NORTH CAROLINA BENCHMARKING PROJECT REPORT 2023

Challenges and Innovations

July 2023

UNC | SCHOOL OF GOVERNMENT
North Carolina Benchmarking Project

BENCHMARKING 2.0
MUNICIPALITIES

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ABOUT THE REPORT

The North Carolina Benchmarking Project was established in 1995 so that participating municipalities could compare service data and performance trends. In 2022, the Benchmarking Project relaunched as Benchmarking 2.0 with a new emphasis on collaboration and relationship-building. Benchmarking 2.0 offers revised framework metrics, streamlined data collection, an interactive online dashboard, and intensive in-person performance strategy sessions.

CURRENT PARTNERS: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, and Winston-Salem.

SERVICES: Asphalt Maintenance and Repair, Building Inspections, Central Human Resources, Emergency Communications, Fire Service, Fleet Maintenance, Parks and Recreation, Police Service, Solid Waste Management, Wastewater Service, and Water Service.

INTERACTIVE DASHBOARD: Every October, the School of Government receives data from its partners through the Benchmarking 2.0 Data Collection Tool. The School audits the data then uploads it to the interactive dashboard by November 1 so that service departments across the state can use it to analyze and compare in-depth data and performance trends. The dashboard includes an array of easy-to-use features that make it possible to apply data normalization and calculate percentages, averages, and confidence intervals across comparison units. Informative, detailed charts can be downloaded as shareable PDFs.

Visit the Benchmarking 2.0 website at benchmarking.sog.unc.edu to access the interactive dashboard.
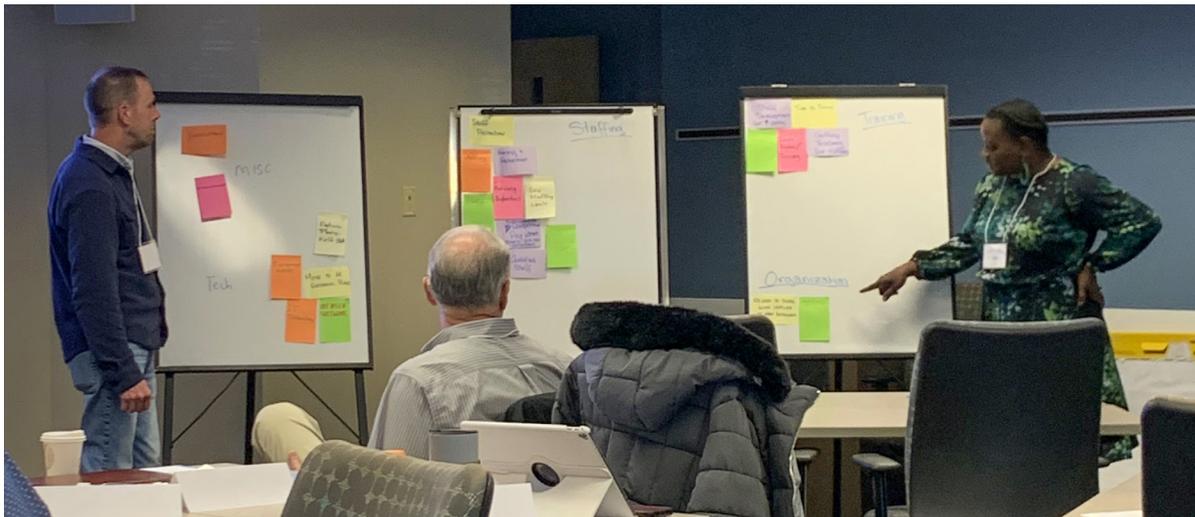
PERFORMANCE STRATEGY SESSIONS:
In November, the School brings service department officials from participating municipalities together (one service at a time) to discuss data trends, strategies, challenges, and effective solutions. In these sessions, we analyze data, identify and address current challenges, and share best practices and innovations. These sessions help the participating service departments understand and improve their organizational performance by engaging in peer-to-peer learning and networking.

BENCHMARKING REPORT: This report compiles and condenses the information and ideas that were exchanged during our November 2022 Performance Strategy Sessions. The report also highlights key innovations from the Benchmarking 2.0 Interview Series in which our partners describe some of the strategies they've used to overcome persistent challenges. One of the interviews was conducted by email; the others were videotaped and can be viewed at benchmarking.sog.unc.edu/reports/.

Please visit benchmarking.sog.unc.edu/contact-us/ to become a Benchmarking 2.0 partner.

BENCHMARKING 2.0 PARTNERS

This report demonstrates the exceptional resourcefulness of North Carolina local governments in finding innovative ways to mitigate internal and external challenges. The collaborative approach and enthusiasm of the participating municipalities allow the Benchmarking 2.0 project to consolidate and highlight important trends in municipal service departments. It is through these crucial moments of sharing and exchange that we will develop a community that moves forward together to better serve all North Carolinians. We hope this report helps local governments celebrate their achievements and learn from one another.

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ACKNOWLEDGMENTS

We would like to thank David Ammons, Dale Roenigk, and Bill Rivenbark for their previous work on the North Carolina Benchmarking Project and for their steady guidance and support throughout its relaunch. Special thanks go to Willow Jacobson for helping design and facilitate the Benchmarking 2.0 performance strategy sessions.

We greatly appreciate the Benchmarking Project steering-committee members for their ongoing support and feedback. Their sincere commitment and generous contribution of ideas and time were crucial to the project's redesign.

Finally, we are grateful to the two hundred service-department professionals who participated in the November 2022 performance strategy sessions. Their remarkable passion for public service, eagerness to gain and share information, and innovative energy provided the foundation for this project's success.

CHALLENGES AND INNOVATIONS IN

Asphalt Maintenance and Repair

On November 9, 2022, asphalt maintenance and repair officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of two featured innovations from the Benchmarking 2.0 Interview Series is also provided. The entire collection of full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Recruitment, Training, and Retention

Asphalt maintenance and repair departments are seeking ways to recruit and train staff and maintain the morale of all employees. As Figure 1 shows, asphalt maintenance and repair departments are operating at capacities as low as 70 percent of their budgeted positions. New federal regulations, such as more stringent requirements for commercial driver's licenses (CDLs), make the recruitment of new employees ever more challenging. Municipalities often invest time and resources toward the attainment of these licenses only to see newly trained employees move to higher-paying municipalities or private companies.
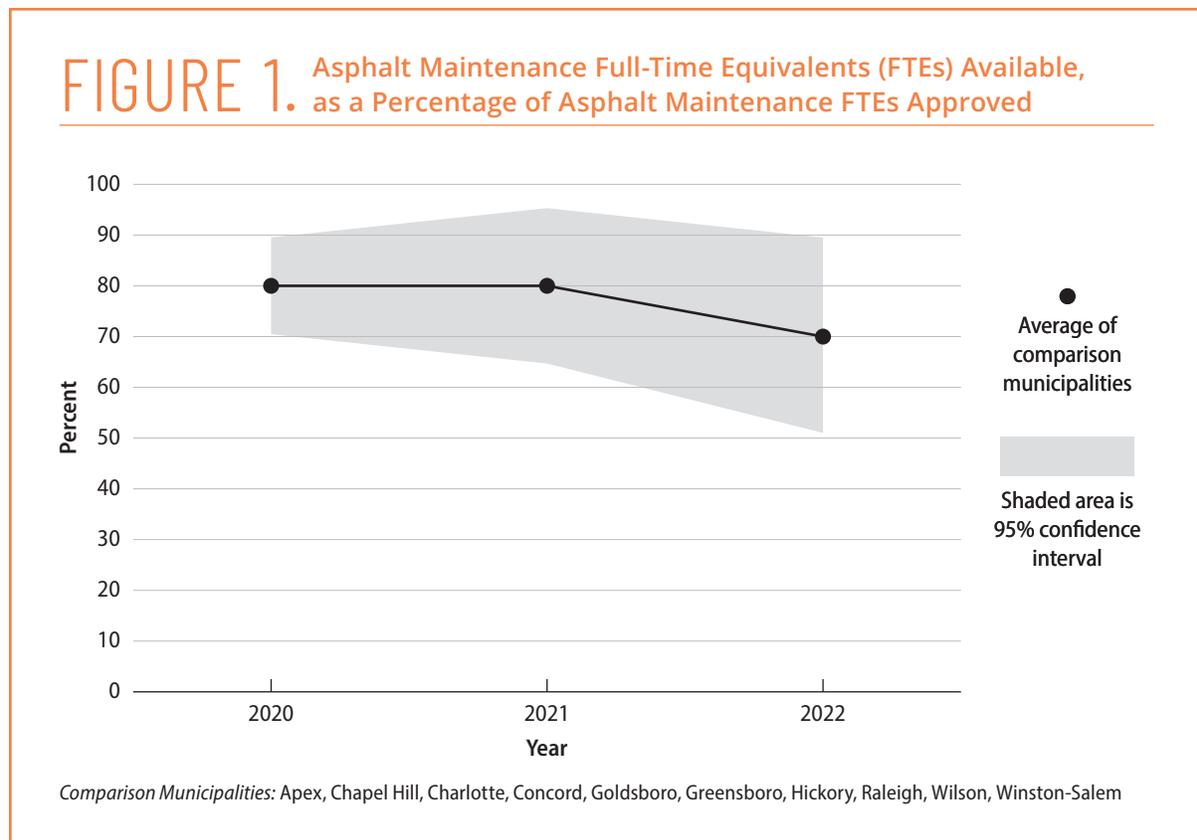
FIGURE 1. Asphalt Maintenance Full-Time Equivalents (FTEs) Available, as a Percentage of Asphalt Maintenance FTEs Approved

Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

SOLUTIONS AND INNOVATIONS: To improve recruitment, training, and retention, municipalities have implemented the following solutions and innovations:

- *On-the-spot-hiring event.* The City of Greensboro hired dozens of employees on the spot for the Field Operations and Water Resources departments during a four-hour job fair at a local event center. Most of these hires were processed and fully onboarded. See the Central Human Resources Featured Innovations section for more details.
- *Referral bonuses.* In Winston-Salem, staff can earn a $250 bonus for referring a new hire who stays at least six months; a larger bonus is available if the new hire stays longer.
- *Sign-on bonus.* In 2022, Greensboro implemented a signing/retention bonus (5 percent of the control point) for new employees who stay for at least three years.
- *Vacation time.* When hiring from other municipalities, Winston-Salem matches accrued vacation time from an employee's previous job.

Challenge: Variable Demand

Demand for asphalt maintenance and repair can fluctuate based on the weather and other factors, such as utility cuts performed or requested by other departments. The rapid population expansion in some jurisdictions can make it difficult to keep up with increased service requests when resources are stagnant. Whether a municipality has at-large or district council members also affects how the demand for services is prioritized within the city. Such variation in demand in turn affects the need and expenditures for contractors and personnel.

SOLUTIONS AND INNOVATIONS: To address variable-demand issues, municipalities have implemented the following solutions and innovations:

- *Automated pavement condition index (PCI) surveying.* The City of Concord and the City of Raleigh both use automated pavement condition index (PCI) surveying. Contractors conduct an objective analysis of road

WHAT IS A POTHOLE?

The Benchmarking 2.0 participants emphasized the need to better define certain aspects of their work. For example, pothole mitigation strategies depend upon whether the reported pothole is a *surface defect* or a *subsurface defect*.

The participants realized these terms needed clarification, and they came up with a list of subcategories for *surface defects*, including: longitudinal/linear cracking, transverse cracking, edge cracks, joint reflection cracks, slippage cracks, and raveling.

The list of subcategories for *subsurface defects* included: depressions/bird baths, alligator cracking, upheaval, and corrugation.

conditions, which better informs resource allocation. See the Featured Innovations section below for more details.

- *Billing the relevant departments.* Some municipalities bill the relevant departments for utility cuts, but other municipalities do not. The Benchmarking 2.0 participants agreed that interdepartmental billing can reduce the financial burden of asphalt repair related to these cuts. Some municipalities have also experimented with outsourcing utility cuts, but private contractors cannot always keep up with the demands and expectations of utility and streets departments.

Challenge: Managing External Expectations

Asphalt maintenance and repair departments must balance limited resources with a constant demand for services. Managing the expectations of elected officials and citizens is therefore essential for their success. They need to ensure that elected officials are well-informed on who (e.g., the municipality or the state) owns and maintains which roads, and they need to gain residents' feedback on their work.

"We need to do a better job in educating the public about the cost and volume of the work done by our departments."

— KAREN KIXMILLER (BUDGET AND EVALUATION DEPARTMENT, GREENSBORO)

SOLUTIONS AND INNOVATIONS: To better manage and address the expectations of elected officials and the public, municipalities have implemented the following solutions and innovations:

- *Online citizen engagement.* Apex has a public website that lets residents see who owns which roads, submit work orders, and report concerns to the responsible department. In Raleigh, residents can petition for street and sidewalk repairs through an online portal. This portal also provides extensive FAQs. Chapel Hill residents can report road concerns through an online portal by uploading a picture from their smartphones.
- *Team management.* To ensure timely responses, Raleigh's streets team shares an email account so that any team member can quickly address residents' questions and concerns.
- *Council involvement.* Raleigh's streets team regularly shares its PCI data with council members to ensure that elected officials understand the need for its services.

Challenge: Limited Supplies

Limited asphalt availability was described as a major issue by the Benchmarking 2.0 participants, especially during the winter months when asphalt plants shut down for maintenance. This scarcity creates a backlog of work that makes it hard to meet residents' and elected officials' expectations of well-maintained roads. The limited availability of asphalt affects some municipalities more than others. For example, a round-trip drive to the closest asphalt plant from Goldsboro takes 1.5 hours, plus there's additional time spent waiting in line and loading the asphalt. Since Goldsboro only purchases approximately six tons of asphalt at a time, there is not enough demand to justify building an asphalt plant closer to the city.

SOLUTIONS AND INNOVATIONS: To address limited-supply issues, municipalities have implemented the following solutions and innovations:

- *Rejuvenation.* Some municipalities, including Apex and Raleigh, use rejuvenation techniques, such as slurry sealing and microsurfacing, to extend the life of asphalt pavement in a cost-efficient manner. See the Featured Innovations section below for more details.
- *Cold-patch asphalt.* When hot asphalt is not readily available, cold-patch asphalt, which costs more, can be used for temporary and small-scale fixes. Goldsboro recommended looking for out-of-state suppliers that sell fifty tons of cold patch at a time.

FEATURED INNOVATION
Raleigh's Automated PCI Survey

Highlights from an interview with Ben Griffin, Assistant Manager, Street Maintenance Division. Watch the full interview at benchmarking.sog.unc.edu/reports/asphalt-maintenance-and-repair/.

What does the PCI survey look like in Raleigh, and how did it begin? In early 2019, the City of Raleigh wanted a data-driven method to assess pavement conditions so that ratings would be consistent and based on objective information. Previously, the city used the "ITRE method," also referred to as the North Carolina Department of Transportation (NCDOT) method or the

"Good-quality data helps us make good decisions about effective and equitable allocations."

— BEN GRIFFIN, RALEIGH

Federal Highway Administration (FHWA) method, which involves sending inspectors into the field with a list of streets to rate based on direct observation. Those inspectors would then enter their subjective ratings into a pavement-condition rating (PCR) system, and the department would calculate an overall pavement-condition score for each section of streets and an aggregate score for the entire city. Those ratings would vary depending on the inspectors, their experience, and their knowledge of pavement distress.

After the department made the switch from the old system to the new PCI survey, it could measure crack density, rutting, rideability or international roughness index (IRI), potholes, and patches. The automated system was developed in cooperation with a consultant, and it provides consistency, objectivity, and repeatability because it can be calibrated the same way every two years and gather data points on the same street sections. This system combines inspector experience and knowledge with technology.

What data, if any, was used to make the decision to get the automated system? The Raleigh Street Maintenance Division wanted their pavement-condition data to be more reliable and repeatable, so they chose a more objective technology-based method to replace the more subjective inspector-based method.

What did it cost to set up this automated system? There were initial outlay costs of around $450,000. The department solicited and graded proposals from private consultants and selected one who had previous experience in other states. The initial outlay in the first year included setting up the asset management system, conducting the survey, creating a data quality management plan, and buying licenses for the asset management system. Every two years, the pavement-condition survey costs around $250,000. The license fees for the asset management system cost around $30,000 a year.

What are the advantages of an automated system? There are many benefits that come from leveraging technology. In just the short period of time from 2019 to 2023, the system's technology has improved greatly. There have been three iterations of a laser crack-measuring technology, and each time, enhancements were made to the laser so that it provides even more accurate crack imagery. The inspection employees now have more time to accomplish their other duties. Hiring contractors freed up resources that can be used elsewhere in the city, but the department still does some quality management on the backside.

What challenges have you overcome in planning and implementing the automated system? When choosing the calibration sections of a road, the department must be particularly careful. It must ensure that each section represents pavement that is going through a normal life cycle without major interventions, such as utility cuts or nearby development. With new technology, you must be prepared to work with it. It takes time and effort to learn about how it works and to understand the data and its limitations.

How could you improve the current automated system? The department needs to continue to evaluate how it uses the data. For example, should the same criteria be applied to and weighted the same for local single-lane roads and heavily trafficked multilane roads? Adjustments may be made based on the budget and other constraints. It's important to use data to make good decisions while efficiently applying street maintenance resources across the city.

Any advice for other managers considering a similar automated system? First, assess the overall needs of your asset management program. Understand your current baseline and what your resources will allow. The Raleigh streets staff had plenty of other projects, so the automated system helped free up some work hours and resources, which made it a good fit for the city. Develop a methodology for asset management within your division or city or town. Leverage technology, information, and data whenever possible. Try to gain some consensus from managers and elected officials about the importance of good data and how it can better inform decision-making. Good data can help determine how to spend limited dollars on pavement improvements and allows for equitable allocations across the city. Data can potentially justify the need for additional funds or additional staffing.

FEATURED INNOVATION

Apex's Asphalt Rejuvenation Techniques

Highlights from an email interview with **Adam Stephenson**, Transportation Engineering Manager.

What pavement-preservation treatments does Apex use? Since 2017, Apex has used an asphalt rejuvenator annually. An asphalt rejuvenator restores the components of asphalt that are lost because of high temperatures during the production and aging process. It penetrates the surface to protect against air and water intrusion. In 2019, Apex improved roadway safety by using microsurfacing to increase and maintain surface friction. This extends the pavement's lifespan by sealing the surface to minimize oxidation and reduce water infiltration. It can also address roadway distresses, such as rutting, raveling, bleeding, and minor cracks.

How do these treatment techniques work? A rejuvenation spray is applied to the surface and penetrates quickly; vehicles can use the road

> *"I find rejuvenation techniques to be more cost-efficient than conventional resurfacing methods."*
>
> — ADAM STEPHENSON, APEX

within an hour. Microsurfacing is a polymer-modified, cold-application paving process. It requires specialized equipment to combine the asphalt emulsion, aggregate, water, and additives. Then the mixture is uniformly spread over the pavement surface, and traffic can resume on the road in about an hour.

Who initiated this change, and who made the final decision? Stephenson proposed the treatments and received approval from city management.

What data, if any, did you use to make the decision? Every three years, Apex selects a pavement-management consultant to conduct a pavement-condition survey of the entire street system. Additional consultant recommendations and various industry publications, including those from the Federal Highway Administration, support the use of different pavement-preservation methods.

What are the costs for these two techniques? The asphalt rejuvenator that Apex uses costs less than $1 per square yard. In 2019, excluding other costs, such as crack sealing, microsurfacing cost around $3 per square yard.

What are the benefits of using such techniques? They are more cost-efficient than conventional resurfacing with plant mix asphalt. In addition to minimal disruptions to traffic, these techniques prolong pavement life and save money over the life cycle of the pavement.

What challenges have you overcome when using these techniques? It can be challenging to deter traffic until the rejuvenator has penetrated the asphalt or the microsurfacing has sufficiently cured. If the rejuvenator hasn't penetrated, it can collect on tires and get dispersed on the vehicle, which then must be cleaned. If the microsurfacing isn't complete, vehicles can create unsightly tracks on the surface. And since microsurfacing is rougher than plant mix asphalt, some residents have assumed it's inferior.

How could you improve the pavement-preservation treatments that are currently used? The treatments themselves work very well, but it would be ideal to have multiple contractors capable of providing them. Currently, only one contractor is available in Apex for the treatments, so there is very little bidding competition.

What advice do you have for other managers who are considering similar techniques? Educate the public in advance. Almost all public pushback results from a lack of understanding. After explaining what the treatments were and their intended purposes, the public reception has been positive. It is also helpful to have contractors distribute flyers door-to-door before beginning their work.

CHALLENGES AND INNOVATIONS IN

Building Inspections

On November 18, 2022, building inspection officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of two featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Recruitment, Training, and Retention

Building inspection departments are seeking applicants to recruit, train, and retain as successful inspectors. Like most public-service organizations, building inspection departments are struggling to find experienced inspectors as well as attract prospective inspectors who can pass the state exams. As Figure 2 shows, building inspection departments are operating on average at eighty percent of their budgeted capacity.

