ORANGE WATER AND SEWER AUTHORITY

A public, non-profit agency providing water, sewer and reclaimed water services to the Carrboro-Chapel Hill community.

Agenda
Work Session of the OWASA Board of Directors
Thursday, March 14, 2019, 6:00 P.M.
OWASA Community Room

The Board of Directors appreciates and invites the public to attend and observe its meetings. For the Board's Work Session, public comments are invited on only items appearing on this agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

For items on the agenda, public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

The Board may take action on any item on the agenda.

Announcements

a. Announcements by the Chair
   - Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.

b. Announcements by Board Members
   - Update on the March 5, 2019 Community Engagement Committee Meeting (Ruchir Vora)
   - Update on the March 14, 2019 Meeting Between the Chapel Hill Town Council OWASA Committee and Chapel Hill Appointees to the OWASA Board (Ruchir Vora)
   - Human Resources Committee will meet on Monday, March 18, 2019 at 8:00 AM in the OWASA Boardroom to discuss 457 deferred compensation (Robert Morgan)

c. Announcements by Staff

d. Additional Comments, Suggestions, and Information Items by Board Members (Yinka Ayankoya)

Consent Agenda

Action

1. Sole Source Procurement of a new Belt Filter Press for the Jones Ferry Road Water Treatment Plant (Allison Reinert)
2. Resolution Approving an Update to the Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data (Stephen Winters)
3. Resolution Authorizing Orange Water and Sewer Authority's Executive Director to Apply for Loans from the State of North Carolina (Stephen Winters)
4. Minutes of the January 24, 2019 Meeting of the Board of Directors (Andrea Orbich)
5. Minutes of the February 14, 2019 Meeting of the Board of Directors (Andrea Orbich)
6. Minutes of the February 28, 2019 Closed Session of the Board of Directors to Discuss a Personnel Matter (Robert Morgan)

Regular Agenda

Discussion and Action

7. Resolution Honoring the Service of Randy T. Horton to the Orange Water and Sewer Authority (Yinka Ayankoya/Ed Kerwin)

Discussion

8. Diversity and Inclusion Program Update (Stephanie Glasgow)
9. Review Status of Agua Vista Manual Read Option (Stephen Winters)
10. Long-Range Water Supply Plan: Demands and Yield (Ruth Rouse)
11. Review Preliminary Fiscal Year 2020 Budget Information (Stephen Winters)
12. Draft Conceptual Approaches to Secure Access to OWASA's Jordan Lake Allocation (Ruth Rouse)
13. Review Board Work Schedule (Yinka Ayankoya/Ed Kerwin)
    a. Request(s) by Board Committees, Board Members and Staff
    b. March 28, 2019 Board Meeting
    c. April 11, 2019 Work Session
    d. 12 Month Board Meeting Schedule
    e. Pending Key Staff Action Items
    f. Action Items Recurring Every 3 to 5+ Years

Summary of Work Session Items

14. Executive Director will summarize the key staff action items from the Work Session

Closed Session

15. The Board of Directors will convene in a Closed Session for the Purpose of Discussing a Personnel Matter (Robert Morgan)

Agenda Item 1:

Sole Source Procurement of a new Belt Filter Press for the Jones Ferry Road Water Treatment Plant (WTP)

Purpose:

This memorandum 1) provides background information about a Capital Improvements Program (CIP) project (WTP Belt Filter Press Rehabilitation Project, CIP #272-37, currently in design), and 2) provides justification for a non-competitive, or "sole source" procurement of a new belt filter press.

Background:

Belt filter presses (BFPs) are used to dewater solids generated at various points in the water treatment process prior to transport of these solids to a composting facility for beneficial reuse as a soil amendment. Currently, the WTP has two BFPs; however, BFP #1 has been non-operational for many years and BFP #2 is nearing the end of its service life as evidenced by increasing operational downtime and maintenance requirements.

With the increasing downtime and maintenance costs, CIP #272-37 was initially requested and funded for the replacement of BFP #2. Staff engaged the engineering firm of Hazen and Sawyer (Hazen) to provide engineering services for the project. A planning study completed in December 2018 evaluated several combinations of rehabilitation and/or replacement of one or both of the BFPs, as well as consideration of several alternative dewatering technologies besides BFPs if replacement was selected. Initial screening of available technologies determined that one other technology, a screw press, showed promise for this application. However, currently there is only one known application in North Carolina of a screw press being used for dewatering at a water treatment plant that uses ferric as a coagulant (i.e., the coagulant type used at the WTP). Staff visited this screw press installation at Davidson Water (Davidson) and spoke with the staff at Davidson about their experiences. In addition, staff conducted a week-long pilot test of the screw press technology at the Jones Ferry Road WTP. Operators and other interested staff were able to observe and ask questions about the dewatering equipment while it was being operated on site. At the conclusion of the pilot and study, the study recommended moving forward with the BFP due to its consistent ability to efficiently dewater ferric solids, its compatibility with the current polymer type and system, and the comfort level of both operations and maintenance staff with the BFP technology. As such, the overall recommendations of the study included the following scope for the project:

- Near-term rehabilitation of BFP #2
- Replacement of BFP #1 with similar BFP technology
- Improvements to the solids conveyor, polymer, HVAC, and instrumentation and controls systems.

Completion of the above scope will extend the life of BFP #2, will add redundancy for this process through replacement of BFP #1, and will replace or improve several key components of the process.

Due to the lack of redundancy for this unit process, the rehabilitation of BFP #2 was accelerated to occur while the design of BFP #1 replacement and related improvements is still underway. In January, staff issued a public bid for a formal purchase contract to furnish and install suitable replacement parts for BFP #2. (Per our purchasing policy, the Executive Director is authorized to award contracts to purchase equipment over $90,000 and update the board after the purchase is awarded.) Results are summarized below:

Formal purchase procurement:	Rehabilitation of Belt Filter Press #2
Responsive/responsible bids received:	1
Bidder:	Andritz Separation Inc.
Bid amount:	$279,133

The contract was awarded to Andritz and the rehabilitation of the existing BFP#2 will occur in April/May 2019.

However, the remaining design for the project cannot be finalized until a specific model is selected for the replacement of BFP #1 since piping and secondary components are largely dependent on the equipment details specific to a vendor and model. The selection of a specific BFP model during design essentially sets up a non-competitive procurement for this equipment during the future construction bid, and so the selection must meet requirements of NCGS 143-129 for sole source procurement.

Justification for Sole Source Procurement of BFP #1 Replacement

NCGS 143-129(e)(g) allows governing boards to authorize purchases of apparatus, supplies, materials, or equipment under a sole-source exception under three specific conditions, including instances where "*standardization or compatibility is the overriding consideration*".

There are numerous advantages to having the replacement of BFP #1 be compatible with the existing Andritz BFP #2. Standardization will allow staff to maintain consistency between spare parts that they need to have on site for regular maintenance of the dewatering equipment. Training and operational understanding between the pieces of dewatering equipment will also be consistent. Additionally, integration of the instrumentation and controls of both pieces of dewatering equipment so they can be run from the same control panel or panels that work well together. Furthermore, the conveyor system will be designed around the same requirements for height and offloading of solids from the equipment by maintaining consistency between the two pieces of dewatering equipment. Lastly, the current polymer system that works with BFP #2 will also work with a new Andritz SMX-14 2.0m BFP and therefore no additional polymer system work shall be required.

The cost estimate for a new SMX-14 is expected to be in the range of $400,000 to $500,000. Should the Board support the sole source procurement of this equipment, staff will proceed to negotiate a scope of supply and price for the Andritz SMX-14 BFP and design the improvements around this model. The future construction contract for BFP #1 replacement and related improvements will include the pre-negotiated price and scope of supply as part of construction contract bid.

Action Needed:

Board approval of the Resolution Approving a Sole Source Procurement for the Belt Filter Press Replacement.

Information:

- Resolution Approving a Sole Source Procurement for the Belt Filter Press Replacement

Resolution Approving a Sole Source Procurement for the Belt Filter Press Replacement

Whereas, State of North Carolina General Statute (GS) 143-129 (Procedure for letting of public contracts) allows a governing board to approve purchases of apparatus, supplies, materials or equipment through a non-competitive, or "sole source," process when: (i) performance or price competition are not available; (ii) a needed product is available from only one source of supply; or (iii) standardization or compatibility is the overriding consideration; and

Whereas, there are two Belt Filter Presses (BFP) at the Jones Ferry Water Treatment Plant: BFP #1 which needs to be replaced and BFP #2 which will be rehabilitated; and

Whereas, standardization and compatibility of the two presses is essential to efficient and reliable function; and

Whereas, the SMX-14 BFP manufactured by Andritz Separation, Inc., is the only BFP model available for replacement of BFP #1 which would provide the essential standardization and compatibility with BFP #2; and

Whereas, this equipment will be included in a future construction contract bid as the only allowable model for the replacement of BFP #1, essentially committing OWASA to a sole source procurement; and

Whereas, pursuant to GS 143-129, the OWASA Board of Directors must approve purchases made through the sole source process prior to the award of the contract;

Now, Therefore, Be It Resolved:

1. That the Board of Directors has concluded that a sole source procurement for the SMX-14 Belt Filter Press is appropriate because standardization or compatibility is the overriding consideration.

