

Final Report:

Utility Board Trainings on Innovative Retention and Recognition Practices for Water Operators



The Environmental Finance Center

The North Carolina Rural Water Association served as a partner on this project.



The Environmental Finance Center (EFC) is also funded in part by EPA Region 4.

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I. Introduction

Small water systems face many challenges in complying with safe drinking water regulations. These challenges are usually both financial and technical. A common problem that small systems face is high turnover among water operators. Many small systems claim that as soon as they have an operator trained, he or she leaves, causing the system to invest time and money in the training of a new operator. This cycle of operator turnover impacts the capacity of these facilities to serve their customers, while draining already scarce financial resources.

The Environmental Finance Center was awarded a previous SE-TAC grant to train water utility governing boards on proper financial management. Feedback from this project has been very positive, however, many utilities report that the high rate of turnover among their water operators continues to hinder the utilities' ability to provide the most efficient water service. The current project sought to update materials produced from a past SE-TAC grant by adding a new module that deals with the relationship between the governing boards and operators of drinking water utilities. This project expanded the EFC's current Water Management Leadership Program by running new sessions in North Carolina and Georgia.

The project was coordinated by the Environmental Finance Center (EFC) at the School of Government of the University of North Carolina at Chapel Hill. It involved a subcontract arrangement with the North Carolina Rural Water Association (NCRWA) to provide some of the outreach services.

II. Methodology

One of the first stages in the project was to conduct a survey of water operators. More than 300 water operators were surveyed in order to gauge current operator job satisfaction and solicit from operators practices/arrangements that would improve their job satisfaction.

In order to find utilities that had developed successful practices for recognizing and retaining their water operators, several emails were sent to listservs and organizations such as the Georgia Association of Water Professionals (GAWP). The case studies in Appendices 2 and 3 were developed based on feedback received from these emails.

Once these case studies were developed, they were presented to the Boards of other small systems in order to improve their operator retention through a series of six (6) board trainings.

While the survey and Board trainings focused on North Carolina and Georgia, the results will be relevant and accessible to other states, especially southeastern ones.

III. Analysis of Water Operator Survey Results

In order to gauge water operator job satisfaction in North Carolina, the EFC, in conjunction with the North Carolina Rural Water Association, conducted a survey of more than 300 water operators in the state of North Carolina. The response rate for this survey was approximately 40%. The questionnaire was composed of questions addressing satisfaction with the operator’s current position and his/her ideas of how operator recognition and reward may be improved. (See Appendix 1 for a copy of the questionnaire.)

This survey was anonymous, in that there was no way for the surveyors to connect the responses on an individual survey sheet to the individual who completed that survey.

The survey was distributed at various water operator conferences and training events, as well as through the NC Rural Water Association’s circuit riders’ monthly outreach to utilities. Since this was not a true random distribution of the survey, the results cannot be extrapolated to the entire body of water operators in North Carolina. However, these results offer some insight into the important issue of water operator turnover and some of the potential solutions to improving operator job satisfaction.

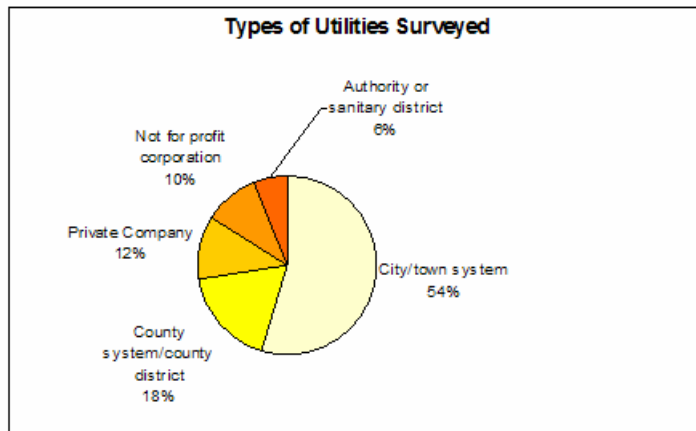
The following are some of the key findings from the survey.

INFORMATION ON SURVEY RESPONDENTS

It should be noted that four percent of all the operators surveyed work as contract employees, while 96 percent are direct hires of the utility.

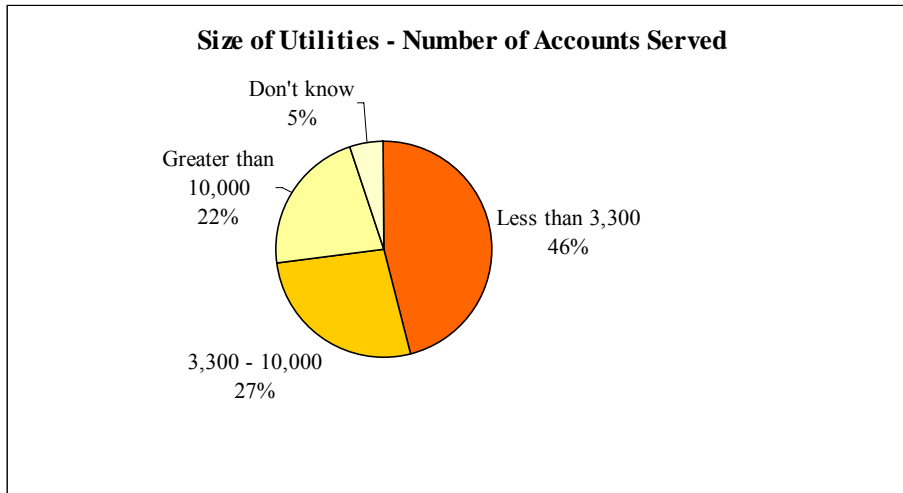
A majority of respondents represented municipal (city/town) systems (54 percent). Private companies and not for profit corporations together accounted for about quarter of the operators. See Figure 1.

Figure 1: Types of Utilities Surveyed



As the pie chart below shows, almost half of the operators surveyed work at smaller systems with less than 3,300 people served by their utilities¹.

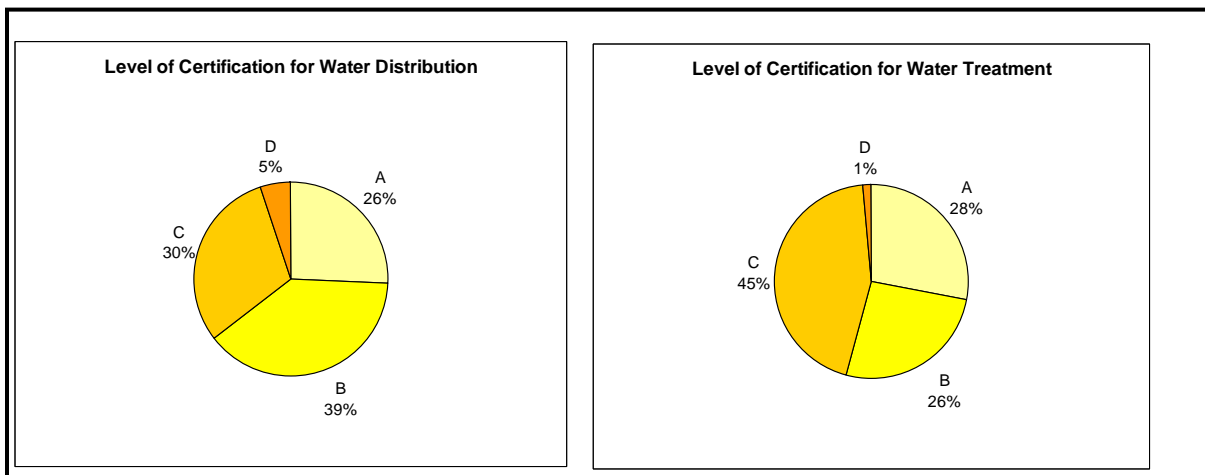
Figure 2: Size of Utilities



Certification Levels of the Operators Surveyed

The following charts show the distribution of certification levels among the operators surveyed.

Figure 3: Certification Distribution



The largest group of water distribution operators surveyed (39 percent) held a B level of certification. Among the water treatment operators however, the C level of certification was most common.

¹ To gain an idea of the relative size of utilities involved, operators were asked how many people (not accounts) their utility serves.

Almost eight percent of all the operators surveyed held no certification at the time. Almost half of the operators (48 percent) had both water distribution and water treatment certification.