> *"We are always on the lookout for the next generation of inspectors."*
>
> — SAMANTHA EWENS (BUILDING INSPECTIONS, APEX)

Training needs are acute because of the growing number of retirements. North Carolina's building inspection certificates are offered at three levels in these five categories: building, electrical, fire prevention, mechanical, and plumbing. In addition to specialized training, universal training is also needed for employees who cover a variety of other inspection roles, such as fire marshals, code-enforcement officials, and permit-center employees. This training is typically provided by third-party consultants and private companies.

SOLUTIONS AND INNOVATIONS: To improve recruitment, training, and retention, municipalities have implemented the following solutions and innovations:

- *Training resources.* The North Carolina Department of Insurance (DOI) hosts certification training at community colleges. It can be challenging to find ten attendees and a trainer for each session, but employees from departments in the same region can attend classes together. The School of Government also offers general leadership and management training.
- *Cross-training.* The City of Wilson's building inspections department has benefited from cross-training employees. Their plumbing and building inspectors can support each other after training in both trades. A few of Chapel Hill's teams are cross-trained so that staff can support each other when there is a planned or unexpected absence.

FIGURE 2. **Inspector FTEs Available, as a Percentage of Inspector FTEs Approved**
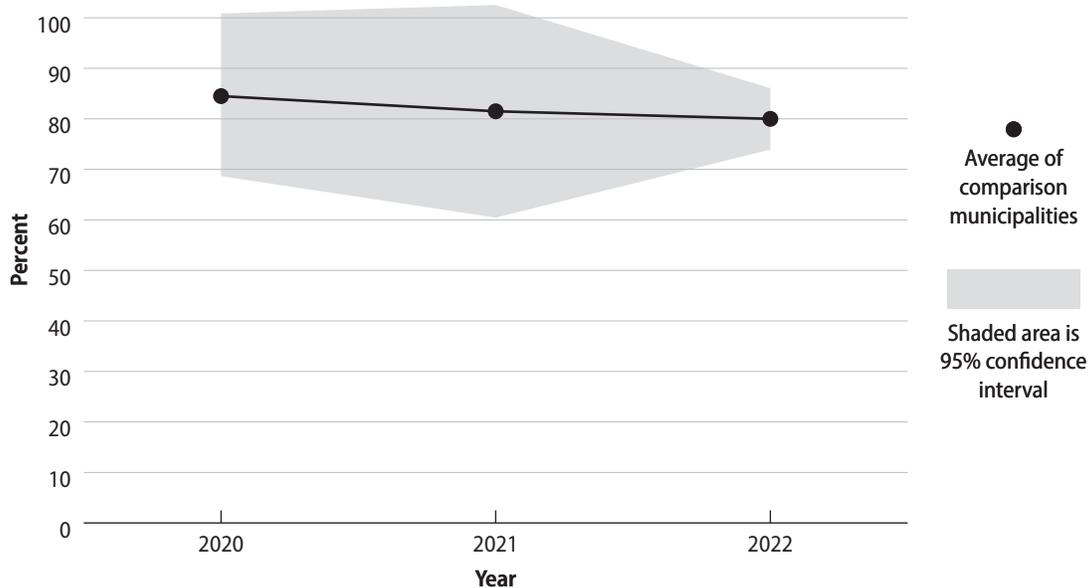
Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

- *Certificate pay.* Currently, Chapel Hill offers up to an additional $5000 stipend per certificate each year. Apex has created a clear career ladder with a pay raise for each certificate, as well as a title promotion for the fourth certificate.

- *Market data.* Understanding the labor market is essential, and it is more cost-efficient to retain a current employee than to onboard and train someone new. Since pension amounts are calculated based on the average of the top four years of pay, some staff members are moving to higher-paying cities. Departments seeking higher inspector pay at budget time benefit from compiling evidence documenting costly departures when advocating for themselves.

- *Alternative recruitment.* In its search for the next generation of inspectors, Apex uses alternative recruitment methods, including an apprenticeship program. In this program, the department collaborates with high-school shop teachers to recruit students to the career through a shed-building competition. For more details, see the Featured Innovations section below.

Challenge: Service and Staffing Levels

Consistent customer service, regular inspections, and clear communication with clients are essential for successful building inspections. Departments must also stay up to date on the North Carolina General Statutes and municipality requirements. This can be challenging for departments that are shorthanded.

**SOLUTIONS AND INNOVATIONS:** To improve service and staffing levels, municipalities have implemented the following solutions and innovations:

- *Quality-assurance reinspection.* In Raleigh, the assistant chief in each trade performs a few quality-assurance reinspections each week. This does not change the original inspector's approval unless a safety concern is present but allows issues to be fixed.
- *Decentralization.* Chapel Hill's building inspections department promotes employee empowerment and decentralized decision-making. Staff members at all levels have a say in their work environment and what they do. The council's and citizens' interests must be met, but a certain amount of flexibility is allowed. Such an approach strengthens problem-solving capacity.
- *Inspector marketplace.* When demand peaks in areas surrounding Chapel Hill, some inspectors are allowed to serve as a resource via the Department of Insurance Marketplace.
- *Adaptable skills.* Having multi-trade inspectors is useful when demand slows. During those times, Chapel Hill inspectors work on projects involving, for example, the implementation of a local ordinance that requires fire sprinklers in most buildings. To maintain a forty-hour workweek, employees with light schedules are encouraged to pick up additional responsibilities, engage in cross-training, or lend a helping hand to other departments.
- *Performance measurement.* Chapel Hill's building inspections department has found that performance measurements help with managing variability of demand. The department is in the 99th percentile for completing inspections within twenty-four hours of request.

Challenge: Technology

Building inspection departments rely on technology, but their current software is sometimes outdated. It can be challenging to obtain new hardware systems or update existing equipment. In recent years, as many departments have switched to electronic plan reviews (EPRs), technology has become even more crucial to building inspection work.

SOLUTIONS AND INNOVATIONS: To take advantage of the benefits of technology, municipalities have implemented the following solutions and innovations:

- *Testing and stakeholder engagement.* Wilson's building inspections department is undergoing a substantial technological overhaul by replacing its more than twenty-five-year-old software with one that offers document security and permitting management. The department consulted with external stakeholders, such as a home-builders association, before implementing the change. Inspectors are trained on the new software by using its test environment. This technology update should help increase the department's efficiency and effectiveness.

> *"The transition (to electronic plan reviews) can be hard at first, but it pays off in the end."*
>
> — TRACY PHILLIPS (CHIEF BUILDING OFFICIAL, WINSTON-SALEM)

- *Electronic plan reviews.* In 2017, Winston-Salem's building inspections department successfully implemented EPRs for commercial properties; three years later, the COVID-19 pandemic prompted a switch to EPRs for residential properties. Before Apex's administrators transitioned to EPRs, they interviewed multiple technology companies to find the best fit. Chapel Hill consulted various sources, including outside stakeholders, other municipalities, homeowners, and IT professionals, before implementing their new software. For more details, see the Featured Innovations section below.

- *Screens, big and small.* Building inspectors in Chapel Hill now have electronic tablets and phones, which increases their efficiency and decreases the burden of staff shortages. Winston-Salem, on the other hand, bought fifty-five-inch monitors that are comparable in size to plan sheets. The large screens have been tremendously helpful to inspectors.

FEATURED INNOVATION

Winston–Salem's Electronic Plan Reviews

Highlights from an interview with Tracy Phillips, Chief Building Official. Watch the full interview at benchmarking.sog.unc.edu/reports/building-inspections/.

Why did Winston-Salem switch to electronic plan reviews for building inspections?
Citizens and businesses were interested in electronic plan reviews because, previously, they had to submit seven sets of paper plans for different reviewers, and then they did the same for revisions. The department identified potential cost savings and positive environmental impacts to justify the change. Electronic plan reviews reduce the need for paper, stamps, and physical storage for documents.

> *"Electronic plan review systems decrease turnaround time, increase cost savings, and reduce the need for storage space."*
>
> — TRACY PHILLIPS, WINSTON-SALEM

Who made the final decision to replace paper reviews with electronic plan reviews? This was a departmental decision. The team consulted with the Information Systems Department to evaluate bids from different companies that offered these products.

What did it cost to implement the system?
In 2015, the initial cost for an electronic plan review system was around $200,000, which included training, but the prices have increased over time. There are also monthly costs and costs to upgrade monitors. A standard twenty-inch monitor is not sufficient, so the department upgraded its monitors to fifty-five-inch and larger TV screens to make them comparable to the size of a plan sheet (two by three feet).

What are the benefits of the EPR system? Winston-Salem implemented the electronic plan review system in 2017. The system allows collaborative reviews, mark ups, and modifications of plans and permits. It has increased efficiency and turnaround times. Currently, there is a ten-day turnaround for first comments on new projects and a five-day turnaround for upfits and revisions.

What challenges did you overcome in planning and implementing the system? Smaller commercial customers were accustomed to paper submissions and didn't have the computer systems necessary for electronic submissions. So, 2017 was a year of experimenting to see what worked and didn't work. By 2018, customers had switched to electronic submissions, and the department no longer accepted paper. Prior to

COVID-19, the department was considering EPRs for residential building permit review. The closing of the office sped up the transition and implementation, and it's been working well since then.

What improvements should be made to the current system? Plan reviewers would like to have the ability to search the system by customer/applicant name. Currently, they can only search by permit number, address, or ID number.

Do you have any advice for building-inspection managers who are considering this type of technology? Winston-Salem/Forsyth County Plan Reviewers highly recommend electronic plan review systems. It is an efficient process that has decreased turnaround time, increased cost savings, and reduced the need for storage space.

FEATURED INNOVATION
Apex's Alternative Recruitment and Apprenticeship

Highlights from an interview with Mike Emig, Code Enforcement Field Supervisor. Watch the full interview at benchmarking.sog.unc.edu/reports/building-inspections/.

How did Apex form its recruitment partnerships with local high schools? A high-school shop teacher asked Mike Emig to judge a Students' Hands-on Experience Day (S.H.E.D.) building competition. The initial competition began with ten high schools; now, there are three competitions covering Wake, Franklin, and Lee counties. Over the years, Emig assumed more judging responsibilities and sometimes helps recruit other volunteer inspector judges for the program.

What is a S.H.E.D. building competition? Teams of high-school students get a set of plans and three days to build a shed. The students work hard from 8 a.m. to 5 p.m. and get their work inspected by the judges at different stages. Ultimately, the winning team is awarded tools donated from local businesses, and the sheds are auctioned off to support scholarships for students interested in design and construction careers.

> *"The only cost involved in the program is the time it takes to volunteer."*
>
> — MIKE EMIG, APEX

What data, if any, do you use in alternative-recruitment decision-making? In the beginning, data wasn't necessary; Emig and the department simply wanted to reach

out to and work with the community. And building professionals often voice concerns about people retiring: up to 85 percent of all building inspectors in North Carolina are set to retire in the next fifteen years. Programs such as these are thus an opportunity to expose young people, who are beginning their careers, to the work of a building inspector so they can graduate with a job that has a livable wage and a career path.

Who made the final decision about starting this partnership? Rudy Baker, the Director of Building Inspections and Permitting, and the town's management were excited about the possibility of interns and apprentices. They increased exposure to the program by mentioning it in the town's newsletter. Emig's continued participation as a local S.H.E.D. judge further developed the partnership.

What initial costs were needed to plan and implement this program? The only cost is the time it takes to volunteer, so you need the municipality to agree to the time commitment. There are two competitions: S.H.E.D. and V.O.L.T. (Vocational Occupational Learning Trade). V.O.L.T. competitions consist of high-school students competing in electrical tasks during a one-day event. S.H.E.D. competitions need building inspectors to volunteer for three days, and V.O.L.T. competitions need them to volunteer for one day.

Have you overcome any challenges with this partnership so far? The biggest challenge is wanting to hire someone when there's not an official position available. At last year's competition, Apex was not looking to hire anyone, but the judges discovered a bright and highly recommended student and offered her a position. Then they collaborated with human resources to convert an open position into an apprenticeship. The town is still figuring out the details. After six months on the team, the apprentice is up for a promotion, which requires additional human resources involvement. Once a clear process is in place, it will be easier from a human resources standpoint.

Do you have any advice for other managers who are considering a similar recruitment technique? This entire hiring pool is often overlooked. The students may not have construction experience, but Apex managers are looking for motivated, smart, and hard-working people who can be trained and taught about code. Interested departments should contact Emig and volunteer for a S.H.E.D. competition—volunteers are needed for the competitions next year in the Triad region. They should also reach out to local schools and talk to shop classes. Tell students they only need a high-school education to start and explain what the department does, how it operates, and why it is important.

CHALLENGES AND INNOVATIONS IN

Central Human Resources

On November 7, 2022, human resources officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of three featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/ reports/**.

Challenge: Turnover, Recruitment, and Succession Planning

Employee turnover creates a costly and time-consuming problem for local governments. In response to high employee turnover, human resources personnel in North Carolina local governments are required to put more effort into employee recruitment and retention, which means they have less time to work on other tasks, such as succession and future planning for old and new positions. The Benchmarking 2.0 participants indicated that recruitment can be particularly challenging when job descriptions are unappealing and the offered pay is uncompetitive in the labor market. Younger generations are seeking greater job flexibility with hybrid or remote options. As local governments work toward refining job roles and responsibilities, they must strategize about how they can appeal to younger applicants.

As Figure 3 shows, total job separations for the Benchmarking 2.0 municipalities have been gradually increasing over the past three years.

SOLUTIONS AND INNOVATIONS: To decrease turnover, improve succession planning, or mitigate recruitment issues, the participating municipalities have implemented the following solutions and innovations:

- *Caregiver leave.* Apex offers employees the opportunity to take caregiver leave. For more details, see the Featured Innovations section below.
- *Parental leave.* Chapel Hill, Apex, and other municipalities offer employees the opportunity to take parental leave. Concord is in the process of implementing parental leave that will be effective July 1, 2023.
- *Advertising for experience.* For certain positions, Greensboro has shifted its job-recruitment strategy to focus more on applicants' job experience than on educational requirements.
- *Tuition reimbursement.* Winston-Salem and Greensboro offer employees tuition reimbursement based on their income. Concord also provides tuition reimbursement, but it is not income based.

FIGURE 3. **Total Job Separations, as a Percentage of City Government FTEs Approved**

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem
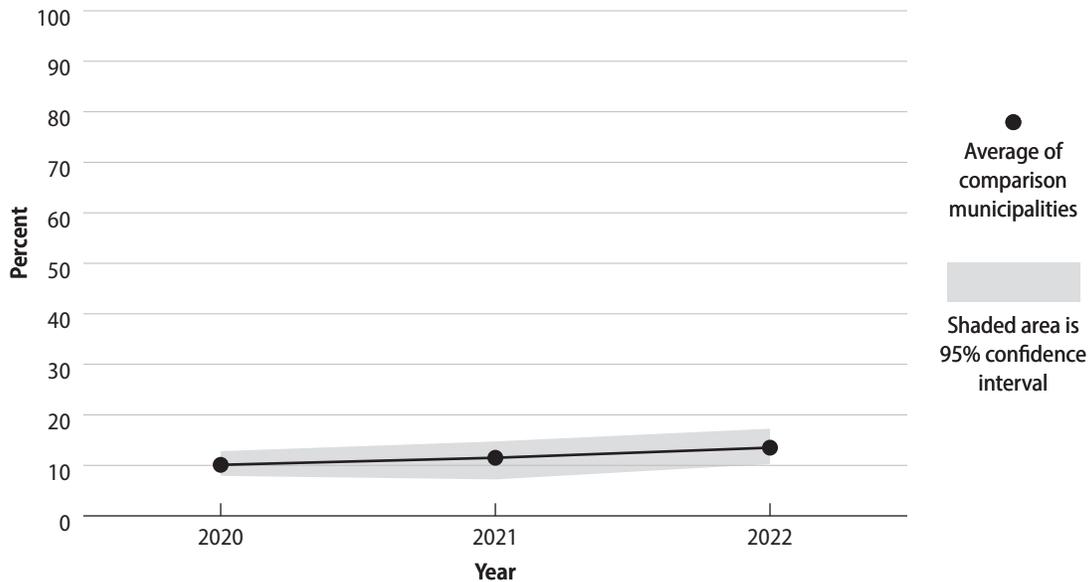
- *Sign-on bonuses for transit bus drivers.* Chapel Hill offers transit bus drivers a sign-on bonus.
- *On-the-spot-hiring fairs.* Greensboro conducted on-the-spot-hiring fairs to fill positions in utilities and solid waste services. For more details, see the Featured Innovations section below.

Challenge: Employee Training and Development

As a result of the Great Resignation, service departments are losing significant institutional memory and interpersonal networks both in and outside their organizations. One participant mentioned that sometimes it takes three to five new recruits to do the work of one long-term employee, but service departments can still only fill one new Full-Time Equivalent (FTE) position upon the departure of a more experienced employee. This challenge is further exacerbated by a tradition of promoting and hiring in service departments based on technical skills. But the Benchmarking 2.0 participants agreed that an employee with exceptional technical talent may not always possess the management skills necessary to, say, supervise and

FIGURE 4. Total Number of New Recruits, as a Percentage of City Government FTEs Approved
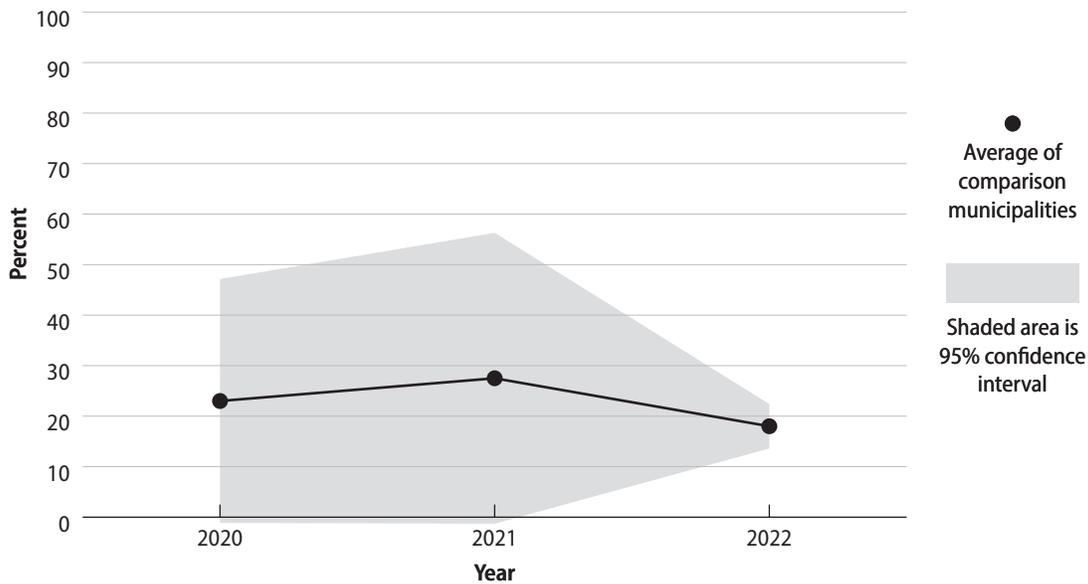
Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

communicate effectively. The number of new recruits is still high, as Figure 4 shows, and indicates a need for investments in employee training and development in North Carolina local governments.

SOLUTIONS AND INNOVATIONS: To improve training and development, one municipality has implemented the following solution:

• *Training tracking.* Concord has implemented a new training-tracking system. The new system is user-friendly to both human resources and employees, and it helps streamline a time-sensitive training process. For more details, see the Featured Innovations section below.