2. That the Board of Directors hereby approves the sole source procurement of the SMX-14 Belt Filter Press manufactured by Andritz Separation, Inc. for the Jones Ferry Water Treatment Plant.

3. This resolution shall take effect immediately upon its passage.

Adopted this 14th day of March, 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item 2:

Resolution Approving an Update to the Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data

Purpose:

Staff recently reviewed our policy on confidentiality of customer billing and water-consumption data and recommends a modification to the policy.

On October 25, 2018, the Board approved an update to OWASA's Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data. The update incorporated language to make it clear that information that is now available through the Agua Vista automated meter infrastructure system is covered by the policy.

North Carolina statute permits disclosure of confidential customer information in certain situations, including at the request of law enforcement agencies. The resolution proposed by staff clarifies the circumstances in which OWASA would provide information to law enforcement agencies. The revised policy makes it clear that disclosure to law enforcement may be made in response to requests from law enforcement agencies only upon the direction or authorization of a formal search warrant or other appropriate order of a judicial official.

Action requested:

Approve attached resolution.

Resolution of the OWASA Board of Directors Adopting a Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data

Whereas, the OWASA Board of Directors adopted a formal policy on the confidentiality of individual customers' billing and water-consumption records and data; and

Whereas, General Statute 132-1.1, Public Enterprise Billing Information, states that billing information compiled and maintained by a city or county or other public entity providing utility services in connection with the ownership or operation of a public enterprise are not public records as defined in General Statute 132-1, and will not be disclosed unless the public agency determines that limited disclosure will be useful or necessary to assist bond counsel, bond underwriters, underwriters' counsel, rating agencies, investors or potential investors, or to assist in fire protection, rescue, or emergency management planning or analysis, or upon proper notice and order from duly authorized judicial officers; and

Whereas, the Board of Directors has determined to direct that individual customer account records will not be disclosed for law enforcement purposes except as directed by a duly obtained search warrant or other proper judicial order;

Now, Therefore, Be It Resolved:

1. That the Board of Directors of Orange Water and Sewer Authority hereby adopts the attached Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data.

2. That said policy is effective upon adoption.

3. That the Executive Director be, and hereby is, authorized and directed to interpret and implement said policy.

Adopted this 14th day of March 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

ORANGE WATER AND SEWER AUTHORITY
POLICY ON CONFIDENTIALITY OF INDIVIDUAL CUSTOMERS' BILLING AND WATER-CONSUMPTION RECORDS AND DATA

PURPOSE:

To adopt a formal policy to maintain the confidentiality of individual customers' billing and water consumption records and data.

BACKGROUND:

OWASA is a public entity and most of its records are open to the public under the General Statutes, with some exceptions. However, records of individual customer accounts, including but not limited to use, consumption, and billing records, are maintained as confidential records.

North Carolina General Statute 132-1.1 specifically allows public entities to classify and keep as confidential billing information compiled and maintained in connection with the ownership or operation of a public enterprise, such as water and sewer services. Furthermore, that statute declares that such records are not public records, and do not have to be disclosed under public records requests.

Nevertheless, that statute permits public entities to use and disclose such records in certain limited instances, such as may be useful or necessary to assist bond counsel, bond underwriters, underwriters' counsel, rating agencies, investors or potential investors, the city, county, or state, law enforcement, public safety, fire protection, rescue, emergency management, or judicial officers.

In order to protect the privacy of individual customers' billing and water-consumption records and data, OWASA does not disclose information unless otherwise approved by the Executive Director for one of the limited purposes permitted by the statute. Disclosure may be made in response to requests from law enforcement agencies only upon the direction or authorization of a formal search warrant or other appropriate order of a judicial official.

AUTHORIZATION:

The Executive Director shall interpret and implement on behalf of Orange Water and Sewer Authority this Policy on Confidentiality of Individual Customers' Billing and Water-Consumption Records and Data. Such administrative actions may be taken without further authorization by the Board of Directors.

Reviewed by General Counsel: _____ _____
Date General Counsel

Adopted by the Board: _____ _____
Date Clerk to the Board

Agenda Item 3:

Resolution Authorizing Orange Water and Sewer Authority's Executive Director to Apply for Loans from the State of North Carolina

Background:

Water and sewer service providers are eligible to periodically apply for low-interest loans available through the state under federal and state funding program authorizations. The North Carolina State Water Infrastructure Authority is responsible for considering funding applications, and for awarding both federal and state funding for water and wastewater infrastructure projects in the state.

April 30, 2019 is the application deadline for the state's next cycle of funding decisions. Staff has identified three projects that we believe may qualify for low-interest loans. In accord with state requirements, the Board of Directors must approve a resolution authorizing the Executive Director to submit funding applications to the state. A copy of a certified resolution must be included with funding applications.

Staff requests Board authorization to submit applications for low-interest loans for three Capital Improvements Program projects. If we receive funding offers from the state, staff will make recommendations regarding acceptance and the Board of Directors will make the final decision as to whether to accept the offers.

Low-Interest Loans

The interest rate on state loans is anticipated to be less than the market rate that we could expect to pay if we funded projects with revenue bonds. We recommend pursuing state loans for the following projects:

Project Name	Estimated Project Cost
Water Treatment Plant Belt Filter Press Replacement	$3,000,000
University Lake Permanganate Facility	$2,300,000
West Cameron Avenue Water Main Replacement	$3,100,000
Total	$8,400,000

Summary

Benefits of low-interest loans will be to reduce planned future, more expensive borrowing and its associated debt service. Submitting an application for low-interest loan funding does not commit OWASA to accepting the funding; that decision would be made by the Board of Directors once we receive an official funding offer from the state.

A draft resolution authorizing OWASA's Executive Director to apply for these funds is attached for the Board's consideration. It follows guidance from the North Carolina Division of Water Infrastructure.

Action Needed:

Approve the Resolution Authorizing Orange Water and Sewer Authority's Executive Director to Apply for Certain Loans from the State of North Carolina.

Resolution Authorizing Orange Water and Sewer Authority's Executive Director to Apply for Loans from the State Of North Carolina

Whereas, the Federal Clean Water Act Amendments of 1987 and the North Carolina Water Infrastructure Act of 2005 (NCGS 159G) have authorized the making of loans and grants to aid eligible units of government in financing the cost of construction of drinking water treatment works and drinking water distribution system projects; and

Whereas, the Orange Water and Sewer Authority has need for and intends to complete several water utility system improvements projects described as:

(a) Water Treatment Plant Belt Filter Press Replacement,
(b) University Lake Permanganate Facility,
(c) West Cameron Avenue Water Main Replacement; and

Whereas, the Board of Directors of Orange Water and Sewer Authority intends to request state loan assistance for the projects;

Now, Therefore, Be It Resolved:

1. That Orange Water and Sewer Authority will arrange financing for all remaining costs of the project, if approved for a state loan award.

2. That Orange Water and Sewer Authority will adopt and place into effect on or before completion of the project a schedule of fees and charges and other available funds which will provide adequate funds for proper operation, maintenance, and administration of the system and the repayment of all principal and interest on the debt.

3. That the governing body of the Orange Water and Sewer Authority agrees to include in the loan agreement a provision authorizing the State Treasurer, upon failure of the Orange Water and Sewer Authority to make scheduled repayment of the loan, to withhold from the Orange Water and Sewer Authority any state funds that would otherwise be distributed to the local government unit in an amount sufficient to pay all sums then due and payable to the state as a repayment of the loan.

4. That Orange Water and Sewer Authority will provide for efficient operation and maintenance of the projects on completion of construction thereof.

5. That Ed Kerwin, Executive Director of Orange Water and Sewer Authority, and successors so titled, is hereby authorized to execute and file an application on behalf of the Orange Water and Sewer Authority with the State of North Carolina for loans to aid in the construction of the projects described above.

6. That Ed Kerwin, Executive Director of Orange Water and Sewer Authority, and successors so titled, is hereby authorized and directed to furnish such information as the appropriate state agency may request in connection with such application or the project: to make the assurances as contained above; and to execute such other documents as may be required in connection with the application.

7. That Orange Water and Sewer Authority has substantially complied or will substantially comply with all federal, state, and local laws, rules, regulations, and ordinances applicable to the above projects and to federal and state grants and loans pertaining thereto.

Adopted this 14th day of March 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Certification by Recording Officer

The undersigned duly qualified and acting Clerk to the Board of Directors of the Orange Water and Sewer Authority does hereby certify: That the above/attached resolution is a true and correct copy of the resolution authorizing the filing of an application with the State of North Carolina, as regularly adopted at a legally convened meeting of the Board of Directors duly held on the 14th day of March 2019; and, further, that such resolution has been fully recorded in the journal of proceedings and records in my office. IN WITNESS WHEREOF, I have hereunto set my hand this _____ day of _____, 20____.

Andrea Orbich
Clerk to the Board of Directors

Agenda Item 4

Orange Water and Sewer Authority

Meeting of the Board of Directors

January 24, 2019

The Board of Directors of the Orange Water and Sewer Authority (OWASA) held a regular meeting on Thursday, January 24, 2019, at 7:00 p.m. in Chapel Hill Town Hall Council Chamber.

Board Members present: Yinka Ayankoya (Chair), Jeff Danner (Vice Chair), Ray DuBose (Secretary), Bruce Boehm, Jody Eimers, Robert Morgan, John N. Morris, Ruchir Vora and John A. Young.

