing opportunities for continuous process improvement; providing design review support for capital projects; and providing on-site support and training to operators. Anna has over 11 years of experience in environmental and process engineering, having previously worked at Ramboll, a consulting company, for 6 years and at the University of Toronto for 2 years. She became involved in the Regional Municipality's training program.

The Enhanced Wastewater Operator Training Program is an internal hybrid model with both in-class and on-site wastewater operator training developed in 2018 for York Region operators. It was delivered by Anna as well as a team lead. The intent of the training program was to provide operators with process training specific to the existing infrastructure at York Region. The in-class component included wastewater treatment process fundamentals and case studies based on the trainers' past experiences with wastewater treatment infrastructure. The on-site component allowed operators to physically interact with the treatment infrastructure and develop a hands-on understanding of process changes on system functionality.

With the onset of the COVID-19 pandemic in 2020, operator training moved to a virtual platform. Anna adapted the training material to be delivered through Microsoft Teams and Microsoft Forms.

She successfully rolled out the program to operations staff. During the process training, operators approached Anna to develop an additional "Operator Math Fundamentals" module. It was delivered to staff in 2021. Operator feedback has been very positive. Many have requested follow-up practice questions to stay engaged and to help them retain their learning. Some reported that the training has provided valuable tools for their jobs as well as their licensing exams. Monthly virtual Wastewater Operator Challenges are also sent out to the operations team, and the first person to submit the correct answer receives a gift card.

Going virtual has meant York Region Operations staff are able to keep up with training requirements while staying safe!

Training Plans

A Training Plan is … *"…a detailed document that guides the planning and delivery of instruction. Whether training people one-on-one, or in groups, in person or online, a well-developed training plan allows you to prepare for and deliver thorough and effective classes." (wikiHow.com)*

As industry evolves, both from a skill set perspective and a diverse workforce, one must be agile and be able to deliver a strong, executable training plan. This is key to building a resilient organization. Our systems today are more sophisticated and complex. This leads to the need for highly specialized skills and advanced training requirements for water and wastewater operators, maintenance staff and process engineers to name a few. It is critical to provide all staff the right training, at the right frequency, by the right knowledgeable individual, with follow-up to ensure the knowledge was understood and can be applied over time.

The demographics of the incoming workers has changed dramatically to introduce a younger workforce made up of more women and workers of diverse cultures. Utilities must not only have a long-term workforce plan, but one that appreciates diversity and inclusivity.

Benefits:

- Mitigates the effects of significant turnover in staffing which will continue to increase over the next decade as many senior employees enter retirement
- Mitigates the effect that the loss of skilled workers can have on operations and the financial implications, particularly if it creates large voids in operational capacity (ability to meet compliance, overtime costs, delays in major projects)

The success of these programs is driven by cross-departmental coordination, most notably between your utility, your HR department and the union. Budget implications to implement staffing/training programs are optimized when planned and implemented over time. (See Success Story, Rob Binks related to cross-departmental coordination, following)

Best Practices

- **Positions** - Identify the positions requiring a training plan such as operators, supervisors, operations & maintenance managers, electricians and millwrights. Organizations should consider cross-training staff to increase bench strength. Training plans should encompass regulatory requirements, such as lockout/tagout and position specific requirements, and Environmental Management Program training.
- **Courses -** Identify all required courses/on-the-job training that each position will be required to complete. The Gap Analysis work you and your resource team completed will provide a foundation for this step. Ensure all regulations have been adhered to such as environment, labour, pressure vessels, TSSA, electrical safety, etc.
- **Frequencies** - Identify the frequencies required by regulations and/or those required by your organization. When determining frequency, ensure all factors are considered. If a more stringent frequency is followed, it may be harder to adjust to the minimum standard as precedence may have been set, leaving the corporation in potential risk.
- **Execution** – Determine if courses are to be delivered in-house or by a third party.
    - If expertise is held internally, ensure they receive trainer training.
    - For staff new to doing training, in addition to having train-the-trainer workshops, you can have them eased in by starting with one-on-one sessions, for example.
    - Be cognizant that staff may be training their peers so they have to acquire relevant skills with support from their management.

- ◊ If third party contractors are required, consult your purchasing by-law and adhere to the requirements. Evaluate the results of the consultant's training offerings and materials for future reference. Ensure handover of training materials.
- ◊ All trainers need to possess the ability to train, encompassing the concepts of diversity and inclusion.

- **Monitoring** – In some provinces/territories, monitoring documentation is required for certification/licence renewals and upgrades. Key performance indicators should be developed to ensure your corporation is on target. The three most recommended practices for monitoring training plan compliance:
  - ◊ Having a dedicated resource
  - ◊ Self-monitoring (for smaller municipalities)
  - ◊ Pooling resources (several close municipalities)
- **Timing** – Training plans are an ongoing and continual part of maintaining effective operations. They are affected by your Succession Planning and influence your Recruiting.
  - ◊ It is important to align your programs with the years of service and the position of the staff team member.
  - ◊ Training plans are developed to ensure compliance with regulations and job requirements.
  - ◊ New team members require some training that is only required once, whereas senior team members require training at different frequencies and in different modes, including one-on-one or working/knowledge sharing sessions.

Recommended Resources:

Trainers, training co-ordinators, and attendees are all jointly responsible to execute a successful training plan. The key is to have integrated plans that are relevant, manageable, and directly related to the positions.

For a reference to the need for highly functioning, trained staff across departments, see the next "Success Story" about Rob Binks.

Success Story Profile:

Rob Binks

Supervisor, Construction - Integrated Water Services

Capital Regional District
Victoria, British Columbia

Rob began his career in the water industry as a labourer in 1991. Since that time, he has worked his way through the positions of pipe layer, pipe fitter, and charge hand. Currently Rob works as a supervisor with a Water Distribution (WD) III certification . He is part of a team of 33 operators and 2 managers. He is responsible for deploying 11 operators and as many contracted partners on a daily basis.

In 1998, the traditional water works roles were amalgamated. An Operator Program was created to encompass 3 main components: Construction, Customer Service, and Regional Supply.

Water workers are divided among those 3 areas and rotate every 6 months to a year through each of the specific roles. This system is based on operational needs, with some positions identified as taking longer to gain proficiencies than others. The program is comparable to the traditional apprenticeship program in which operators start as an Operator 1 and progress, without competitions, to an Operator 4. Similar to the Red Seal Program, operators in BC are required to write the EOCP Water Distribution certifications exams. After 7 years of experience and rotation, the operators assume the role of an Operator 4 holding a minimum of a WD II ticket.

In the construction rotation, which Rob supervises, the operators perform on average 4km of water main replacements per year. They install 15 hydrants, and repair leaks on services and water mains. The most complex part of the job is completing an average of 50 developer connections, including the tie-ins on the upgraded pipe. These connections require system shutdowns, excavations over 1.2m, and heavy crane lifts. Rob is also in charge of a crew that installs and replaces up to 660 meters a year. This group of 13 operators, and up to 10 contractors, take care of 450 km of water mains, and 2500 services in 6 different municipalities that are growing by more than 3% annually. In some areas, they are over 50 years old and have system pressure exceeding 100psi.

Recruiting

Recruiting refers to …

The process of identifying, attracting, interviewing, selecting, hiring and onboarding employees. It involves everything from the identification of a staffing need to filling that need. As your external environment changes, your organization needs to be cognizant of these changes and adjust practices accordingly. It is important to not only look at skills, but also cultural alignment and diversity to ensure the long-term sustainability and resilience of the utility.

If filling a position with an internal candidate is not possible or practical, you will need to look externally to recruit for that role. This is a tremendous opportunity to enrich the organization.

Benefits:

- Recruiting staff with the appropriate skills to meet your utility's mission and vision is critical to ensure the long-term sustainability and resilience of your utility
- Recruiting new staff with newer skills can add to the skill sets of all through knowledge sharing and might allow faster technical transition if internal training is not practical
- Taking the time up front to ensure employment candidates are aligned with the utility's mission, vision and culture will save significant time, effort and grief in the future by not having to deal with staff retention, performance, and engagement issues.

Best Practices:

Diversity and Equity:

- Cast your net wider to improve the catch of potential candidates. The Canadian workforce has changed and so has your community and our industry.
- A utility workforce that reflects the community it serves builds community connection and engagement.
- Consider recruitment methods that eliminate bias (removal of names or pictures).
- Consider methods to structure the interview process to avoid diversity bias and improve interview inter-activeness.
- Inclusivity is the ongoing, internal effort to welcome a diverse workforce and to make them feel comfortable and equal while ensuring all employees feel fully valued.
- Ensure there is a gap analysis conducted such that staff diversity is accommodated, e.g., changing rooms, washrooms and personal protective equipment.
- Ensure the organization has created an inclusive culture through initiatives, such as tracking and reporting on diversity and inclusivity metrics, creating employee resource groups and purposefully establishing diverse project teams.

Recruiters:

- Ensure that those conducting the recruiting understand the mission and core values of the organization, as well as the technical requirements for a position.
- Ensure that those conducting the recruiting and hiring receive training and fully appreciated the importance of a diverse and inclusive workforce.
- Ensure managerial compensation packages and union collective agreements are competitive and attractive to potential employees.
- Consider, where appropriate, work-from-home and/or hybrid work-from-home/office options for maximum flexibility.

Communications:

- A good corporate communications plan can benefit every aspect of a utility from community engagement that supports operations to building the value of water AND the value of a career in our water/wastewater industry.

- Such community-wide communications plans should include a focus on the critical role of staff and on the opportunities for future staff. Early engagement in schools, colleges and universities, builds the profile of the utility as a quality employer.
- Regular communications and engagement with your diverse community can create a better sense of inclusion and encourage better recruitment from all sectors. Recognizing the diversity in your community, ensures communications are in the languages reflective of the target audience.
- How and where you communicate your recruitment needs can dramatically affect the responses you receive. Remember that you are not just 'hiring' a specific skill provider for a specific task, but 'recruiting' a team member that will serve their community, support the greater mission of the organization and hopefully stay a long while.