Challenge: Lack of Capacity

Like other services, human resources departments are dealing with a reduction in capacity. As Figure 5 shows, some HR departments are operating with below the total approved FTEs they need to perform their functions. This lack of capacity is further exacerbated by a significantly elevated workload caused by an unprecedented number

FIGURE 5. Human Resources FTEs Available, as a Percentage of Human Resources FTEs Approved
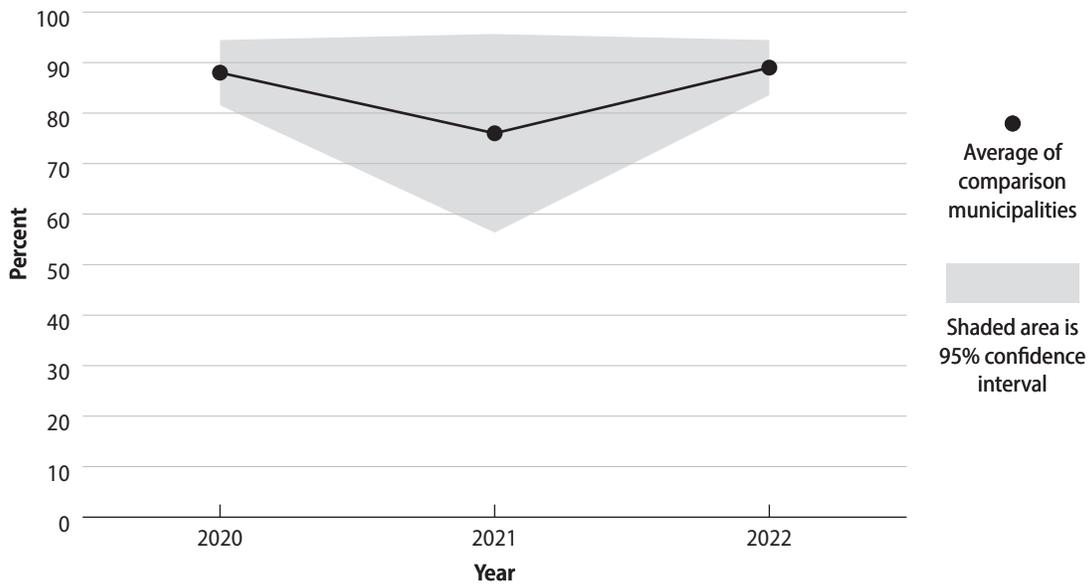
Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

of separations and fresh recruits in local governments. Human resources departments in North Carolina local governments are thus providing more services with fewer available resources. One participant mentioned that the lack of capacity is redirecting that person's efforts toward the most essential tasks that require immediate action, which inhibits progress in other important, but less urgent, areas, such as long-term planning and support for employees.

Challenge: Internal Communication

Hiring new employees and managing the inner workings of an entire municipality is a team sport because of the amount of collaboration and communication needed to coordinate such efforts. Human resources personnel highlighted the need to communicate guidelines and expectations not only with colleagues within the HR department but also with other service departments and external audiences. The Benchmarking 2.0 participants expressed interest in exploring how they could better collaborate with other service departments to change their perception that HR departments mostly care about compliance and rule-following.

SOLUTIONS AND INNOVATIONS: To improve collaboration or communication issues, one municipality has implemented the following solution:

- *Information sessions.* When Greensboro switched from a monthly to a biweekly pay schedule, administrators hosted several sessions with employees to clarify and communicate why it was happening. These sessions eased the confusion surrounding the transition and soothed employees' concerns about their paychecks.

FEATURED INNOVATION
Greensboro's Hire-on-the-Spot Job Fair

Highlights from an interview with **Jamiah Waterman**, Director of Human Resources; **Latoya Harris**, Communications Specialist; and **Rena Comer**, Project Manager. Watch the full interview at **benchmarking.sog.unc.edu/reports/human-resources/**.

What is a hire-on-the-spot job fair? The City of Greensboro Human Resources (HR) department hosted a hire-on-the-spot job fair at the Barber Park Event Center as part of a strategy to streamline its recruitment and selection process. The hire-on-the-spot job fair was a collaborative effort between HR, the Water Resources Department, the Field Operations Department, the Office of Equity and Inclusion, and the Communications Department.

> *"We hired seventy-three individuals in one day!"*
>
> — JAMIAH WATERMAN, GREENSBORO

The job fair was advertised to current employees and external partners through brochures, a news release, and a media release. The jobs selected to be advertised at the fair, such as the crew-member position and the solid-waste-operator position, had relatively low barriers for entry and could easily be mastered with the correct training. This allowed individuals with limited educational and employment backgrounds to apply for jobs that would train them and help them develop their skills and qualifications over time.

At the hire-on-the-spot job fair, recruiters could gauge candidates' public-service orientation and their interest in the available jobs. The recruiters were transparent in conveying the demanding and sometimes unpleasant conditions of the positions. Qualified candidates could receive a job offer at the fair itself, but before being officially hired, they would have to complete other mandatory screenings, such as a background check, employment references, medical screenings, and a drug test.

Who initiated the need for the fair and who made the final decision? The HR Department, the Water Resources Department, and the Field Operations Department started the initial conversations about hosting an on-the-spot hiring event. These departments were already aware of their hard-to-fill low-level positions, and they were hopeful they would be able to fill most of these critical positions in one day. The idea received strong support and only took three months of planning before it was implemented.

What were the costs involved in setting up the fair? The cost of the hire-on-the-spot job fair was significantly low. The HR department already had free access to event locations because of Greensboro's municipality status. The department did not have to purchase equipment, such as tents, tables, and tablecloths, because they already had many of these items from previous events. In addition, the City of Greensboro has an internal print shop, so the department received a discount on the printing costs and design work.

What data was used to make the decision? The HR department used the employee vacancy rate and turnover rate to justify the need for a hire-on-the-spot job fair. Based on those rates, the department was able to pinpoint the job categories they wanted to target and advertise at the fair.

What are the benefits and challenges associated with hire-on-the-spot fairs? The hire-on-the-spot job fair was considered a success and allowed the department to save two months' worth of time compared to the traditional recruitment and hiring process. More than 250 people attended the fair, and the HR department was able to hire a total of 73 individuals for their Water Resources and Field Operations departments. Even though not all candidates received a job offer, everyone who attended got an opportunity to learn about the City of Greensboro and its career opportunities.

What changes could be made to improve these fairs? Latoya Harris said the three-month timeline for the fair was adequate, but an even longer planning period could have allowed them to brainstorm further about how to extend its impact. For example, more planning time could have allowed them to plan two job fairs in the same week at two different, strategic locations.

Advice for those who are thinking about implementing a similar recruitment strategy? Jamiah Waterman quoted an old saying, "If you want to go fast, go alone, but if you want to go far, go together." He attributes the success of the hire-on-the-spot job fair to the collaborative approach taken by all the departments and the effort to better understand the needs of each stakeholder and what each could bring to the event.

FEATURED INNOVATION

Concord's New Training Tracking System

Highlights from an interview with **Kimberly Wynn**, Deputy Human Resource Director. Watch the full interview at benchmarking.sog.unc.edu/reports/human-resources/.

What is Concord's new training tracking system? The City of Concord Human Resources (HR) Department adopted a new software to track the training of its employees. The new training tracking software is contracted under the parent company, Salvo, and has greatly helped the department streamline and consolidate its training tracking system.

Who initiated the change and who made the final decision? Wynn and the Director of Concord's HR department started the preliminary research for software that would best meet the training tracking needs of the city. Initially, Wynn reached out to and spoke with four or five vendors to understand the differences between their products. Then the vendors met with her to demonstrate their software and discuss logistical matters.

> *"To find what best fits your organization, you first need to understand the needs of your organization and the gaps that need to be filled."*
>
> — KIMBERLY WYNN, CONCORD

What were the costs involved in setting up the new system? The vendor of Concord's existing performance management system offered a bundled discount that included the new training tracking software. HR administrators were able to map out the costs of the new software and figure out how to absorb them in the new fiscal year. The cost of setting up the training system was about $40,000 for the first year. The cost of each subsequent year is a contractual amount negotiated with the vendor.

What data was used to make the decision? The department identified the need to adopt the new software after noticing how long it was taking administrators to track the number of trainings city employees had attended and completed. The prior system used a combination of Google Docs, Excel spreadsheets, and printed sign-up sheets to track employee training. This method was time-consuming and inefficient because administrators would often have to search for and piece together an array of documentation provided by training facilitators.

What are the benefits and challenges associated with the new software? The partnership between the vendor and the city has been very beneficial, not only because of the bundled discount but also because administrators were already used to working with that vendor's software. The training tracking software is simple to use and does a good

job of organizing information in a visually pleasing and easy-to-understand format. However, the initial transition was a tedious process because administrators had to manually organize and format all prior documentation before it could be uploaded to the new system.

What changes could be made to improve the new system? It's important to schedule meetings with the vendor to train HR administration staff on the new software. Even though the staff feels comfortable with it, having the chance to talk and learn from the experts could improve performance.

Advice for those who are thinking about adopting a similar system? Doing background research is critical. To find the software that best fits your organization, you first need to understand the needs of your organization and the gaps that need to be filled. Before selecting a vendor, it's important to do extensive testing and scheduling of demos, making sure to include other people, such as additional HR staff or outside facilitators, in that process.

FEATURED INNOVATION
Apex's Caregiver–Leave Policy

Highlights from an interview with Mary Beth Manville, Director of Human Resources. Watch the full interview at benchmarking.sog.unc.edu/reports/human-resources/.

What is Apex's caregiver-leave policy? The Town of Apex Human Resources (HR) Department implemented a caregiver-leave policy that allows employees up to three weeks of paid leave to care for immediate family members. The definition of "immediate family member" is broad in the sense that it is not limited to just those in one's immediate household but also includes people such as parents, grandparents, and in-laws.

Who initiated the change and who made the final decision? The initial conversations about caregiver leave stemmed from discussions about broadening the definition of "family member" within the family medical leave policy. The HR department knew they wanted to create a leave status for employees who would be out for an extended period of time that went beyond what family medical leave would cover. To explore this opportunity, the department collected feedback from employees about the benefits offered, considered different policy options,

> *"Caregiver–leave systems should be easy for employees to use but also easy for HR to manage."*
>
> — MARY BETH MANVILLE, APEX

and then brought their findings to the leadership team for review. The caregiver-leave-policy proposal received full support from both the leadership team and the Town Council.

What were the costs involved in setting up the caregiver-leave policy? Based on the implementation of the paid parental-leave policy, the department had a rough estimate of how employees would use the caregiver-leave policy and how much it would cost the town. The caregiver-leave policy has been in effect for about two years now, and the town has not seen the policy significantly impact the budget. It has impacted employee productivity, especially among shift positions, which need to be backfilled while employees are on caregiver leave, but overall, the benefits of the policy outweigh the costs.

What data was used to make the decision? The department used surveys to gauge how employees felt about the benefits offered by the town. The department also knew there was a greater need for employee leave time because they could track the types of leave employees were taking and for what reasons. This appreciation for employee leave was particularly apparent when the paid parental-leave policy, implemented prior to the caregiver-leave policy, was well received by employees.

What are the benefits and challenges associated with the caregiver-leave policy? Apex advertises its extra benefits, such as its generous leave package, to prospective employees. It is obvious that the different types of leave options available to employees positively impact recruitment and retention. Implementing the caregiver-leave policy during the onset of COVID-19 did prove to be challenging, but the subsequent quarantine restrictions helped expedite the implementation of the policy. It was only after the initial chaos of COVID-19 subsided that the HR department began to communicate to employees the policy's original intent and the correct procedures they must follow to receive caregiver leave.

What changes could be made to improve the policy? Caregiver leave is a paid-leave option available to employees who are eligible for family medical leave. The HR department needs to better communicate with employees who qualify for caregiver leave and to clarify what forms need to be completed to receive it. It is also important for employees to understand that caregiver leave should be reserved for longer periods of illness and care.

Advice for those who are thinking about implementing a similar policy? HR managers need to carefully consider the needs of employees and figure out how to implement a caregiver-leave system that is easy for employees and HR managers to use.

CHALLENGES AND INNOVATIONS IN

Emergency Communications

On November 16, 2022, emergency communications officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of three featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Staffing Shortages and Locating Quality Candidates

Staffing is an issue across all municipal departments; however, the stakes in emergency communications are extremely high. A lack of staff can mean the difference between life and death in this line of work. With such important roles, it is imperative for these departments not only to be fully staffed but to be staffed with high-quality candidates who are suited for the pressures of the job. As Figure 6 shows, emergency communications departments are operating with a significant deficit of telecommunicators. The reality of working in an emergency communications

FIGURE 6. Telecommunicator FTEs Available, as a Percentage of Telecommunicator FTEs Approved
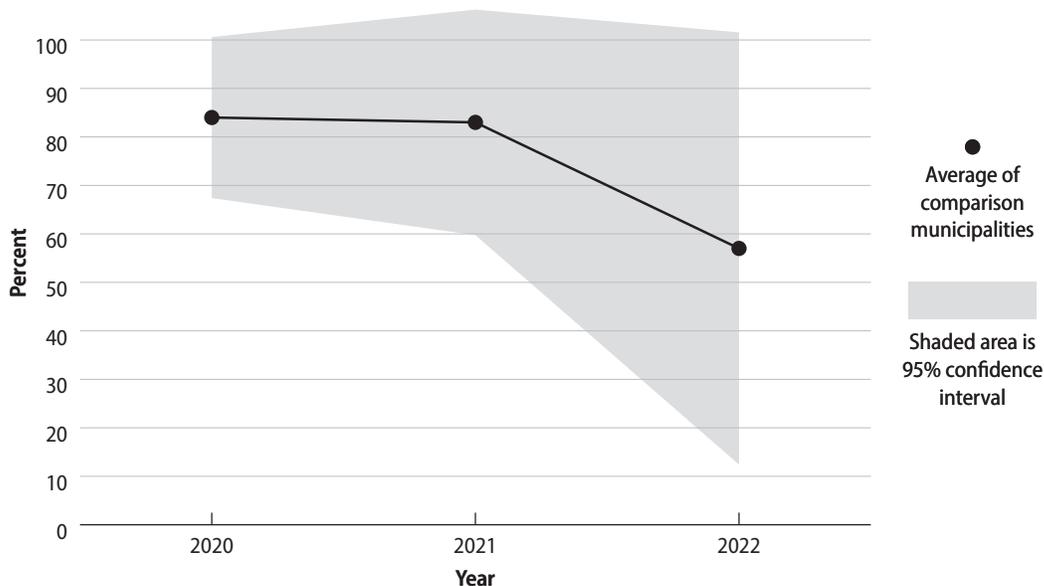
Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

department is not as glamorous as television might have you believe. These departments need a mechanism for recruiting new candidates and assessing their likelihood for longevity before they are put through the lengthy training process.

SOLUTIONS AND INNOVATIONS: Municipalities across North Carolina have implemented several innovative solutions to combat staffing concerns, including:

- *Candidate tours.* Apex offers departmental tours to prospective job candidates, so they can get a sense of what it is like working in an emergency communications center.
- *Competitive pay.* Many municipalities are offering higher salaries to stay competitive with surrounding towns.
- *Job-shadowing program.* Greensboro allows interested candidates to participate in a day in the life of an emergency communicator.
- *Apprenticeships.* Raleigh partners with local community colleges to allow eighteen-year-olds to take relevant coursework and gain experience. See the Featured Innovations section below for more details.
- *Advertisements.* Concord frequently advertises job openings on social media and at career fairs.

Challenge: Turnover

Turnover contributes to the staffing concerns of emergency communications departments. The high-intensity work can lead to high burnout rates. Many departments find it hard to keep employees long-term. As turnover increases, burnout rates of colleagues also increase, because each staff member is forced to take on additional responsibilities and tasks.

SOLUTIONS AND INNOVATIONS: Below are some solutions explored by emergency communications departments to increase staff retention:

- *Retention pay.* Greensboro provides monetary retention bonuses to current employees.
- *Night-time differentials.* Greensboro provides increased payments for employees who work nights, creating incentives for the hardest or least appealing shifts.
- *Pay minimums and pay adjustments.* Winston-Salem offers new employees a competitive base salary with opportunities for an increase mid-year.

Challenge: Technology

Technology plays a large role in emergency communications departments, which must continuously update their equipment to meet the needs of citizens and ensure compatibility with other systems. Municipalities often struggle to communicate with each other because they employ different technologies and codes that make uniformity nearly impossible. Computer-aided dispatch (CAD) communications across municipalities can be challenging as no industry-wide standard has been established in North Carolina. If municipalities do not have the time and resources to acquire new technology, they risk not being able to communicate with other departments during emergencies. Funding requests for new technology have become increasingly difficult to get approved and implementing new programs is near impossible because of constant turnover.

> *"How can Uber track your exact location down to the room you are sitting in, but our first responders can't find you?"*
>
> — CHRISTINE MOORE (GUILFORD METRO 911, GREENSBORO)

SOLUTIONS AND INNOVATIONS: Below are some technological innovations adopted by emergency communications departments to improve their services:

- *First Arriving dashboards.* Concord employs dashboards that provide important public safety information and keep call-center operators updated on what is happening in their communities in real time. **See the Featured Innovations section below** for more details.
- *CAD-to-CAD systems.* Greensboro, through Guilford Metro, utilizes CAD services to streamline call processing and facilitate quick communication with other emergency departments. See the **Featured Innovations section below** for more details.

Challenge: Lack of Code Standardization

There is no standardization of codes among emergency communications departments, which compounds the problem of incompatible technology. Communicating with other departments is often difficult because of the inconsistent codes, and this becomes detrimental in emergencies when departments must relay messages quickly. It can also make long-term cooperation among municipalities and counties more challenging.

Challenge: Call Processing

As communities across North Carolina grow, the volume of emergency calls also continues to increase. Departments struggle to keep up with their growing community needs while simultaneously facing staffing shortages. As a result, the response time to calls has increased. Some departments are trying to teach their communities to use non-emergency phone numbers, whenever possible, to lessen the volume of 911 calls.

Challenge: Information Requests

Emergency communications departments are also responsible for fulfilling information requests by citizens, governments, and various organizations. The process of completing these requests is lengthy, as employees must sort through transcripts and redact all sensitive information about callers and their situations.

> Some departments find it useful to group the total number of information requests received as follows:
> - requests requiring redaction,
> - requests from the public,
> - requests from agencies,
> - requests from the Department of Social Services (DSS), and
> - requests from the media.

These information requests are important for a variety of reasons, but they put a strain on emergency communications departments that are struggling to find people to fulfill their other life-saving roles.

FEATURED INNOVATION
Raleigh's Veteran Apprenticeship Program

Highlights from an interview with Dominick Nutter, Emergency Communications Director. Watch the full interview at benchmarking.sog.unc.edu/reports/emergency-communications/.

Could you describe the apprenticeship program available to veterans? The veteran apprentice program is a subset of the GI Bill. Raleigh's emergency communications department reached out to the state Veteran's Affairs (VA) and put together a training program. Their curriculum was approved by the VA, and the staff received training to become school-certifying officers. The program provides extra pay for veterans while they are training in the emergency communications center.

Could you describe the apprenticeship program? Applicants are enrolled in a twelve-week course that begins with basic certification training. Trainees then work in a training lab to learn the CAD system and local policies that will impact their work. The final, and longest, step is a two-month period of on-the-job training in which trainees work with certified training officers. After training is completed, employees can take emergency calls on their own.

> *"The apprenticeship program allows for new opportunities for veterans, all at no cost to the department."*
>
> — DOMINICK NUTTER, RALEIGH

Who proposed this program and who made the final decision? The department was looking for new recruitment strategies. Around that same time, the VA office reached out to us seeking employment opportunities for veterans. The two organizations were able to work together toward a common goal. The VA was able to place veterans in fulfilling roles, and the communications center was able to fill open positions with motivated, energized individuals. There are several military bases in North Carolina, which means there is a large candidate pool for this program.

What data, if any, did you use to make the decision? The department used turnover and exit-interview data to understand why their current employees were leaving. They also used military transition data collected by Fort Bragg to better understand the needs of new veterans.

What were the costs involved in setting up and using this type of recruitment strategy? The only costs for the emergency communications department were time and training. It took time completing the paperwork necessary to become a certified program and to allow current staff to be trained as school-certifying officers.

What do you like about the apprenticeship program? The apprenticeship program offers new opportunities to veterans, and it may convince them to apply for jobs they feel hesitant about, all at no cost to the department.

What challenges did you face in planning and implementing such recruitment strategies? The most pressing challenge is for those in the training program who also serve in the military reserve. It can be challenging for candidates to balance both roles at once.

What changes would you make to improve the recruitment and apprenticeship process? The program has been successful, and no changes are wished for in Raleigh. The city hopes that other municipalities implement similar programs in their own departments.

Any advice for other emergency communications managers who are thinking about using similar recruitment techniques? Raleigh encourages anyone thinking about implementing a program like this one to push forward. There have been no negatives, and the benefits have been immeasurable.

FEATURED INNOVATION
Guilford Metro's Communications Technology

Highlights from an interview with Christine Moore, Operations Manager, Guilford Metro 911. Watch the full interview at benchmarking.sog.unc.edu/reports/emergency-communications/.

What technology is used by Guilford Metro 911? And why was there a specific need for this technology? Guilford Metro uses CAD-to-CAD services in order to streamline call processing and quickly communicate with other emergency departments. The CAD systems in different municipalities communicate with each other so that emergency operators don't have to make calls.

What do you like about the technology? The technology streamlines the process and allows for the dispatch of different services quickly. And it eliminates the need for call transfers between different call centers.

What are the challenges and limitations of the technology? The process relies on live connections between systems, and that can fail on the dispatching or the receiving end. However, the technology does signal operators when a transfer is not completed, and operators can then call an assisting department.

> *"The next generation of emergency technology will allow for data to be delivered quickly and seamlessly in the form of texted pictures and video to the 911 center."*
>
> — CHRISTINE MOORE, GUILFORD METRO

What changes would you make to improve the system? The stability of the connection could be improved. Operators rely on the system, and the operation can be slowed down if a connection fails. Guilford Metro 911 also needs to work with surrounding areas to create a data-conversion tool that allows for codes to be translated between departments without any manual entry or interpretation required.