OWASA staff present: Mary Darr, Robert Epting, Esq., (Epting and Hackney), Vishnu Gangadharan, Robin Jacobs (Epting and Hackney), Ed Kerwin, Ken Loflin, Linda Low, Andrea Orbich, Johnny Riley, Todd Taylor, Mary Tiger and Stephen Winters.

Others present: Joel Bulkley (Community Sports News), Meg Holton (UNC Water Resources Manager), Ben Poulson (UNC Associate Director of Energy Services) and Lauren Takitch (Entex).

Motions

1. Ruchir Vora made a motion to approve the Minutes of the November 8, 2018 Meeting of the Board of Directors; second by Jeff Danner and unanimously approved.

2. Ruchir Vora made a motion to approve the Minutes of the January 10, 2019 Closed Session of the Board of Directors to Discuss Confidential Information Regarding Security Measures in Place to Protect OWASA Customers, Personnel and Assets; second by Jeff Danner and unanimously approved.

3. Ray DuBose made a motion that the Board of Directors approve the proposed Affordability Outreach Program Update and Plan (Year 4) and authorize staff to proceed to implement the program in accordance with the approach described in the Plan; second by John Morris and unanimously approved.

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Announcements

Yinka Ayankoya asked if any Board Member knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight to disclose the same at this time; none were disclosed.

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Ms. Ayankoya said an OWASA orientation for newly elected Orange County Commissioners, Jamezetta Bedford and Sally Greene, be held on Thursday, February 7, 2019 at 9:00 a.m. in the OWASA Boardroom.

Mr. DuBose announced a meeting of Members of the Orange County Board of Commissioners and the Orange County Appointees to the OWASA Board will meet on Wednesday, January 30, 2019 at 8:30 a.m. in the OWASA Boardroom to discuss items of mutual interest.

Mr. DuBose announced that Jody Eimers, Yinka Ayankoya and he will provide OWASA's Annual Update to the Orange County Board of County Commissioners on Tuesday, February 19, 2019, at 7:00 p.m. at Southern Human Services Center in Chapel Hill.

Petitions and Requests

Yinka Ayankoya asked for petitions and requests from the Board, public and staff; there were none.

Item One: Capital Improvements Program Semiannual Report

The Board received this as an information item.

Item Two: 12 Month Board Meeting Schedule

The Board agreed to schedule an update on work to effectively manage taste and odor in the drinking water.

Item Three: Minutes

Ruchir Vora made a motion to approve the Minutes of the November 8, 2018 Meeting of the Board of Directors; second by Jeff Danner and unanimously approved. Please see Motion 1 above.

Item Four: Minutes

Ruchir Vora made a motion to approve the Minutes of the January 10, 2019 Closed Session of the Board of Directors to Discuss Confidential Information Regarding Security Measures in Place to Protect OWASA Customers, Personnel and Assets; second by Jeff Danner and unanimously approved. Please see Motion 2 above.

Item Five: 2018 Annual Lakes Recreation Report

Jody Eimers proposed staff provide an opportunity for lake visitors to sign up as a stakeholder to receive information electronically regarding lake news, continue to promote birdwatching as well as additional comments and suggestions to improve the report.

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Item Six: Financial Report for the Six-Month Period Ended December 31, 2018

Stephen Winters presented the financial report for the six-month period ended December 31, 2018 reporting that net income for the period was about $644,000 or 11% less than budget. OWASA is a nonprofit entity. Net income is used to fund investments in capital improvement projects and reserves.

The Board requested an update on matters related to our work to effectively manage taste and odor in our drinking water.

Item Seven: Affordability Outreach Program Update

The Board expressed appreciation to staff and partners for a thorough Affordability Outreach Program Update and Plan (Year 4). The Board made minor suggestions to be incorporated into the final Plan.

Ray DuBose made a motion that the Board of Directors approve the proposed Affordability Outreach Program Update and Plan (Year 4) and authorize staff to proceed to implement the program in accordance with the approach described in the Plan; second by John Morris and unanimously approved. Please see Motion No. 3 above.

Item Eight: Fiscal Year 2020 Budget Calendar and Assumptions

The Board received this as an information item.

Item Nine: Executive Director Will Summarize the Key Staff Action Items from the Work Session

Ed Kerwin noted the following items for staff follow-up:

- Address comments and suggestions to the Annual Lakes Recreation Report, including opportunities to promote birdwatching;
- Provide Board update on matters related to our work to effectively manage taste and odor in our drinking water;
- Address suggestions to the Affordability Outreach Report and Program;
- February 14, 2019 Board Work Session agenda will include:
    - Community Engagement Approach for Forestry Management
    - Review consultant's Scope of Work for the Water Distribution System Replacement Prioritization Model
    - Review options for accelerating valve maintenance program
    - Long Range Water Supply Final Demands and Yield

Item Ten: Closed Session

Without objection, the Board of Directors continued in a Closed Session to discuss a personnel matter. The Board meeting was adjourned at 9:25 p.m.

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Respectfully submitted by:

Andrea Orbich
Executive Assistant/Clerk to the Board

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Agenda Item 5

Orange Water and Sewer Authority

Meeting of the Board of Directors

February 14, 2019

The Board of Directors of the Orange Water and Sewer Authority (OWASA) met in a work session on Thursday, February 14, 2019, at 6:00 p.m. in OWASA's Community Room, 400 Jones Ferry Road, Carrboro.

Board Members present: Yinka Ayankoya (Chair), Jeff Danner (Vice Chair), Ray DuBose (Secretary), Bruce Boehm, Jody Eimers, Robert Morgan, John N. Morris, Ruchir Vora and John A. Young.

OWASA staff present: Denise Battle, Mary Darr, Robert Epting, Esq., (Epting and Hackney), Vishnu Gangadharan, Ed Kerwin, Simon Lobdell, Linda Low, Andrea Orbich, Nick Rogers, Ruth Rouse, Todd Taylor, Mary Tiger, Stephen Winters and Richard Wyatt.

Others present: Elijah Ayankoya, Meg Holton (UNC Water Resources Manager), Ben Poulson (UNC Associate Director of Energy Services) and Adam Sharpe (HDR).

Motions

1. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the corrected Resolution Accepting Four Low-Interest Loan Offers from the State of North Carolina, and Authorizing Executive Director to Execute and Administer all Related Loan Offer and Acceptance Documents. (Motion by Robert Morgan, second by Bruce Boehm and unanimously approved.)

2. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution of Orange Water and Sewer Authority Awarding a Construction Contract for the University Lake Raw Water Pump Station Improvements. (Motion by Robert Morgan, second by Bruce Boehm and unanimously approved.)

3. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution of Orange Water and Sewer Authority Declaring Its Intention to Execute a Sole Source Procurement of the Optifow Baffle System at the Mason Farm Wastewater Treatment Plant. (Motion by Robert Morgan, second by Bruce Boehm and unanimously approved.)

4. Robert Morgan made a motion to approve the Minutes of the November 15, 2018 Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved.

5. Robert Morgan made a motion to approve the Minutes of the December 13, 2018 Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved.

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6. Robert Morgan made a motion to approve the Minutes of the December 19, 2018 Special Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved.

7. Robert Morgan made a motion to approve the Minutes of the January 24, 2019 Closed Session of the Board of Directors for the Purpose of Discussing a Personnel Matter; second by Bruce Boehm and unanimously approved.

8. Robert Morgan moved that the Nominating Committee consist of the full Board and that the question of whether to amend the by-laws to formalize this nomination process be discussed on April 11, 2019; second by Ray DuBose and unanimously approved.

9. Robert Morgan made a motion to approve the Resolution Adjusting the Executive Director's Compensation; second by Ruchir Vora and unanimously approved.

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Announcements

Yinka Ayankoya asked if any Board Member knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight to disclose the same at this time; none were disclosed.

Ms. Ayankoya said that Ray DuBose, Jody Eimers, Ed Kerwin and she meet with Jamezetta Bedford and Sally Green, newly elected Orange County Commissioners, on February 7, 2019 to provide an OWASA orientation.

Ray DuBose said that Yinka Ayankoya, Ed Kerwin and he met with Chair Penny Rich and Mark Marcoplos, Orange County Board of Commissioners, on January 30, 2019. This was the first meeting of the group which will meet quarterly and topics discussed included: water system resiliency, Agua Vista, Sewers for Historic Rogers Road Area, Affordability Outreach Program, Diversity and Inclusion Program. The group will meet again on Thursday, April 25, 2019 at 8:00 a.m. in the OWASA Boardroom.

Mr. DuBose said that on Tuesday, February 19, 2019 Jody Eimers and he will provide a brief presentation of OWASA's Annual Update to the Orange County Board of County Commissioners at 7:00 p.m., Southern Human Services Center in Chapel Hill. Ed Kerwin will also attend, and the same topics noted previously in the quarterly meeting with the Commissioners will be presented.

Robert Morgan said the Human Resources (HR) Committee met on February 5, 2019 to discuss optional approaches to providing retiree health and deferred compensation plans. The HR Committee concluded that offering the benefits as a package would be costlier than other options and would not adequately bring the benefits in-line with the market. The HR Committee favors continuing the current offering for the retiree health plan benefit for existing employees and, as of a to-be-determined date, provide new employees with a Retiree Medical Savings Account. Mr. Morgan noted the HR Committee will continue to work on balancing the Board's desire to

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fairly and competitively compensate employees while being mindful of fiscal responsibilities, and plans to meet again on Monday, March 18, 2019 at 8:00 a.m. in the OWASA Boardroom.