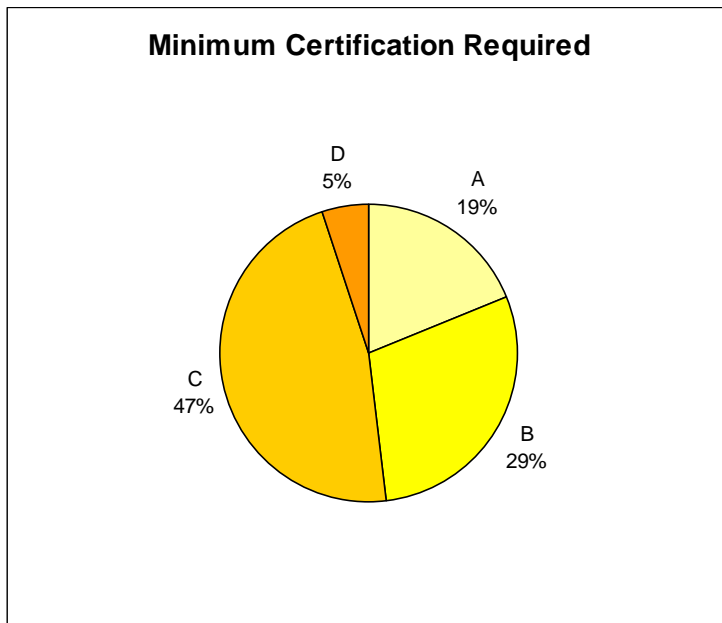
Close to 60 percent of those responding indicated that they were designated as an “Operator in Responsible Charge” (ORC) at their utility.

Certification Level Required by Utilities

There should be at least one certified operator (the “operator in responsible charge”) at a water utility. In some cases, other operators at the utility are not required to have certification. Only 13 percent of the operators surveyed said that they were **not** required to have certification for their job.

For the other 87 percent that said that certification was required, the following chart shows the minimum certification that the operators were required to have.

Figure 4: Certification Requirements

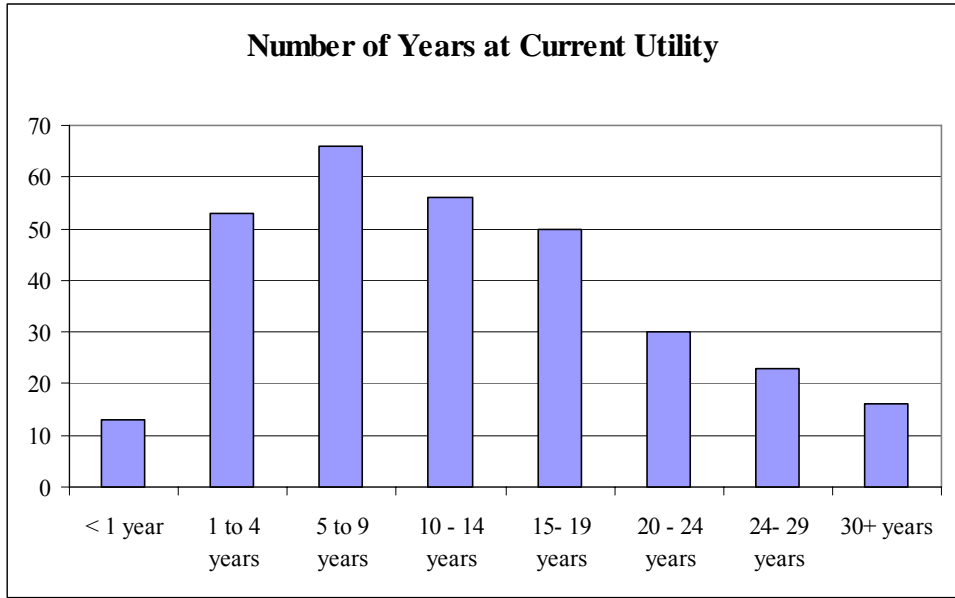


Years of Service

As demonstrated in figure 5, there is a wide distribution for the length of service at a particular utility among survey respondents.

Four percent of operators have been at their current utility for less than one year. On the other hand, over 20 percent of the respondents have served for 20 or more years at their current plant.

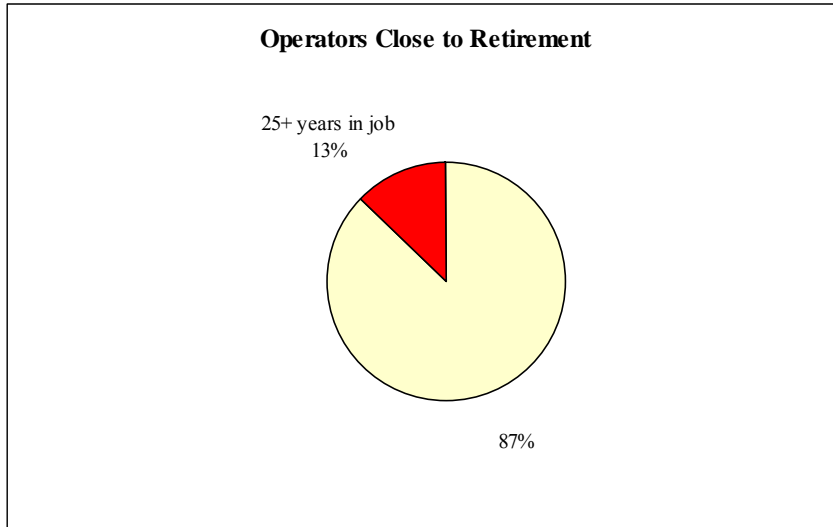
Figure 5: Number of Years at Current Utility



AGING WORKFORCE

Human resource professionals differ widely on how they define the age of older workers, but common ages are 45 and 60 years. Figure 6 shows that there is a significant percentage of operators who have been at the same utility for over twenty-five years. This indicates that these operators are probably at least 45 years old. The 13 percent of operators with twenty five (25) or more years of experience should represent a concern for employers; these individuals have the most experience and knowledge of the specific plant and their retirement can cause a loss of important information. Given this concern, questions around knowledge transfer and preparation for transition become crucial, including issues of hiring, training, and mentoring. (It is important to note here that the problem may be more extensive than reflected in this analysis as figure 6 only represents years of service within their current utility. If they have years of service elsewhere, as many do, the number close to retirement is likely much larger.)

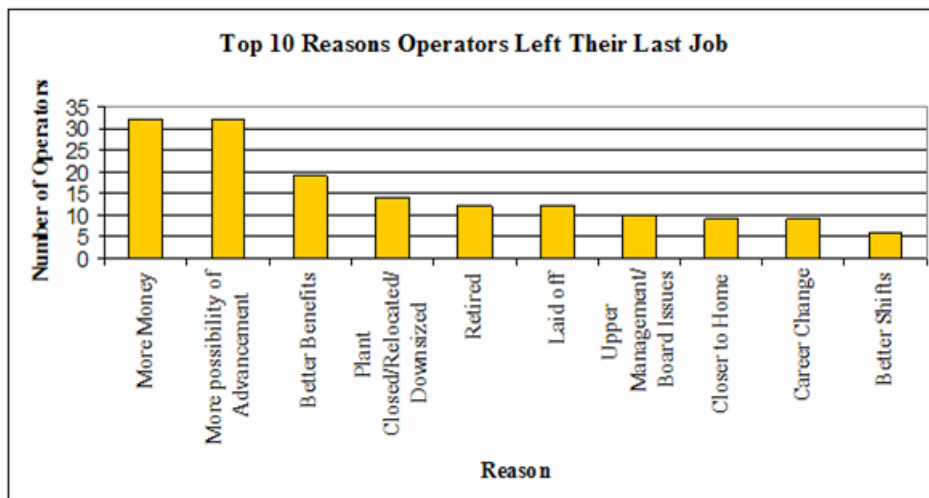
Figure 6: Operators Close to Retirement



REASONS FOR VOLUNTARY TURNOVER

With the rising age of the workforce and impending retirement waves, the issue of knowledge transfer and workforce planning become more crucial. In addition to the need for planning for natural retirement issues, organizations with high voluntary turnover rates face additional challenges and the need for effective retention becomes even more important. In order to effectively plan for retention strategies, it is important to understand the reasons for voluntary turnover. Respondents were asked for the reasons they left their last position. Most operators leave a job in search of higher pay and more opportunities for advancement. Better health and retirement benefits are another main reason for moving to a different utility. Some of the involuntary reasons for changing jobs are plants closing, relocating or downsizing and workers being laid off.

Figure 7: Reasons Operators Leave Their Jobs



The fifth most common reason was that they retired from their last job; supporting the concerns that this industry may face as a result of an aging workforce.