What would be the costs associated with making these changes? Who would have to initiate them and who would need to approve them? The system operates through existing CAD-to-CAD networks in the area. All the call centers in the area use the same CAD system, which allows for easy communication. The only cost would be for a new municipality joining the network that has to purchase the same CAD system.

Do you have any other comments about the use of technology by emergency communications departments? The next generation of emergency technology is being created and will allow for data to be delivered quickly and seamlessly. Some of this new tech might allow users to text pictures and videos to the 911 center. The department is currently thinking of ways to make that information useful to first responders without causing undue harm to call operators who are not used to seeing graphic pictures and videos from active emergencies.

FEATURED INNOVATION
Concord's First Arriving Dashboards

Highlights from an interview with Bethany Ledwell, Communications Director, and Matt Lowery, Communications Center Manager. Watch the full interview at benchmarking.sog.unc.edu/reports/emergency-communications/.

What are First Arriving dashboards, and when and why did you decide to use them? First Arriving dashboards are message display screens that can be seen throughout the emergency communications center. These screens provide critical public-safety information and keep call center operators updated on what is happening in their community. The dashboard pulls information from the social media feeds of the police and fire departments as well as from other sources like the national weather service. The center also uses Google Slides to add important announcements and other departmental information.

> *"Municipalities should customize their dashboards to make them their own; every communications center is different and the potential of the First Arriving dashboards is limitless."*
>
> — BETHANY LEDWELL, CONCORD

What data, if any, did you use in making your decision to get the dashboard? The need for a First Arriving dashboard came up a couple of years ago when there was an incident involving police and SWAT forces that led to inconsistent messaging for first responders: the police department had put out a shelter-in-place order on Twitter, but the communications center was not made aware of that order. This kind of inconsistent messaging between departments can be detrimental. The First Arriving dashboard allows the center to get instantaneous updates from first responders.

Who initiated the need to change and who made the final decision? The previous communications center manager helped create and implement the First Arriving dashboard. The final approval came from Ledwell.

What were the costs involved in setting up the First Arriving dashboards? The Concord Fire Department was already using First Arriving dashboards to carry out their everyday duties. This allowed the emergency communications center to use the existing system, which required only the purchase of two additional licenses. The cost was minimal to implement the system in the emergency communications department.

What do you like about the First Arriving dashboards? The First Arriving dashboard is most useful for enabling a constant flow of information that is always accessible to everyone in the call center. The dashboard is used to communicate information internally and externally; in addition to providing crucial public safety updates, it announces upcoming training for employees. And it has an easily accessed archive.

What challenges did you face in planning and implementing the First Arriving dashboards? The biggest struggle the center faced was figuring out how to best display the dashboard information, which needed to be easily seen by everyone in the center.

What changes would you make to improve the system? One detail that could be changed is the frequency of display cycles. Currently, operators have to watch an entire cycle of slides to find the one slide they need. There is no way to manually cycle through them. The department also wants to maximize the benefits of the dashboard by finding new apps and displays that could make it even more useful.

Any advice for other emergency communications managers who are thinking about implementing a similar system? Concord recommends using free online spreadsheet software for quickly customizing the dashboard. The department's spreadsheet software allows users to bypass the dashboard service provider when making changes to information. Municipalities should customize their dashboards according to their own unique needs since every communication center is different. The potential value of having a First Arriving dashboard is limitless.

CHALLENGES AND INNOVATIONS IN

Fire Service

On November 18, 2022, fire service officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of one featured innovation from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Staffing

Across the board, fire departments are finding it difficult to fill open positions and retain current employees. As Figure 7 shows, departments are typically operating at just below 80 percent of their capacity. It is difficult for municipal fire departments to compete with the higher pay offered for the same jobs in the private sector. The issue is further exacerbated by the amount of screening and training required in the hiring process. Departments also struggle with temporary staffing and overtime when employees are on maternity/paternity leave. Such a lack of capacity has implications for the effectiveness and efficiency of municipal fire departments.

FIGURE 7. **Firefighter FTEs Available, as a Percentage of Firefighter FTEs Approved**
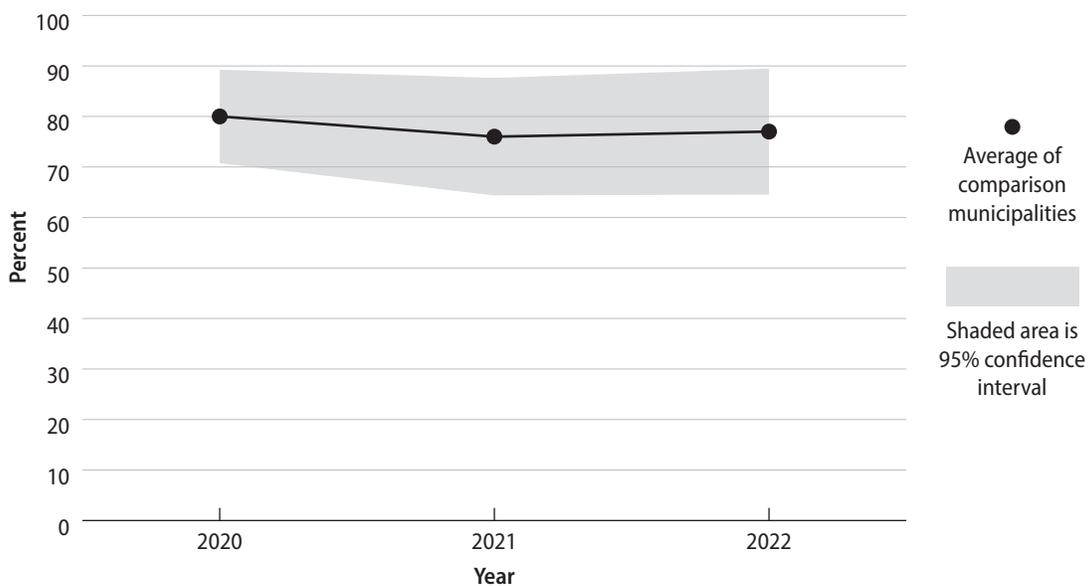
Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

SOLUTIONS AND INNOVATIONS: Municipal fire departments have used various innovations to mitigate staffing/retention issues, including:

- *Recruiting bonuses.* Several departments offer current employees a salary bonus in exchange for bringing in new recruits.
- *Exit interviews.* Raleigh conducts exit interviews to better understand the reasons employees leave so that administrators may make improvements based on the feedback.
- *Retention bonuses.* Charlotte rewards employees for their longevity by awarding them salary bonuses based on their years of service.
- *Day-shift differential.* Several municipalities offer pay differentials to employees who work during less desirable hours.
- *Sign-on bonus.* To entice recruits, Raleigh has experimented with offering sign-on bonuses for new hires.
- *Remote work.* To combat staffing issues including retention, several fire departments have started to offer remote options for some administrative positions. However, this can be challenging since many fire department employees need to work in-person so they can quickly respond to emergencies. Allowing some but not all employees to work remotely can potentially lead to resentment among the staff, as the employees who have to be present may feel they are doing more work than those who are working from home.

Challenge: Population Growth

Many North Carolina communities have been experiencing immense growth, which puts pressure on first responders. As communities are also becoming more spread out, fire departments are expected to adjust their response territory to include expanding neighborhoods. This has made the job harder, given resource limitations. Sudden population growth has put fire departments in a reactive rather than proactive position, with inadequate planning for community changes.

SOLUTIONS AND INNOVATIONS: Some possible solutions to help deal with issues related to population growth include:

- *Partner with other departments.* Charlotte Fire Department is working on mutual aid agreements with some neighboring jurisdictions to provide faster response times to remote neighborhoods and provide additional resources when needed.
- *Hire contractors.* Some municipalities have looked into hiring fire-service contractors to help respond to emergencies, if they meet the department's training and performance expectations.

Challenge: Community Design

As North Carolina's population grows and cities carve neighborhoods out of previously uninhabited areas, fire departments' responsibilities increase. In some cases, annexed or newly populated areas might include inadequately regulated infrastructure such as narrow roadways that are virtually impossible for fire trucks to navigate. This issue can result in delayed responses to emergencies by forcing firefighters to take different, less direct routes. Some fire trucks have damaged cars parked along tight roads while racing to an emergency. These issues arise when fire departments are not included in annexation or zoning discussions and are only informed after decisions are made.

Challenge: Broader Community Understanding

Some residents may not be aware of the full functions of fire departments, which can lead to confusion in cases of emergency. Fire departments are seeking ways to improve the public's understanding of their roles so that they can be of maximum service. They want to communicate more effectively with residents and help them understand what they can expect from their local fire personnel, so that community needs can be better met. Fire departments also struggle with having enough resources to meet public information requests about calls and responses. The procedure for processing these requests can be lengthy and rigorous, as all requested documents must be redacted for sensitive information.

SOLUTIONS AND INNOVATIONS: Some North Carolina municipal fire departments have come up with innovative ideas to help broaden community understanding, including:

- *Public Information Officers (PIOs).* Some municipal fire departments employ PIOs who are responsible for providing information about the department and sharing its success stories. They typically use social media to get these messages to the public.
- *Citizen surveys.* Some municipalities have used surveys to gauge community feedback, but they haven't been especially useful since citizens first need to understand what their fire department does.

Challenge: Communication with Other Departments in the City

Communication within municipalities can be made difficult for a variety of reasons, including evolving technology. The fire department is meant to work directly with emergency communications to allow for quick dispatch times, but that is not always so easy due to a lack of communication standardization. See the Emergency Communications section above for more details. Fire departments can also have a hard time communicating with their fleet maintenance teams to request new vehicles or get inspections.

SOLUTIONS AND INNOVATIONS: Some Benchmarking 2.0 participants found the following strategy to be helpful in communicating with other departments:

- *Stakeholder meetings.* Charlotte Fire Department conducts two meetings per year with fleet maintenance regarding the department's fleet requests. The first meeting clarifies the department's priorities while the second meeting presents an analysis of what is viable within the budget.

Challenge: Cybersecurity

Departments across North Carolina struggle to keep up with new software while simultaneously protecting their data. Because of the threat of cyberattacks, data must be well protected to protect the privacy of those served. It is often hard to get new software approved because there is always a chance it will not be able to withstand a cyberattack. It has been difficult for departments to balance access to information with the need for security.

Challenge: Funding for Equipment

Funding is a constant struggle in municipal departments. The stakes are especially high for fire departments because their funding for equipment could make the difference between saving and losing lives. Fire equipment must be replaced regularly to ensure it functions properly, but many departments often make do with older equipment and aging fleets.

FEATURED INNOVATION
Responding to Charlotte's Rapid Growth and Expansion

Highlights from an interview with **Blake Redden**, Charlotte Fire Department, Planning Division. Watch the full interview at **benchmarking.sog.unc.edu/reports/fire/**.

What challenges and limitations does the Charlotte Fire Department face in terms of annexation, planning, and zoning? The City of Charlotte is growing exponentially, and the fire department feels unable to keep up. Many fire departments across the state likely share a similar sentiment. Zoning policy favors high-density and mixed-use housing, meaning that many low-density developments like single-family homes, garden apartments, or strip shopping centers are being replaced with transit-oriented, high-density developments like townhomes and mid- or high-rise residential buildings. A single building or complex can encompass an entire block or more, potentially adding hundreds of households in a much smaller footprint than a typical neighborhood used to have. High-density areas are also increasingly difficult to navigate and serve due to congestion from increased traffic, street-side parking, and traffic-calming initiatives. Annexation has also created similar challenges to serving neighborhoods around the city's periphery equitably, increasing response times and driving additional firehouse needs. Undeveloped land is becoming increasingly sparse and expensive which inhibits the capacity to adequately place additional firehouses in already developed areas. All areas of the fire department are feeling the impacts of city growth both in workload and staff capacity. In the fire prevention bureau, inspectors are charged with inspecting new and existing buildings. As the number of buildings increases, the inspection workload also increases, creating a risk to inspection quality if staffing does not similarly increase.

> *"As the city builds out, we have an increase in the building stock, but we also have an increase in density and congestion. This increases not only the demand for our services but decreases our ability to get from point A to point B in a timely fashion."*
>
> —BLAKE REDDEN, CHARLOTTE

What data, if any, highlights the challenges and limitations you've identified? In fiscal year 2022 (July 1, 2021–June 30, 2022), Charlotte Fire Department (CFD) responded to 143,147 calls for service. It is averaging a call-volume increase of about 3.75% annually. The city's fifteen fire companies are responding to 3500 or more incidents per year, which is the threshold for beginning to analyze ways to reduce calls or add additional companies to supplement emergency demands. At 3500 incidents per year, the chance of a fire company being tied up on an incident when a new incident comes in becomes more likely. This can create a domino effect of fire companies responding later than the standard 240 seconds (four minutes) of "travel time," which further increases overall response times. In fiscal year 2022, Charlotte's 90th percentile first-unit arrival time was 06:54. As of January 2023, the 90th percentile first-unit arrival time was at 07:05, which is 1:05 over the standard established by the National Fire Protection Association (NFPA). This not only impacts firefighters' ability to mitigate fire incidents, but it also impacts their ability as first responders to provide life-saving measures such as CPR. This data highlights increasing demands on emergency resources and the potential need to supplement existing resources.

What annexation, planning, and zoning changes could make the Charlotte landscape more compatible with the needs of the fire department? CFD's Planning Division hopes to expand its communications and collaboration with other city departments to gain understanding of their needs as well as to increase their understanding of the fire department's needs. It would like to work more closely with the city planning, economic development, transportation, and information technology departments to ensure that its needs and interests are being represented in conversations that affect it. Unfortunately, CFD's Planning Division doesn't always have the capacity to collaborate with others due to workload demands, cybersecurity limitations, and an increasing reliance on data. In addition to increasing staff, establishing a designated interdepartmental liaison would be beneficial. A liaison who understands the inner workings and needs of the fire service could facilitate communication and represent the department in important planning conversations. It is also important to treat the fire department as critical infrastructure, using a set of predetermined metrics that allows its budget and staffing to keep better pace with the city's growth.

Who would the fire department need to collaborate with to implement the changes you've mentioned? The city planning department is one of the most important contacts for CFD's Planning Division. Being part of conversations around zoning, annexation, and other city growth is crucial. With access to information about the city's long-range plans, the department can predict future needs. This can allow the department to forecast call volume and response times based on expected density. The information that the department receives concerning long-range planning can also be used in budget decisions.

What advice do you have for other fire departments? CFD's Planning Division recommends that other fire departments stay engaged with short- and long-term community planning. It can be easy to allow other departments to make decisions for you, but fire needs a seat at the table for anything that could possibly impact public safety. A public-safety perspective is invaluable and offers insight on important considerations that often, unintentionally, get overlooked. Lastly, the department urges other fire departments to do their best to educate decision-makers and city leadership on fire department needs and industry standards. When necessary, hold those entities accountable to the standards you know are necessary to keep your community safe and provide equitable emergency services to all.

CHALLENGES AND INNOVATIONS IN

Fleet Maintenance

On November 9, 2022, fleet maintenance officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of three featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at benchmarking.sog.unc.edu/reports/.

Challenge: Turnover Crisis

Employee hiring and retention is a problem for many local government departments. As Figure 8 shows, fleet maintenance departments are currently operating on average with just over 70 percent of their budgeted positions. Local governments are facing intense competition from the private sector in acquiring qualified technicians who have the highly sought-after expertise required to maintain a municipality's fleet efficiently.

SOLUTIONS AND INNOVATIONS: To alleviate struggles related to hiring and retention, municipalities have implemented some innovative solutions, including:

FIGURE 8. **Fleet Maintenance FTEs Available, as a Percentage of Fleet Maintenance FTEs Approved**

Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem
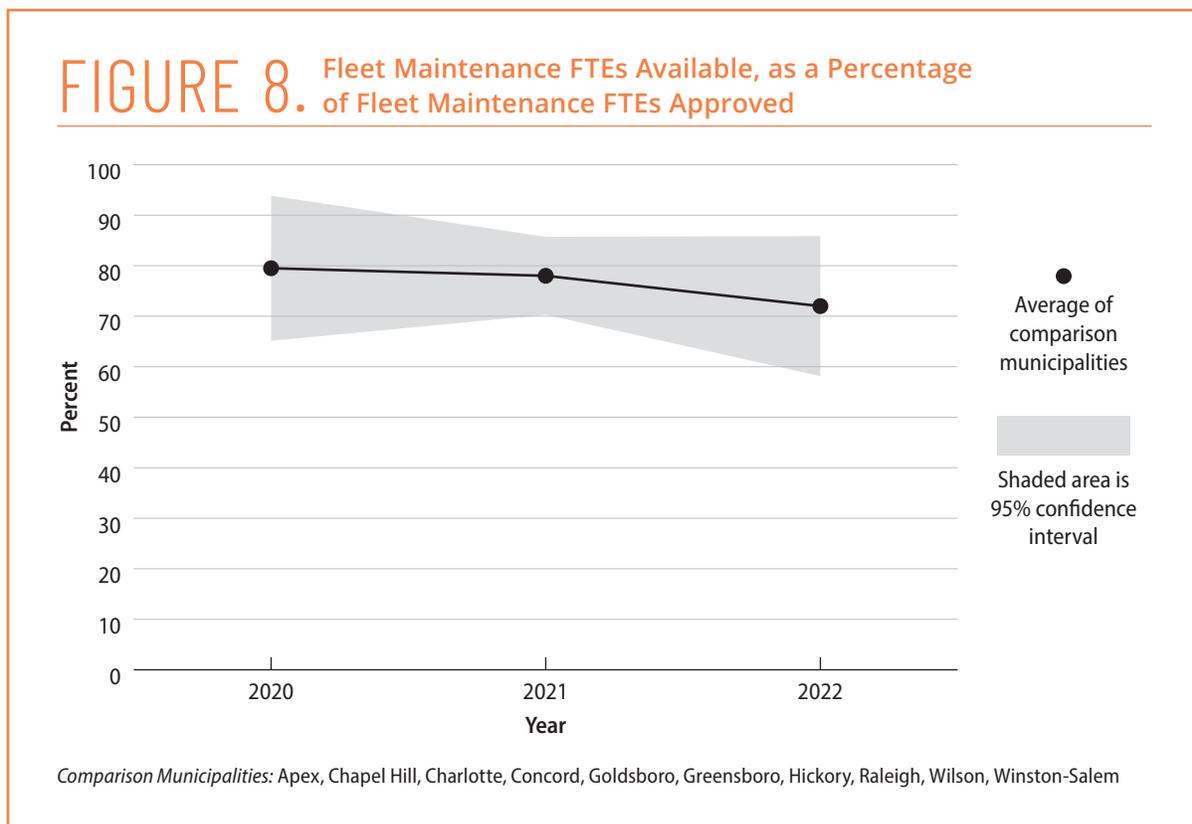
- *Job fairs.* Raleigh took representatives of their fleet maintenance department to job fairs to recruit potential candidates.
- *Apprenticeship programs.* Community-college students in Raleigh can take part in an apprenticeship program that allows them to work in the city's fleet maintenance department while taking related courses that will advance their careers.
- *Sign-on bonuses.* Charlotte offered $2000 sign-on bonuses to new employees.
- *Advertisements.* Charlotte has used local radio and social media to advertise job listings. The ads feature the motto "Keep Charlotte Moving" to attract talent.
- *Salaries.* Raleigh has increased salaries, so they are comparable to those in the private sector, making the city more competitive for candidates.
- *Alternative work shifts.* Charlotte allows for increased work-schedule flexibility and rewards employees for working certain shifts.

Challenge: Communication and External Support

Fleet maintenance operations face difficulties in procuring funding because, like other internal service departments, they are seen more as mission-support than mission-critical. Inadequate communication with other departments can contribute to funding concerns when fleet maintenance needs are poorly understood. Many fleet departments feel siloed off from the rest of municipal government. Some fleet departments have only one representative to contact when a given department's vehicles need work. Even with a designated representative, some fleet service teams feel like they must go beyond the representative to chase down the municipal staff members who need to bring their vehicles into the garage. Fleet maintenance teams also frequently feel underrepresented at city council meetings; this is exacerbated in municipalities that are not allowed to send a fleet maintenance spokesperson to address the city or town council but instead are represented by public works departments.

SOLUTIONS AND INNOVATIONS: Fleet departments adopted the following solutions to help strengthen communication and support:

- *Quarterly meetings with stakeholders.* Some fleet maintenance teams hold quarterly meetings with their stakeholders, such as the city management team, town council, and other departments.
- *Internal Service Funds.* Some municipalities use Internal Service Funds (ISFs) as a means of generating revenue, which limits the impact of expenditures on departments. ISFs can allow a fleet maintenance department to become self-sufficient by operating more like a business. Internal service funds operate by charging departments for the services, vehicles, and maintenance they receive

from fleet maintenance. The accumulation of these fees provides resources for the replacement of vehicles, when needed. This can be helpful to governments that otherwise would struggle to have funds available to replace high-cost vehicles (e.g., fire pumpers and solid waste vehicles). Some municipalities use a similar charge-back system for fuel. The fleet maintenance department buys the fuels and then sells it to other departments as needed.