John Young said the Chatham-Orange Joint Planning Task Force will meet on Thursday, February 21, 2019 at 12:00 noon in the Chatham County Agriculture & Conference Center Cooperative Extension Conference Room, Pittsboro. An update of the Jordan Lake Western Intake Partners (Durham, Chatham, Pittsboro, OWASA) is on the agenda and will be presented by Dan LaMontagne, Interim Chatham County Manager.

Ruchir Vora said the Community Engagement Committee will meet on Tuesday, March 5, 2019 at 9:00 AM in the OWASA Boardroom to discuss Agua Vista Web Portal.

Mr. Vora said a meeting between the Chapel Hill Town Council OWASA Committee and Chapel Hill Appointees to the OWASA Board is scheduled for Thursday, March 14, 2019 at 8:30 AM in the OWASA Boardroom to discuss items of mutual interest.

Item One: Resolution Accepting Four Low-Interest Loan Offers from the State of North Carolina, and Authorizing Executive Director to Execute and Administer all Related Loan Offer and Acceptance Documents

Two typo corrections were noted on page two of the Resolution; these were corrected by staff, and the Board continued its consideration of the corrected version.

Robert Morgan made a motion to approve the corrected Resolution; second by Bruce Boehm and unanimously approved. Please see Motion 1 above.

Item Two: Award the University Lake Raw Water Pump Station Improvements Construction Contract

Robert Morgan made a motion to approve the resolution; second by Bruce Boehm and unanimously approved. Please see Motion 2 above.

Item Three: Sole Source Procurement of Grit Removal Equipment at the Mason Farm Wastewater Treatment Plant

Robert Morgan made a motion to approve the Resolution of Orange Water and Sewer Authority Declaring Its Intention to Execute a Sole Source Procurement of the Optiflow Baffle System at the Mason Farm Wastewater Treatment Plant; second by Bruce Boehm and unanimously approved. Please see Motion 3 above.

Item Four: Minutes

Robert Morgan made a motion to approve the Minutes of the November 15, 2018 Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved. Please see Motion 4 above.

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Item Five: Minutes

Robert Morgan made a motion to approve the Minutes of the December 13, 2018 Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved. Please see Motion 5 above.

Item Six: Minutes

Robert Morgan made a motion to approve the Minutes of the December 19, 2018 Special Meeting of the Board of Directors; second by Bruce Boehm and unanimously approved. Please see Motion 6 above.

Item Seven: Minutes

Robert Morgan made a motion to approve the Minutes of the January 24, 2019 Closed Session of the Board of Directors for the Purpose of Discussing a Personnel Matter; second by Bruce Boehm and unanimously approved. Please see Motion 7 above.

Item Eight: Review Scope of Water Distribution System Prioritization Model

The Board provided comments and feedback on the Scope of Services for the update to the Water Distribution System Prioritization Model. The study, which is expected to take about a year to complete, will not only inform capital project prioritization and guide long-term infrastructure investment decisions, but will also develop operational strategies to manage risks in highly critical areas of the water distribution system.

Item Nine: Community Engagement Approach for Forestry Management Program

After considerable discussion, the Board agreed to authorize staff to develop a Community Engagement Plan for the Forestry Management Program including the following steps:

- Engage local elected officials regarding forestry management;
- Organize a community meeting in Cane Creek during which:
    - OWASA will provide a presentation on its new incremental forest management approach with supporting photos/exhibits, and draft Guiding Principles as developed by staff
    - Small group discussions to invite input from participants at the meeting
- Staff to present a list of up to 10 sites for forest management, based on the Guiding Principles, to the Board. Public will have the opportunity to comment at the Board meeting. Once the Board approves a subset of the draft list of sites for forestry management, staff will develop a community engagement plan for those landowners.

Item Ten: Evaluation of Accelerating OWASA's Valve Exercise Program

The Board authorized staff to further accelerate the initial push of the valve exercise program, which will require renting one additional valve exercise machine and filling two unfunded Utility

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Mechanic positions; the Board will receive monthly updates on the proposed accelerated valve exercise program progress and metrics.

Item Eleven: Review Board Work Schedule

The Board agreed to add an agenda item to nominate and elect a new Vice Chair at the February 28, 2019 meeting.

John Young commented that if the Board considers changing the Bylaws, he recommends the Chair of the Board delegate their responsibility to serve on the Nominating Committee (Bylaws, Article X. Advisory Committees) because he feels it creates a conflict of interest or perceived conflict of interest.

Robert Morgan moved that the Nominating Committee consist of the full Board and that the question of whether to amend the Bylaws to formalize this nomination process be discussed on April 11, 2019; second by Ray DuBose and unanimously approved. Please see Motion 8 above.

The Board also agreed to discuss at its April 11, 2019 meeting the practice of eliminating successive terms for the offices of Chair, Vice Chair and Secretary, thus limiting Board Members to one one-year term for each office beginning July 1, 2019.

John Morris suggested, and the Board agreed, to discuss the draft brief on conceptual approaches for securing OWASA's access to Jordan Lake allocation at the March 14, 2019 meeting.

Staff will provide the Board via email an update on construction contract bids received for solids thickening improvements and headworks rehabilitation for the Mason Farm Wastewater Treatment Plant by February 18, 2019.

Item Twelve: Executive Director Compensation

Robert Morgan made a motion to approve the Resolution Adjusting the Executive Director's Compensation; second by Ruchir Vora and unanimously approved. Please see Motion 9 above.

Item Thirteen: Executive Director Will Summarize the Key Staff Action Items from the Work Session

Ed Kerwin noted the following items for staff follow-up:

- Proceed with water distribution system prioritization model project and consider condition assessment of raw water mains; updates will be emailed to the Board.
- Prepare an outline summary of a desired approach for community engagement of forestry management and invite individual Board member feedback via email; considering feedback, staff will prepare community engagement plan for the Board's review and approval at a future Board meeting.
- Implement the proposed accelerated valve exercise program and keep the Board updated on progress/metrics.

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- Add an item to April 11, 2019 agenda to discuss the practice of eliminating successive terms for the offices of Chair, Vice Chair and Secretary, thus limiting Board Members to one one-year term for each office beginning July 1, 2019.
- Add an item to the April 11, 2019 agenda to discuss whether the Nominating Committee consist of the full Board and the question of whether to amend the Bylaws to formalize this nomination process.
- Provide Board via email by February 18, 2019 an update on construction contract bids received for solids thickening improvements and headworks rehabilitation for the Mason Farm Wastewater Treatment Plant.

Item Fourteen: Closed Session

Without objection, the Board continued in Closed Session to discuss confidential information regarding security measures in place to protect OWASA customers, personnel and assets.

The Board meeting was adjourned at 9:20 p.m.

Respectfully submitted by:

Andrea Orbich
Executive Assistant/Clerk to the Board

Attachments

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Agenda Item 6

Orange Water and Sewer Authority

Closed Session of the Board of Directors

February 28, 2019

The Board of Directors of Orange Water and Sewer Authority met in Closed Session in on Thursday, February 28, 2019, following the Board meeting.

Board Members present: Yinka Ayankoya (Chair), Jeff Danner (Vice Chair), Jody Eimers, Robert Morgan, John Morris and John A. Young. Board Members absent: Ray DuBose (Secretary), Bruce Boehm and Ruchir Vora.

Staff present: Robert Epting (General Counsel) and Robin Jacobs.

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ITEM ONE

The Board of Directors met in Closed Session with General Counsel to evaluate General Counsel's semiannual performance review.

No official action was taken at the meeting.

The meeting was adjourned at 8:01 p.m.

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Robert Morgan, Chair
Human Resources Committee

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Agenda Item 7:

Resolution Honoring the Service of Randy T. Horton to the Orange Water and Sewer Authority

Background:

Mr. Randy T. Horton, Distribution and Collection System Manager, has been employed with Orange Water and Sewer Authority (OWASA) since February 16, 1977 and will retire on March 31, 2019.

The OWASA Board of Directors wishes to express to Mr. Horton its sincere appreciation and deep gratitude for his faithful and dedicated service, professional expertise and devotion of service to the citizens of the Carrboro-Chapel Hill-Orange County community over 42 years.

Action Needed:

Adoption of the Resolution Honoring the Service of Randy T. Horton

Resolution Honoring the Service of Randy T. Horton
to the Orange Water and Sewer Authority

Whereas, Mr. Randy T. Horton (Randy) has retired from service as Manager of OWASA's Water Distribution and Wastewater Collection Department, effective March 31, 2019, and the Board of Directors wishes to honor and recognize his work, his character, and the example he leaves for us all; and

Whereas, Randy came to work for OWASA when its operation began on February 16, 1977, and has continued and progressed from his original position as a Line Mechanic, to become Manager of the Distribution and Collection Department, all as a result of his having learned the locations and purposes of every pipe, valve, service connection, shovel and hoe operated by OWASA, by his tireless effort during regular hours and every inevitable night, holiday and weekend emergency, and by his commitment to know and care about the lives of every person who worked with him outside in the heat of summer and through the freezing rains of winter, to keep in operation the water and wastewater systems, the lifelines of our community; and

Whereas, Randy came to be widely known and admired across our community as "that nice, helpful man from OWASA" who deeply cares and has compassion for "his" customers; and

Whereas, Randy has set an excellent example for all who have come to work for OWASA during his career, as well as those who will hear about him when they come to work at OWASA in the future; and

Whereas, OWASA shares Randy's pride of the many people he has hired, trained and supported over the years, so many with highly successful careers at OWASA and elsewhere; and

Whereas, Randy's former and current co-workers are proud to call him friend;

Now, Therefore, Be It Resolved:

That the Board of Directors of the Orange Water and Sewer Authority (OWASA) hereby honors the distinguished public service of Mr. Randy T. Horton to OWASA and the people of Chapel Hill, Carrboro and Orange County; and the Board of Directors expresses its best wishes to him and his family for an abundance of happiness.