Once hired:

- Develop and initiate an onboarding process and appropriate training plan.
- Spend time with new recruits to ensure alignment with the organization's vision, mission and culture. Address misalignments early on to avoid long-term performance and/or engagement issues.
- Implement a mentoring program.
- Performance reviews should occur frequently for new hires and, at a minimum, conduct annual performance reviews of all staff.

Recommended Resources:

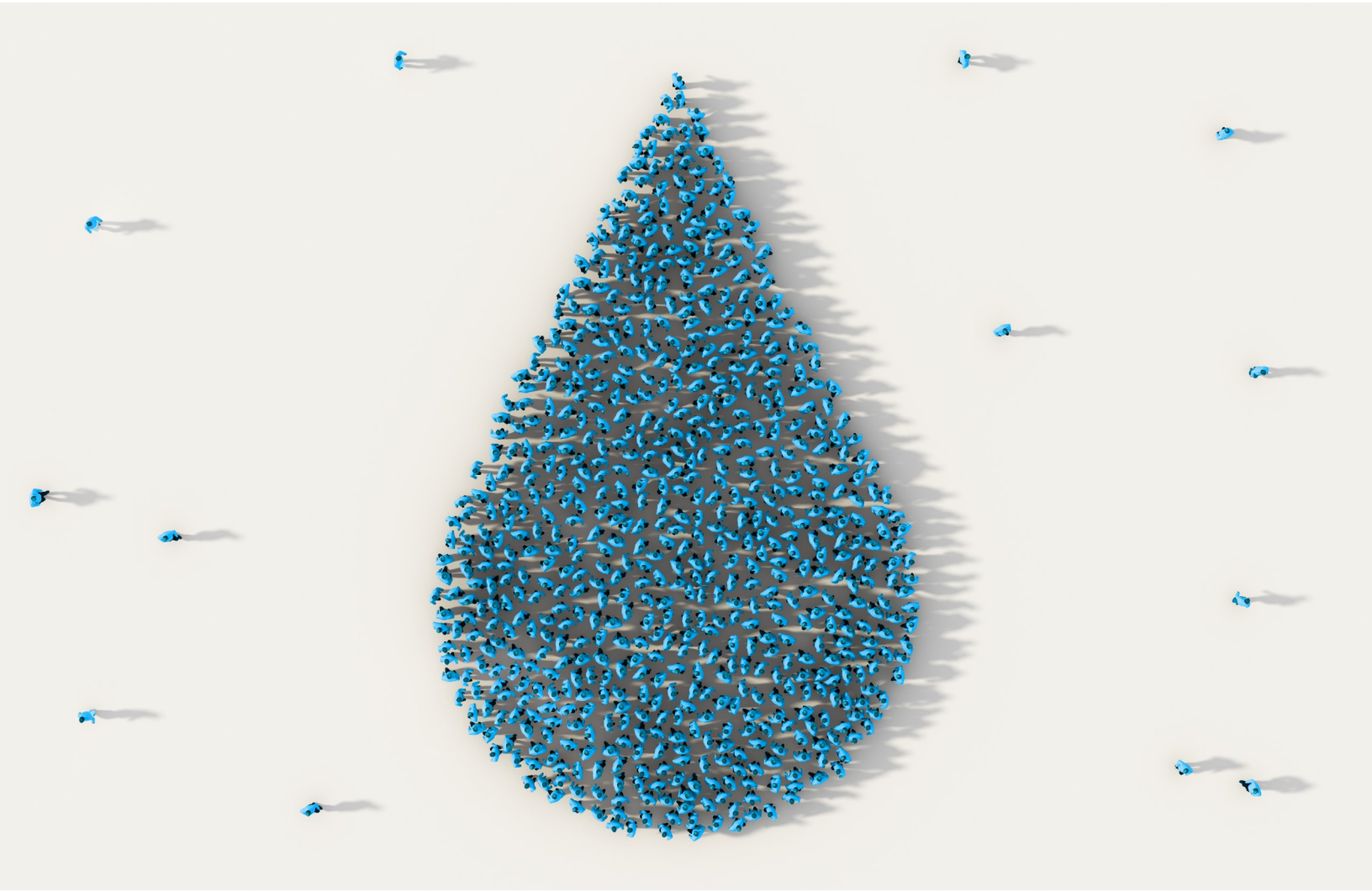
- Assemble a knowledgeable interview panel, such as, Human Resources and hiring manager
- Utilize employee assessment and profile tools developed by professional organizations to assist in hiring people who fit within the organization and have the prerequisite skills

Summary

This Guidance Document has identified a number of themes that, together, will assist you in developing your workforce in order to ensure resilience and to optimize a smooth transition of leadership and management when staff leave or retire.

Each utility is different. So, review the best practices of each Guidance Document Theme and customize them for your use, depending on your operation and as identified in your Gap Analysis.

The secret to success is preparation and there are so many resources to support you. We have included a list of some great resources recommended by our Utility Leadership Committee. CWWA hopes that this Guidance Document can get you started as water and wastewater managers in preparing your own Workforce Development Plans that ensure a sustainable and resilient utility.



Gap Analysis for Your Organization

This Guidance Document recommends that you start with a Gap Analysis. This table is based on the five themes covered in the Guidance Document and asks you to assess your organization's progress on each item.

This is intended as a high level look at your organization that can help determine your readiness and organizational maturity to implement the Best Practices that have been recommended. This early analysis can help you prioritize what you want to focus on.

Theme	**Readiness**				
	No progress to date (1)	Some progress (2)	Actionable plans in place (3)	Fully evolved mature program (4)	Score
Succession Planning					
Employee Development					
Training for New Technology					
Training Plans					
Recruiting					

**** a downloadable and adaptable version of this chart is available for your easy use on the CWWA website www.cwwa.ca***

Gap Analysis for Your Organization

Gap Analysis for Critical Positions

This table is intended to help you to conduct a quick analysis of the steps required for each individual. The information can first help you identify any training needs required by each member of your team. Meanwhile, combined, the results can direct your corporate training plans based on the most critical needs.

Key Position (Job Title)	Employee Development Plan in place?	Formal Training Plan?	Training for New Technology Required.	Candidate for Succession Plan?
Position 1				
Position 2				
Position 3				

**** a downloadable and adaptable version of this chart is available for your easy use on the CWWA website www.cwwa.ca***

WORKFORCE DEVELOPMENT CHECKLISTS

The CWWA's Workforce Development Working Group sent out the *Workforce Development Survey* (2020). The results identified several areas where-in utilities stated a need for further guidance or assistance.

In response, the Working Group developed this series of checklists as simple aids to support utility leaders to list the core competencies they desire and assess the readiness of their workforce.

Recognizing that different types of employees require different approaches, the Working Group created these 4 specialized checklists:

- Management and Supervision Training Checklist (MS 1-3)
- Engineering Progression Checklist (EP 1-4)
- Maintenance Training Checklist (MT 1-3)
- Operator Training Checklist (OT 1-2)

Each of the checklists identify specific "Competencies". To utilize the checklist, managers are invited to assess the "Readiness Level" of their workforce - either the utility as a whole, or by individual employee skill sets as appropriate. The "Readiness" to perform these competencies can be rated as follows:

❶ Needs Training Area
❷ Skilled Area
❸ Strength Area

Any area identified with a ❶ can be addressed either by training existing employees with the potential to take on the required competencies or through external hiring or consultants. For existing employees, a training plan can be documented in a personal development plan and re-assessed annually.

These Checklists, developed by the CWWA Utility Leadership Committee and their Workforce Development Working Group, were assembled to assist managers of water and wastewater utilities to use best practices and provide guidelines for developing their own workforce.

These Checklists, combined with using the Themes and Best Practices in this document, will aid managers to better manage their utilities for optimum performance, now and into the future. The Working Group members who developed these Checklists and Themes are long-term, senior utility managers with much expertise in the subject matter. It is hoped that the sharing of these checklists will prove beneficial to managers with fewer resources or time to develop similar documents themselves.

Management and Supervision Training Checklist

The following table identifies the attributes and skill components that are deemed essential to running a good utility. These attributes and components are drawn from the Effective Utility Management (EUM) Primer developed by AWWA, WEF, PWAUS and other related bodies*.

The "Readiness" to perform these competencies can be rated as follows:

1. Needs Training Area (Address through training or external hiring)
2. Skilled Area
3. Strength Area

ATTRIBUTE	COMPETENCIES	READINESS LEVEL
Product Quality (i.e., water, wastewater and stormwater)	• Uses Key Performance Indicators (KPIs) to analyze Water Utility's performance • Understands regulatory requirements • Able to maintain operational quality to support customer, public health, economic, and ecological needs	
Customer Satisfaction	• Facilitates timely customer feedback • Responsive to customer needs and emergencies • Provides tailored customer service to a range of customer groups (e.g., residential, commercial)	
Employee and Leadership Development	• Reviews/creates role descriptions for employees • Identifies the difference between management and leadership • Demonstrates effective active listening skills • Demonstrates ability to build consensus • Builds effective work teams • Uses effective approaches to conflict management • Develops and implements systems for employee coaching and development	
Operational Optimization	• Understands the benefits of annual and long-term planning • Understands/develops a Business Case as critical input to capital projects • Conducts ongoing, improvement-based performance monitoring • Minimizes resource use and loss from day-to-day operations • Is aware of and adopts, in a timely manner, operational and technology improvements (e.g., operational and information technology) • Manages and utilizes data from automated and manual processes • Develops and implements safe work and standard operating procedures	