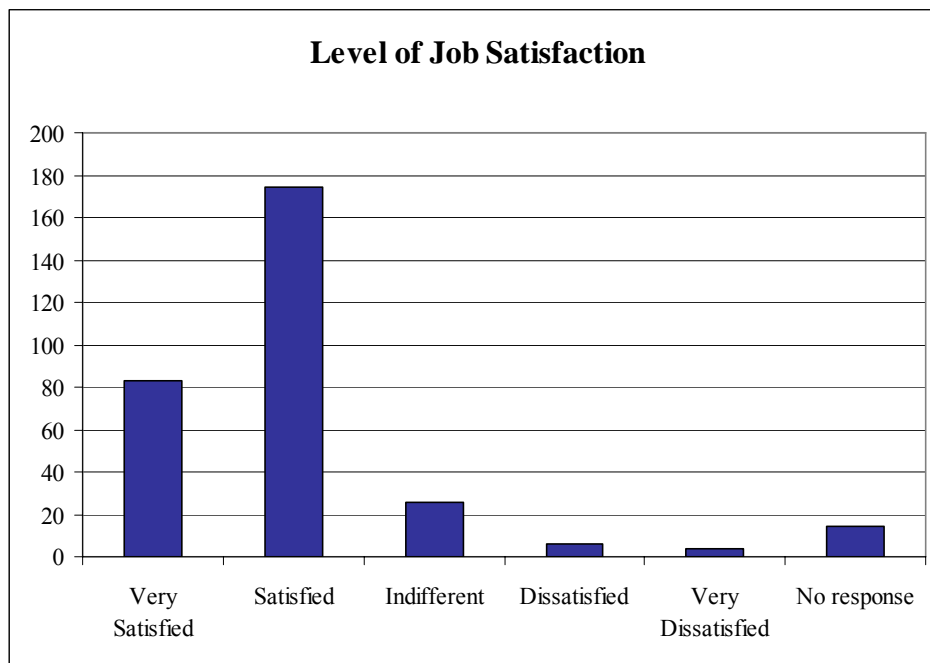
Additional reasons that operators gave for leaving their last job are:

- Better Hours
- I Relocated
- Left Military
- Transfer Within Same Company
- Was Self-Employed
- Life Changes
(Marriage/Parenthood)
- Less Travel Time
- Less Stress
- Owner/Operator
- This is a Second/Part time Job
- Steady Work/Job Security

JOB SATISFACTION

In addition to gaining a better understanding of the reasons people leave employment, respondents were questioned regarding their level of job satisfaction. Although responses varied, a large majority (84 percent) indicated that they were satisfied or very satisfied with their jobs. Only three percent said that they were dissatisfied or “very dissatisfied.”

Figure 8: Job Satisfaction



Given the high level of turnover within this profession the high levels of job satisfaction were surprising. But this could be because of sample bias, since people happy with their jobs may have been more likely to respond to the survey. Although satisfaction was

overall high, 13 percent of those surveyed claimed that they were “indifferent” or simply did not respond to this particular question on the survey.

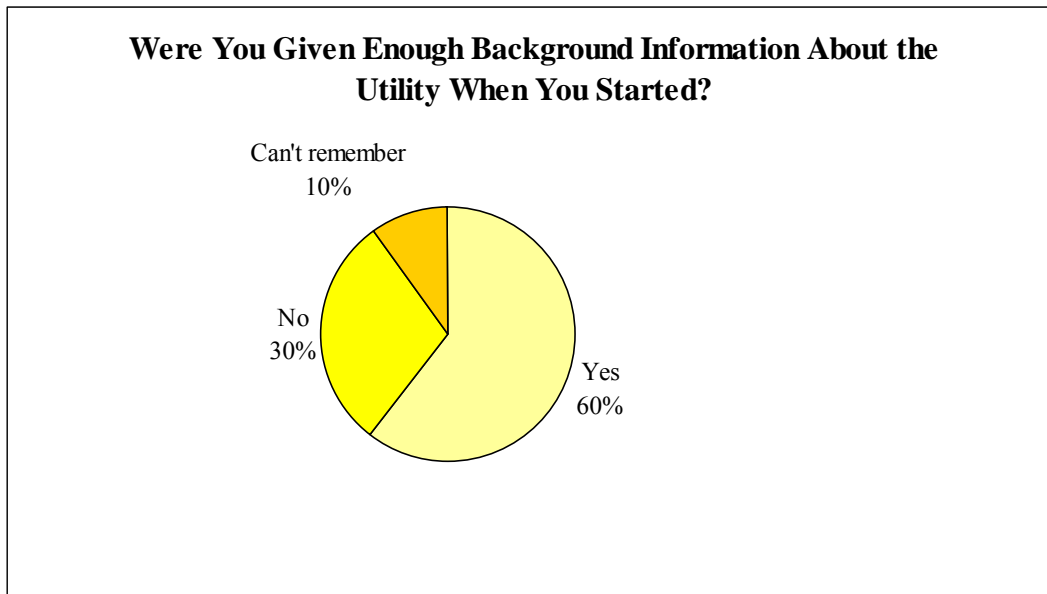
In addition, the operators that were surveyed in this study belong to a professional organization, the North Carolina Rural Water Association. This membership involves a fee that is usually paid for, or at least subsidized, by the utility. It seems reasonable that utilities that are willing to pay for this membership are, in general, more worker-friendly. Hence, workers at these utilities are more satisfied with their jobs than the general group of water operators across the state.

ORGANIZATIONAL INCENTIVES

Orientation at Current Job

Orientation is the first chance to start the knowledge transfer and establish organizational loyalty amongst new workers. In order to assess whether operators felt they received proper orientation at their current jobs, the survey asked if enough background information about the utility was provided at the start of the current job.

Figure 9: Orientation Information

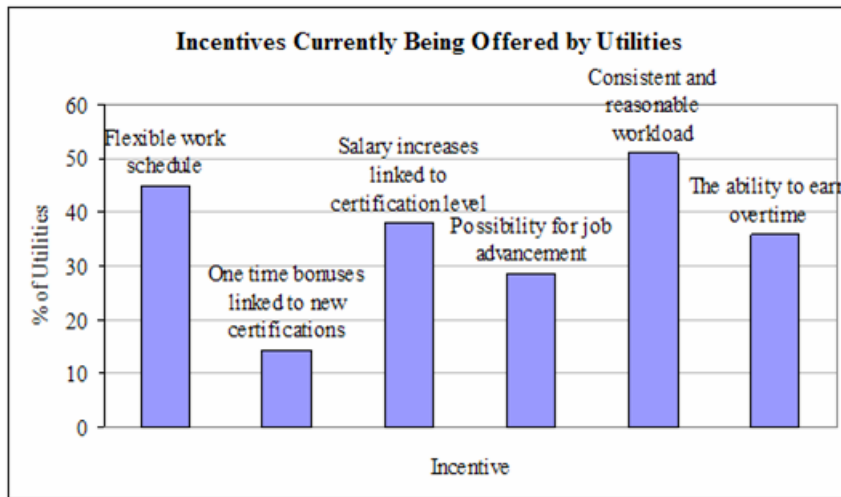


Most operators (60 percent) indicated that they believed that they were provided with enough background information. This is a positive factor in any profession, but particularly important when turnover is high. It implies that new hires are benefiting from the experience and knowledge of their predecessors.

Given the concern outlined about turnover and retention, it is important to understand what, if any, motivation or incentive programs are currently in place. Figure 10

highlights current incentive practices present in this sample of utilities. These results are encouraging, with over half of all the utilities represented in the survey financially reward their operators for achieving new certifications. These financial rewards are usually in the form of a general increase in salary (38 percent) or a one-time bonus (14 percent). A “consistent and reasonable workload” was the most common incentive identified by the operators.