Challenge: Supply Chain Disruptions

The global supply chain faced severe disruptions because of the COVID-19 pandemic, and fleet maintenance departments are still feeling the effects. Without access to vital vehicle parts or even the vehicles themselves, fleet maintenance departments have been forced to make do with nonoptimal equipment. With supply delays, the costs of new vehicles and parts have also increased, making them financially inaccessible to many local governments. This caused some governments to choose different brands and parts as it was no longer feasible to purchase their preferred ones. However, switching brands can be troublesome because it means departments must acquire all new parts and vehicles and retrain the staff to service them.

SOLUTIONS AND INNOVATIONS: Municipalities adopted the following strategies to mitigate supply chain challenges:

- *Budgeting for future vehicles.* Some departments leave room in their budgets for future vehicles so that when issues with supply chains arise, they still have the option of replacing vehicles.
- *Building relationships with local parts vendors.* Some departments invest in local relationships with vendors. This allows them to locally source vital parts when they are not able to get them elsewhere.

Challenge: Transition to Electric Vehicles

Many fleet maintenance teams are being encouraged to replace their current vehicles with electric or hybrid vehicles. The transition process has been slow-moving. Obtaining electric vehicles (EVs) is not the only issue, as municipalities must also build up the infrastructure needed to support an all-electric fleet, including access to charging stations. Some departments are experiencing pushback from staff who want to keep their current vehicles. This has led governments to use different tactics to increase buy-in from their employees. The conversion has also been tricky because some municipalities don't think the quality of electric trucks and large vehicles is good enough yet.

SOLUTIONS AND INNOVATIONS: The Benchmarking 2.0 partners have used the following practices to help ease the transition to electric vehicles:

- *Electric-vehicle training.* Raleigh created a partnership with a local community college to offer specialized hybrid- and electric-vehicle-use training. Charlotte also offers a training program for employees that allows them to get familiar with new government vehicles.
- *Electric-vehicle driving event.* To increase employee buy-in, Charlotte hosted an event that allowed employees to test-drive electric vehicles. The event helped people feel more comfortable with the fleet transition. See the Featured Innovations section below for more details.

Challenge: Data Availability

While some municipalities make great use of fleet maintenance data, others struggle to collect useful fleet maintenance and driver-use data for decision-making. Some municipalities employ fleet information systems. These systems can track all kinds of information related to driver behaviors and practices. This information can then be sorted by employee or department to provide a better understanding of specific driving habits. Not all municipalities are at the same stage in their data-collection processes; some currently use driver scorecards, while others are planning to soon. Some employees do not understand the best practices that will make their data meaningful. For example, anti-idling data is revealing because many drivers do not think to turn off their engines when their vehicles are parked or not in motion. Other data provides fleet maintenance information, such as the turnaround time at body shops or the available hours of technicians. In one case, an automatic vehicle localization (AVL) system allowed a department to prove that an employee was stealing fuel.

SOLUTIONS AND INNOVATIONS: The following innovations helped Benchmarking 2.0 partner departments deal with data issues:

- *Utilize fleet software.* Apex currently uses fleet management software to track performance data.
- *Differentiate shift tasks.* Raleigh employees clock in differently for different tasks, which allows managers to measure productivity by comparing total time paid versus total billable hours.
- *Employee education.* Some fleet departments regularly reach out to drivers and employees in other departments to help them understand and appreciate how their data is being used.

Challenge: Vehicle Replacement Policy

Many municipalities have vehicle replacement policies or guidelines, but there are no strict industry standards for vehicle replacement in fleet maintenance. Replacing vehicles on an as-needed basis can be hard to plan for in an annual budget or over a longer period of time. Some municipalities hold monthly meetings to decide which vehicles need to be replaced. Without a system in place, it can be hard to secure buy-in for new vehicles, causing many departments to make do with outdated equipment.

FEATURED INNOVATION

Raleigh's Driver Scorecards

Highlights from an interview with **Thomas Battistel**, Fiscal Analyst. Watch the full interview at **benchmarking.sog.unc.edu/reports/fleet-maintenance/**.

What are driver scorecards, and why did you decide to use them? About a year ago, the City of Raleigh began using driver scorecards as a safety visualization tool. Driving data is collected using a telemetric device that records speed, seatbelt usage, braking, and more. These metrics are then compiled to create driver scorecards that can be reviewed by individual drivers or by the municipal department. After seeing an increase in fleet accidents, Raleigh began experimenting with the scorecards so that department heads could track driver performance and discourage unsafe behaviors behind the wheel. Some departments even compete for the best driving score.

> *"The return on investment has been extremely high as the department has saved a lot of money on repairs by avoiding unsafe driving."*
>
> — THOMAS BATTISTEL, RALEIGH

What data, if any, did you use to highlight the need for the scorecards? The idea came from an effort to decrease the number of accidents occurring in fleet vehicles. Car wrecks can cost fleet maintenance departments a lot of money, so they are invested in driver improvements.

Who initiated the change and who made the final decision? Battistel took the lead in creating Raleigh's driver scorecards, but it was a team effort that went across departments.

What were the costs involved in setting up the driver scorecard system? Raleigh's fleet maintenance department installed the system in-house, meaning their start-up costs were minimal. The fleet department can now install the system for other departments at an hourly rate.

What benefits have you seen from using the scorecards? Since implementing the driver scorecards, Raleigh has seen many improvements, including: fewer wrecks, better drivers, improved reaction times, and an increased use of seat belts, all of which has led to lower insurance rates for the city. The fleet department can also use the telemetric system to monitor car maintenance by checking service lights. Some people who currently use the scorecards are so invested in them that they have volunteered themselves or their departments for the beta testing of the next scorecard system. The return on investment has been extremely high: by minimizing the amount of unsafe driving, the fleet department has saved a lot of money on repairs.

What challenges did you face in planning and implementing the driver scorecards? The project faced resistance from some municipal employees who were concerned about being tracked or micromanaged by telemetric software. This led to a decrease in buy-in from some departments. However, Raleigh believes that the benefits of the driver scorecards far outweigh the challenges.

Any advice for other fleet maintenance managers who are thinking about implementing a similar system? Raleigh encourages the use of driver scorecards and advises managers to get in touch with vendors and find a product that works best for their municipalities. Research all options before jumping into a new system. Municipalities should also try to maintain a positive spin on the metrics by offering awards and encouragement for good driving rather than focusing on bad driving.

FEATURED INNOVATION
Greensboro's Lease Charge–Back Program

Highlights from an interview with Jerry Gunter, Equipment Services Manager. Watch the full interview at benchmarking.sog.unc.edu/reports/fleet-maintenance/.

What is Greensboro's lease program and how does it work? And why did Greensboro decide to implement it? The Lease Charge-Back Program was implemented in 1994 by the budget and evaluation department in an attempt to control budget spikes caused by, for example, the police department ordering a hundred police cars in one year. The program allows fleet services to work closely with other municipal departments to purchase, maintain, and monitor all vehicles and equipment bought by the city. The department purchases all the equipment and leases it back to the departments. The

> *"The program allows the department to experiment with different makes and models and compare longevity and maintenance costs over time."*
>
> — JERRY GUNTER, GREENSBORO

department uses data to monitor the condition of the equipment and decide what needs to be replaced.

What data, if any, was used to make the decision to create the program? There is no known data that was used in the creation of the program in 1994 other than the budgetary spikes that were being addressed by the budget and evaluation team.

Who initiated the need for the program and who made the final decision? The budget and evaluation department highlighted the need for the program, but it likely received final approval from the city manager.

What were the costs involved in setting up the program? The city had to find funds to pay for two new positions—a budget analyst and a specifications writer—that would be responsible for creating an effective program. In 1999, the department purchased the fleet management software they still use today. This software tracks equipment used by the city, including the age, maintenance, and mileage of every vehicle. The software creates a point system to designate which vehicles are eligible for replacement. Along with the data software, it's important to collect input from departments, as they interact with their equipment daily.

What do you like about the program? The program has many positives. Not only can it help track mileage, maintenance, and various costs, but it also allows the department to experiment with different vehicle makes and models to compare longevity and maintenance costs over time. Its only shortcoming is that it does not account for accidents. If a municipal employee causes a vehicle accident, then that person's department is responsible for the replacement costs. If the vehicle is totaled and it's the city's fault, then Equipment Services replaces the vehicle from their replacement budget.

What changes would you make to improve the program? The Lease Charge-Back Program is comprehensive and leaves little to be desired. One potential change could occur internally when long-term employees retire and new employees who are unfamiliar with the program are hired. Currently, new employees learn the system from scratch. The department would benefit from offering a training period during that transition.

Any advice for other fleet maintenance managers who are thinking about implementing a similar program? Greensboro encourages other municipalities to have a strong and

comprehensive fleet software that suits their needs. Fleet departments also need to have capable staffs that can handle the purchasing, maintenance, and surplus sales of all equipment.

FEATURED INNOVATION

Charlotte's Electric Vehicle Ride and Drive Event

Highlights from an interview with Chris Davis, Operations Supervisor and Fleet Manager at Charlotte Department of Transportation; Megan Upchurch, Regional Planner at Centralina Regional Council; and Jason Wager, Assistant Regional Planning Director of Centralina Regional Council. Watch the full interview at benchmarking.sog. unc.edu/reports/fleet-maintenance/.

How can fleet maintenance departments make progress toward transitioning to electric vehicles? And can regional councils help fleet maintenance departments in smaller local governments? Building relationships is incredibly important and being involved with regional teams allows for an open line of communication and ideas. It's valuable when people from different organizations can share what they are working on, as well as their innovations and solutions. The electric-vehicle driving event brought together manufacturers and staff from multiple jurisdictions and different departments, enabling an in-depth conversation about electric fleets. The event also allowed smaller organizations and municipalities to present their electric vehicles.

> *"[This event] came out of our passion to expedite EV adoption."*
>
> —CHRIS DAVIS, CHARLOTTE

What was the purpose of the Electric Vehicle Ride and Drive Event? The City of Charlotte is passionate about shifting to an electric fleet, and that passion is what inspired the event. The idea came from Charlotte's street superintendent. The city partnered with the Centralina Clean Fuels Coalition, our region's U.S. Department of Energy Clean Cities affliliate, in order to expand the event's reach to a regional level. Charlotte was the perfect location for this event as it has a test-driving track that offers a safe, controlled environment to test the vehicles. The event also provided educational resources regarding EV safety and accident response. The event was able to fulfill its purpose of creating a holistic ecosystem of knowledge, resources, and ideas.

What data, if any, was used to support the decision to host this event? Data was never a significant factor; instead, the event was pushed forward by the city's desire to switch

to electric vehicles. By hosting an event like this, the city was able to answer a lot of questions people had about electric vehicles.

Who initiated the event and who made the final decision? After the street superintendent shared the idea with the fleet manager, they reached out to the range master, who manages the driving facility, and the risk management group. Buy-in was needed from all parties for the event to move forward. After all the necessary approvals were received, the team reached out to Charlotte's Office of Sustainability and Centralina to begin planning the logistics.

What were the costs involved? The cost was minimal: volunteers brought vehicles and staffed the event. Centralina provided event-planning logistics support along with coffee and lunch for the volunteers.

What made the event successful? The event made it clear that people need to talk more about EVs, specifically with respect to fleet deployment. It allowed vendors to see strong local government interest in these vehicles. It also provided a great networking opportunity and improved communication between different fleet teams and municipalities. Many of the participants expressed interest in attending future events like this one, and they appreciated being able to take the knowledge they gained back to their municipalities and councils in order to increase support for electric vehicles.

What changes would you make? There should be a backup day scheduled in case of bad weather. And elected local and state officials should be invited to participate in future EV events so that relationships can be built and information about effectively spending allocations for electric vehicles can be shared.

Any advice for other fleet maintenance managers who are thinking about hosting a similar event? They should start by determining their objectives and then figuring out who they can partner with. It is important to be honest and realistic about goals and obstacles and not to be afraid to ask for help in creating new events and initiatives. Fleet maintenance departments should use their existing networks to expand their reach and impact; the Clean Cities network is a good resource that can help with that.

CHALLENGES AND INNOVATIONS IN

Parks and Recreation

On November 15, 2022, parks and recreation officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of three featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at benchmarking.sog.unc.edu/reports/.

Challenge: Staffing

Staffing has been a concern for parks and recreation departments due to various issues, including low pay and high stress. As Figure 9 shows, parks and recreation departments operate at a lower level of capacity than their budgeted FTEs allow. This reduced capacity has put pressure on existing employees to meet residents' expectations and, in many cases, has led to a lack of motivation, low morale, and other issues.

SOLUTIONS AND INNOVATIONS: Parks and recreation departments have adopted the following innovative measures to solve their staffing issues:

- *Billboard advertisements.* Winston-Salem has just begun to advertise jobs on billboards to attract new employees.

FIGURE 9. **Parks and Rec FTEs Available, as a Percentage of Parks and Rec FTEs Approved**

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem
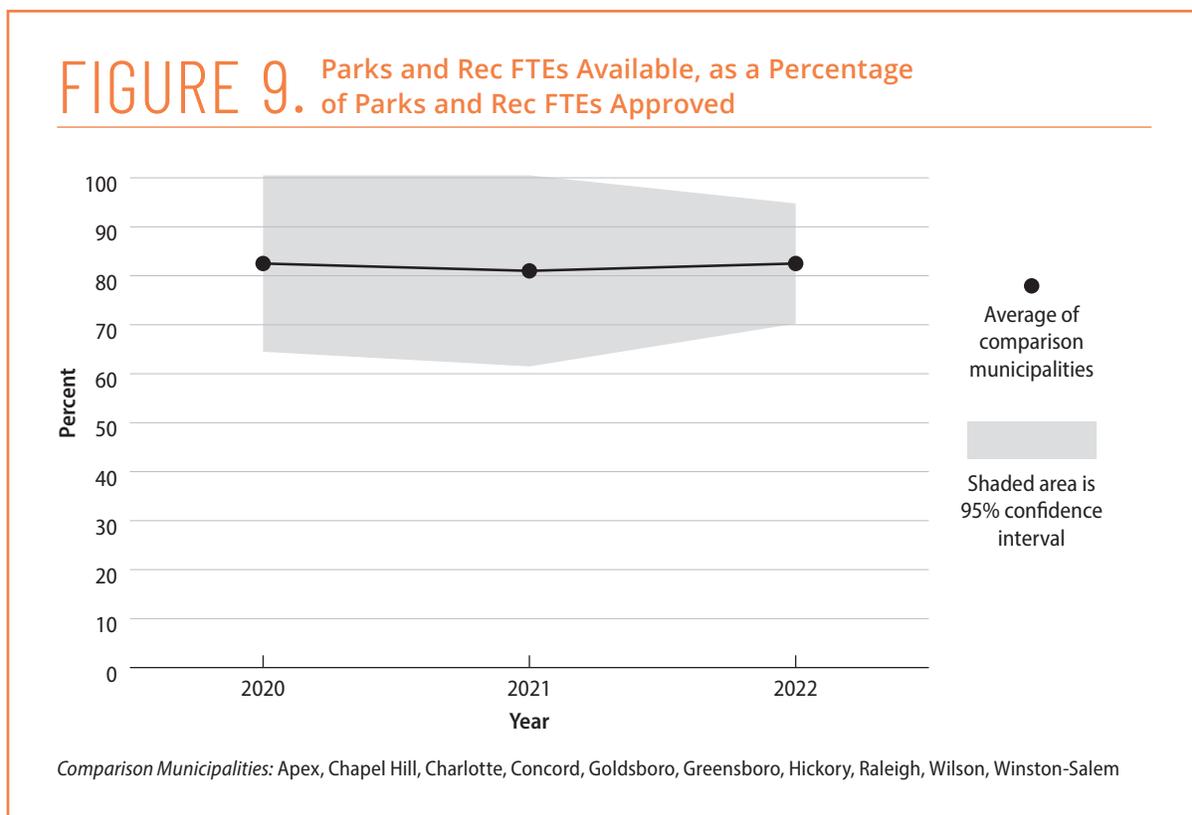
- *QR codes.* Chapel Hill and Raleigh feature QR codes for employment applications posted on banners at local facilities and on the sides of department vehicles.
- *Reaching out to high schools.* Concord promotes their jobs to high-school juniors and seniors who are not seeking higher education.
- *Referral bonuses.* Winston-Salem offers a $1000 bonus to current employees who refer applicants who are hired and work for a certain length of time.
- *Monetize volunteer work.* Some municipalities calculate the value of volunteers' time by the hour to advocate for better salaries and increased staff positions.

Challenge: Data Availability

Parks and recreation officials were dissatisfied with their current state of data collection. For example, the multiple entrances to most parks make it difficult to collect visitor information. Even when car counters are used, the formula used is an estimate and is not always accurate. One municipality mentioned that partnerships with transit centers could be helpful in determining park visitation numbers.

> Parks and recreation leaders hoped to gather the following data to better meet the needs of residents:
> - Accurate visitor data for playgrounds, greenways, and lakes.
> - Data broken down by demographics (for example, age, race, gender, and so forth).
> - Community health and wellness data.
> - Surveys of people who have participated in their programs.
> - Information from local transit centers to see how many people request rides to parks.

SOLUTIONS AND INNOVATIONS: Parks and recreation departments are using the following methods to collect data:

- *Live availability.* One municipality has sensors that detect the availability of tennis and basketball courts in real time.
- *Greenway counters for hiking trails.* These counters help calculate the number of hikers on greenways. This provides a more accurate representation of the use of specific access points and trails.
- *Car counters.* Some municipalities expanded their use of car counters at park entrances to ensure they have better traffic data. The municipalities use a formula of four people per car to estimate the total number of park visitors.
- *Online ticketing and registration software for events.* One municipality found that offering online registration leads to more precise data collection that is easier for administrative staff to use.
- *Present data with "planner" tools in existing software.* One municipality uses the "planner" tool in Microsoft Teams to share data more effectively among colleagues.

Challenge: Employee Mental Health and Motivation

Maintaining a healthy morale and good mental health was a key discussion in this department's performance strategy session. Even before COVID-19, stress was an issue for parks and recreation employees, but it has increased since the pandemic began. Employees often find it challenging to meet residents' expectations. Because of the community-focused nature of this service department, employees have little, if any, time to decompress, and management issues are not always addressed.

SOLUTIONS AND INNOVATIONS: To better support their employees, parks and recreation departments have integrated new activities and services into their operations, including:

- *Field days.* Raleigh organizes an annual "field day" for employees to try out different roles and interact with other employees they may not see on a regular basis. Employees attend the event on a rotating schedule so that other staff members are still serving the public during operational hours. See the Featured Innovations section below for more details.
- *Mental-health first aid.* Raleigh contracts with a mental-health first-aid service that is offered to all full- and part-time staff.
- *Routine check-ins.* One municipality's leadership has scheduled check-in days with all employees. The municipality also allows "flexible" sick days that can be used for nonphysical ailments with no explanation needed.

Challenge: Community Relations

Parks and recreation departments often find it difficult to adapt to changing community needs. The growing demand for their services means that sometimes little to no time is left for department staff to implement planned maintenance or develop new programs to enhance the customer-service experience. This can lead to undeveloped community outreach and a lack of viable plans for reaching certain populations.

In some cases, parks and recreation facilities experience vandalism and capacity overload. Because of limited resources, equipment is sometimes inadequately maintained, resulting in shorter equipment lifespan. Some departments find it difficult to meet the needs of all residents, especially those who may not be as vocal or well-connected as others. Inequities in resource distribution is a major concern for many municipal parks and recreation departments.

SOLUTIONS AND INNOVATIONS: Parks and recreation departments have used the following innovations to better manage community relations and expectations:

- *Protected neighborhoods.* One department has implemented "protected neighborhoods" to increase equity in customer service. Through this program, the department reaches out directly to residents to assess any needs that may not already be known to it.

- *Community relations department.* One municipality has instituted a community relations department that ascertains demands and needs and figures out how to meet expectations.

- *Recognized neighborhoods.* Concord has a program for "recognized neighborhoods" that are certified by the city council (concordnc.gov/Services/Community/ Neighborhood-Program#9409-overview). Residents in these neighborhoods meet regularly with a parks and recreation liaison who helps the city keep up with residents' needs. These neighborhoods can also apply for community project grants. See the Featured Innovations section below for more details.

- *Financial assistance.* Some municipalities have offered financial assistance in the form of fee waivers to residents who cannot afford the fees for the use of their resources.

- *Finding support.* Some parks and recreation departments actively support residents. For example, one parks and recreation department offers employment to people who seek shelter in their facilities. The department also tries to connect people with mental-health services and homeless shelters.