Adopted and presented this 14th day of March 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item 8:

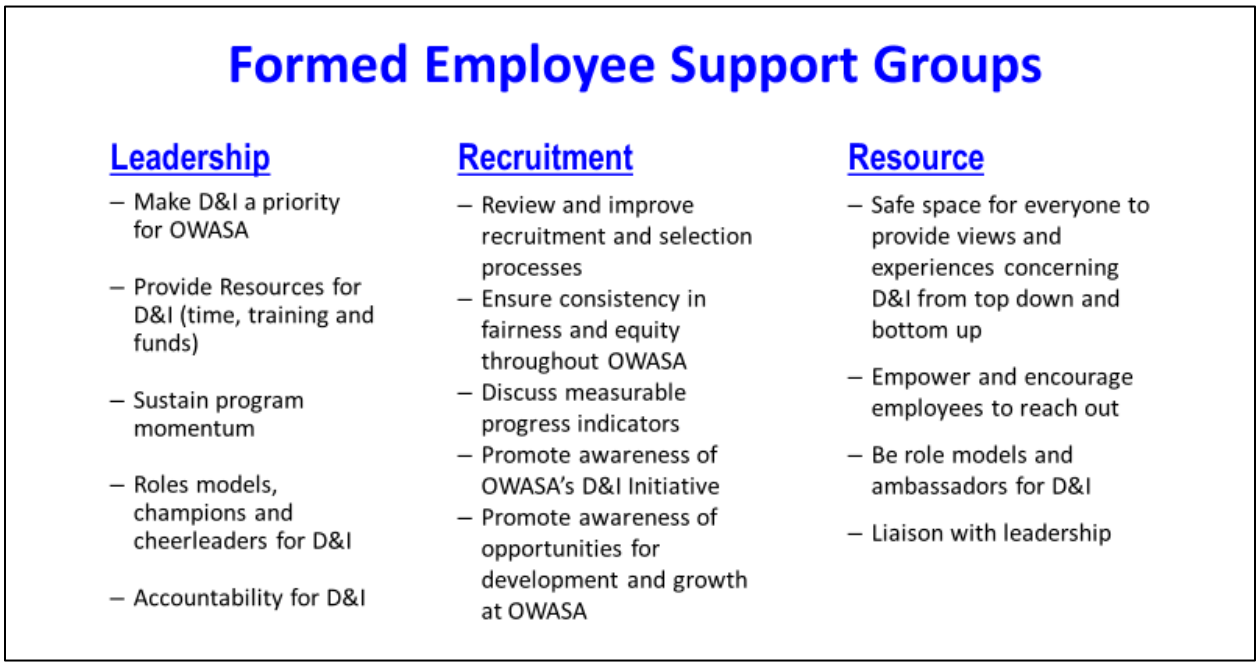
Diversity and Inclusion Program Update

Purpose:

To provide an update on recent and upcoming diversity and inclusion work of the Diversity Resource Group.

Background:

As part of OWASA's Diversity and Inclusion (D&I) Program three groups were formed to help guide the D&I work. The ***Diversity Resource Group*** is made up of employee volunteers from throughout the organization to help guide and promote OWASA's D&I efforts. The ***Diversity Recruitment Group*** is made up of hiring managers and Human Resource staff. This group is working on improvements to the recruitment, selection and retention processes. The ***Diversity Leadership Group*** includes the five Department Directors and Executive Director to provide the leadership and support to make sure the OWASA Team delivers excellent service to our customers while providing a diverse workforce and an inclusive work environment for all.



Updates will be provided to the Board three times per year. This year, abbreviated updates will take place in March and July by the Diversity Resource and Recruitment Groups. The September update will continue to be a comprehensive program progress report from Human Resources and will contain the annual EEO report.

March 14, 2019

Diversity and Inclusion Update:

Key activities as part of the D&I Program since September 2018 include:

- In October 2018, a joint Diversity Group meeting took place to discuss progress and status updates for those recommendations assigned to 2018.
- All Diversity Groups continue to work toward measurable outcomes and action items addressing the recommendations.
- An addendum to the contract with VISIONS was approved in January 2019 which supports a workplace through June 2019.
- The next joint group meeting with VISIONS is scheduled for March 11, 2019.
- The upcoming work with VISIONS includes continued training, enhancements to hiring/recruiting, individual coaching sessions and reconciling policies, guidelines and forms.

Information:

At the March 14, 2019 Work Session, members of the Diversity Resource Group (Sandra Bradshaw, Addison McDonough, and Alicia Grey) will make presentations and be available to answer Board member questions.

- Attachment 1: December 2018/January 2019 Information Pipeline Employee Newsletter – Diversity Resource Group Introduction to Employees
- Attachment 2: "Building Stronger Companies Through Inclusion" – Rachel Gilbert

OWASA Information Pipeline

December 2018/January 2019

As part of the Diversity & Inclusion program, OWASA invited employees to form a Diversity Resource Group self-selected volunteers who would be a resource for all who work at OWASA, give voice to employee goals and accomplishments, and provide insight to the organization on ways to continuously improve organizational culture and processes for the best outcomes possible.

14 employees volunteered to be part of the Diversity Resource Group. We are: Sandra Bradshaw, Emily Caperton, Millie Zeno-Chapman, Jose DuRant, Joshua Dury, Marcus Fuller, Glorija Gladney, Alicia Grey, Linda Low, Addison McDonough, Greg Monschein, Johnny Riley, Ruth Rouse, and Rosa Valdez. This is our mission statement:

> The Diversity Resource Group (DRG) supports the creation of a culture and community at OWASA that enables all team members to share their experiences – and views informed by their experiences – at all levels of the organization. We aim to enable peer-to-peer connections. We work to ensure people representing all parts of OWASA are included in discussions about workplace opportunities, challenges, and solutions. Our DRG is committed to leading by example by modeling this approach in our work and interactions with peers, so that all OWASA employees are encouraged, empowered, and included.

We'll be looking for opportunities to acknowledge the contributions of all groups at OWASA, and to create joint activities where all of us across all departments can come together – for fun and for productivity. We value the unique background, culture, and experiences of each OWASA employee. We want to mobilize this collective wisdom to make the place where we work, for the people that work here, the best it can be. Look out for updates on our work and activities in the coming months!

We also want to hear from you – your ideas, your experiences, your challenges, and your aspirations. In fact, we need to hear from you, talk with you, and receive your feedback, to be able to truly represent you! If you are interested in joining our group, please let us know; we welcome new faces and ideas! You can contact any one of us, anytime, individually or at our group email address: diversityresource@owasa.org.

~Your Diversity Resource Group

Sandra Bradshaw, Emily Caperton, Jose DuRant, Joshua Dury, Marcus Fuller, Glorija Gladney, Alicia Grey, Linda Low, Addison McDonough, Greg Monschein, Johnny Riley, Ruth Rouse, Rosa Valdez, and Millie Zeno-Chapman



OWASA Diversity Resource Group



Check for updates

RACHEL GILBERT





Gilbert

Building Stronger Companies Through Inclusion

Removing barriers that have historically held down the diversity of the water industry is, simply, the right thing to do. Across the economy, there is also an increasing realization that diversity is good for business. A diverse and engaged workforce leads to more innovation and creativity, as well as better outcomes. That belief is what guides Woodard & Curran's diversity and inclusion (D&I) program.

The company began its D&I program in 2014, with full support at the top level from its board of directors, consisting of internal and external members. Its executive leadership moved immediately to create an advisory committee, which identified four focus areas to be led by subcommittees. Next, a D&I consultant was hired to assist with training, administering a company-wide survey, and developing a three-year plan.

UNDERSTANDING DIVERSITY AND INCLUSION

I first got involved with Woodard & Curran's D&I program in 2015 as a subcommittee leader and then moved on to accept the position of D&I Advisory Committee chair in 2017. What drew me to the D&I program? The answer lies in my personal story. I grew up in a transracial family within a primarily white community. My parents came from modest means, with limited opportunities for education. Both worked manual labor jobs for most of their lives. The majority of our community consisted of upper-middle-class professionals. Growing up, I felt the contrast between my family and the demographics of our environment. These experiences helped shaped my profound respect for diversity and inclusion.

People often have preconceived ideas of what diversity means, typically focusing on race, gender, or ethnicity. When it comes to defining diversity in a professional environment, the focus is broad, including all the elements that make people different from each other. These differences can be based on culture, geography, and life experiences. They are what makes each individual unique.