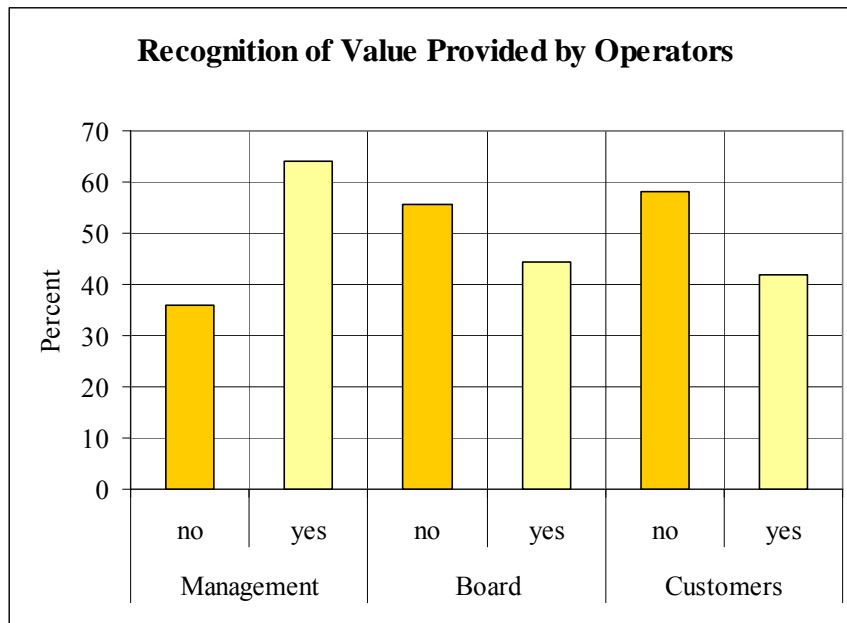
Figure 10: Incentives



RECOGNITION OF OPERATORS

In addition to programmatic or organization incentive practices, operators were also asked if they felt that different groups adequately recognize the value that the operator provides to the utility. The three different groups were management, the governing board and customers. As can be seen below, operators felt that for the most part management did recognize the value that they provide. However, they felt that the Board and their customers were not as likely to recognize the value that operators provide.

Figure 11: Recognition



Non-Monetary Recognition

Operators indicated the following non-monetary recognition practices used within their utility to recognize operators' contributions:

- Verbal Comments on My Work
- Appreciation Banquets/Cookouts etc.
- Letters/Plaques/Certificates of Appreciation
- Vacation
- Pat on the Back
- Recognition by Board and Mayor
- Extra time off/"Comp Time"
- Flexible Work Schedules
- Service Awards (e.g. 5, 10, 15, 20, 25, 30 years)
- Vehicles
- Allowed to Attend Conference etc.
- Article in Local Newspaper When Operators get New Certifications etc.
- Willing to Work With Us
- Good Performance Evaluations

When asked for their suggestions as to what the utility could do to better recognize and retain operators, the following list of practices was identified by the operators:

- Higher Pay
- Increase Pay with each Certification Level
- Improve/Include Benefits
- Pay for and Allow to Attend Seminars/Workshops/Certification Classes
- Increase Communication Between Board and Employees
- Incentives
- Certificate of Recognition
- Hire More Staff (Sooner)
- Cost of Living Increase
- Employee Appreciation

- Public Acknowledgement
- Merit-based Pay Increases
- Realize the Importance of our Jobs
- Training for Board Members
- Become More Involved With Day-to-day Operations
- Pat on the Back

IV. Other Findings

In addition to the actual operator survey, the Environmental Finance Center (EFC) also conducted several less formal phone interviews with persons who have experience in such areas as water operator certification and incentive programs. This section outlines some of the information that was gleaned from this phone and email correspondence.

WATER OPERATORS AS PROFESSIONALS

Many of those contacted expressed that there needs to be more of a sense of professionalism in the water operator line of work. In other words, this type of work needs to be regarded more as a profession involving a career path, than simply a “job.” Several suggestions were offered to help create this professional image. For example, something as simple as **providing email accounts for operators** may help to make the work seem more professional. (The EFC has created a listserv specifically for water operators where they have been exchanging information on issues that affect their job duties. Over one hundred and fifty persons have joined the listserv so far. Past EFC listservs have served other professionals such as city and county managers, finance managers, and utility directors of local government.)

Along this vein of exchanging information with colleagues, the City of Raleigh Public Utilities allows operators to make overnight trips to visit other facilities and manufacturers. This allows operators to **interact and exchange information with other utilities**.

Some utilities also **provide their operators with a cell phone**. Since operators do not sit at desks for most of their shift, and are even often on call, a cell phone may be an appropriate way to give these employees somewhat of a “perk” that is related to their duties. The Town of Cramerton, NC provides paid cell phone service as a fringe benefit to their operators.

Part of seeing this field as a “profession” also involves the way it is perceived by the public. Some utilities have their **operators visit career fairs at local schools**. This benefits the students by introducing the water operator profession as a career option. At the same time, the operators who participate in this type of activity are probably left with a sense of value and pride in their work as they showcase their duties and efforts to the public.

AWARD PROGRAMS

Both the states of Georgia and North Carolina have several awards for outstanding water operators. The awards should serve as an incentive to operators to strive for high standards in their work. Some examples are outlined below.

The Georgia Section of the American Water Works Association bestows the **Operator's Meritorious Service Award** on an operator who has demonstrated special performance in areas such as continuous compliance with public health standards in drinking water and in the training of other operators. Similarly, the **Elizabeth McEntire Award** recognizes its recipient for excellent achievement in the direct operation of water supply, water treatment and/or water distributions systems.

In North Carolina, the **Raymond E. (Red) Ebert Award** is given to someone who demonstrated organizational leadership, technical innovation, or facility improvement. Other areas that are considered when deciding on a nominee include the promotion and/or participation in training, or safety awareness and general knowledge that has led to the upgrading and advancement of the water distribution and/or wastewater collection systems. The **Water Distribution Operator of the Year** goes to a full-time employee of superintendent grade or below (waived for towns with less than 5 utility employees) who has exhibited outstanding knowledge and innovation in the continuing operation of a water distribution system.

Awards can also be provided at the individual utility level. For example, the Town of Hillsborough, NC, has an "Employee Recognition Award," where any supervisor can award an employee who has gone "above the call of duty" or has shown exceptional effort. The employee receives a **\$25 gift certificate** to Wal-Mart, and a **certificate of recognition**. At the Town of Holly Springs, NC, when an operator obtains a new license their **name is posted in the internal newsletter**.

MERIT PAY INCENTIVES

Some utilities have rewarded their water operators for high performance via individual **pay raises based on the results of the operator's performance evaluation**. For example, this strategy of "pay-for-performance" based on annual appraisals is used by the City of Rocky Mount, NC.

Some utilities may find it difficult to find the extra money needed for a pay raise. At the Charlotte-Mecklenburg Utilities, there is a "Gainsharing" program. **If operators are able to run the plant at less than was originally budgeted, then they receive a portion of the saved funds**. With this method, the funds for the pay raise are directly off-set by the money that was saved in the budget.

V. Training of Small Water Utility Boards

Over the course of the project period, staff from the North Carolina Rural Water Association (NCRWA) identified small utility Boards across North Carolina who were interested in training. Environmental Finance Center (EFC) staff also made contact with a small community in Georgia who wanted to receive the information. EFC staff provided the training to these utility boards as outlined in the following table.

| Utility | Date of Training | Number of Individuals Trained |
|--|------------------|-------------------------------|
| Town of Pink Hill, NC | 9/18/2006 | 8 |
| *West Carteret County Water Corporation, NC; | | |
| Bogue Banks Water, NC | 11/29/2006 | 12 |
| *Town of Pine Knoll Shores, NC; | | |
| Town of Atlantic Beach, NC | 11/30/2006 | 9 |
| City of Porterdale, GA | 5/15/2007 | 9 |
| TOTAL INDIVIDUALS TRAINED | | 38 |

(* In these two instances, training for two Boards was conducted on the same day.)

These trainings covered a range of topics, but more emphasis was placed on issues that were of particular concern to the Board involved in the training. Material from one of the operator retention manuals in Appendices 2 and 3 were presented to the Boards, depending on the state in which the community was located. At the end of each training session, Board members were asked to complete an evaluation form. The questions on this evaluation that related to operator retention were:

Circle the number that indicates your agreement or disagreement with the statement (5 being the highest, 1 being the lowest):

1. The operator retention and recognition subject matter was relevant and useful (5=highest, 1=lowest)
2. The presentation was effective (5=highest, 1=lowest)

Please circle “yes” or “no” in regard to the question below:

3. Has participating in this program impacted your view on the importance of recognizing and rewarding operators? (yes, no)

The following table shows participants’ responses for questions 1 and 2. The mean score for each Board ranged from 3.8 to 5.0.²

² In each case, the participant gave the same score for both the question on relevance/usefulness and the question on effectiveness of presentation.

| Utility | Question 1: Mean Score | Question 2: Mean Score |
|--|-------------------------------|-------------------------------|
| Town of Pink Hill, NC | 4.7 | 4.7 |
| West Carteret County Water Corporation, NC; Bogue Banks Water, NC | 3.8 | 3.8 |
| Town of Pine Knoll Shores, NC; Town of Atlantic Beach, NC | 5.0 | 5.0 |
| City of Porterdale, GA | 4.6 | 4.6 |

For question 3, of the thirty nine individuals trained, sixty seven percent (67%) indicated that the training had impacted their view on the importance of recognizing and rewarding operators. (Several of the remaining thirty three percent who said that there was no impact, indicated that they were already aware that recognizing and rewarding operators is important.)