Challenge: Funding

Since the revenue collected by most parks and recreation departments goes to the municipality's general funds, these departments cannot direct this money to updating existing infrastructure or building new amenities, such as a municipal splash pad where residents can cool off in summer or recreational pickleball courts. Concord, Greensboro, and Raleigh approved bonds ranging from $16–$275 million to help support projects and services that benefit their communities. Another municipality utilizes a 1 percent tax increase to help with repairs and deferred maintenance needs.

Challenge: Insurance Requirements

Some local policies require outside users of parks and recreation facilities to provide or pay for special insurance first. This effort to protect the city can have unintended consequences. For example, a costly insurance policy requiring workers' compensation can discourage small businesses from offering their programs and services at parks and recreation facilities, which in turn limits the diversity of the people who use those facilities. See the Featured Innovations section below to learn about Chapel Hill's insurance policy.

Challenge: Keeping Up with Work Orders

Parks and recreation departments are increasingly challenged to meet demands for maintenance and repairs. This is especially difficult when they rely on other municipal departments to provide certain kinds of repairs. Work orders are typically expected to be handled in forty-eight hours regardless of consideration priority and the amount of work needed. This creates unrealistic demand pressures for staff and makes it difficult to balance pressing needs with other issues.

FEATURED INNOVATION
Raleigh's Annual Field Days

Highlights from an interview with Charles Craig, Assistant Director, Parks and Natural Resources. Watch the full interview at benchmarking.sog.unc.edu/reports/parks-and-recreation/.

What is a field day? A field day has multiple components. It was initially created to highlight the maintenance and operations staff as those employees worked different hours and were not often seen by the other staff. The components were based on specific skills. For instance, a "zero-turn mower competition" allowed employees to see which team members operated a lawn mower the best and how they did it. Other competitions, such as driving a nail through a board with the least amount of hits, operated similarly.

Overall, the field day was meant to boost morale and give employees a sense of belonging and acceptance. It's important for every employee to feel essential and valued by the department. Since the first field day, the project continues to grow, and there is always a sense of excitement surrounding the event every year. It has helped make work more inviting and fun for employees.

Who plans each annual field day and who makes the final decisions about it? A core team made up of approximately ten volunteers, who represent more than four hundred staff members, plans for the field day every year. An annual survey is used to gauge interest from employees and get ideas for changes that could be made. The department's assistant director and director make the final decisions regarding the event.

What are the costs involved in setting up the field day? The biggest expense for the field day is providing lunch. There are free food trucks and a slushie vendor. The department has more than four hundred full-time employees; if you add part-time employees, that's more than a thousand people. The department budgets $15 to $25 per person, including lunch, marketing materials, and event freebies. The field day has $10,000 allocated toward it each year. It helps, of course, that parks and recreation can provide entertainment in-house at no cost.

> *"You see everyone [employees] giving a hundred percent—let's celebrate them. Let's encourage and support them. Let's make this a place they want to be."*
>
> — CHARLES CRAIG, RALEIGH

What data was used in making the decision to create the event? Department leaders found morale at an all-time low during and after the COVID-19 pandemic. Employees were burned out or burning out; department heads were dealing with mass resignations and retirements. The department wanted to cultivate a meaningful solution to the issues they were witnessing.

What are the benefits and challenges associated with the field day? The benefits include seeing colleagues outside of their usual element and having fruitful conversations that don't have to do with work. Challenges include non-ideal weather and allowing everyone to attend while still maintaining the department's operations for the day.

What changes could be made to improve the event? To keep parks and recreation employees motivated and operations at full capacity with no facility closures because of insufficient staffing, the department is shifting toward making it a three-day event instead of a one-day event.

Advice for those who are thinking about implementing a similar event? Department heads should try not to get stuck in the hustle and bustle of running routine day-to-day operations. The field day is about taking time to celebrate and recognize the work of the department. By intentionally creating a space that is welcoming for employees and emphasizes their value, the department will do more for employees than it can imagine. Grow the event little by little, if needed.

FEATURED INNOVATION
Concord's Recognized Neighborhoods

Highlights from an interview with Katherine Ramirez Campbell, Community Outreach Coordinator, and Katie Helms, Parks and Recreation. Watch the full interview at benchmarking.sog.unc.edu/reports/parks-and-recreation/.

What is a recognized neighborhood? A recognized neighborhood is a city council–approved group within the city limits. This informal group or organization applies to be recognized. The application is simple: the group provides contact information, a schedule of meetings, bylaws, and a paragraph about the culture and goals of the neighborhood. The neighborhood is voted on by Concord's city council and, once approved, joins the Partnerships for Stronger Neighborhoods program. The program began in 2000 and has recognized seventy-six neighborhoods. There are currently fifty-five active recognized neighborhoods.

Neighborhoods must renew annually in January with a similarly simple process that updates contact information and meeting dates, along with a confirmation of nondiscrimination practices. Some of the benefits include having municipal representatives, like police officers, attend meetings to provide requested data or reports. Concord's parks and recreation department waives its public facilities fees for neighborhood meetings.

> *"We view recognized neighborhoods as essential stakeholders. We let them know we need their input."*
>
> — KATIE HELMS, CONCORD

Who initiated the program and who made the final decision? This is a city council-led initiative. While there is an approval process, neighborhoods are not denied.

What were the costs involved in setting up the program? The initial investments included hiring a dedicated staff person, finding community rooms, creating a newsletter platform, and developing a phone system to aid in program implementation. Concord staff liaisons can typically flex their time or are offered overtime to attend the recognized neighborhood group meetings. Concord's city council offers $30,000 each year in grants for these neighborhoods. These grants, in allocations of up to $3000, have been used for basketball court repairs, beautification projects, pet waste stations, and more.

What are the benefits and challenges associated with the program? One of the benefits is that the program provides a hands-on staff person. Any city staff member can volunteer to be nominated to become a recognized neighborhood liaison. The city

manager appoints the liaisons, who attend a skills workshop that equips them to better serve the recognized neighborhoods. The city has also benefited from partnering with nonprofits and other municipal services to provide resources, such as free CPR classes, to recognized neighborhoods. Some of the challenges include dealing with leadership changes within the recognized neighborhoods. Aging communities sometimes have leadership gaps if people are not prepared to step into vacant roles, which leads to recognized neighborhoods becoming dormant.

What changes could be made to improve the program? Over the years, the program has changed. For instance, the program used to be fully housed in Concord's planning department, but now it's in the public affairs office and has a specialized staff person dedicated to fulfilling the needs of current and potential recognized neighborhoods. The municipality wants to develop a language access plan so that the program will be more accessible to all citizens. It also wants to expand its diversity efforts, as the makeup of the neighborhood boards does not always represent the diversity represented in the neighborhoods.

Advice for those who are thinking about implementing a similar community-based strategy? The Concord program has only been possible through intergovernmental collaboration and coordination. This program is too large for one department to handle, and it is very beneficial to have city management or city council involvement and support.

FEATURED INNOVATION
Chapel Hill's Policy on Insurance

Highlights from an interview with Nikiya Cherry, Recreation Division Manager, and Samantha Slayer, Administrative Coordinator. Watch the full interview at benchmarking.sog.unc.edu/reports/parks-and-recreation/.

What is Chapel Hill's policy on insurance? Chapel Hill has three sets of insurance required for the use of town facilities, depending on the type of organization or individual. First, the town has its own professional liability policy in addition to specialized policies, such as one relating to sexual abuse and misconduct. Insurance is not required for individuals who want to rent town property to host birthday parties or community and group events. Rentals, large street

> *"Our goal is to make sure that everybody feels welcome."*
>
> — NIKIYA CHERRY, CHAPEL HILL

fairs, and services like private swim lessons are evaluated on a case-by-case basis by the risk manager.

Contractors and vendors operating a service on town property or on behalf of the town are required to have general liability or umbrella/excess liability. There are other factors that determine if additional coverage is needed. If vehicles will be used for the event, auto insurance is required. If there are employees working at the event, workers' compensation is required. If the contractors will be working with vulnerable populations, such as children, elders, or disabled people, a $1 million policy in sexual abuse and misconduct is required.

This protects the town from liability and protects the budget in the event of an incident or suspected incident, which ensures good stewardship of taxpayer money. It also requires vendors to run their events safely.

Who initiated the need to change the policy on insurance and who made the final decision? Every three to four years, a risk manager, a consultant, insurance carriers, and an insurance broker initiate any needed changes as a group. The town manager has the final say.

What were the costs involved in setting up the policy on insurance? The Town of Chapel Hill conducts required background checks for people who work with the vulnerable populations mentioned above. The municipality also has event staff on hand to ensure that vulnerable populations are not left alone with contractors; it is town policy that the staff always be able to view everyone in attendance with a clear line of sight.

What data was used to make the decision? In 2017, data provided by the insurance broker, insurance carriers, and a consulting firm informed Chapel Hill's decision to implement these requirements. Specific incidents in Chapel Hill and industry trends were also considered.

What are the benefits and challenges associated with the policy on insurance? These requirements make events safer. The background checks provide additional confidence that the town will not be blindsided, and that the coverage is strong if there is an incident. Obviously, this process is costly and logistically challenging. And Chapel Hill has not been able to mitigate the adverse effect it has had on smaller contractors and vendors who cannot afford the required insurance.

What changes could be made to improve the policy on insurance? Chapel Hill would like to provide additional education to municipal government staff who negotiate with vendors to avoid miscommunications and inefficiency. There is also a need for more plain language documentation.

Advice for those who are thinking about implementing a similar policy? It is a difficult change to implement, but the trend in municipal insurance is to have more of these policies as awareness of the abuse of vulnerable populations becomes more prevalent. Policies like this remove barriers and allow vulnerable populations to speak up about their experiences.
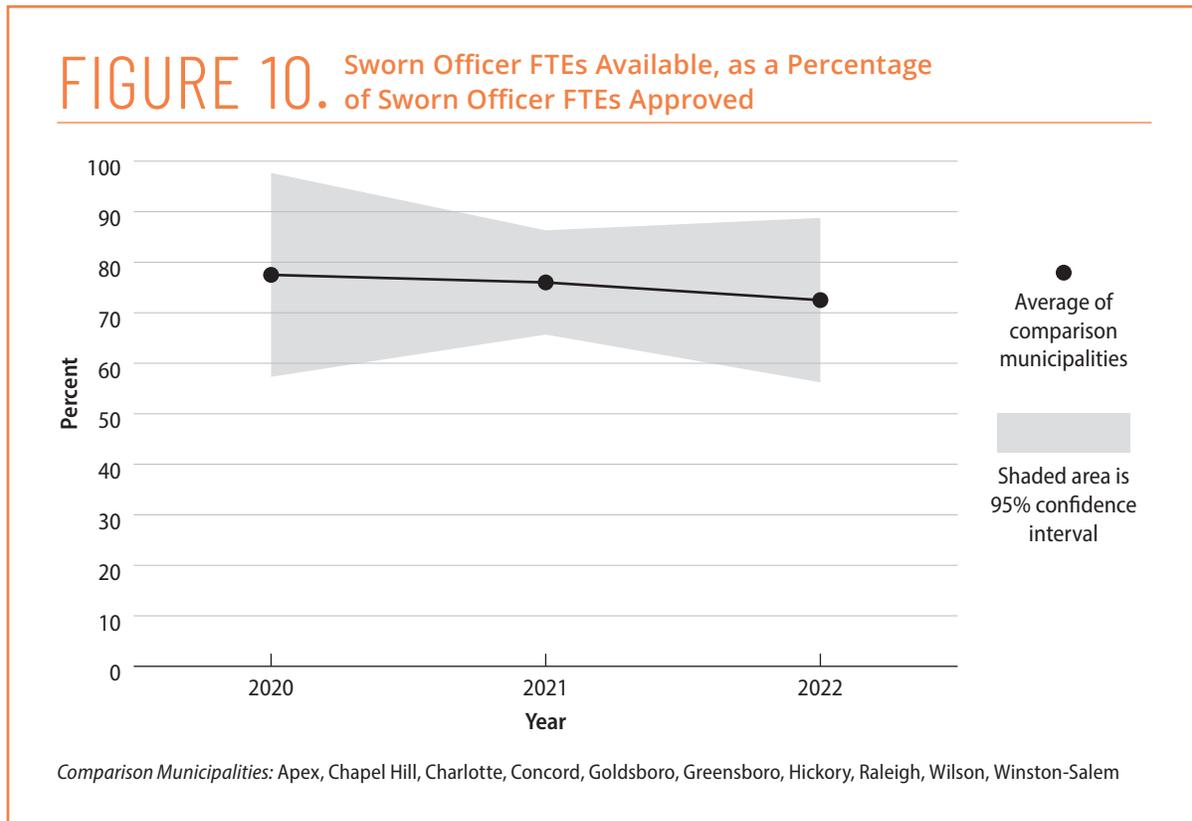
CHALLENGES AND INNOVATIONS IN

Police Service

On November 16, 2022, police service officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of two featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at benchmarking.sog.unc.edu/reports/.

Challenge: Recruiting, Training, and Retention

Recruiting, training, and retention are pressing concerns for all police departments (PDs). As Figure 10 shows, some police departments are operating with just over 70 percent of their authorized positions. The Great Resignation has put pressure on these departments and affects their public relations and internal communication efforts as well as the services they offer to the community. Law enforcement leadership is looking for new ways to attract talent, especially local young adults, and they are finding that training and professional-growth opportunities can encourage long-term retention.

FIGURE 10. Sworn Officer FTEs Available, as a Percentage of Sworn Officer FTEs Approved

Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

SOLUTIONS AND INNOVATIONS: To improve recruiting, training, and retention processes, some municipalities have implemented the following solutions and innovations:

- *Targeted recruitment.* The Apex PD updated its recruitment video to highlight the benefits of living and working in a community like Apex, and the Hickory PD emphasizes the perks that it extends to officers' spouses and families.

- *Open houses.* The Concord PD organizes open houses to host prospective applicants. At the open house, interested applicants can speak with the Chief of Police and senior leadership and meet other members of the department's specialized teams and units.

- *Sign-on bonuses.* The Winston-Salem PD is piloting a $10,000 sign-on bonus, given incrementally, for a three-year commitment. This program has had mixed results, so it will continue to be monitored for its effectiveness. The Goldsboro PD has increased entry-level pay and retention incentives.

- *Apprenticeships.* Hickory PD works with ApprenticeshipNC to attract new recruits. The State of North Carolina pays for apprentices' schooling and reimburses 50 percent of their salaries. Police apprentices work in parks twenty hours a week. At graduation, apprentices will have earned an associate's degree at no cost to themselves and will have completed Basic Law Enforcement Training (BLET). See the Featured Innovations section below for more details.

- *Cadet programs.* Winston-Salem's police cadet program allows cadets to work twenty hours a week while earning an associate's degree. The city and the department pay for their books and schooling, and cadets graduate in the subsequent rookie class with a 5 percent pay bump thanks to the associate's degree.

- *Increased compensation.* The Greensboro PD is offering a 9 to 11 percent pay increase, composed of a 5 to 7 percent pay adjustment and a scheduled 4 percent step adjustment. The department also offers night-shift differential pay.

- *Cross-training and certifications.* Different training methods can support recruitment and retention efforts.
  - The Greensboro PD requires at least one year of service before officers are selected for specialized units, which allows newer employees the opportunity to apply and serve in those units. The Concord PD reduced its specialized unit requirement of three to five years of service to only one year.
  - Alongside a pay bump for advanced certificates, the Greensboro PD offers a certificate pay bump for intermediate corporal officers and below. Long-term employees need engagement, and offering more goals and milestones is a possible solution.

- *Filling the gaps.* Police departments are using a variety of incentives and strategies to fill the staffing gaps with experienced employees.
  - The Apex PD has added Watch Commander positions to its patrol division. This allows veteran officers to take on diverse roles and responsibilities.
  - Raleigh PD offers overtime pay to officers who are willing to supplement patrol-staffing gaps.

Challenge: Increased Scope of Work

Over the past few decades, the scope of police work has increased. Many departments are adapting to population and jurisdiction growth, which demands increased customer service. Quality of life concerns, such as homelessness, drugs, and mental health, are also increasingly delegated to police departments. As they take on nontraditional police roles with higher expectations, these departments have capacity concerns.

> *"Police are good problem solvers, so a lot of issues are given to the police to solve."*
>
> — BRYAN ADAMS (POLICE DEPARTMENT, HICKORY)

SOLUTIONS AND INNOVATIONS: To address the increased scope of police work, municipalities have implemented the following solutions and innovations:

- *Mental-health and social workers.* Many police departments have or work with licensed clinicians, social workers, and counselors. See the Featured Innovations section below for more details.
  - The Winston-Salem PD pairs licensed clinicians and social workers with sworn officers for safety backup on mental-health calls.
  - Greensboro's Office of Community Safety hires social workers as city employees to work with the police department.
  - The Community Navigator Program in Hickory connects the city's homeless population with the nonprofit community, the City of Hickory, and Hickory PD.
  - Chapel Hill PD offers a variety of services, such as crisis unit counseling, peer support and intervention, and a street outreach program, to meet the community's needs.
  - The Concord PD partners with the Cabarrus Health Alliance and other local leaders on the Mental Health Advisory board. They recently completed a

multiyear grant with the School of Government and Cabarrus County to address opioid dependance. The department also educates transient populations on services available to them in the local community.

- *Targeted coverage.* To address growth pressures, the Raleigh PD has created several new units to focus on parks and greenways, hospitality, and transit. The department has augmented its weekend staffing needs with additional coverage by detectives, administrators, and other division members.

Challenge: Public Trust and Technology Integration

The Benchmarking 2.0 participants expressed concern about the public's declining trust in local governments and, especially, police departments. There are fewer applicants for police jobs and staffing has been negatively affected. To continue to serve their communities, police departments have had to make difficult trade-offs, balancing proactive and reactive efforts, addressing the need to provide high-quality service with limited resources, and deciding whether to use specialized units or shift assignments. Some police departments rely on technology to assist with public engagement, but this approach

> *"It is important to stay engaged in the community . . . actions speak louder than TV."*
>
> — MICHAEL WEST (POLICE DEPARTMENT, GOLDSBORO)

sometimes presents other problems, including: long procurement-approval processes; high costs and rapid obsolescence; potential incompatibility issues; and privacy and discrimination concerns.

SOLUTIONS AND INNOVATIONS: To improve public trust, community engagement, and technology integration, some PDs have implemented the following solutions and innovations:

- *Interaction methods.* The Greensboro PD has a civilian response unit to take reports over the phone for non-urgent incidents. The department also uses a chatbot called Enhanced Virtual Victim Assistant (EVVA) to assist victims of residential burglary.
- *Utilizing technology.* The Winston-Salem PD uses a Fusus Real-Time Crime Center, a cloud-based platform that integrates various sources of information,

including bodycam footage. Concord PD has adopted Flock Safety's stationary Automatic License Plate Recognition (ALPR) devices to address property crime in retail locations.

- *Community policing.* Community-oriented policing focuses on developing relationships with community members.
  - ◦ In Greensboro, community watches are becoming less popular, so the police monitor social media to gather information. And every week, officers walk through neighborhoods that have a high number of service calls, meeting residents and discussing their needs.
  - ◦ The Concord PD attends neighborhood meetings and events throughout the year with recognized city neighborhoods. The department also participates in National Night Out, an annual event that strengthens police and community relationships on the first Tuesday of every August.
  - ◦ The Concord PD also hosts "Concord 101" and "Public Safety Academy" classes. Concord 101 is a one-night event for members of the community to come to the police department and learn more about the department. Public Safety Academy is a more in-depth, three-night (one per week) class.
  - ◦ In Hickory, the police department has regular and meaningful conversations with racial justice groups and has many long-term relationships with local churches and pastors.

Challenge: Internal Communication

Police departments traditionally have had a timeline of twenty to twenty-five years for strategic planning and leadership succession. External pressures, like the increased scope of law enforcement, and internal factors, such as a lack of capacity, are encouraging conversations about organizational culture shifts toward shorter strategic timelines. With each new generation of police officers, the top-heavy department structure is being challenged by younger officers who expect to have more interactions with departmental leadership.

"We must go beyond the chain of command. New officers need to be comfortable talking with leadership."

— JASON ARMSTRONG (POLICE DEPARTMENT, APEX)

SOLUTIONS AND INNOVATIONS: To respond to internal communication challenges, municipalities have implemented the following solutions and innovations:

- *Weekly updates.* In Goldsboro, the police chief provides a weekly update to all employees regardless of rank.
- *Open meetings.* The Chapel Hill PD staff meetings are open to line officers, not just top leadership. In Concord, monthly PD staff meetings are open to every member of the department. Every quarter, the Police Chief hosts "Coffee with the Chief," where line officers can meet with the Chief to directly address any issue.
- *Meeting recordings.* All command staff meetings are recorded at Apex PD and are available to staff on their internal network.

FEATURED INNOVATION
Hickory's ApprenticeshipNC Trainee Program

Highlights from an interview with Bryan Adams, Captain of the Hickory Police Department. Watch the full interview at benchmarking.sog.unc.edu/reports/police/.