Management and Supervision Training Checklist

ATTRIBUTE	COMPETENCIES	READINESS LEVEL
Financial Viability	• Understands the full life-cycle cost of assets • Develops cost benefit analyses for projects • Develops budgets and reports back on variances • Is able to set priorities in budgets • Understands and implements financial policies • Understands the approach for setting realistic rates • Develops a rates and tariffs program	
Infrastructure Strategy and Performance	• Is able to fulfill Asset Management regulatory requirements • Quantifies and qualifies the assets within their utility • Develops a framework for conducting an asset inventory and a condition assessment • Understands how asset management fits with the long-term viability of the utility • Understands the condition of and costs associated with critical infrastructure assets • Develops an approach to maintaining assets over the long-term at the lowest possible life-cycle cost and acceptable risk • Coordinates repairs within the community to minimize disruptions • Develops plans for infrastructure investments consistent with community needs, growth, and system reliability, using a robust set of adaptation strategies	
Enterprise Resiliency	• Identifies business risks. (e.g. legal, regulatory, financial, environmental, safety, cyber, knowledge-loss, etc.). • Assesses risks in the context of a regulations, environment, safety, security and operations • Prioritizes these risks using case studies and industry best practices • Performs operational risk assessments on their utility using industry best practices • Works with staff and external resources to anticipate and avoid problems • Proactively establishes tolerance levels and effectively manages risks • Develops plans for and actively manages business continuity	

Management and Supervision Training Checklist

ATTRIBUTE	COMPETENCIES	READINESS LEVEL
Community Sustainability	• Actively leads in promoting and organizing improvements to community and watershed health with external community partners • Actively leads in promoting welfare within the community for disadvantaged households • Uses operations to enhance natural environment • Ensures efficient use of water and energy resources • Supports maintaining and enhancing ecological and community sustainability (e.g., pollution prevention, watershed and source water)	
Water Resource Sustainability	• Ensures water availability through long-term resource supply and demand analysis, conservation, fit-for-purpose water reuse, integrated water resource management, watershed management and protection, and public education initiatives • Manages operations to provide for long-term aquifer and surface water sustainability and replenishment • Understands and plans for future water resource variability (e.g. changing weather patterns, including extreme events, such as drought and flooding)	
Stakeholder Understanding and Support	• Develop the process for stakeholder communication • Demonstrates the ability to communicate effectively - both orally and in written form • Develops relevant Key Performance Indicators (KPIs) • Engenders understanding and support from oversight bodies, community and watershed interests, and regulatory bodies for service levels, rate structures, operating budgets, capital improvement programs, and risk management decisions • Actively engages in partnerships and involves stakeholders in the decisions that will affect them • Actively promotes an appreciation of the true value of water and water services, and water's role in the social, economic, public and environmental health of the community	

* Further information can be obtained via the following links:

The EUM Primer: Effective Utility Management Program | American Water Works Association (awwa.org)

The EUM Certificate Program which offers a comprehensive schedule of workshops covering all attributes: www.worldwatertraining.com

Engineering Progression Checklist

Senior Engineer, Engineering experience approximately 11+ years

The following identifies a progression and evaluation approach developed by the Region of Waterloo and based on guidance from Professional Engineers Ontario.

The "Readiness" to perform these competencies can be rated as follows:

❶ Needs Training Area (Address through training or external hiring)
❷ Skilled Area
❸ Strength Area

a downloadable and adaptable version of this chart is available for your easy use on the CWWA website

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
Professional Designation	• **P. Eng.** criteria met	
Knowledge and Experience	• Related university degree **plus progressively responsible (broad scope) experience**	
Planning and Project Management	• **Prepares** 1-3 yr. overall plans and inputs into long range planning	
Engineering Designs	• **Prepares/reviews** designs and drawings • Assumes **professional responsibility** for project integrity	
Budgeting	• **Estimates** costs and **manages** project budgets	
Supervision	• **Supervises** technical staff • **Administers** contracts with consultants and contractors	
Consultant Selection	• **Leads/participates** in the tender and consultant selection process	
Project Control	• **Establishes** monitoring programs and **interpretation** of monitoring results	
Technical Support	• **Researches and advises** on technical issues	
Contract Administration	• **Negotiates and approves** consultant budget • **Manages** consulting and construction budgets	
Presentations	• **Conducts** public meetings • **Prepares and presents** to various committees	

Progression Path Checklist:

Engineer, experience approximately 4-10 years

The following identifies a progression and evaluation approach developed by the Region of Waterloo and based on guidance from Professional Engineers Ontario.

The "Readiness" to perform these competencies can be rated as follows:

1. Needs Training Area (Address through training or external hiring)
2. Skilled Area
3. Strength Area

a downloadable and adaptable version of this chart is available for your easy use on the CWWA website

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
Professional Designation	• **P. Eng**. criteria met	
Knowledge and Experience	• Related university degree **plus related program specific experience**	
Planning and Project Management	• **Assists with** planning and project management of projects	
Engineering Designs	• **Develops preliminary designs** and budgets including preliminary specifications and contracts	
Budgeting	• **Develops** budgets for projects	
Supervision	• **Monitors** work of Regional staff assigned to project • **Oversees** the work of contractors and consultants working on projects **across division**	
Consultant Selection	• **Participates** in the consultant selection process	
Project Control	• **Monitors progress** and provides input to project team during the **design** and **construction phases** of assigned **projects**	
Technical Support	• **Prepares** technical specifications	
Contract Administration	• Provides **contract administration** and inspection	
Presentations	• **Participates** in public meetings • **Occasionally** presents to Committee	

Competency Criteria Checklist:

Engineering Intern, experience approximately 0-4 years

The following identifies a progression and evaluation approach developed by the Region of Waterloo and based on guidance from Professional Engineers Ontario.

The "Readiness" to perform these competencies can be rated as follows:

1. Needs Training Area (Address through training or external hiring)
2. Skilled Area
3. Strength Area

a downloadable and adaptable version of this chart is available for your easy use on the CWWA website

ATTRIBUTE Quality of Experience	COMPENTENCIES Five Competencies must be met over the course of the 48-month period	READINESS LEVEL
Application of Theory	• To qualify as engineering work, at least one component of the following must be present in the tasks as a significant percentage of the assignment function: • Analysis, Design & Synthesis, Testing Methods, Implementation methods • The work should involve the use of engineering principles taught during an engineering degree program	
Practical Experience	• Provides interns with an appreciation of the fundamental roles of the function, time, cost, reliability, reparability, safety & environmental impact of their work, through the opportunity to experience/understand/acquire knowledge about the following: • function of components within a system, limitations of practical engineering & related human systems, significance of time in the engineering process, codes, standards, regulations & laws that govern the applicable engineering activities	
Management of Engineering	• **Planning -** including the development of a concept & evaluation of alternatives • **Scheduling** - including the allocation of resources to assessment of cost escalation • **Supervision** - including leadership, organizational & motivation skills • **Project control** - including coordination monitoring & taking corrective action • **Risk assessment -** including performance, social & environmental impacts	

Competency Criteria Checklist:

Engineering Intern, experience approximately 0-4 years

ATTRIBUTE Quality of Experience	COMPENTENCIES Five Competencies must be met over the course of the 48-month period	READINESS LEVEL
Communication Skills	• **Written work -** including briefs or formal reports • **Oral Reports or Presentations -** to peers, management, scientific community and/or general public	
Societal Implications of Engineering	• Awareness of potential consequences both **Positive** and **Negative** of a project • Recognition of Value to the Public • **Safeguards** to mitigate adverse impacts, Role of **Regulatory Agencies** and **Responsibility** to Guard Against Conditions Dangerous or Threatening to Life, Limb, Property or the Environment	

Maintenance Training Checklist

The following table identifies the attributes and skill components that are deemed essential to running a good utility. These checklists were developed by the CWWA's Working Group on Workforce Development.

The "Readiness" to perform these competencies can be rated as follows:

1. Needs Training Area (Address through training or external hiring)
2. Skilled Area
3. Strength Area

a downloadable and adaptable version of this chart is available for your easy use on the CWWA

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
Apprenticeship	• Apply for program (e.g. millwright, electrician, plumber) • Attend training annually • Work under/shadow a journeyperson	
Maintenance Management	• Learn about work orders and request systems • Identify critical equipment • Learn about "preventative maintenance" • Learn about "predictive maintenance" • Learn about "reliability-engineered maintenance"	
Asset Management	• Understand policy, strategy and approach to governance • Understand current levels of service, risks and lifecycle management approach • Review Inventory listing • Review rebuilding equipment plan • Review plan to installing new equipment/technology • Review short & long-term budgeting	
Equipment	• Attend supplier training for components (e.g. bearings, valves) • Attend vendor training for systems (e.g. filters, pumps, compressors) • Attend industry and equipment conferences (e.g. MWWA, WCW) • Review P&C/P&ID's to learn about the plant process • Review distribution drawings to understand distribution system	

Maintenance Training Checklist

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
Equipment (continued)	• Review equipment manuals • Review operating manuals • Identify mobile equipment • Learn about equipment reports used to document work that occurred at shutdowns or during rebuilds • Lessons Learned reports	
Safety	• Review critical task lists • Review SOP's and JHA's • Review Workplace Health and Safety Regulations • Review Site Safety Procedures	
Operations	• Review operating licenses • Review past compliance to licenses • Shadow operator to cross-train • Understand the impact of changes in critical equipment on the process	
Process Control	• Understand SCADA system overview at plans • Understand distribution system SCADA • Programming training	
Regulatory	• Identify municipal, provincial or federal regulations related to equipment	
HR Management	• Quality onboarding review to learn about organization and meet people for relationship building • Review Workplace HR Policies • Attend annual performance review • Discuss career development with management, identify future possibilities and create employee development plan	

Maintenance Training Checklist

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
Resources	• Identify key mechanical and electrical contractors to support during breakdowns (a list with contact information to access during weekends and holidays) • Identify key suppliers to support during breakdowns (a list with contact information to access during weekends and holidays) • Identify key utility contacts in other municipalities to obtain support during a breakdown • Identify online training support • Identify local college training support • Identify online troubleshooting support • Understand the process and authority levels to hire contractors	
Business Continuity Planning	• Understand the approach to managing disasters • Be familiar with the Business Continuity Plan for the utility	

Operator Training Checklist

These checklists were developed by the CWWA's Working Group on Workforce Development.