The evaluation also contained an area where participants could include “General Comments.” Some of those provided were:

- *“Excellent presentation and informative, very useful”*
- *“Very beneficial”*
- *“Very informative”*
- *“Great workshop”*
- *“Every town in the state needs to take this training”*
- *“Very good seminar”*

In addition to the above trainings where actual evaluation forms were completed, the EFC also conducted other trainings where the issue of water operator retention was addressed, but less time was spent on the topic. Since these trainings were also part of larger event, it was not convenient to distribute evaluation forms. The following table shows details on these events.

| Event | Date of Training | Number of Individuals Trained |
|--|-------------------------|--------------------------------------|
| Onslow Water and Sewer Authority (ONWASA) Training (Board and Staff) | 03/22/06 | 13 |
| NC Rural Water Association 30th Annual Conference | 05/15/07 – 05/16/07 | 30 |
| <i>Upper Costal Plain Council of Government</i> | <i>06/15/07</i> | <i>35 (expected)</i> |

The ONWASA Board did send an email with the following comment the next day:
“...thanks for your service last night ... and I think it was time well spent ...put us down as a satisfied customer reference.”

VI. Dissemination of Deliverables

The training modules and case studies (Appendices 2 and 3) were added to the website of the Environmental Finance Center (EFC) at

<http://www.efc.unc.edu/projects/wateroperators.htm>

An announcement with this web link will be included in the June edition of “Waterleaks” and the “Tarheel Pipeline” magazine, quarterly publications of the NC Rural Water Association.

The online availability of these materials was advertised on several listservs that are run by the EFC and the School of Government in North Carolina as can be seen in the following table. (A listserv is a topical electronic forum where list subscribers may post announcements, participate in discussions and pose and answer questions. A list server automatically distributes an e-mail message from one member of a list to all other members on that list.)

| Name of Listserv | Number of Members | Description |
|-------------------------|--------------------------|---|
| ccmanagers | > 700 | Serves city and county managers across North Carolina |
| ncwater | > 400 | Provides financial, administrative, and management assistance to individuals and organizations involved with managing programs that impact NC's water resources |
| ncwateroperators | > 150 | Provides technical assistance to individuals and organizations involved with operating drinking water and wastewater facilities in North Carolina |

The Georgia Association of Water Professionals also announced the deliverables of this project via an email to their membership.

Due to this electronic distribution, the relevant web page (<http://www.efc.unc.edu/projects/wateroperators.htm>) was accessed **524 times** by May, 30th, 2007.

The hard copies of this module will be distributed as the EFC continues to present this information as part of the financial management training for water Boards in the future. The module and supplemental information will also be presented at annual conferences of organizations such as state level Rural Water Associations. Copies of the module will be made available to other training organizations such as the state Rural Water Associations and the Southeast Rural Community Assistance Project. The EFC also hopes to eventually submit an article based on the results of the operator survey results to a national publication.

VII. Review Process

According to the section entitled “Review Process for Deliverables” included in the terms and conditions of this grant, each of the sections of the training module were emailed to the following individuals for review. These reviewers submitted their comments and edits via email.

| Section of Module | Reviewer |
|--|---|
| Water System Owner Roles and Responsibilities: A Best Practices Guide | Publication by EPA Office of Water; September 2006; EPA 816-F-06-036 |
| Fact Sheet on Drinking Water Operators for Georgia Water Governing Boards | Colleen Roehm - Secretary, Georgia State Board of Examiners for the Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Rebecca Mason - Grants Assistant, GA Environmental Protection Division; Operator Certification Reimbursement Program |
| Fact Sheet on Drinking Water Operators for North Carolina Water Governing Boards | Tony Arnold - Office of Education & Training Manager, North Carolina On-Site Wastewater Contractors and Inspectors Certification Board, NC Department of Environment and Natural Resources |
| Case studies | Willow Jacobson - Assistant Professor of Public Administration and Government Robert Walters - Chairman, North Carolina On-Site Wastewater Contractors and Inspectors Certification Board and Assistant Manager, Davidson Water Inc. |
| Georgia Water and Wastewater Funding Sources | Jason Bodwell - Clean Water & Drinking Water SRF Program Manager, Georgia Environmental Facilities Authority |
| North Carolina Water and Wastewater Funding Sources | Previous EFC publication |
| Survey Results | Willow Jacobson - Assistant Professor of Public Administration and Government Robert Walters - Chairman, North Carolina On-Site Wastewater Contractors and Inspectors Certification Board and Assistant Manager, Davidson Water Inc. |

Operator Survey: The Office of Human Research Ethics (OHRE) is responsible for ethical and regulatory oversight of research at the University of North Carolina (UNC) that involves human subjects. OHRE supports and oversees the work of the Institutional Review Boards (IRBs). The IRB reviews and monitors human subjects research conducted under the aegis of UNC. The water operator questionnaire survey (Appendix 1) was reviewed and approved by the IRB, since it involved human subjects.

Acknowledgements

The Environmental Finance Center would like to thank the following people and organizations for their assistance with the “Utility Board Trainings on Innovative Retention and Recognition Practices for Water Operators” project:

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Andrew Westbrook, Environmental Finance Center
Stacey Isaac Berahzer, Environmental Finance Center

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Heather G. Cagle, NC Rural Water Association

Communities:

Onslow Water and Sewer Authority
Town of Pink Hill, NC
West Carteret County Water Corporation, NC;
Bogue Banks Water, NC
Town of Pine Knoll Shores, NC;
Town of Atlantic Beach, NC
City of Porterdale, GA
City of Fayetteville, NC
Rockdale County Water Resources in Conyers, GA
Union County Public Works (UCPW), NC

Reviewers:

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Rebecca Mason, GA Environmental Protection Division; Operator Certification Reimbursement Program
Tony Arnold, NC On-Site Wastewater Contractors and Inspectors Certification Board
Willow Jacobson, Assistant Professor of Public Administration and Government
Robert Walters, NC On-Site Wastewater Contractors and Inspectors Certification Board and Assistant Manager, Davidson Water Inc.
Jason Bodwell, GA Environmental Facilities Authority

Others:

University of North Carolina at Chapel Hill, School of Government
Georgia Association of Water Professionals
NC Department of the Environment and Natural Resources
GA Environmental Protection Division



This survey is designed to take only about 10 minutes of your time. The results will be used to improve water operator recognition throughout the State. Please be assured that your responses are confidential. **Each operator should only fill out the survey once.** Thank you for your assistance.

1. What is the name of the water utility where you currently work? (Optional)
Name of utility: _____
2. What best describes your utility?
 City/town system
 County system/county district
 Authority or sanitary district
 Not for profit corporation
 Private company
3. How many people (not accounts) does your utility serve?
 Less than 3,300 3,300 - 10,000
 Greater than 10,000 Don't know
4. Approximately how many operator positions does your utility have?
 operators
5. How many water operator vacancies does your utility have?
 vacancies
6. What is the average time that it takes to fill a vacancy? (Please write a number for months or weeks)
 weeks months Don't know
7. For how many years have you worked at this utility?
 less than 1 year years
8. Why did you leave your last job?