How does the Hickory Police Department use apprenticeship programs like ApprenticeshipNC to attract and recruit prospective employees? Hickory PD participates in the Catawba Apprenticeship Network managed by Catawba Valley Community College. Through this partnership, Hickory PD and local companies visit high schools in the county where interested students and their parents are invited to come to Catawba Valley Community College to learn more about the program.

> *"Police departments should embed apprentices in the organizational culture."*
>
> — BRYAN ADAMS, HICKORY

When and why did your department decide to use apprenticeship programs and to partner with the Catawba Apprenticeship Network? The department wants to encourage local people to stay local. The command staff at Hickory PD consists mostly of people who were raised in the area and graduated from local high schools, so they see the value of having officers who are passionate about the city they grew up in. A year and a half ago, members of the Hickory PD attended a session about an apprenticeship program for telecommunicators, and the leadership asked, "Why can't we do this for police officers as well?" That's when they started having conversations with the apprenticeship-program people at Catawba Valley Community College.

How does the apprenticeship program work? Apprentices must be eighteen years of age and about to graduate from high school, if they haven't already graduated, but administrators also reach out to younger students, some of whom are in their freshman year, to raise awareness of the program. Interested students are interviewed, and selected applicants go through a full hiring process to become part-time security aides. In this role, they participate in ride-alongs with police officers, work with telecommunicators in the communications center, and patrol public areas such as the Hickory Trail System.

ApprenticeshipNC pays for apprentices to continue their education in the criminal justice program at Catawba Valley Community College. They work twenty hours a week while being embedded in the police department. Once they are twenty years old, they can attend Basic Law Enforcement Training (BLET). After completing BLET, the apprentices can become certified police officers and work full-time for the Hickory PD. These new officers are already familiar with the department's culture and possess many of the vital skills. The current program capacity allows for four apprentices at a time.

What data, if any, was used to highlight the need for a program like this? In recent years, there have been reductions in the workforce around the country. Law enforcement is no exception, so this apprenticeship program combats staffing deficits. Creating a two-year pathway for potential employees will help the department address these issues now and in the future.

Are there any costs associated with the program? The police department pays apprentices an hourly wage for the twenty hours they work each week. ApprenticeshipNC helps set the starting rate as well as the incremental pay increases.[1]

What are the advantages of the apprenticeship program? This is a long-term solution to increase recruitment, and it is helping Hickory's students and young adults find local jobs. It is also a great opportunity to reach diverse candidates. For example, Hickory PD's first apprentice was a Hispanic female. Since minority women tend to be underrepresented in law enforcement, this was a good chance to address a staffing need.

What improvements could be made to the apprenticeship program? So far, things are going smoothly, and no changes are desired. In the six or seven months since the first apprentice started, the program has been working well. The employees at Catawba Valley Community College and ApprenticeshipNC are outstanding partners who have made this process easier.

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1. ApprenticeshipNC serves students who are sixteen to twenty-five years old. Employers can receive up to $2000 for onboarding and training each apprentice as well as a substantial reimbursement for hourly wages. Funds are available through Dec. 31, 2024, until expended. More information about the ApprenticeshipNC program is available at www.apprenticeshipnc.com.

Do you have advice for other police departments who are considering a similar apprenticeship program? Find something for these apprentices to do. The Hickory PD saw the need for security patrols along a new trail system and wanted an alternative to having police officers provide these patrols. As civilian security-patrol people, the apprentices are able to fill this gap. It's also important to ensure that apprentices are embedded within the department so they can better learn crucial skills and more fully experience the culture of police work.

Greensboro's Behavioral Health Response Team

Highlights from an interview with Chad Williams, Operational Support Division Captain, and Erin Williams, Lead Mental Health Clinician. Watch the full interview at benchmarking.sog.unc.edu/reports/police/.

What is Greensboro's Behavioral Health Response Team (BHRT)? The BHRT is a collaboration between two city departments: the police department and the Office of Community Safety. Different lenses and skills allow this team to better assist citizens and the community, especially people who are dealing with mental-health crises or homelessness. Captain Williams explains that there are some situations the city cannot always "police our way out of." Clinicians can offer a valuable perspective as well as de-escalation expertise. This collaboration increases citizens' awareness of the resources that are available in Greensboro and how they can get support and help before a crisis happens.

> *"The impact of the program has been jaw-dropping."*
>
> — CHAD WILLIAMS, GREENSBORO

How is Greensboro's BHRT structured? There are six dedicated officers and a supervisor who respond to mental health and homelessness issues, because these situations often go together. In 2022, the Greensboro PD received a Support Team Assisted Response (STAR) grant from the state to fund a paramedic. Erin Williams, the lead mental health clinician, is aided by six crisis counselors who ride along with officers during their shifts. One full-time outreach coordinator provides ongoing case management.

Why did Greensboro decide to have a BHRT in the first place? In 2019, the city realized that a traditional police response alone wasn't enough to address mental health crises. They had previously used an outside counseling group, but they wanted to build on that, and they began exploring the option of a counseling group embedded within the department using a co-response model.

How does data inform your decisions? Initially, the only data used consisted of simple evaluations of mental health calls for service, whether the response was an emergency or not, and how the city, local hospitals, and mental-health organizations handled involuntary and voluntary commitments. Data revealed that significant police department time and resources were spent on mental-health calls rather than on other emergencies requiring a police presence. Assistant Chief John Thompson researched different models from around the country, and after an initial push, the project continued under Chief Brian James. Today, the data is solid and is making an impact. Data helps determine if the team is working the right times of day and on the right schedules.

What are the costs for creating a BHRT? The costs for the department were relatively low because it used current available resources, such as equipment, uniforms, vehicles, office space, and computers. The budget for 2021–22 allocated around $588,000 for the program with a large majority of the expenditures going toward staffing and employee benefits. Approximately $70,000 was used for training, equipment, uniforms, car usage, and similar operating expenditures.

What impact has Greensboro's BHRT had so far? Captain William explains, "Overall, it's been jaw-dropping, for lack of a better word, to really see how this program has been embraced not only by the department but by the community as well." Every week, the police department receives positive feedback from residents and officers about helpful counselors. The city is identifying better ways of dealing with people in crisis. It's beneficial having counselors present and taking time to talk with people to understand what they need (medications, resources, counselors, or just someone to talk to). The program is a refreshing break from the usual cycle of providing a quick response to an immediate problem and coming back tomorrow to do the same thing. And it is making a difference in people's lives by giving them access to mental-health professionals and making them aware of available resources, such as therapy, without insurance.

What are some challenges associated with this team? Co-response requires interdepartmental communication and compromise, which is uncommon in law enforcement. From day one, everyone "left their egos at the door." Diverse perspectives are both a strength and a challenge. There was uncertainty in what the new program would entail, and even after two years, the department is still revising its related policies. However, the right people were hired to take on the challenge. There has been significant demand for the service and not enough resources. The staffing should be increased to 24/7 coverage so that relationships can be developed with the night officers. More case managers are needed for follow-up and referrals.

Do you have any advice for police departments considering a similar program? Find a model that complements your city and community. The initial costs and the counselor costs can be intimidating, but this program definitely benefits the community.
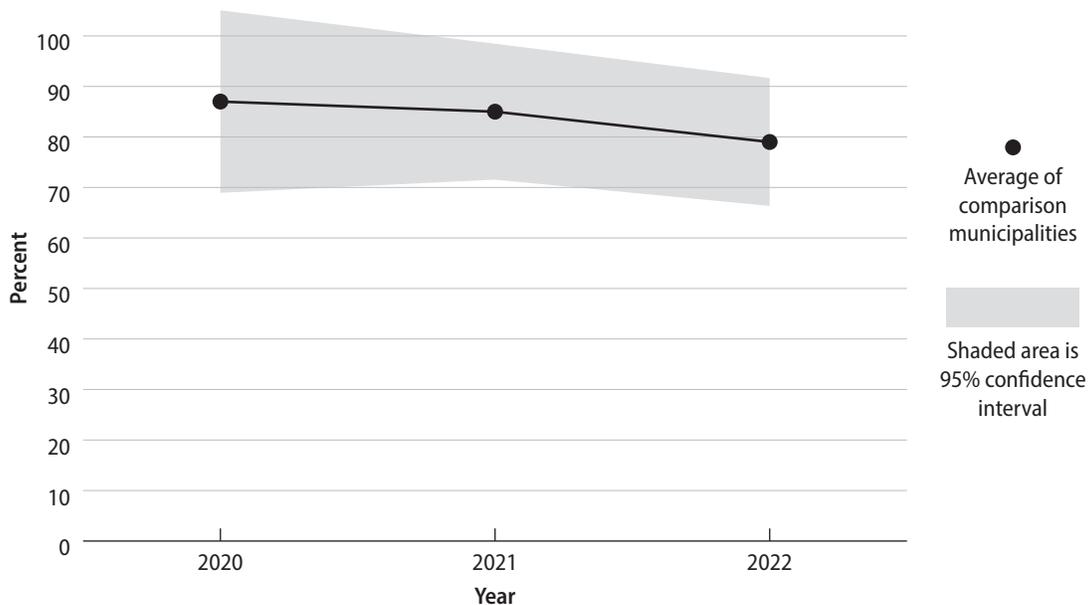
CHALLENGES AND INNOVATIONS IN

Solid Waste Management

On November 15, 2022, solid waste management officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of two featured innovations from the Benchmarking 2.0 Interview Series is also provided. The full-length video interviews can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Recruitment and Retention

Municipal solid waste departments are struggling with turnover and finding people who want to build careers in this field. As Figure 11 shows, yard waste collections are operating with capacities as low as 80 percent of their authorized FTE strength. Department leaders discussed several relevant issues, including low salaries and generational differences. Sometimes the generic pay grade developed by human resources does not give employers enough flexibility to raise compensation to market levels. Several municipalities emphasized the need to offer more attractive packages that are competitive with private sector opportunities. Overall, these departments

FIGURE 11. **Yard Waste Collection FTEs Available, as a Percentage of Yard Waste Collection FTEs Approved**

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

want to increase their use of data showing their value to the community, so that they can grow by providing more incentives that will help to retain current employees and attract new ones.

SOLUTIONS AND INNOVATIONS: Solid waste departments have adopted the following innovations to help with recruitment and retention:

- *In-house Commercial Driving License (CDL) trainers.* Concord and Charlotte hired citywide CDL trainers to cut costs and retain employees.
- *Signing bonuses.* Greensboro and Winston-Salem have offered signing bonuses ranging from $2000–$5000, respectively.
- *On-the-spot-hiring fairs.* Charlotte and Greensboro have hosted on-the-spot-hiring fairs where job seekers can be hired immediately and start work in less than a month. See the Central Human Resources Featured Innovations section for more details.
- *Opting out of benefits.* Goldsboro allows employees to decline certain benefits, such as a 401K, to boost their weekly pay.
- *Unions.* Greensboro field workers and essential services workers, including the solid waste department, created a union to address pay inequities. Charlotte's waste management employees also took a similar approach to unionizing.
- *Recognition.* Charlotte's city management frequently highlights the value of solid waste workers, which has helped employees feel heard and supported.

Challenge: Operational Costs

Solid waste departments are struggling to keep up with the rising costs of equipment and personnel while their budgets remain tight. For these departments, recycling services are especially costly. The benefits of contracting out for refuse-collection services, as well as bringing in-house previously contracted services, were also discussed.

SOLUTIONS AND INNOVATIONS: Solid waste departments have implemented the following solutions and innovations to combat operational costs and improve service delivery:

- *Bring key services in-house.* Concord and Winston-Salem are bringing refuse collection services in-house to lessen that financial burden and improve service delivery. See the Featured Innovations section below for more details.
- *Seasonal special collection.* Apex offers a service during the first two weeks of November that picks up residents' pumpkins and delivers them to a local farm that uses the decaying fruit for animal feed.

- *Public education.* A few municipalities have recognized the sustainable "leave the leaves" movement and supported education about it to cut down on the costs of running their leaf-collection services.

Challenge: Collection Schedules

Some solid waste management departments find it difficult to change inefficient schedules, such as those based on a quadrant system, because they've been in place for a long time and might be costly to change in the short-term. In addition, these departments do not have the authority to make major operational decisions. As a result, they struggle to provide good service and meet residents' expectations. This has led to low morale, especially among the departmental leaders who might spearhead effective initiatives.

SOLUTIONS AND INNOVATIONS: Solid waste departments have implemented the following approaches to improve the quality and timeliness of their services:

- *Hand-recorded data.* Concord tracked its yard-waste collection trucks and used a stopwatch to time curbside-pickup speeds. After the information was presented to the city council, the department's request to use paper lawn bags instead of plastic was approved.
- *Excess waste Wednesdays.* Wilson has a dedicated day of the week to pick up bulky items. This helps meet residential demand and avoid state fines due to contamination.
- *Electronic resource guide.* Concord developed a digital resource guide to help residents sort their garbage more effectively. See the Featured Innovations section below for more details.

Challenge: Recycling

Solid waste department leaders discussed two important issues related to recycling. The first is the need for community education. Because there are so many guidelines, residents do not always follow the correct recycling regulations, which leads to contamination. The more contamination there is, the more work is imposed on staff or contractors, which can be costly. If recyclables are not sorted correctly, they will end up in a landfill. In addition, the costs and fees associated with municipal recycling options are very high. Many municipalities would like to find more cost-effective ways to offer this service. Some municipalities said that their recycling system is inefficient, and they

are overpaying for a defective service. Among the Benchmarking 2.0 partners, only Apex offers a weekly recycling service.

Concord's Digital Solid Waste Resource Guide

Highlights from an interview with **Troy Savage**, Administration Manager, Solid Waste Services, and **Valerie Proper**, Senior Customer Service Specialist, Solid Waste Services. Watch the full interview at **benchmarking.sog.unc.edu/reports/solid-waste/**.

What is the purpose of the digital Solid Waste Resource Guide? Concord's electronic Solid Waste Resource Guide aims to provide an easily accessible and comprehensive guide for commonly asked questions by all residents in the municipality. The guide includes information about non-compliance items and specific services, and it even provides contacts for organizations that do services the municipality doesn't handle. A printed version is mailed to customers every three years.

> *"The guide provides accessible and comprehensive answers to customer questions."*
>
> — TROY SAVAGE, CONCORD

Who initiated the guide and who made the final decision? The guide was developed in 2013 by the department's staff in coordination with a customer service specialist. It was important to work in collaboration with someone who specializes in customer service to ensure the guide's inclusivity and readability.

What were the costs involved in setting up the digital guide? The total cost of the project depends on the length of the guide. Concord's guide is now fourteen pages. Other costs depend on the use of stock images (illustrations and photos) and copyeditors. For Concord, most of the cost was associated with the startup; updating the guide is obviously cheaper.

What data was used to make the guide? The solid waste management team collected the information and provided it to a creative brand team that designed the guide. It is updated annually to keep up with changes in city policies.

What are the benefits and challenges associated with the digital guide? The two main benefits of the guide relate to customer service. The first is the ability to update the

guide quickly, specifically in circumstances when a city policy takes effect with a two- or three-day turnaround. The guide also directs questions to the call center so that staff can provide more efficient and timely customer service. The main challenge is that it cannot reach everyone in the entire city; however, it is only meant to be a supplement to existing resources.

Advice for those who are thinking about implementing a similar educational strategy? It's important to use the guide to cover gaps in information, which will help reduce the number of calls made to customer service and of customer issues that get escalated to management. After the guide is created, make sure it gets widely distributed at local events in the city and county.

FEATURED INNOVATION
Winston–Salem's In–House Recycling Collection

Highlights from an interview with **Derek Owens**, Recycling Program Administrator. Watch the full interview at **benchmarking.sog.unc.edu/reports/solid-waste/**.

How and why did the municipality move its recycling in-house? Winston-Salem already offered trash, yard waste, brush, and leaf collection. When the five-year contract for recycling collection was up for renewal last year, Winston-Salem renegotiated for a one-year contract after which the city would take it over; the five-year contract for recycling processing, however, would stay in effect. City leaders wanted to have more control over the quality of customer service. On April 3, 2023, the city started its in-house recycling collection.

> *"We have high standards, and we want to bring our services back to those standards."*
>
> — DEREK OWENS, WINSTON-SAELM

Who initiated the need for the change and who made the final decision? Winston-Salem's city council approved the decision to move the recycling-collection service in-house. The council members wanted the change because of the number of constituent complaints that had been received over the contracted service. Service quality was the primary reason for the change, but cost was also a factor: the municipality can run its recycling collection at a cheaper rate than contractors charge.

What were the costs involved in setting up the in-house recycling collection? The initial startup costs mainly included equipment. The city bought its own vehicles, which has the added benefit of showing residents who is now picking up their recycling. There

were also costs involved in hiring additional personnel; however, Winston-Salem continues to save money by paying only the contracted-out processing fee.

What data was used to make the decision? Customer service satisfaction—or, rather, dissatisfaction—was used to inform the decision. Some customers were so dissatisfied with the contracted recycling service that they stopped putting out their recycling bins altogether. The city also considered the recycling contamination rate and thought it could be reduced with in-house collection.

What are the benefits and challenges associated with the in-house recycling collection? It is hoped that one of the main benefits will be an increase in customer service satisfaction. Plus, there is the benefit of optimizing a full fleet of equipment to provide quality service, which contracted services cannot do. At the time of this interview, the municipal-run recycling collection program had not yet begun, but it has already been modified and will continue to be improved over time. The biggest challenge for Winston-Salem was acquiring the required equipment.

What changes could be made to improve the in-house recycling collection? The city has led dry-runs and is seeking on-the-ground information about employee experiences and suggestions to make the new service even better.

Advice for those who are thinking about implementing a similar change? Providing an in-house municipal recycling-collection service requires a lot of groundwork, but it offers a significant benefit in quality control: municipal employees are dedicated to customer satisfaction in a way that contractors aren't. Winston-Salem is happy to share additional insights with any municipality looking to make the switch.
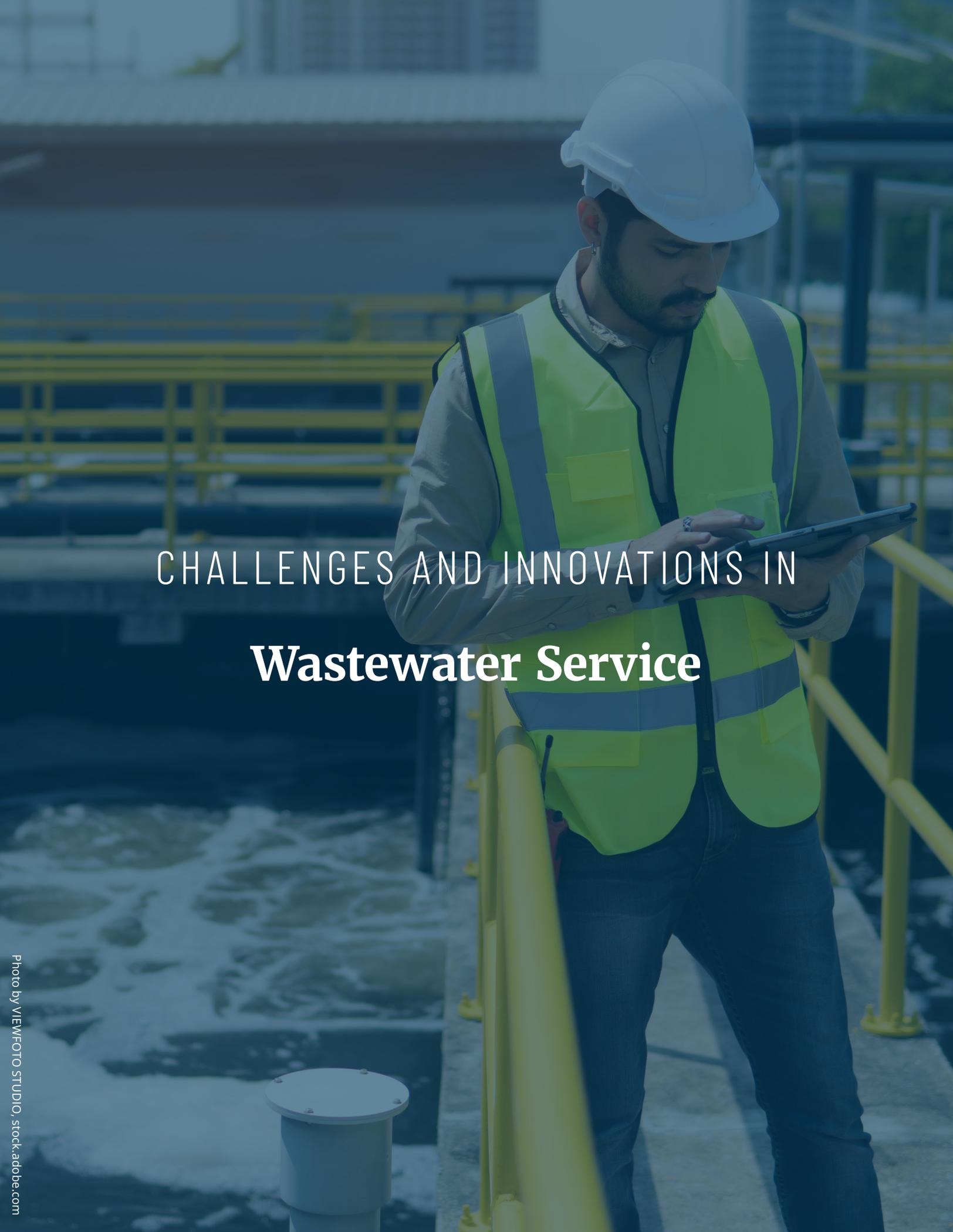
CHALLENGES AND INNOVATIONS IN

Wastewater Service

On November 8, 2022, wastewater officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below. An overview of one featured innovation from the Benchmarking 2.0 Interview Series is also provided. The full-length video interview can be accessed through the drop-down menu at **benchmarking.sog.unc.edu/reports/**.