The "Readiness" to perform these competencies can be rated as follows:

1. Needs Training Area (Address through training or external hiring)
2. Skilled Area
3. Strength Area

**** a downloadable and adaptable version of this chart is available for your easy use on the CWWA***

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
ON-BOARDING		
New Employee Orientation:	• Ensure internal policies and procedures are understood such as Security access, Fleet and Environmental Management System documents	
Programs such as Computerized Work Management Systems	• Ensure Computerized Work Management System (CWMS) expectations are understood including access and training	
Review of Procedures:	• Ensure internal corporate policies and procedures are understood such as Health & Safety, Standard Operating and Emergency Response	
ON-THE-JOB		
Plant Tour:	• Identify the support systems in place, either in-house or contracted, and how to access them (millwrights, electrical, process optimization etc.) • Identify and understand critical control points	
Operations:	• Understand how the facilities operate through review of Operations Manual, Process Narratives, Process Control Narratives, SCADA training and linear infrastructure while identifying problem areas and areas of focus	
Maintenance:	• Understand Computerized Work Management System work orders • Identify the critical equipment and work orders associated	
System Training:	• Understand systems through training (hydraulics, topography, process by process, from source to tap and source to treatment etc.)	

Operator Training Checklist

ATTRIBUTE	COMPENTENCIES	READINESS LEVEL
CONTINIOUS IMPROVEMENTS TRAINING:		
Training:	Develop skills through training required by: • Provincial/Territorial Regulatory Labour Requirements (for all employees) • Provincial/Territorial Regulatory Environmental Requirements (for licensed operators) • Federal Fisheries Regulations • Process / Equipment / Capital Training • Management of Change • Incident investigation	

CWWA WORKFORCE DEVELOPMENT SURVEY RESULTS

Overview

The CWWA Working Groupon Workforce Development was charged with developing a Guidance Document for water and wastewater utilities. The Guidance Document aims to provide tools and resources to senior managers in developing their workforce to meet the challenges of today and in the future.

To understand and ensure the Guidance Document meets the needs of utility managers a survey instrument was developed with input from Working Groupmembers many of whom are utility managers.

Objective

The objective of the survey is to: gain input from CWWA Senior Leaders on key Workforce Development processes and roles, their importance and the current state of implementation in their organization.

Implementation

A list of utility managers was developed and the survey was disseminated to 124 managers and supervisors by CWWA on July 31, 2020.

A total of 31responses were received and tabulated. The results represent a snapshot in time and provide insight into the industry but cannot conclusively represent the overall utility stakeholder group.

The information gathered represents the opinions of the respondents and not necessarily the opinions of CWWA.

Survey Results

The following are the results of the survey presented in chart and graph format.

The survey results have been broken down by subject matter as follows:

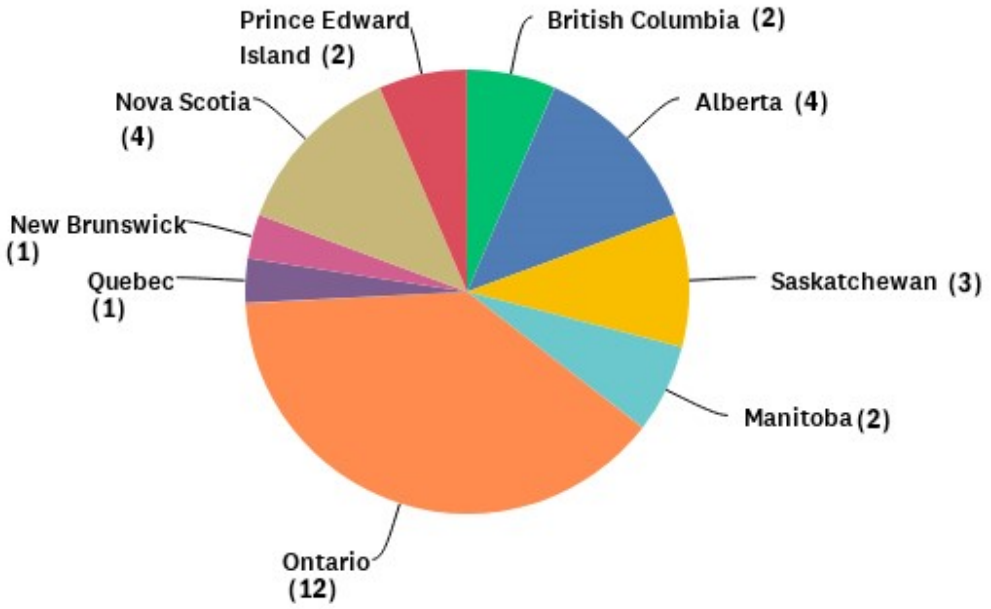
- Demographic Information
- Processes
- Leadership
- Maintenance Staff
- Operators
- Engineers
- General

Where appropriate, a brief analysis precedes each graph or chart. For certain questions, respondents were asked for further commentary. Where this was provided, the responses are shown under Participants Comments following the chart or graph.

Section A. Demographic Information

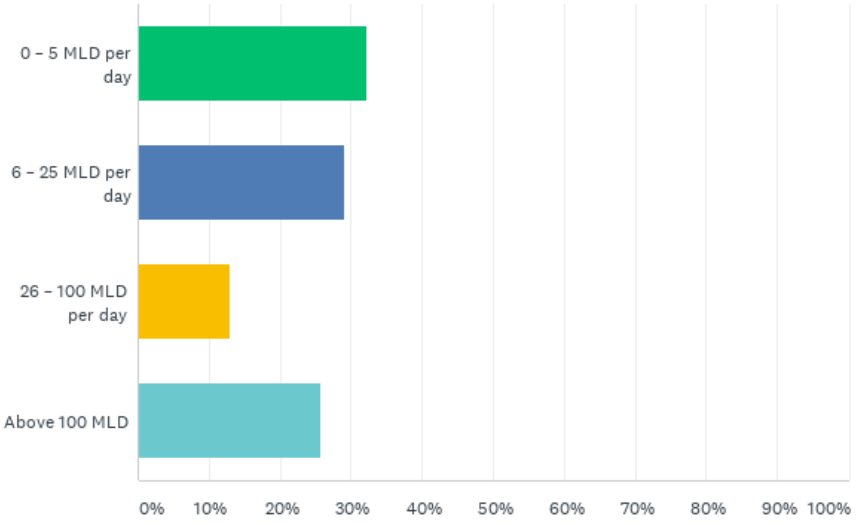
Question: In What Province are you located?

There was representation from all Provinces. Quebec is under-represented in the sample and the survey was only administered in English. It is therefore difficult to assign a confidence level for Quebec. No responses were received from the Territories.



Question: How many mega liters per day of water or wastewater per day is processed?

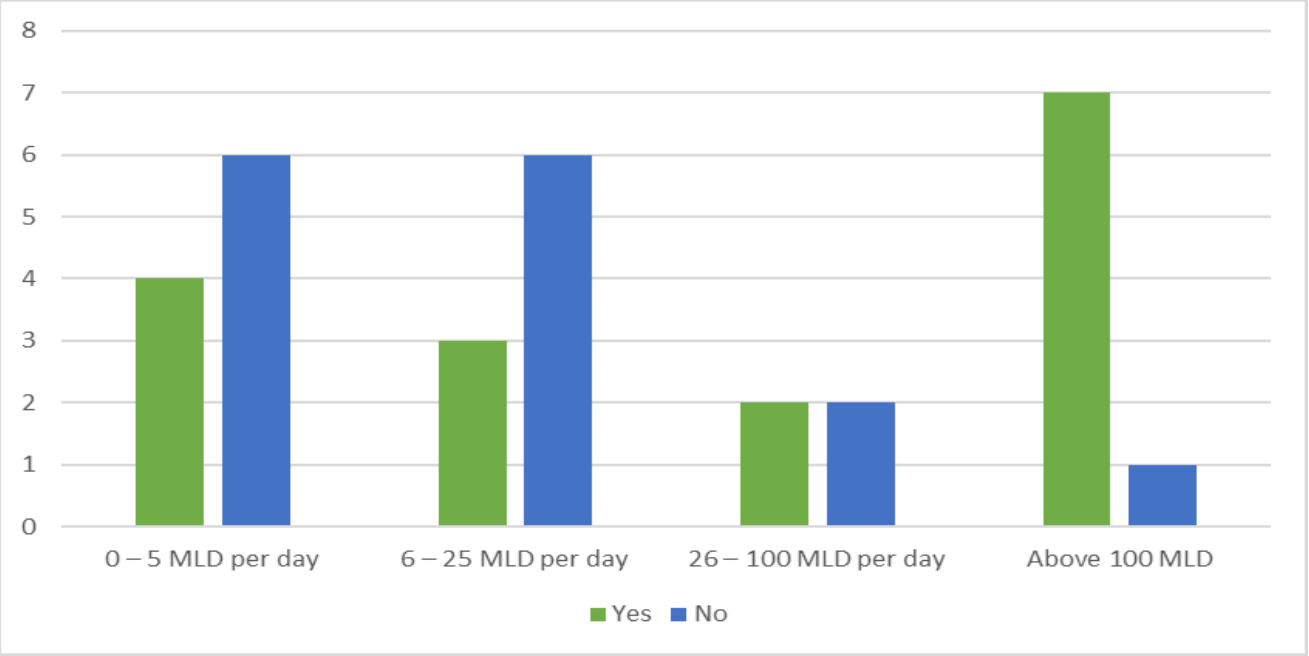
There was a good cross section of responses from small, medium and large utilities which enabled crops tabulations to be run to determine if responses varied by size.