9. When you first started working at your current utility, do you feel that you were given enough background information about the utility?
 Yes No Can't remember
10. What is your water distribution operator certification level?
 D C B A none
11. What is your water treatment operator certification level?
 D C B A none
12. Are you designated as an ORC (Operator in Responsible Charge)?
 Yes No
13. Are you required to have a certification level for your job?
 Yes No
14. If you answered "yes" above, what are the minimum certifications you must have?
 D C B A
15. Are you a direct hire of the water utility, or a contract employee?
 Direct hire Contract employee

16. If you are NOT a direct hire employee, who is your employer? (Optional)
 _____ Employer Name _____ Self-employed
17. Rate your overall satisfaction with your job: (Check only one)
 _____ Very satisfied
 _____ Satisfied
 _____ Indifferent
 _____ Dissatisfied
 _____ Very Dissatisfied
18. Please check which applies to operators at your utility (check all that apply)?
 _____ Flexible work schedule
 _____ One-time bonuses linked to new certifications
 _____ Salary increases linked to certification level
 _____ Possibility for job advancement
 _____ Consistent and reasonable workload
 _____ The ability to earn overtime
19. Please rank the following work conditions/incentives in order of the importance to you personally. Rate the importance of the following to your job satisfaction from 1 to 6 (1 = most important, 6 = least important). **Please use each number only once.**
 _____ Flexible work schedule
 _____ One time bonuses linked to new certifications
 _____ Salary increases linked to certification level
 _____ Possibility for job advancement
 _____ Consistent and reasonable workload
 _____ The ability to earn overtime
20. Do you feel your utility management staff adequately recognizes the value you provide to your utility?
 _____ Yes _____ No
21. Do you feel your utility governing board (city council, county commissioners, corporation board of directors etc.) adequately recognizes the value you provide to your utility?
 _____ Yes _____ No
22. Do you feel your utility customers adequately recognize the value you provide to your utility?
 _____ Yes _____ No
23. What are the non-monetary ways your utility recognizes your contribution? (e.g. certificate of recognition etc.)

24. Do you have any suggestions for things your utility could do to better recognize and retain operators?

Thank you for taking the time to complete this survey!

Funding for this survey was provided by the Southeastern Regional Small Public Water Systems Technical Assistance Center (SETAC).

Appendix 2 - Georgia Training Module

Addendum to:

Guidebook to Financial Leadership for Water Utility Boards

Drinking Water Operator Retention Module



The Environmental Finance Center

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The North Carolina Rural Water Association served as a partner on this project.



The Environmental Finance Center (EFC) is also funded in part by EPA Region 4.



Drinking Water Operator Retention

Introduction

Small water systems face many challenges in complying with safe drinking water regulations. These challenges are usually both financial and technical. A common problem that small systems face is high turnover among water operators. Many small systems claim that as soon as they have an operator trained, he or she leaves, causing the system to invest time and money in the training of a new operator. This cycle of operator turnover impacts the capacity of these facilities to serve their customers, while draining already scarce financial resources.

In addition, many of these facilities have no formal practice of documenting characteristics of the systems' infrastructure. This information is often only known by the operator. Once this person leaves, he/she takes this knowledge with him/her and the information is lost to the facility. In the publication: "Planning for a New Workforce before Your Employees are All Gone," produced by the National Environmental Services Center (NESC), the term "tacit knowledge" is used to refer to the situation where the vast majority of what the operators know about the system is in their heads and not documented. According to this publication, the nature of the utility workplace lends itself to methods that are not written down. This situation means that a high rate of turnover among water operators is even further exacerbated.

The information in this module is intended to assist governing boards of small drinking water facilities in retaining experienced water operators at their utilities.

Fact Sheet on Drinking Water Operators for Georgia Water Governing Boards

Introduction

This document outlines some of the responsibilities and resources that Governing Boards should be aware of, in terms of state certified drinking water operators.

Authorization:

Water Operator issues are covered in the following legislative document:

- Georgia Code Title 43, Chapter 51, sections 1-15 (“Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts Act.”)

Key Definitions

Operator – refers to any person who performs operational duties and water treatment plant and wastewater treatment plant laboratory testing for reporting purposes.

Certification Board – refers to the State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts.

Certificate – refers to a document issued by the Certification Board stating that the operator or laboratory analyst has met the requirements for the specified operator classification.

Operator in Responsible Charge (ORC) – This operator is accountable for and performs active daily, on-site operation of a plant/system and who is responsible for the quality of the treated water.

Public Water Supply System – refers to the system of pipes, structures, and facilities through which water is obtained and treated to be offered to the public for household use or for any other public consumption (provided the system has 15 or more service connections or which regularly serves 25 or more individuals.)

“Very small public water system” – (the same as a “Class IV Public Water Supply System”) refers to any public water system which is a groundwater system and serves a population of less than 1,000

Service Connection – a water tap made to provide a water connection to the water distribution system

Governing Board Responsibilities

- **Governing Boards must assure that the facilities they own are operated by properly certified operators**

This relates mainly to the “Operator in Responsible Charge” at the facility. Proper certification depends on the classification of the system. There are 4 types of classifications which are defined by the source of the water and the type of facility as follows:

| System Type | Class I | Class II | Class III | Class IV |
|--|------------------------------|------------------------------|--------------------------|---------------------|
| Surface Water with conventional treatment plant | 5.0 MGD or greater | 4.99 MGD or less | | |
| Surface Water with package or non-conventional treatment plant | 1.0 MGD or greater | 0.99 MGD or less | | |
| Surface water with approved high-rate filtration | Greater than 3.0 gpm/sq.ft | Less than 3.0 gpm/sq.ft | | |
| Groundwater under direct influence of surface water | 1.0 MGD or greater | Greater than 0.1 to 0.99 MGD | 0.1 MGD or less | |
| Groundwater | 50,000 or greater population | 10,000 – 49,999 population | 1,000 – 9,999 population | 25 – 999 population |

MGD = million gallons per day

gpm/sq.ft =gallons per minute, per square foot

- **Penalty**

It is illegal for any person to perform the duties of an operator or laboratory analyst without being properly certified. Persons violating this are liable for a civil penalty of up to \$500 per day, and as much as \$5,000 per day if the violation is “willful.”

- **Determining if an operator is certified**

In the state of Georgia, you can conduct a search for a particular operator by simply clicking on the following link: <https://secure.sos.state.ga.us/myverification/> which is maintained on the Secretary of State website. To search the database, first, “water/wastewater board” must be selected. Searches can be done by last name or by certification number.

An operator in responsible charge (ORC) must possess a valid certificate issued by the Certification Board equal to, or greater than, the classification of the facility for which the operator is designated.

Operator Certification Checklist:

- To obtain certification for a certain operator class, the applicant generally needs to hold a certificate in the preceding class. (For example, to obtain class I certification (the highest level of certification) the applicant must hold the class II certificate first.
- The applicant must also have a certain number of months experience at the water system before applying for certification (For details, see: “Renewal and Continuing Education” section of <http://www.sos.state.ga.us/acrobat/PLB/Rules/chapt750.pdf>)
- Each water operator seeking certification must have a high school diploma or GED equivalent
- Depending on the class of certification being sought, the operator may be required to have a certain number of course hours (ranging from 0 additional hours for those seeking Class I, to 48 hours for those seeking Class II (To find approved courses, visit: <http://www.sos.state.ga.us/plb/water/Course%20Provider%20Revised%20April%202007.pdf>)
- The operator must also pass a written exam in order to receive the certificate
- To maintain a given certification class, operators must have obtained a certain number of continuing education requirements or “points,” since the last renewal period. (For details, see: “Renewal and Continuing Education” section of <http://www.sos.state.ga.us/acrobat/PLB/Rules/chapt750.pdf>)

All certificates expire on June 30th of odd-numbered years.

| Fees | |
|---|-------|
| Exam application | \$78 |
| Renewal biennial | \$65 |
| Renewal biennial late fee | \$115 |
| (note: September 30th ends late period) | |

Operator Certification

Part of the Governing Board's financial responsibility is to obtain and set aside funding for operator training and certification. The Governing Board or staff of each system should maintain a record of operator certification.

- **Reimbursement Program**

In Georgia, the Operator Certification Reimbursement Program serves to reimburse reasonable training expenses to operators working for community water systems or nontransient noncommunity water systems serving 3,300 persons or less. Funding is available to help alleviate financial hardship on the small system owner. Licensed operators and/or water systems meeting the above criteria are eligible for reimbursement. Volunteer operators receiving no pay may also be eligible for per diem expenses. See http://www.gaepd.org/Documents/op_cert.html for details.

Further Resources

State Board of Examiners for Certification of Water and Wastewater Treatment Plant Operators and Laboratory Analysts www.sos.state.ga.us/plb/water

<http://www.efc.unc.edu/projects/wateroperators.htm> - this webpage will be updated with information on water operator retention and reward

Operator Certification Reimbursement Program - http://www.gaepd.org/Documents/op_cert.html

<http://www.epa.gov/safewater/opcert/opcert.htm> - EPA - "Operator Certification"

Talking To Your Decision Makers: A Best Practices Guide - http://www.epa.gov/safewater/smallsys/pdfs/guide_smallsystems_decision_makers_08-25-06.pdf

Job Satisfaction among Water Operators

In order to gauge water operator job satisfaction, the Environmental Finance Center (EFC), in conjunction with the North Carolina Rural Water Association (NCRWA), conducted a survey of more than 300 water operators in the state of North Carolina. The response rate for this survey was approximately 40%. The survey was composed of questions addressing satisfaction with the operator's current position and his/her ideas of how operator recognition and reward may be improved.