Inclusion, on the other hand, is a simple concept that is paradoxically difficult to pin down. It is essentially fostering an environment in which the contributions of all people are respected. What makes this hard to do is that every individual has a unique background that affects how she or he approaches the world, interprets feedback, and engages with her or his work. Inclusion is about creating an environment in which employees have an opportunity to be included in everything, from a conversation, to a project team, to the board room. To create this environment, it helps to distinguish between diversity—the things we can see and measure—and inclusion, which is about the firm's environment, processes, and behaviors.

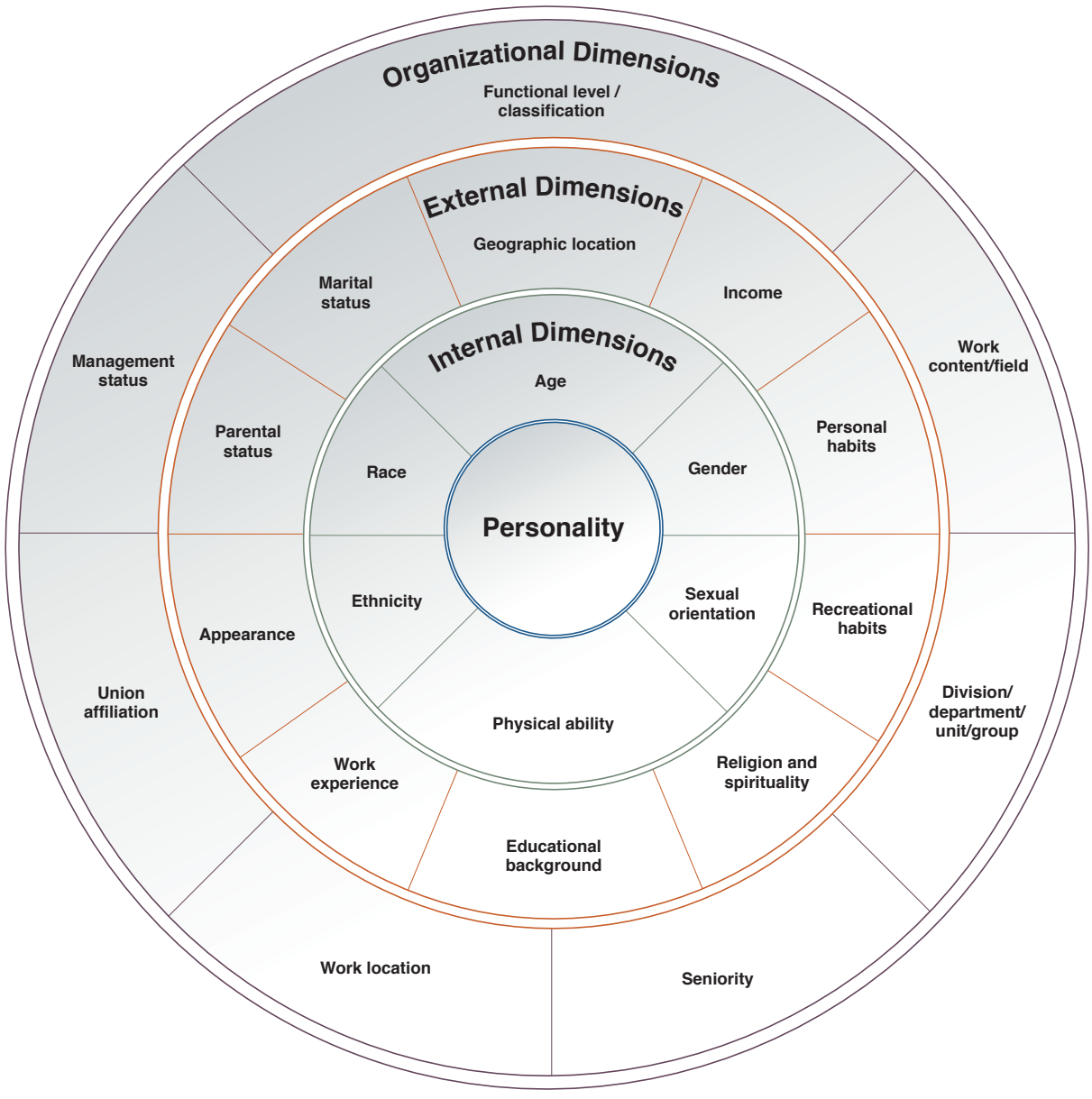
Layout imagery by Shutterstock.com/Rawpixel.com

What do diversity and inclusion have to do with companies and organizations? First, instilling these values in the corporate culture is beneficial for employees; if they have greater opportunities to work on diverse teams, they are likely to thrive and perform at a higher level. This translates into higher engagement, efficiency, and profitability. Encouraging an inclusive work environment with diverse work teams maximizes opportunity for all employees, which helps attract and retain talent in an incredibly competitive labor market. Additionally, recent studies show that more diverse and inclusive companies have higher financial returns (Hunt et al. 2018). The bottom line is that embracing diversity and inclusion will help your business or organization succeed.

INCREASING DIVERSITY AND INCLUSION

Since starting the D&I program, our company has integrated diversity and inclusion components into many existing programs, including employee performance reviews for salaries and promotions, recruitment, an employee stock ownership program, and an incentive compensation plan. For instance,

FIGURE 1 Organizational dimensions of diversity



Source: Gardenswarz & Rowe 2003. © Society for Human Resource Management 2003.

unconscious-bias awareness training was given to senior leaders and then added as a component to existing training programs throughout the company.

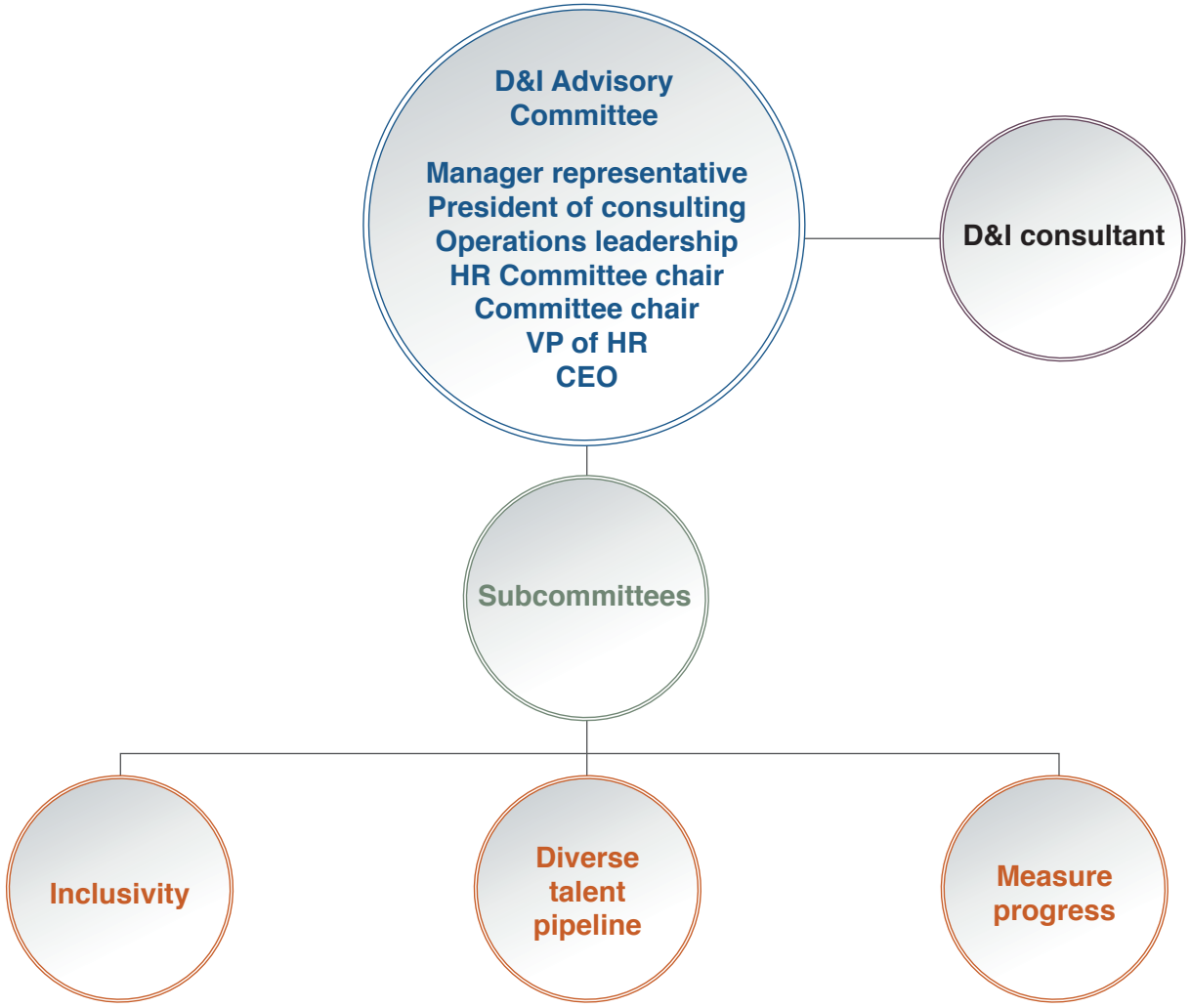
Employee engagement survey. In August 2016, Woodard & Curran took the first significant step in measuring the success of its D&I program by administering an employee engagement survey that would serve as a baseline. The goal of the survey was to gauge employee satisfaction around areas such as career advancement, development, and opportunity. The survey was carefully customized to distill data around diversity and inclusion while protecting employee privacy. There was a 90.2% participation rate, and overall, most participants indicated they valued the company's focus on diversity and inclusion. The survey data provided insight on where to focus future efforts, including improving the diversity of work teams and providing clear communication and messaging.