Challenge: Staffing

Like other local government departments, wastewater services are finding it difficult to fill vacancies and retain trained employees. As Figure 12 shows, wastewater service utilities are operating with just over 80 percent of their authorized FTEs. Some Benchmarking 2.0 participants said that job descriptions often have unnecessary jargon that might deter younger professionals looking to enter a career in government. It is also hard to fill jobs due to external issues, such as the cost of living: employees are often priced out of the communities they serve, and many of them are forced to live in outlying bedroom communities so that they can afford to keep their jobs.

FIGURE 12. Wastewater FTEs Available, as a Percentage of Wastewater FTEs Approved
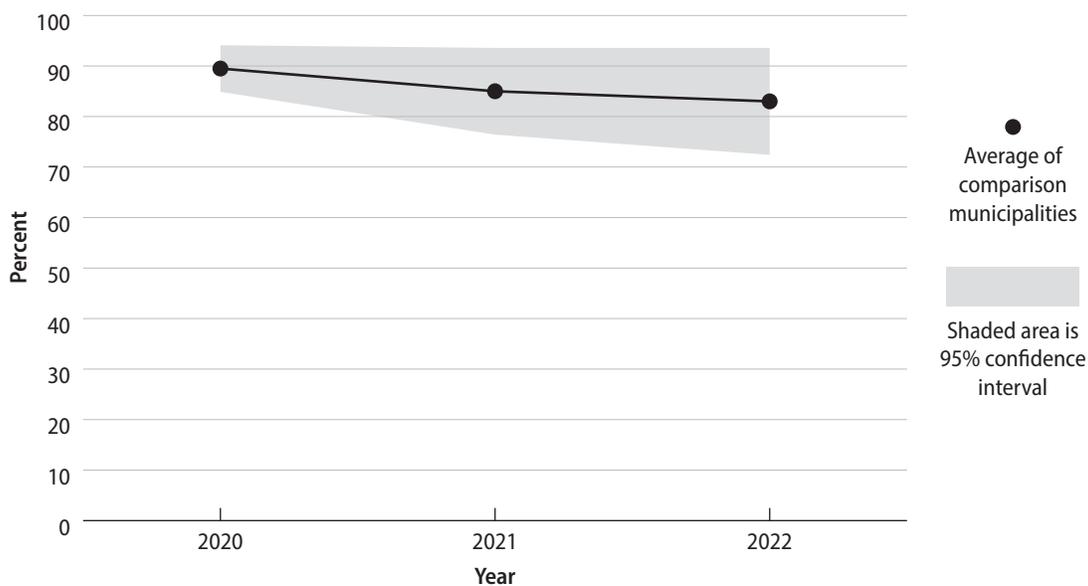
Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

SOLUTIONS AND INNOVATIONS: Wastewater utilities have implemented the following solutions and innovations to address turnover challenges:

- *Cross-training.* Wilson and Charlotte cross-train their employees for shift differentials in water and wastewater services. This increases flexibility for staff assignments, and a wider range of knowledge also increases the ability to address customer issues.
- *Quality of life.* One municipality focuses on quality-of-life practices and emphasizes the value of the department's work in the community. This effort is aimed at increasing retention by creating an atmosphere in which employees care for themselves and others, which can also lead to higher productivity.
- *Partnering with other organizations.* Charlotte partners with campus outreach organizations to advertise the municipality's employment opportunities and broaden the applicant pool so that the best employees are added to the team.
- *Career fairs.* One department markets their jobs to prospective employees at high-school job/career fairs. By approaching students before they make career decisions, the municipality hopes to attract talent who will contribute to the future of local government.
- *Hands-on experience.* One department reaches out to local community colleges to develop skilled labor. This gives the municipality a more robust workforce, advertises government jobs to young adults, and allows students to learn in-demand skills for their careers.

Challenge: Rising Costs

Wastewater service departments hoped that infrastructure issues would be addressed with funds from the National Infrastructure Act. However, supply chain issues have caused a significant rise in costs that cannot be offset and have delayed specific revival projects. In addition to aging infrastructure that needs to be addressed, population growth is leading to a higher demand on treatment capacity in high-growth areas. As a result, service quality has declined while residents have seen their bills increase. Some municipalities contract out for certain services instead of providing them in-house. While in-house provision can cost more, it also leads to more transparency and better service.

SOLUTIONS AND INNOVATIONS: Wastewater services have implemented the following solution to address cost challenges:

- *Energy generation.* Winston-Salem uses methane gas, a byproduct of wastewater, to generate energy. The energy is sold to electric companies to create additional revenue. See the Featured Innovations section below for more details.

Challenge: Public Relations

Leaders of wastewater service departments expressed a feeling of being under-appreciated by the communities they serve. One participant said, "It is best to not be seen or heard from in our business," suggesting that the department only makes the news when something goes wrong. This lack of visibility makes it difficult to ask political bodies for increased budgetary allocations for projects and infrastructure needs.

SOLUTIONS AND INNOVATIONS: Wastewater services have implemented the following solutions to address cost and public relations challenges:

- *Social media.* Wastewater utilities discussed using their municipal social media accounts to disseminate information quickly to residents regarding efficient and proper wastewater care techniques.
- *Canvassing.* Some departments go door-to-door, passing out flyers with a variety of information, such as what can and cannot be flushed.
- *Community discussions.* Wastewater utilities also hold community discussions to educate the public on specific topics, such as rate increases, to create more transparency.

FEATURED INNOVATION

Winston–Salem's Conversion of Methane to Electricity

Highlights from an interview with Lindsey Smith, Energy Manager. Watch the full interview at benchmarking.sog.unc.edu/reports/water-and-wastewater/.

Why did Winston-Salem start converting methane to energy? The City of Winston-Salem has a long history of converting methane into electric energy at two wastewater treatment plants and the city's landfill. The goal has always been to utilize the full energy potential of the natural byproduct of the decomposition of organic material and to minimize methane released into the atmosphere. When the Muddy Creek Wastewater Treatment Plant opened in the mid-1980s, two large blower motors used for aeration were powered by the waste methane with a portion of the heat utilized for process heat. By 2015, the motors were reaching the end of their useful life and the heat transfer system was not efficient, so the city invited an engineering firm to study various alternatives to fully utilize the waste methane. One alternative was to simply replace the existing blower motors, but it was determined that installing a technologically advanced Combined Heat and Power (CHP) system would generate

electricity, supply heat more efficiently for the plant's processes, and continue to eliminate methane emissions.

Who made the crucial decisions involved in the project? An engineering firm helped Winston-Salem's operations staff make the decision to use a CHP internal combustion engine after studying various alternatives. The engineering firm and city staff visited several other wastewater treatment plants to view their CHP generator installations. The specific engine selected was the Jenbacher CHP.

What were the costs involved in setting up the new system? The engineering firm estimated it would cost $4.8 million to install the Combined Heat and Power (CHP) system with an estimated earned revenue of up to $300,000 per year from selling electricity, which would result in a payback of approximately fifteen years for the project. Because of various issues, delays, and higher than expected interconnection costs, the final cost was $5.6 million. The city is currently selling approximately $15,000 to $20,000 a month of electricity. It's important to note, however, that this project was not initiated to make a profit but to do what's right by maximizing the recoverable usable energy from the waste methane. The city wanted to fully utilize the waste methane available at the plant site rather than burning it off, or "flaring" it, which was not an option.

> *"This project is about managing the waste and doing the best with what you've got."*
>
> — LINDSEY SMITH, WINSTON-SALEM

What data was used to make the decision? There were many technical issues involved, but the main question that needed to be answered was: How much free fuel, or digester gas, is available? Digester gas is the methane produced in the treatment process that can be captured and possibly stored in tanks and used to help heat and power the plant. That information dictated the specific parameters of the project.[1]

What are the benefits and challenges associated with the new system? The system is working very well. Along with the obvious benefit of increasing revenue, there is the environmental benefit of reducing the region's total greenhouse-gas-emissions rate by generating electricity that otherwise would have had to be generated by the power company. The most challenging aspect of the process was the length of time required by the power company to approve of the interconnection. The application was submitted in mid-2015 but was not approved until early 2019. Once approved, the

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1. Additional data used by wastewater services included: H2S and flow monitoring; lab data on nitrogen, oxygen, and pH levels; sanitary sewer overflow tracking maps; rain event information; CCTV data; acoustic testing; Sewer Line Rapid Assessment Tool (SL-RAT) test; and more.

power company also required an additional $300,000 payment for upgrades to their system that were not originally expected.

Advice for those who are thinking about adopting a similar system? The key is to work with a design firm that has experience installing these types of systems. As mentioned earlier, the municipality must know how much digester gas they have available and to understand this is not a profit-making operation. The goal should be to break even or come close to breaking even. Additionally, opportunities may exist to register Renewable Energy Credits (RECs), which can be sold on the open market or retained to offset internal emissions. Winston-Salem has not met their profit expectations, but the staff is still satisfied with the overall benefits. It is also important for municipalities to consult energy companies first to understand if interconnection capacity is available and what energy credits will be available to determine if a CHP generator installation is feasible. For example, if a nearby facility is already generating electricity from solar PV systems, that may impact the ability to add other electricity-generating facilities.
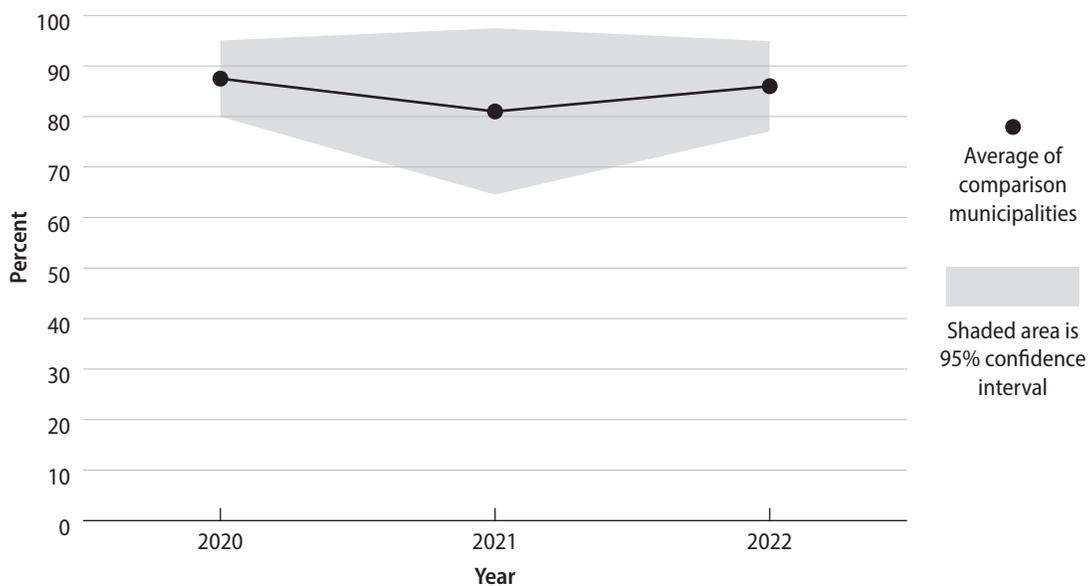
CHALLENGES AND INNOVATIONS IN

Water Service

On November 8, 2022, water officials from the Benchmarking 2.0 partner departments met at the School of Government to discuss the challenges they face and the solutions they have adopted to mitigate them. Some of those challenges and solutions appear below.

Challenge: Staffing

Like other local government departments, water services are struggling to recruit and maintain staff; however, some staffing issues are unique to this department. For example, due to the nature of their work, water service employees can be required to have several certifications and to be available for "on call" work. As Figure 13 shows, these departments are operating with around 85 percent of the authorized FTEs. One of the Benchmarking 2.0 partners has more than 80 vacancies in a 390-position department, which can lead to a decrease in customer service and to problems like water leaks going unattended. There is also a concern that as current employees age out in what has been called the "silver tsunami," these departments are unable to appeal to younger generations to fill the vacancies.

FIGURE 13. Water Service FTEs Available, as a Percentage of Water Service FTEs Approved

Average of comparison municipalities

Shaded area is 95% confidence interval

Comparison Municipalities: Apex, Chapel Hill, Charlotte, Concord, Goldsboro, Greensboro, Hickory, Raleigh, Wilson, Winston-Salem

SOLUTIONS AND INNOVATIONS: To mitigate high-turnover issues, water service departments have come up with these innovative approaches to recruiting, hiring, and retaining employees:

- *Apprenticeship programs.* Charlotte and Goldsboro started apprenticeship programs that feature degree and certification incentives.
- *Applicant education.* Raleigh's water service department reaches out to rejected job applicants to let them know how they could be successful in finding employment with the department in the future.
- *Recruiting for attitude.* Raleigh assesses the attitudes of applicants toward public service to ensure they will be a lasting, good fit for the department.
- *On-the-spot-hiring job fairs.* Greensboro hosts on-the-spot-hiring job fairs for immediate hire for non-managerial labor positions. See the Central Human Resources Featured Innovations section for more details.
- *Incentivizing continued employment.* Charlotte conducts employee-appreciation events, uniform-cleaning services, and compensation adjustments to shift differential (non-day-shift) employees.
- *Occasional scheduling flexibility.* Raleigh occasionally offers a limited amount of scheduling flexibility, including later shifts.
- *Increasing morale.* Greensboro hosts food truck festivals for employees on a regular basis and offers free access to gym facilities.
- *Guaranteed pay.* Raleigh budgets employee salaries to include eight hours of on-call pay, even if unused.
- *Municipal partnerships.* Apex and Cary are partners on their treatment plant, which means Apex owns 27 percent of the plant, but the FTEs and 73 percent of the plant belong to Cary.

Challenge: Infrastructure & Planning

Recently, water utilities have had to come to terms with the pressing need to upgrade aging infrastructure; this need has largely been unmet due to budgetary issues. Department leaders often find that they do not control key aspects of planning for customers' needs, and they have limited long-range resource capacity, funds, and raw water supplies. These departments need consistent data across multiple municipalities to give to decision-makers so they can make more informed determinations.

Challenge: Outdated Regulations

These departments must navigate their aging infrastructures through challenging regulations, such as the EPA's Lead and Copper Rule. This has proven to be a bigger issue for municipal water systems that were built before the 1950s. And it's an even larger issue for municipalities that are experiencing high growth with no stagnation forecasted. The municipalities discussed using American Rescue Plan Act (ARPA) grant funds to tackle this issue; however, inflation has left many projects incomplete or not yet begun.

Challenge: Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)

The discovery of manmade substances such as PFAS (or "forever chemicals") in everything from common household items and food to drinking water has eroded customer confidence. Since most water treatment plants were not built to filter out PFAS, municipalities need to ensure that they are cooperating with EPA regulations and that the water is safe.

Challenge: Supply Chain Issues

Lingering COVID-19 supply chain issues and the fragile current economy have hindered timely reactions to water service issues and led to higher customer bills. They have also delayed much-needed system upgrades and made it challenging to protect existing supplies and facilities. Since water protections generally have to go through Homeland Security, contracting out could compromise security and thus is not an option. And with so many staffing shortages, internal department monitoring is not always available.

SOLUTIONS AND INNOVATIONS: Water service utilities are implementing the following solutions to combat supply chain issues:

- *Ordering ahead.* A few departments are estimating their future needs, preordering chemicals and spare parts so that they are readily available if necessary.

Challenge: Data Availability

The Benchmarking 2.0 partners are struggling to collect consistent data. They also find it difficult to navigate data requirements from different stakeholders. For example, some need more information on how to handle cost allocations for various services, while others need data that can be used by city managers and council members, or to respond to resident inquiries.

SOLUTIONS AND INNOVATIONS: Some departments have implemented the following solution to collect accurate, consistent data:

- *Phone apps.* Some water service departments have developed mobile applications that provide lab results of home water samples that have been collected and sent in, track customers' water usage, and give residents more control over their bills.

REPORT SUMMARY

During the 2022 Performance Strategy Sessions, the Benchmarking 2.0 partners had the opportunity to discuss the challenges faced by service departments in North Carolina local governments and the solutions and innovations that have been implemented in response. The findings for each service department are summarized below.

ASPHALT MAINTENANCE AND REPAIR. The main challenges identified by service department members were recruitment, training, retention, variable demand, managing expectations, and limited supplies. Solutions and innovations, such as on-the-spot-hiring job fairs, bonuses, and online citizen engagement, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Raleigh's automated pavement condition index surveying and Apex's alternative rejuvenation techniques.

BUILDING INSPECTIONS. The main challenges identified by service department members were employee recruitment, training, and retention; service and staffing levels; and technology. Solutions and innovations, such as cross-training, alternative recruitment, performance measurement, and electronic plan reviews, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Winston-Salem's electronic plan reviews and Apex's alternative recruitment and apprenticeship program.

CENTRAL HUMAN RESOURCES. The main challenges identified by service department members were turnover, succession planning, and recruitment; employee training and development; lack of capacity; and collaboration and communication. Solutions and innovations, such as sign-on bonuses, tuition reimbursements, and establishing formal information sessions, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Greensboro's on-the-spot-hiring job fair, Concord's new training tracking system, and Apex's caregiver-leave policy.

EMERGENCY COMMUNICATIONS. The main challenges identified by service department members were locating and hiring quality candidates, turnover, technology, standardization of codes, call processes, and information requests. Solutions and innovations, such as creating a job-shadowing program and promoting job openings on the radio and social media, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Greensboro's use of communication technology and Concord's First Arriving dashboards.

FIRE SERVICE. The main challenges identified by service department members were funding and salaries, staffing, population growth, community design, community understanding, cybersecurity, and public information requests. Solutions and innovations, such as conducting exit interviews and using public information officers (PIOs), were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Charlotte Fire Department's response to annexation, planning, and zoning concerns.

FLEET MAINTENANCE. The main challenges identified by service department members were employee hiring and training, funding, interdepartmental communication, internal service funds, supply chain issues, transitioning to an electric fleet, collecting data, and vehicle replacement. Solutions and innovations, such as establishing apprenticeship programs, participating in job fairs, and hosting quarterly meetings with stakeholders, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Raleigh's driver scorecards, Greensboro's lease charge-back system, and Charlotte's electric-vehicle driving event.

PARKS AND RECREATION. The main challenges identified by service department members were community relations, mental health, and staffing. Solutions and innovations, such as mental-health first-aid kits and routine check-ins, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Raleigh's annual field days, Concord's recognized neighborhoods, and Chapel Hill's insurance policy.

POLICE SERVICE. The main challenges identified by service department members were employee recruiting, training, and retention; an increased scope of work; public trust and community engagement; technology integration; and internal communication. Solutions and innovations, such as increased compensation, trainee programs, and employing mental-health and social workers, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Hickory's ApprenticeshipNC trainee program and Greensboro's behavioral health response team (BHRT).

SOLID WASTE MANAGEMENT. The main challenges identified by service department members were staffing, quality of service, and operational costs. Solutions and innovations, such as an electronic resource guide, signing bonuses, and bringing selected services in-house, were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Concord's digital resource guide and Winston-Salem's in-house recycling collection.

WASTEWATER SERVICE. The main challenges identified by service department members were morale, municipality population growth, community education, and staffing. Solutions and innovations, such as educational campaigns and career fairs,

were implemented to address the challenges. To take a closer look, interviews were conducted and information was gathered about Winston-Salem's conversion of methane gas to profitable energy.

WATER SERVICE. The main challenges identified by service department members were potential contaminants like PFAS, infrastructure, planning, and staffing. Solutions and innovations, such as ordering ahead in bulk and fostering municipal partnerships, were implemented to address the challenges.

This report demonstrates the exceptional resourcefulness of North Carolina local governments in finding innovative ways to mitigate internal and external challenges. The collaborative approach and enthusiasm of the participating municipalities allow the Benchmarking 2.0 project to consolidate and highlight important trends in municipal service departments. It is through these crucial moments of sharing and exchange that we will develop a community that moves forward together to better serve all North Carolinians. We hope this report helps local governments celebrate their achievements and learn from one another.

Please visit **benchmarking.sog.unc.edu/contact-us/** to become a Benchmarking 2.0 partner.