The operators provided this list of non-financial ways that their utility is currently recognizing their contributions:

- Verbal Comments on My Work
- Appreciation Banquets/Cookouts etc.
- Letters/Plaques/Certificates of Appreciation
- Vacation
- Pat on the Back
- Recognition by Board and Mayor
- Extra time off/"Comp Time"
- Flexible Work Schedules
- Bonus (e.g. for Christmas)
- Service Awards (e.g. 5, 10, 15, 20, 25, 30 years)
- Vehicles
- Allowed to Attend Conference etc.
- Article in Local Newspaper When Operators get New Certifications etc.
- Willing to Work With Us
- Good Performance Evaluations

When asked for their suggestions as to what the utility could do to better recognize and retain operators, the following list of responses was given:

- Higher Pay
- Increase Pay with each Certification Level
- Improve/Include Benefits
- Pay for and Allow to Attend Seminars/Workshops/Certification Classes
- Public Acknowledgement
- Merit-based Pay Increases
- Realize the Importance of our Jobs
- Training for Board Members
- Increase Communication Between Board and Employees
- Incentives
- Certificate of Recognition
- Hire More Staff (Sooner)
- Cost of Living Increase
- Employee Appreciation
- Become More Involved With Day-to-day Operations
- Pat on the Back

GENERAL TIPS

- **Cover Education Costs**
- **Provide financial incentives for passing exams**
- **Share operators between facilities - may allow for a higher salary**
- **Non-financial Rewards/Recognition**
 - Awards ceremony
 - Mention in internal newsletter
- **Provide incentives for suggestions that result in utility improvements**

Case Studies of Operator Incentive Programs

Several utilities have implemented programs to encourage their water operators to stay at the utility. The following are three case studies that highlight different approaches to rewarding and retaining operators.

Water Resources Plant Operator Apprenticeship Program – Public Works Commission (PWC), City of Fayetteville, NC

Fayetteville PWC used to have a system that awarded a one-time payment of \$100.00 for each certification level of water treatment and/or water reclamation that was successfully completed. This was replaced by the “Operator Apprenticeship Program” in 1998. The utility entered into an agreement with the NC Department of Labor as well as Fayetteville Technical Community College to begin a five-year program of training for their water operators. The whole program took about one year for all three partners to set up. The utility worked with the college on the type of math, microbiology, and other content to concentrate on for the program with the main focus being the relevancy to the water operator profession.

The operators had to pass (that is, earn a grade of "C" or higher) in the relevant college level courses. The operators also had to attain a certain number of “on the job training” hours. Once operators met these requirements they were awarded, on average, a \$0.50/hr increase every six months throughout the 5 year program. At the end of the program they were awarded a Journeyman's Certificate through the NC Department of Labor in their respective fields.

Since all their operators were so well trained and earning at the top of their pay scale by the end of the program, the utility did away with position titles such as Operator I, II and III. All drinking water operators simply held the title of “Water Treatment Facility Operator.” The pay scale for this position ranged from \$12.06/hr to \$20.11/hr. The utility has ended the program at the moment, mainly because they were able to retain such a highly trained staff. However, there are plans to reinstitute the program with revised policies based on lessons learned from this experience.

Before the Apprenticeship Program, the utility lost about one operator every nine months. Between 1998 (when the program was started), and 2006, only two operators have left the utility.

Other Initiatives Used by the Utility:

- Fayetteville PWC also has “water quality teams,” of four to five operators who are very dedicated, but “topped out” in terms of pay grade. These operators serve as “team leaders” on their shift, but receive no extra compensation. They also have more responsibility in getting state and monthly reports ready. They are often sent on training events that involve a hotel stay at a desirable location which

is paid for by the utility. These operators meet monthly to talk about different treatment alternatives. This makes the operators feel like they are part of a team and adds to their overall professionalism and organizational commitment.

- In order to introduce more students to the option of a career as a water operator, the utility participates in the Cumberland County School System's "job shadowing" program. The program involves school teachers of students who are less likely to attend college, coming to the utility and observing the skills that are involved in being a water operator. These teachers can then advise their students on what classes they need to take in order to prepare for this career. Such a program showcases the profession in a positive light. This is especially important since a lack of appreciation for water operators is often cited as a reason for low morale and high turnover within the field. The utility became involved in this program about five years ago.
- One of the salary-unrelated benefits that all utility employees receive is recognition for their service at an annual awards ceremony. Additionally, increased vacation time and a small savings bond are presented.
- The utility also uses its small publication, the "Community Connector," to recognize employee achievements. This internal newsletter is used to highlight commendable things that operators may have done in the last month, including favorable comments from the public.
- A sample of the utility's water was submitted to the NC AWWA conference, where it won "best tasting sample" in North Carolina. The utility had a group photo of all the operators taken and ran a large ad in the local newspaper. All the operators got a copy of the picture. The plaque that they won was placed at the plant.
- Another way that this utility helps to reinforce to their operators that they are regarded as "professionals," is that the operators are not required to perform extraneous maintenance duties.

Peer Recognition Program - Rockdale County Water Resources in Conyers, GA (Big Haynes Creek Water Treatment Plant)

At Rockdale County Water Resources, the Peer Recognition Program has been in existence since 1999. The program is supported by the Board of Commissioners and the Department Director. It is an employee-based effort where individuals vote on a quarterly winner in their particular divisions in four areas of concentration:

- Responsiveness
- Integrity
- Dependability, and
- Effectiveness

The benefits to the winner are essentially non-monetary in nature. They involve:

- Picture with Board of Commissioners Chairman & Rockdale Water Resources Director displayed at all three locations
- Designated parking space for the quarter
- Lunch with Board of Commissioners Chairman and Rockdale Water Resources Director
- Accomplishments published in bill insert
- Framed certificate and logo pin

This program receives a lot of publicity as it is shared with the public through the local television station and various news outlets.

Certification Incentive Plan - Union County Public Works (UCPW), NC

In 2005 the UCPW developed a policy to reward staff monetarily for obtaining certain professional certifications. A one-time cash bonus is given to staff for successfully obtaining an approved certification, as follows:

SCHEDULE OF CERTIFICATIONS & BONUS AMOUNTS

| CERTIFICATION | FINANCIAL BONUS |
|--------------------------|------------------------|
| C Water Distribution | \$500 |
| B Water Distribution | \$1,000 |
| A Water Distribution | \$1,500 |
| I Wastewater | \$500 |
| II Wastewater | \$750 |
| III Wastewater | \$1,000 |
| IV Wastewater | \$1,500 |
| I Lab Technician | \$500 |
| II Lab Technician | \$1,000 |
| III Lab Technician | \$1,500 |
| SWANA (EACH) | \$500 |
| Pesticide Application | \$500 |
| Cross Connection Control | 500 |
| Wastewater Residuals | \$500 |
| Spray Irrigation | \$500 |
| Industrial Pretreatment | \$500 |
| Water Meter Technician | \$500 |

The utility also pays for the first time that an employee attends school or sits for a particular exam. All associated direct costs, including registration fees, manuals, and food and lodging, where applicable, are covered by the utility.

Appendix 3 – North Carolina Training Module

Addendum to:

Guidebook to Financial Leadership for Water Utility Boards

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Introduction

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In addition, many of these systems have no formal practice of documenting characteristics of their systems' infrastructure assets. This information is often only known by the operator. Once this person leaves, he/she takes this knowledge with him/her and the information is lost to the facility. In the publication: "Planning for a New Workforce before Your Employees are All Gone," produced by the National Environmental Services Center (NESC), the term "tacit knowledge" is used to refer to the situation where the vast majority of what the operators know about the system is in their heads and not documented. According to this publication, the nature of the utility workplace lends itself to methods that are not written down. This situation means that a high rate of turnover among water operators is even further exacerbated.

The objective of this module is to assist governing boards of small drinking water maintain their system integrity by retaining experienced water operators.

Fact Sheet on Drinking Water Operators for North Carolina Water Governing Boards

Introduction

In North Carolina, the “Water 2030” initiative was launched in March 2004 by the NC Rural Economic Development Center. The aim of this initiative was to determine the state’s water resource needs for the next 20 years. One of the recommendations that arose from the Water 2030 effort was to form a task force to address the many operations and maintenance concerns that were identified by the study. This task group found that *“System owners (governing boards) must recognize the importance of fulfilling operation and maintenance needs ...”*

This document outlines some of the responsibilities and resources that Governing Boards should be aware of, in terms of state certified drinking water operators.