When I took on the role of advisory committee chair in March 2017, I focused on the following objectives:

- Reorganize and revitalize the subcommittees by recruiting volunteers from various geographies across the company.
- Provide broad-based communication about the reorganization by having the chief executive officer include an update in his annual "State of the Company" presentations. This presentation is given in person at most offices across the country.
- Establish a plan to implement recommendations that are part of a three-year strategy.

Ensuring broad representation of geographies, staff levels, and business areas was important to representing

FIGURE 2 Organization chart for Diversity & Inclusion (D&I) Advisory Committee under Woodard & Curran's D&I program



CEO—chief executive officer, HR—human resources, VP—vice-president

as many dimensions of diversity and inclusion as possible. Figure 1 shows internal, external, and organizational dimensions of diversity.

Diversity and inclusion are not solely about race and gender, and even though Figure 1 captures more of the possible dimensions, it is still just a slice of the broad definition of diversity. New studies are showing that the millennial generation, which will soon make up a majority of the workforce, strongly values cognitive diversity, meaning a variety in thought, ideas, and philosophy (Dishman 2015).

Recruiting D&I program volunteers was a critical step for our company, and the effort was very successful. Figure 2 shows the current advisory committee's organization chart, which reflects the renewed focus areas defined as part of our three-year strategy.

Each subcommittee has a leader and a sponsor from the advisory committee. The D&I Advisory Committee includes senior leadership that represents different parts of the company. Each member of the advisory committee is fully supportive and engaged, which has been key to our success.

Subcommittees. The role of the subcommittees is to make recommendations, using the three-year strategy as a guide. The role of the advisory committee is to implement recommendations at the management level. Each subcommittee has developed a vision statement and has started by reviewing and recommending year-one priorities.

The Inclusivity Subcommittee's vision statement is "to foster a culture of inclusion and collaboration that results in an innovative and engaged workforce where developmental opportunities abound." Its year-one priority is to create diverse client delivery teams and distribute project work equitably.

The Diverse Talent Pipeline Subcommittee vision statement is that "the firm's recruiting processes, procedures, and talent evaluation methods are improved to ensure that the firm attracts and retains an employee base which is diverse and promotes an inclusive work environment." Its year-one priorities are to broaden recruiting efforts, address unconscious bias, and identify barriers.

The Measure Progress Subcommittee vision statement is to "identify qualitative and quantitative ways to measure progress and goal attainment to ensure that the goals of the D&I program are being achieved in a sustained manner." Its year-one priorities include working with other subcommittees to develop metrics in each of the focus areas and to use the employee engagement survey to measure overall progress on diversity and inclusion.

Business plan. By the end of 2017, we established a D&I business plan for 2018 with specific action items. The two focus areas that year were diversity of our work teams and candidate pipeline. Progress was made in the following areas:

- We launched a campaign for our internal website (#inclusion) to share stories of how an individual with a different skill set and/or background made an important contribution.
- We developed unconscious-bias awareness training for employees who lead project teams.
- We developed unconscious-bias awareness training for interview teams.
- We created a D&I logo for internal and external branding.
- We established key metrics based on the two focus areas.
- We reviewed and analyzed results from our 2017 employee engagement survey and compared them with the 2016 baseline data.

DIVERSITY AND INCLUSION AS A VALUE

The concept of diversity and inclusion needs to be regarded as a value—not just a program or priority. Priorities change—values don't. The Woodard & Curran D&I program is a commitment that will develop and grow over time. There have been challenges and successes along the way. A challenge, for instance, is messaging across a wide range of geographies; there are different perceptions from region to region regarding diversity and inclusion. We understand that one size does not fit all, and that listening is the best way to address the lack of consistency. To sustain diversity and inclusion as a value, we need to encourage behavioral changes in addition to executing initiatives. Balancing the concepts of diversity and inclusion is vital for cultivating opportunities and creating an environment in which employees thrive.

*—**Rachel Gilbert** is a project manager in the Drinking Water Practice at Woodard & Curran Inc., Andover, Mass., and has been with the company for 14 years. She is chair of the company's Diversity & Inclusion Advisory Committee. She graduated with a BS degree from Merrimack College, North Andover, Mass.*

***Nancy Sullivan** (column coordinator, to whom correspondence may be addressed) is manager of Section Services, AWWA, Denver, Colo.; nsullivan@awwa.org.*

https://doi.org/10.1002/awwa.1239

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Agenda Item 9:

Review Status of Agua Vista Manual Read Option

Background:

After conducting a comprehensive feasibility study which included soliciting and collecting feedback and input from the public, the OWASA Board of Directors decided on March 26, 2016 that it is in the best interests of our customers to implement an Advanced Metering Infrastructure (AMI) system.

Prior to, and at our October 12, 2017 Work Session, some customers expressed concerns about information privacy and the health effects of radio frequency transmissions. We respect the positions of those who expressed concerns and in consideration of those concerns, the Board adopted a policy (attached) that defines terms of a "manual read option." In summary:

- The meter serving the customer's location will not be replaced with an AMI meter.
- The meter will be read once per month by an OWASA employee who will travel to the customer's location to manually read and record water-use.
- The customer will pay $25 per month for this service.
- Customers electing to have their meter read manually are not eligible for OWASA's emergency water loss account adjustments.
- Because the customer's location will not be reporting hourly water-use information through the Agua Vista system, customer will not be eligible for leak notifications.

The option to have their meter read manually is only available to customers who held accounts with OWASA at the time the Agua Vista system was implemented and is not transferrable. AMI meters are considered a condition of service for all new accounts.

Status:

As of March 2019, two customers (out of over 21,000) have chosen to have their meters read manually at the rate of $25 per month.

Manual Metering Options Going Forward:

When the policy was adopted, we did not know how many customers would choose to have their meters read manually and the Board asked that the policy be reviewed in the future and amended, as necessary. Based on the very low adoption rate of the manual meter-reading option, staff proposes the following options for the Board's consideration:

1. Discontinue the policy of offering a manual read option and install an Agua Vista meter at the two locations with meters being read manually.
2. Continue to read the two non-AMI meters manually at a charge of $45 per month. With so few meters being manually read, no special equipment is needed to support and maintain the process. Therefore, the cost of a trip to a customer location for a manual read is no different than other visits we make to customer locations (e.g. service initiation, turn a meter off/on for nonpayment, etc.); OWASA charges a fee of $45 for this type of visit to a customer's location.
3. Continue to read the two non-AMI meters manually at a charge of $25 per month.

Action Requested:

Review information and provide guidance to staff.

Agenda Item 10:

Long-Range Water Supply Plan: Demands and Yield

Purpose:

To receive the OWASA Board of Directors' questions, comments, and guidance to staff regarding 50-year water demand and supply projections for use in the update of the Long-Range Water Supply Plan (LRWSP).

Background:

Preparation of a long-term water demand projection is an essential task for OWASA, and is the first step in the update of our LRWSP. It is required to evaluate how much water we expect our customers will need us to provide, the ability (reliable yield) of our existing water supply sources to meet future needs, and the need for and cost-effectiveness of additional supply-side and/or demand-side strategies (including the expansion of our reclaimed water [RCW] system).

Since there is a high level of uncertainty in developing water demands over the next fifty years, it is important to periodically evaluate our potential demands and the assumptions upon which they are based. If our projections are too low, we could face greater risks during drought, more frequent and severe water use restrictions, and potential limitations on new development and connections to our water, wastewater, and RCW systems. On the other hand, if our projections are too high, we risk making costly, unneeded expansions in our infrastructure systems.

Staff presented a draft Baseline demand projection and an accompanying draft report to the Board of Directors on November 15, 2018. At that meeting the Board directed staff to have our engineering consultant for the LRWSP project: (a) review the draft projection and report; (b) prepare a statistical analysis of the effects of weather on the overall system demand; and (c) complete a Monte Carlo Simulation (MCS) to further evaluate the uncertainty in our demand projections. The Board also authorized staff to share the draft report with the Towns of Carrboro and Chapel Hill, Orange County, UNC Chapel Hill, UNC Health Care, and neighboring utilities to obtain feedback on the report. Staff has incorporated that feedback and the results of our consultant's analyses into the revised draft report (Attachment 1). We did not receive any major comments, but several comments helped us refine the MCS and reinforced the importance of evaluating the effects of weather on overall system demands.