Section B Processes

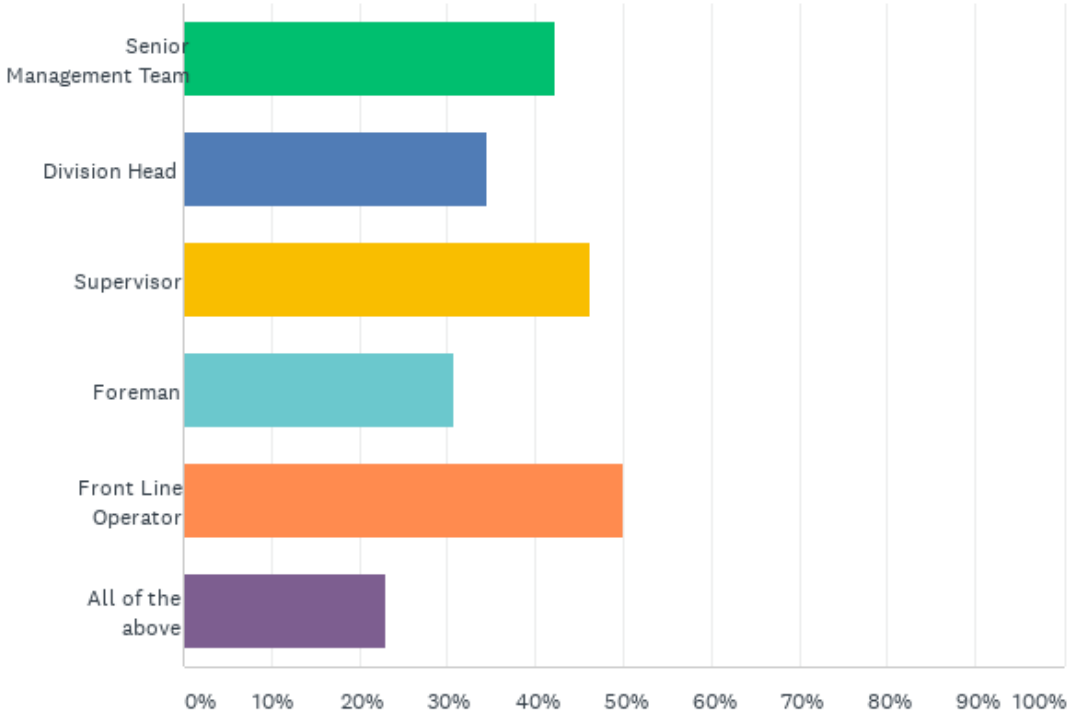
Question: Does your Utility have a Succession Plan?

In the smaller and medium sized utilities, less than 50% have a succession plan.



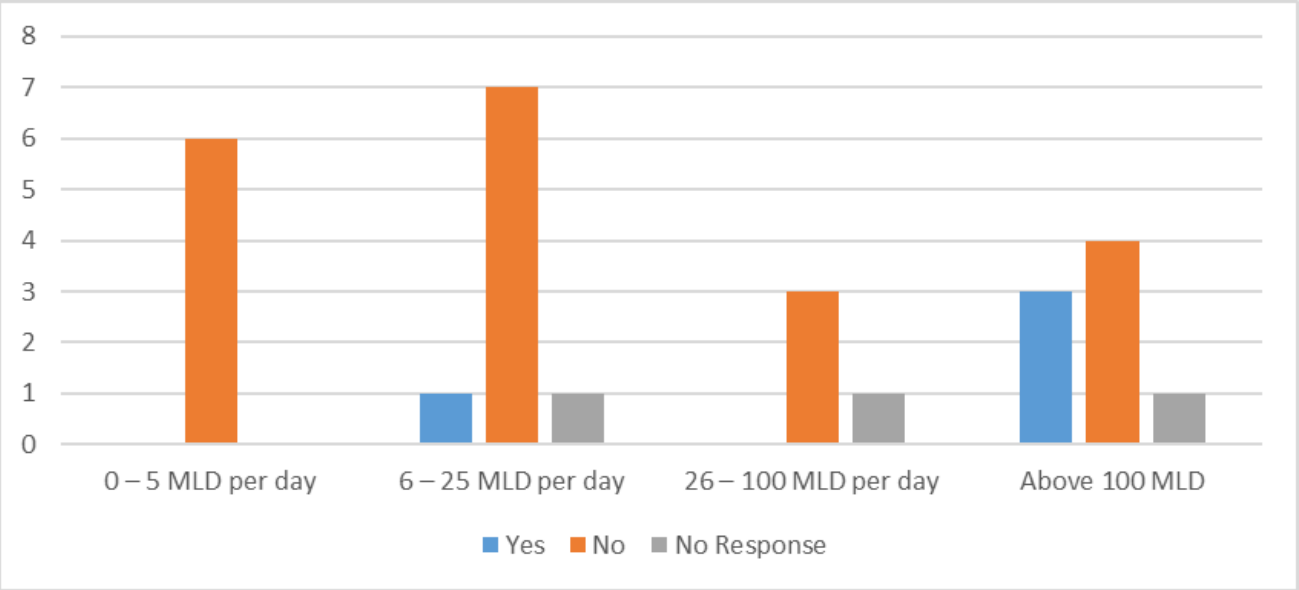
Question: Which Utilities have an Employee Development Plan for which employees?

Only 23% of participants have Plans for all employees. For those that do not have plans for all, the larger amounts are for Senior Management Team and Supervisors. The slightly largest group to have plans are operators. One could opine that this is not unexpected as operators have to not only be Certified but require CEUs. More research would be needed to validate this. With an aging workforce and retirement looming for many staff, having a Development Plan needs more attention than is being given.



Question: What are the findings from the Gap Analysis on workforce knowledge, skills and abilities?

Few utilities of any size have performed a Gap Analysis to determine the level of skills of their staff compared to what is needed. 42% of respondents in the largest utilities, presumably with more resources at their disposal have undertaken a Gap Analysis. Only one of the seventeen utilities in other size categories reported doing so.



What are the 3 main findings from the Gap Analysis on Workforce Knowledge, Skills and Abilities

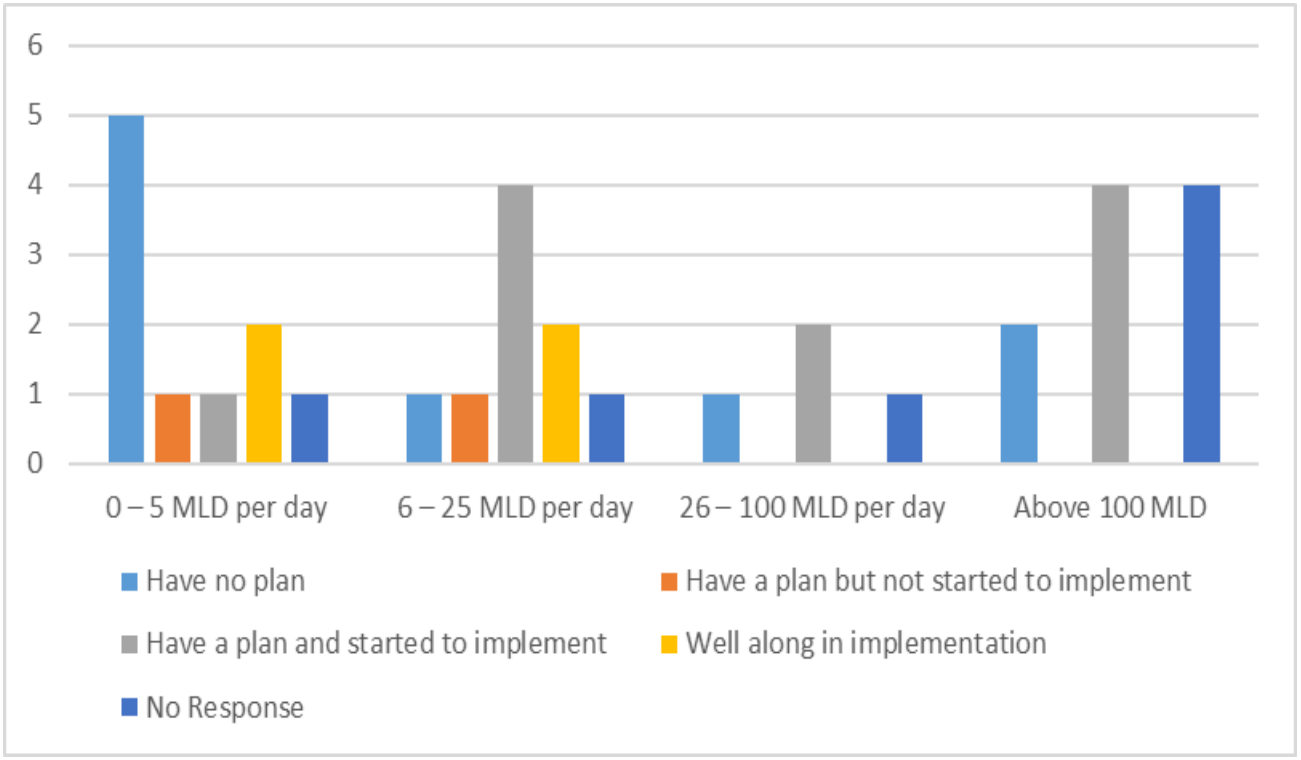
Respondents' Comments:

- Need to plan for the future
- Regionally there are challenges to training
- Effective transfer of knowledge is critical to sustainable programming
- Recruiting local has been more successful with retention
- Qualified workers are hard to find
- Focus on internal development
- Certification Boards in most provinces need to change

CWWA WORKFORCE DEVELOPMENT SURVEY RESULTS

Question: Where is your utility in the Workforce Development Process?