Authorization

Water Operator issues are covered in the following two legislative documents:

- Article 2 of the General Statutes (90-A-20 through 90-A-33)
- North Carolina Administrative Code Title 15A, Subchapter 18D, Sections .0101-.0700.

Key Definitions

Operator –any individual who operates, maintains, or inspects water treatment facilities.

Certification Board – refers to the “NC Water Treatment Facility Operators Certification Board,” under the Department of Environment, Health, and Natural Resources (NC DENR). The Certification Board consists of eight members appointed by the governor.

Certified Operator – any holder of a certificate issued by the Certification Board.

Operator in Responsible Charge (ORC) – operator who is accountable for and performs active daily, on-site operation of a plant/system.

Public Water System – refers to a system for the provision of piped water for human consumption, (through pipes or other constructed conveyances if the system serves 15 or more service connections or which regularly serves 25 or more individuals.)

Service Connection – a water tap made to provide a water connection to the water distribution system.

Governing Board Responsibilities

- **Governing Boards must assure that the facilities they own are operated by properly certified operators.**

This relates mainly to the “Operator in Responsible Charge” at the facility. Proper certification depends on the classification of the system. There are 3 types of classifications, which are defined by the source of the water and the type of facility:

| Operator Certifications | | | | | | | | |
|-------------------------|---------|---------|------------|---------|---------|---------------------|---------|---------|
| Surface Water | | | Well Water | | | Distribution System | | |
| Grade A | Grade B | Grade C | Grade A | Grade B | Grade C | Grade A | Grade B | Grade C |

- **Surface and well water systems are classified based on a point system.** The point system is based on the water source, population served, and the complexity of the treatment.
- **Distribution systems are classified based on the number of service connections** (commonly number of accounts), and fire protection, or the classification of the treatment plant, whichever is greater, as follows:

| |
|---|
| Class D < 100 service connections |
| Class C 101 < 1001 service connections |
| Class B 1001 < 3300 service connections |
| Class A > 3300 service connections |

- **The Certification Board will notify the utility on the classification of the facility**
The grade of certificate required by the ORC of the water treatment facility is based on the classification information that the Certification Board provides to the utility.

An operator in responsible charge (ORC) must possess a valid certificate issued by the Certification Board equal to, or greater than, the classification of the facility for which the operator is designated.

Operator Certification Checklist:

| To obtain certification as a water operator, | |
|--|---|
| ⑦ | The applicant must live or work in North Carolina |
| ⑦ | S/he must attend the appropriate Certification Board approved school, demonstrate experience and pass a North Carolina exam at the respective operator classification level |
| ⑦ | Once certified, an operator must complete 6 contact hours of instruction per year and pay an annual renewal fee |

- If an operator fails to pay the annual renewal fee and/or obtain six professional growth hours during the year, the certificate will expire. Then, the operator must reapply and pass the exam again.
If a certificate is revoked for any reason, it is unlikely that operator would be eligible to reapply.

All certificates expire on the first day of the new calendar year. If renewal fees have not been paid by the first day of February, certification becomes delinquent. After February 1, a late fee must be paid for each certification that is delinquent.

| Fees (as of 2006) | |
|------------------------------------|------|
| Exam and certificate | \$50 |
| Temporary certificate | \$50 |
| Renewal charges | \$30 |
| Late fees | \$30 |

There are specific guidelines related to the number of facilities that an operator can be in responsible charge of without seeking written permission from the Certification Board. (See http://www.deh.enr.state.nc.us/oet/forms/rule_gov_wtfo_2004.pdf for more information)

Enforcement of Certified Operator Requirement

- If a Governing Board is found to be in violation of the certified operator requirement, then the Certification Board can recommend that an administrative civil penalty be imposed on the Governing Board. Each day of violation will be regarded as a separate offense. The penalty will be \$100/day.
- Violations may be discovered by sanitary surveys, public complaints, and through a cross-comparison of water supply system records and the records on operators.
- The Certification Board has jurisdiction in enforcement actions against operators. NC DENR has jurisdiction in enforcement actions against system owners or Governing Boards.

Contested Cases

To contest a penalty, the Governing Board can request an administrative hearing and judicial review according to the procedures outlined in Articles 3 and 4 of Chapter 150B of the General Statutes.

If a system is charged and they do not request this administrative hearing and do not pay the penalty in 60 days, the DENR Secretary can bring a civil action in the county court where the violation is thought to have occurred. If the hearing was requested, and the court decided that the penalty is legitimate, again the system has 60 days to pay or a civil action can result.

A water treatment facility can contract with a commercial water treatment facility operation firm for operational and other services. The Governing Board can then designate an employee of that contracting firm as the ORC. This operator must obtain the relevant certification and comply with all the water operator requirements.

Temporary Certificate

A temporary certificate may be issued by the Certification Board when the supply of certified operators is inadequate. The person applying for the temporary certificate must be competent and able to fulfill the appropriate duties operator requirements.

A temporary certificate is applicable only for the system for which the operator is employed at time of issuance.

Further Resources

http://www.deh.enr.state.nc.us/oet/operator_cert/grant_prgm.htm - In North Carolina, the Expenditure Reimbursement Grant (ERG) Program serves to refund expenses to operators working for small water systems serving 3,300 persons or less. Funding is available to help operators become certified without placing a hardship on the small system owner. Anyone operating a small water system serving 3,300 persons or less is eligible for reimbursement. This includes volunteers receiving no pay who operate small water systems.

<http://www.efc.unc.edu/projects/wateroperators.htm> - this webpage will be updated with information on water operator retention and reward

<http://www.ncga.state.nc.us/gascripts/Statutes/StatutesTOC.pl?Chapter=0090A> - North Carolina General Statutes: Chapter 90A: Sanitarians and Water and Wastewater Treatment Facility Operators

http://www.deh.enr.state.nc.us/oet/operator_cert/op_cert_main2.htm - North Carolina Water Treatment Facility Operators Certification Board website

<http://ncwoa.com/> - North Carolina Water Operators Association

<http://www.epa.gov/safewater/opcert/opcert.htm> - EPA - "Operator Certification"

Job Satisfaction among Water Operators

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- Realize the Importance of our Jobs
- Training for Board Members
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- Cost of Living Increase
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- Become More Involved With Day-to-day Operations
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GENERAL TIPS

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- **Provide financial incentives for passing exams**
- **Share operators between facilities - may allow for a higher salary**
- **Non-financial Rewards/Recognition**
 - Awards ceremony
 - Mention in internal newsletter
- **Provide incentives for suggestions that result in utility improvements**

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Before the Apprenticeship Program, the utility lost about one operator every nine months. Between 1998 (when the program was started), and 2006, only two operators have left the utility.

Other Initiatives Used by the Utility:

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is paid for by the utility. These operators meet monthly to talk about different treatment alternatives. This makes the operators feel like they are part of a team and adds to their overall professionalism and organizational commitment.

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- Lunch with Board of Commissioners Chairman and Rockdale Water Resources Director
- Accomplishments published in bill insert
- Framed certificate and logo pin

This program receives a lot of publicity as it is shared with the public through the local television station and various news outlets.

Certification Incentive Plan - Union County Public Works (UCPW), NC

In 2005 the UCPW developed a policy to reward staff monetarily for obtaining certain professional certifications. A one-time cash bonus is given to staff for successfully obtaining an approved certification, as follows:

SCHEDULE OF CERTIFICATIONS & BONUS AMOUNTS

| CERTIFICATION | FINANCIAL BONUS |
|--------------------------|------------------------|
| C Water Distribution | \$500 |
| B Water Distribution | \$1,000 |
| A Water Distribution | \$1,500 |
| I Wastewater | \$500 |
| II Wastewater | \$750 |
| III Wastewater | \$1,000 |
| IV Wastewater | \$1,500 |
| I Lab Technician | \$500 |
| II Lab Technician | \$1,000 |
| III Lab Technician | \$1,500 |
| SWANA (EACH) | \$500 |
| Pesticide Application | \$500 |
| Cross Connection Control | 500 |
| Wastewater Residuals | \$500 |
| Spray Irrigation | \$500 |
| Industrial Pretreatment | \$500 |
| Water Meter Technician | \$500 |

The utility also pays for the first time that an employee attends school or sits for a particular exam. All associated direct costs, including registration fees, manuals, and food and lodging, where applicable, are covered by the utility.