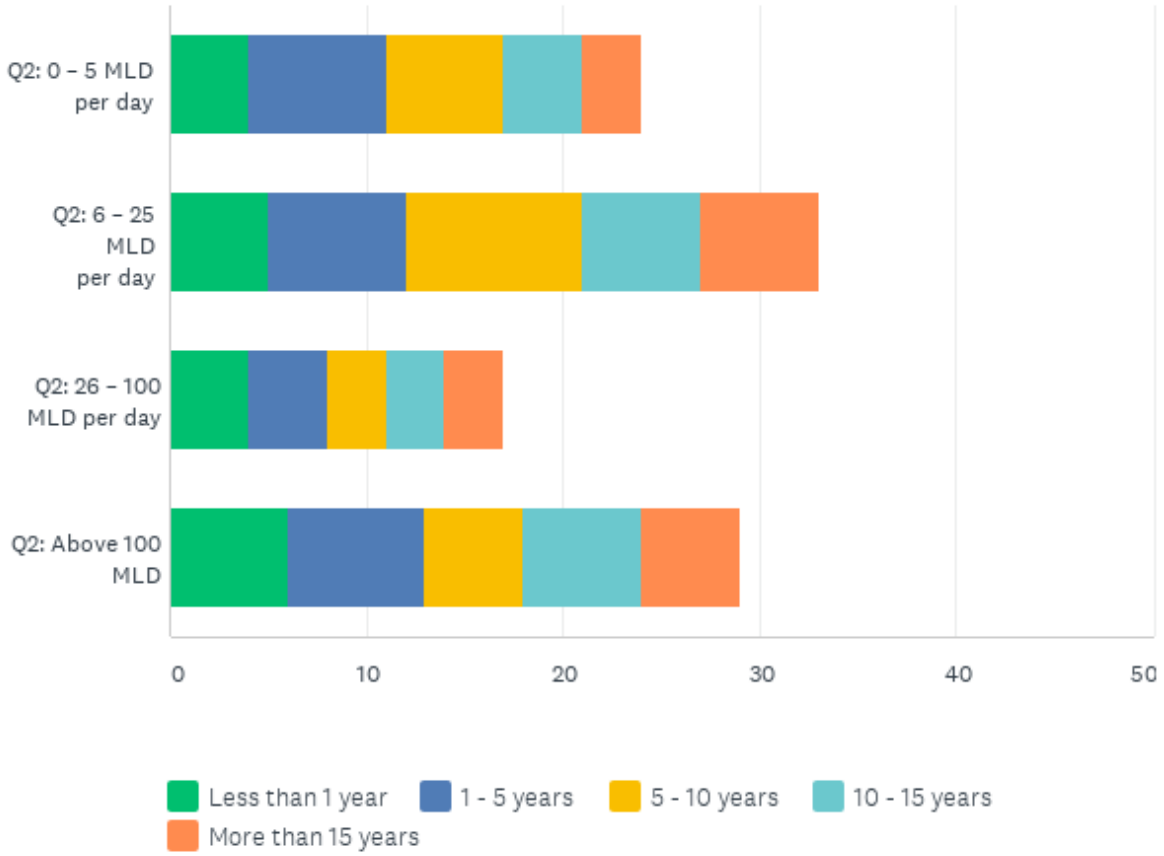
Those with no plan range from smaller utilities at 55% to larger utilities at 16%.



Section C: Leadership

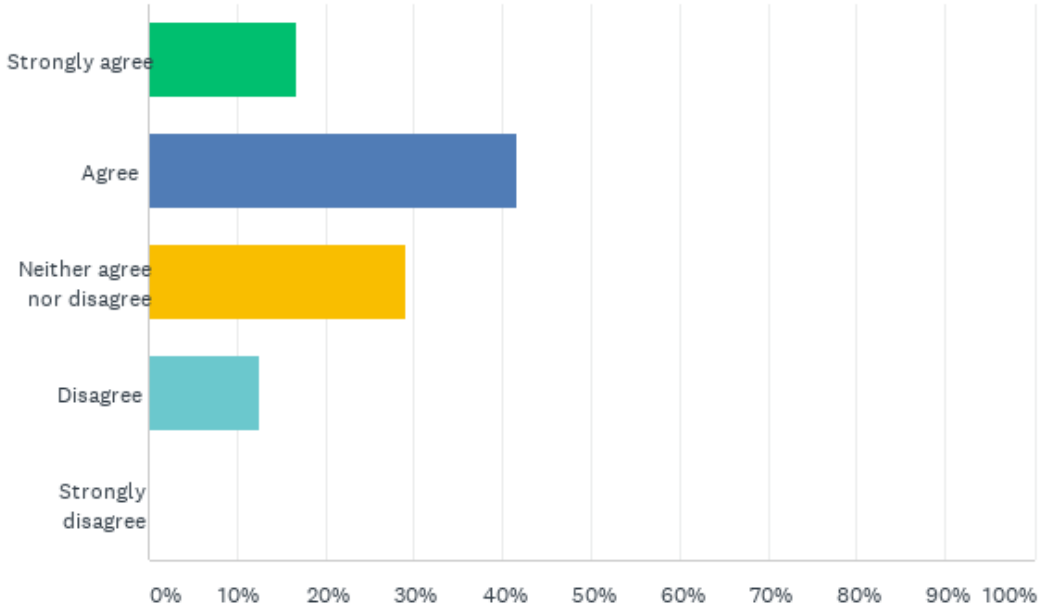
Question: What % of Senior Management Team and Division Heads are due to retire in various time frames?

The Data indicates 18% will retire in less than one year and 24% will retire in the next five years. There are no statistically significant differences by size of utility



Question: Does the organization provide sufficient training for all employees?

Only 11% of respondents disagree that their organization provides sufficient training for all employees. While this is good, caution must be taken with this result as in the previous question as to performance of a gap analysis very few utilities had done so. Not having a clear idea as to what skills are lacking to develop the workforce of the future, staff may be more optimistic in their response to this question and not realize what training is needed to prepare for future operational optimization.



Question: Identify Areas of Leadership Development that are Lacking

Respondents were asked to provide commentary so no graph is provided.

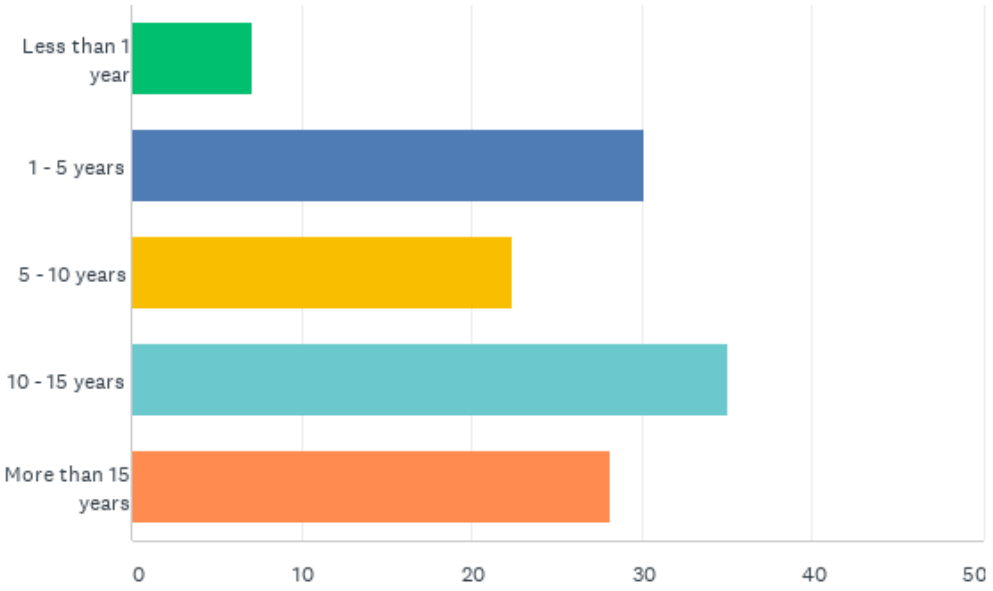
Respondents' Comments

- Eliminating racism
- No training program developed
- Documented training plans for all
- More training and opportunity for union staff
- A plan
- There is no leadership training provided

Section D: Maintenance Workers

Question: What % of maintenance employees are due to retire?

Less than 1% retiring in the next year and 5% in the next 5 years.



Question: What would make maintenance onboarding and training easier and more efficient?

Not all respondents answered this question. There was no general consensus so all responses are recorded

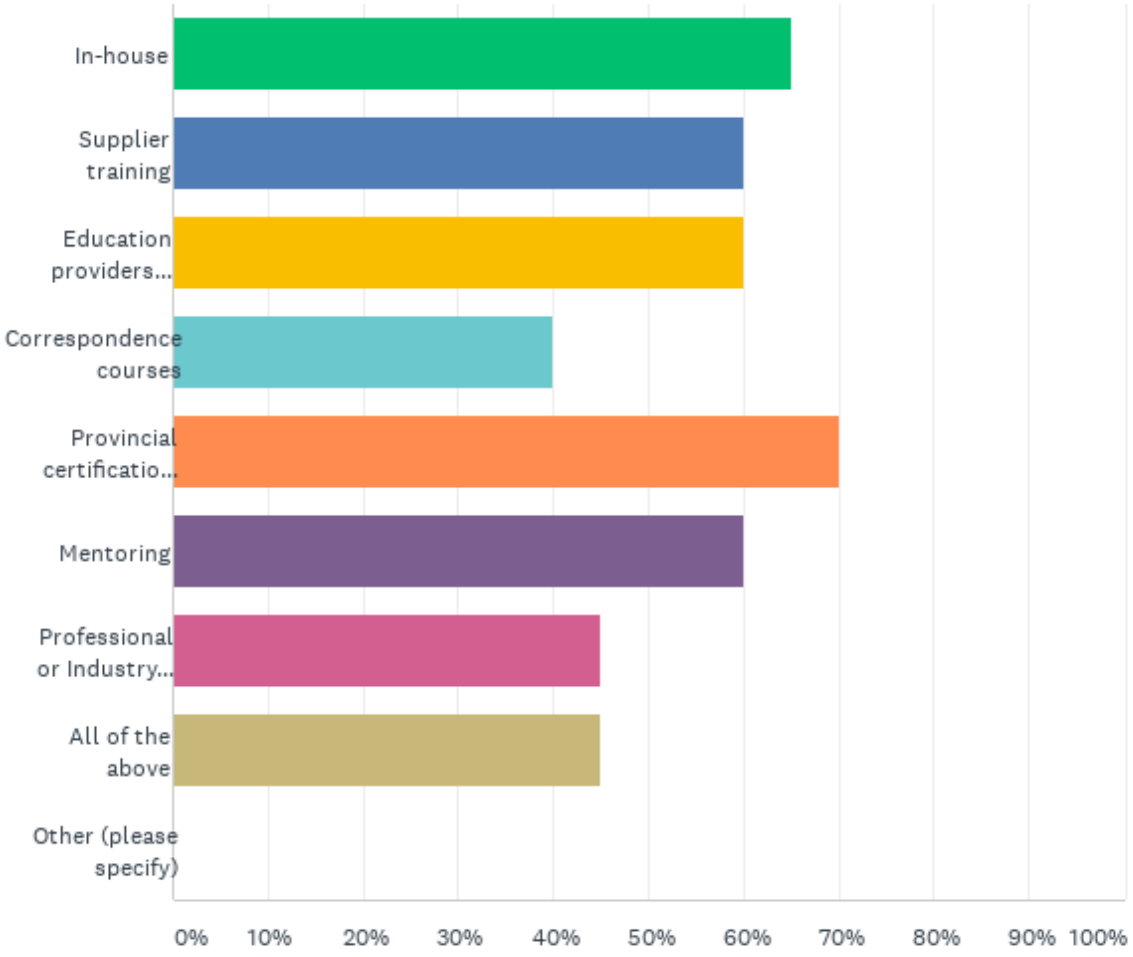
Respondents' comments:

- Standard Operating Procedures (SOP)
- Resources
- Documented business processes and training manuals
- More online resources
- Documented Asset Management Program and documented PM Program
- A pre-employment course on water treatment plant operation and maintenance for 2 weeks before they start
- The use of virtual reality for training and lengthy companionship training
- Stronger orientation package for new hires
- Mobile workshops able to train a small number of operators (1-5)
- Interdepartmental consistency

Section E: Operators

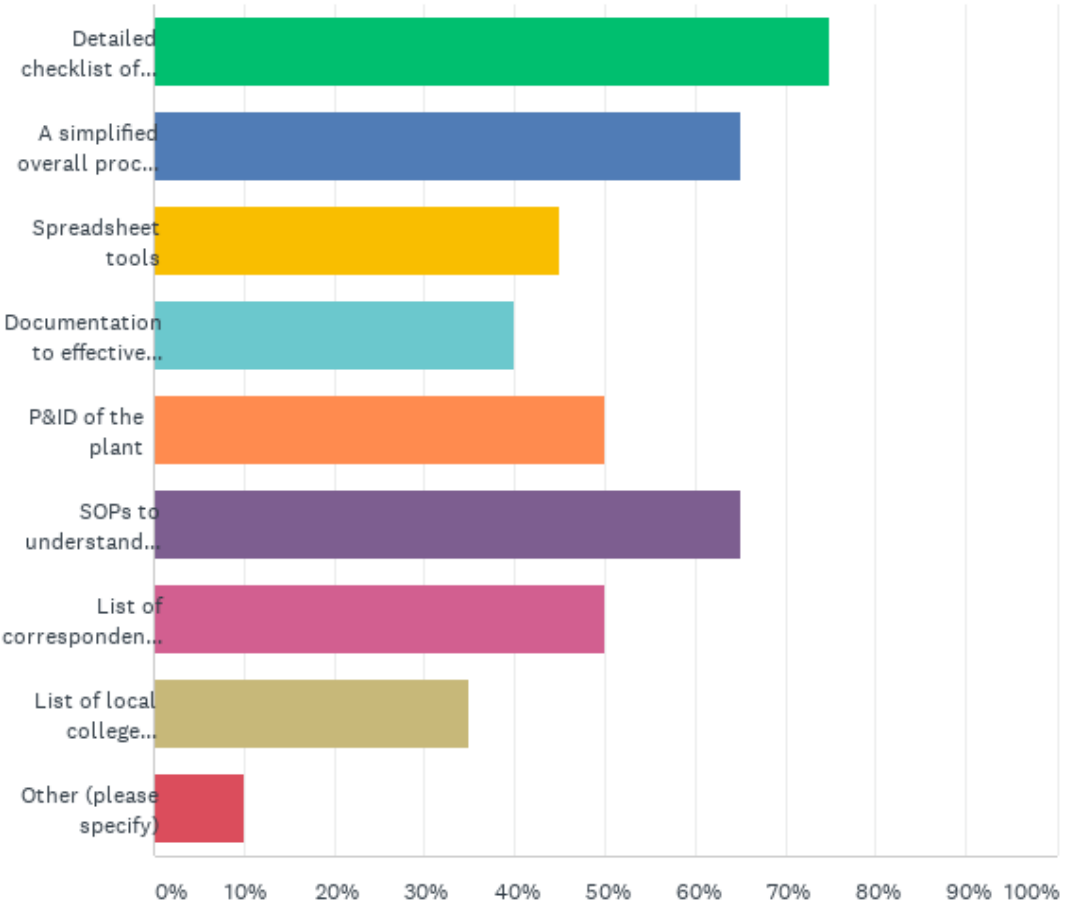
Question: How do you access operator training?

Operators access training in a myriad of ways. Provincial Certification is marginally the largest method for operator training followed closely by: in-house, supplier, education providers and mentoring.



Question: What materials would make the onboarding and training of new Operations Staff easier and more efficient

Respondents were encouraged to check all that might apply. SOPs and Checklists alongside simplified overall processes are the most frequently mentioned. However, many other methods were also frequently mentioned. Utilities would do well to check the availability of these materials in their utilities.



Question: What are your hands on activities to improve understanding of Water & Wastewater Technology by new Operators?

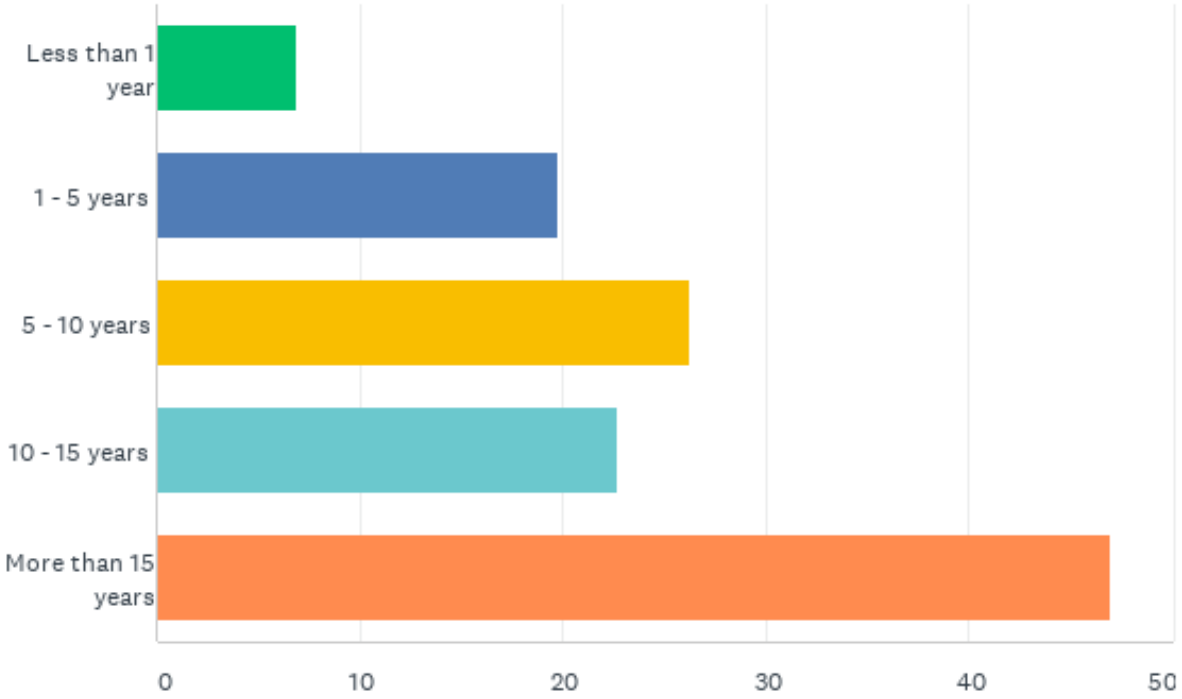
The following are the activities mentioned. Some activities were mentioned by more than one respondent. The number of mentions is indicated following the response.

Respondents' Comments:

- In-house mentorship (X4)
- Shadowing experienced operators (X3)
- On-the-job-training
- Special hands-on membrane training courses
- Continuing education, practical review
- Training both hands on and online

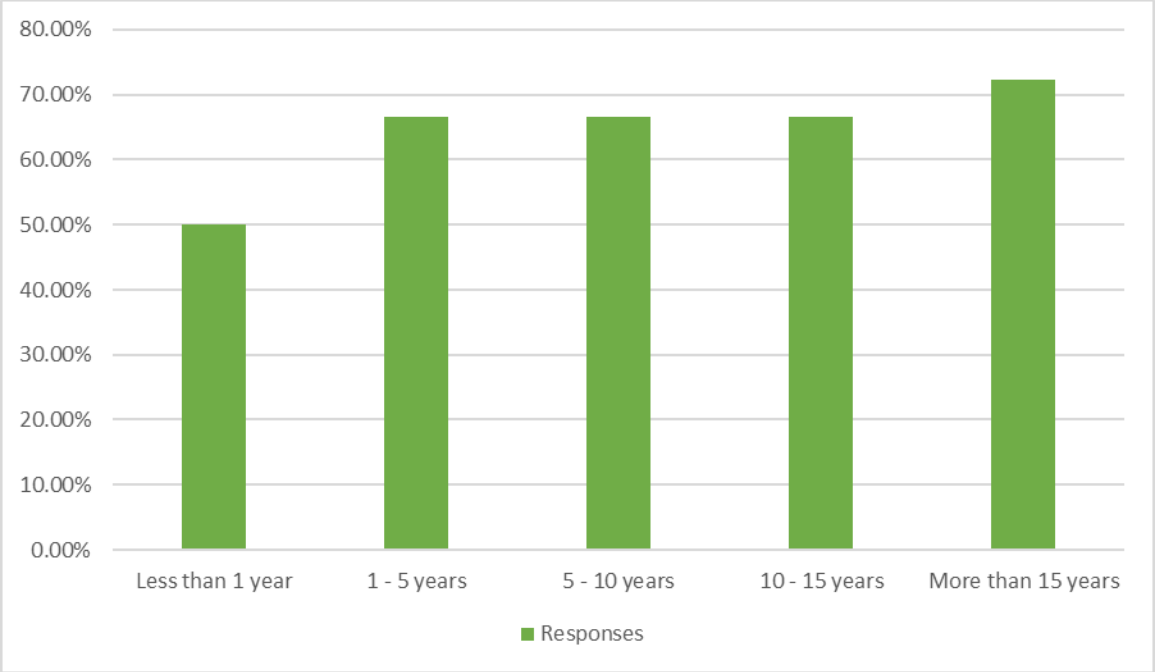
Question: What % of the Operators and Lab Technicians are due to retire?

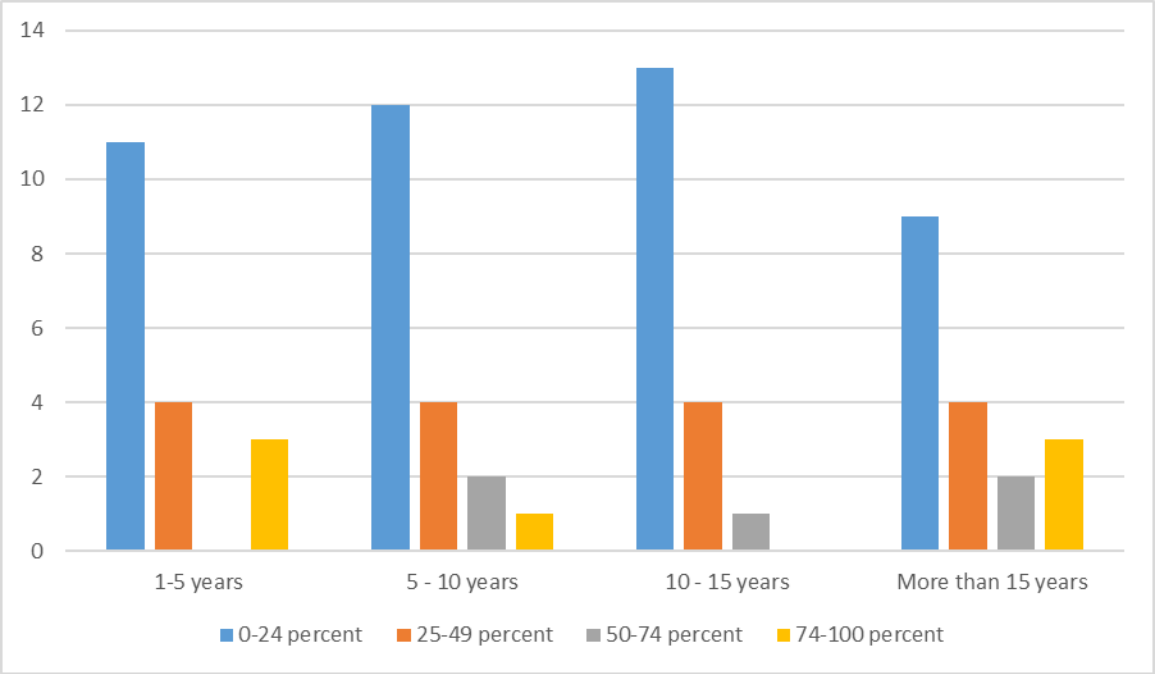
Data indicates that 7% will be retiring in the next year and 20% in the next 5 years. Not having Employee Development Plans could be a barrier to promoting internally.



Section F: Engineers

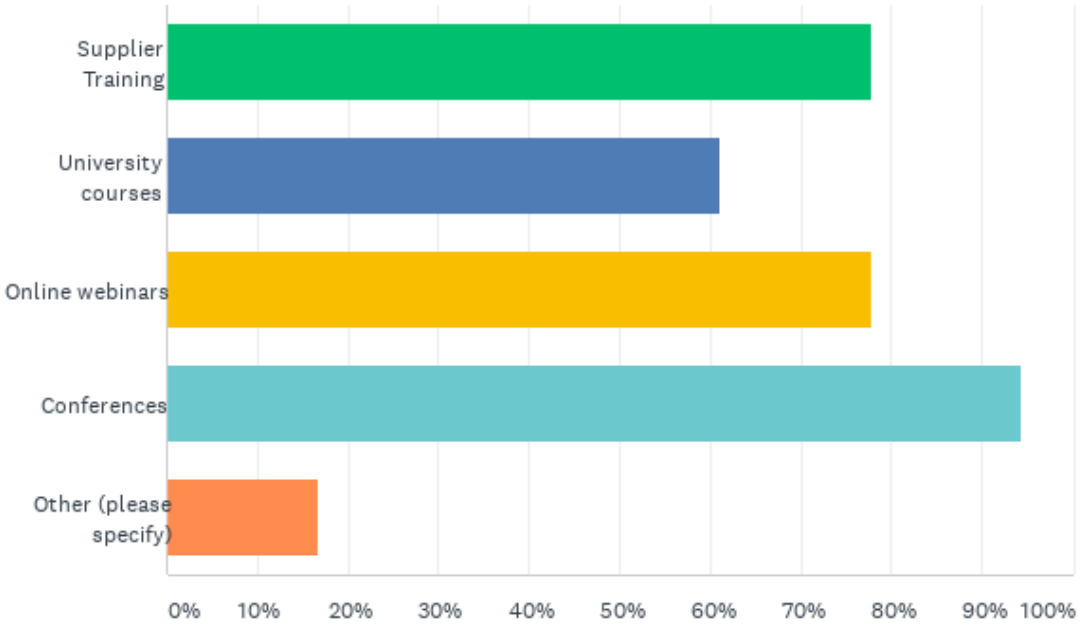
Question: What % of Engineering staff are due to retire?





Question: What type of training do your professional staff undertake?

Engineers reported utilizing a number of sources for education. 94% access training by attending conference. 77% take Supplier Training and the same number access Online webinars.



Section G: General questions

Two final qualitative questions were asked. There were no discernable trends identified and each response is therefore added as written.

Question: What are the Top 3 Overall Challenges your Utility faces?

Responses:

- Operational resources/ declining revenues/ infrastructure age
- Recruiting a more diverse workforce/ preparing operators to transition to supervision roles
- Ageng infrastructure and funding/regionalization of water, wastewater and sold waste management)
- Asset renewal/improved SCADA systems
- Financial/infrastructure improvements/ staff recruitment
- Capital funding/process control expertise training/Asset Management Planning and Execution
- Succession planning for supervisors/data informed decision-making (analytical skills) /leveraging technology to support operations and maintenance
- Pandemic/climate change/ageing infrastructure
- Cost containment/ageing infrastructure/ staffing development
- Alignment of stakeholders/operating a facility at or near end of life/lack of opportunity for advancement of staff
- No succession plan/no preventative maintenance program/no asset management plan
- Revenue-funding/ageing infrastructure/ admin work
- Capital funding/continuing education for operators/succession planning

Question: What could CWWA do to assist in the area of Workforce Development?

Responses:

- More senior level development and certification/ regional collaboration
- Development of webinars/training on environment, health and safety topics specific to Canadian utilities would be helpful
- Online webinars
- Provide checklists of best practices for development of employees in each department
- Succession plan framework for supervisors-managers/building analytical skills to consider risk, data and trends
- Would really like to see some good courses on Sequential Batch Reactor Technology
- Specialized courses for pre-employment for operators and maintenance staff before they start work
- Push provinces to commit to fund W&WW operator post secondary education opportunities
- Case studies from successful utilities may help smaller utility members who don't quite to achieve this/ possible facilitation of utility mentoring

CWWA WORKFORCE DEVELOPMENT SURVEY RESULTS

Summary

The survey was designed to provide a snapshot of opinions to aid the Workforce Development Committee in designing the Workforce Development Guideline Document. Although the results cannot be generalized to all utilities they do provides insight that is helpful.

Respondents are generally confident in their skill levels and confident that someone would be able to take over their position.

There is a large percentage of employees due to retire in the next 5 years. Most utilities who responded indicate they have not performed a Gap Analysis and less than 50% of small and medium size utilities report they do not have a Succession Plan. Approximately 30% of utilities responding report they have no Workforce Development Plan.

A diverse number of challenges were identified with ageing infrastructure and asset management being the most common.

Likewise there was a diverse array of ways that CWWA could assist presented but no common trend.

The information reported from the questionnaire has been helpful in determining themes and resources needed to design a successful Workforce Development Guidance Document.

Additional Resources

EUM Primer - Effective Utility Management Program -
Effective Utility Management Program | American Water Works Association (awwa.org)

AWWA: The Water Workforce: Strategies for Recruiting and Retaining High-Performance Employees
The Water Workforce: Strategies for Recruiting and Retaining High-Performance Employees (awwa.org)

AWWA – Improving Utility Succession and Workforce Development Planning
Improving Utility Succession and Workforce Development Planning - Clark - 2019 - Journal AWWA - Wiley Online Library

BCWWA/EOCP Workforce Strategy Report 2017
WorkforceStrategy_Final.pdf

BCWWA/EOCP Workforce Profile 2015
Water-and-Wastewater-Sector-Workforce-Profile-Full-Report.pdf (eocp.ca)
Water-and-Wastewater-Sector-Workforce-Profile-Executive-Summary.pdf (eocp.ca)

US Environmental Protection Agency – Water Sector Workforce Initiative
America's Water Sector Workforce Initiative | US EPA