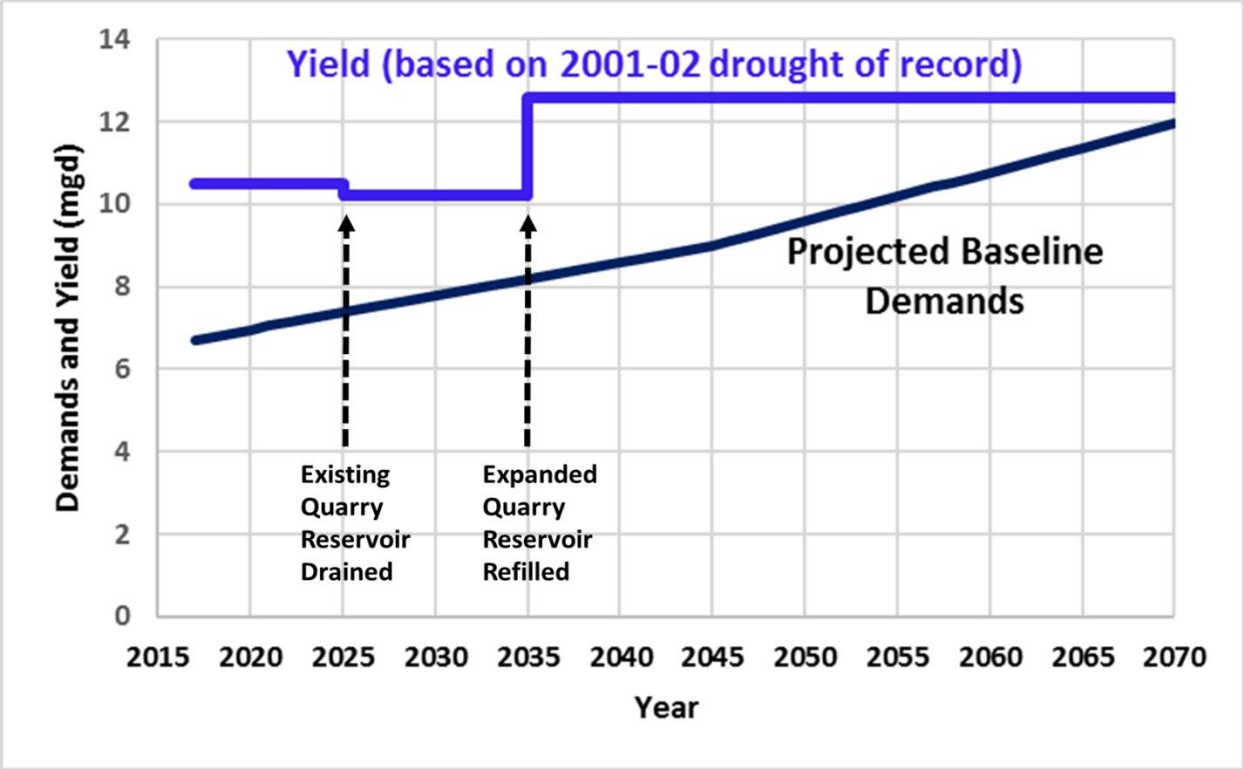
This document summarizes OWASA's raw water demand projections through 2070, describes the method and assumptions to develop the projections, presents an overview of the analysis done to evaluate the effects of weather on water demands, and summarizes the results of the MCS across 15 of our key assumptions to better understand the uncertainty surrounding our long-term demand projections.

OWASA does not prepare growth and development projections for our service area; rather, we rely on population, growth, and employment projections developed and/or used by the Towns of Carrboro and Chapel Hill, the University of North Carolina at Chapel Hill, and UNC Health Care.

Water Demand Projections

Figure 1 shows how our Baseline demand projection compares to the estimated reliable yield of our local reservoir system (assuming the drought of record and an emergency reserve of 20% remains in storage at all times); it does not include our allocation from Jordan Lake, which would provide approximately an additional 5 million gallons per day (mgd).

Figure 1: OWASA's Baseline Projected Demands and Estimated Yield



The yield in this figure does not include OWASA's allocation from Jordan Lake of 5 percent of the water supply pool. Estimates from DWR indicate this would increase yield approximately 5 mgd. Modeling completed as part of the 2010 LRWSP estimate that access to our Jordan Lake allocation would increase our yield by 4.8-6.5 mgd depending on the pumping rate.

Key Steps to Develop the Water Demand Projections

Staff used a simple and understandable water demand projection approach that includes water use input variables which we can readily obtain, track, and use. We applied unit demands based on OWASA data to the growth projections for our service area that were recently developed for the regional Metropolitan Transportation Plan using the CommunityViz model. As part of this

process, the Triangle J Council of Governments used the CommunityViz tool to estimate where population and employment growth would occur. Those growth projections included data for 2045 and for build-out conditions, which staff assumed would occur in 2070. If build-out occurs sooner, our projected demands would occur earlier, and if it occurred later, the projected demands would occur later.

The key steps in our approach to develop the Baseline projection presented in this report are:

1. Determine the annual demands for the "Base Year" (calendar year 2017).
2. Determine the water use factors or unit demands based on 2014-2017 billed use data that will be applied to single family residential, master-metered multi-family residential, University of North Carolina (UNC) and UNC Health Care, and other types of commercial development. These most recent four years of data were used to reflect the most recent customer behaviors and fixture updates.
3. Use the CommunityViz model to obtain the number of new dwelling units for single family and multi-family development and employment square footage for both the "2045 Scenario" and "Build-Out Scenario". Assume that growth is linear and that build-out occurs in 2070.
4. Apply the water use factors from step 2 to the growth projections.
5. Adjust unit demands for both existing and new development to reflect additional conservation measures and improved device efficiency.
6. Add the projected demands for the new development to the projected demand from existing customers (existing development) to obtain the projected total demands by our customers.
7. Factor in water treatment and distribution system losses to derive the total projected demand on our water supply reservoirs.
8. Evaluate the sensitivity of the results to changes in key assumptions.

Key Assumptions to Develop the Water Demand Projections

Key assumptions made to develop the baseline projection through 2070 are:

1. OWASA's retail service area as defined in the *Water and Sewer Management, Planning and Boundary Agreement* will remain unchanged, and we will not provide wholesale or retail water service beyond the existing Urban Service Area boundary of Carrboro and Chapel Hill.
2. Federal and state regulations will allow us to continue with our RCW program and our water treatment plant process water recycling system.
3. Dwelling unit and economic growth projections (employment and non-residential development) through 2045 are assumed to be consistent with the projections from the CommunityViz 2045 Scenario. As noted above, we assume the growth projected to occur by 2045 occurs at a uniform rate between now and then, and that the CommunityViz Build-Out scenario growth projections for our service area will be realized at a linear rate from 2046 to 2070.

4. Water use factors for the various types of projected development are based on recent unit demands determined from our water use analysis, as summarized in the attached draft report. The key water use assumptions for new development are:
    a. new individually-metered single-family residences will use 4,200 gallons/unit/month;
    b. new master-metered multi-family dwelling units will use 3,300 gallons/unit/month; and
    c. new non-residential development will use 75 gallons/day/1,000 square feet

   The above factors are similar to recent findings from the Town of Cary's detailed analysis of billed water use among its major customer classes.
5. Non-revenue water (such as water used for line flushing and firefighting, and water lost via system leaks) will continue to account for approximately 10% of our raw water demands.
6. There will not be any major expansion of our RCW system, and our annual RCW demands will remain constant through the 50-year planning horizon.

Baseline Water Demand Projections

The approach and assumptions outlined above resulted in the Baseline projection demands summarized in Table 1, which also compares the Baseline projection to the demands projected for the "Expected" demands scenario included in the 2010 LRWSP.

Table 1: Baseline Raw Water Demand Projections Compared to Projections in 2010 LRWSP

Year	2019 Baseline Total Raw Water Demands*	2010 LRWSP Projected Raw Water Requirements*	Percent Change from 2010 Projection
2025	7.38	9.03	-18.3%
2030	7.79	9.68	-19.5%
2035	8.19	10.24	-20.0%
2040	8.59	10.79	-20.4%
2045	9.00	11.33	-20.6%
2050	9.59	11.86	-19.1%
2055	10.18	12.39	-17.8%
2060	10.77	12.91	-16.6%
2065	11.36	N/A	N/A
2070	11.95	N/A	N/A

** Includes 10% adjustment to account for non-revenue water (fire-fighting, flushing, leaks, etc.) based on about 10 years of OWASA data*

Weather Analysis

Hazen and Sawyer completed an analysis to identify how changes in temperature and precipitation have influenced past water demands in our service area and how weather may influence our future water demands. As expected, water demands in our service area generally increase as temperature increases and decrease as precipitation increases. Hazen also found that there is a general weak negative correlation between annual temperature and annual precipitation; as total precipitation increases above average in a given year, the mean high temperature has a greater than average chance of being below normal, and vice versa. Total demands across all four of our major customer groups generally follow this pattern; however, the analysis showed that the influence of weather on demands is more pronounced for some groups more than others. As noted in the following section, these weather and demand relationships have been incorporated into an analysis of uncertainty in the assumptions used in our demand projection. The attached report also includes an uncertainty analysis which evaluates the impacts of weather only on the projected raw water demands.

Monte Carlo Analysis to Evaluate Uncertainty

To further consider the range of potential future water demand scenarios, OWASA completed a systematic uncertainty analysis with assistance from Hazen and Sawyer. The purpose of this exercise was to help OWASA better understand the possible range of future demands given the uncertainty in the value of many of our assumptions. Our consultant developed a Monte Carlo Simulation (MCS) for this purpose. MCS relies on repeated random sampling of variables whose future values are inherently uncertain. In this case, the MCS involved running 5,000 different trials in which the value assigned to 15 different variables included in the Baseline demand projection were randomly sampled. The variables sampled for the MCS are responsible for factors such as growth and development rates, water use intensity, conservation and occupancy variables (assumptions) and annual weather conditions. For each scenario modeled, each variable was randomly sampled within a specified range and distribution of values. The resulting set of 5,000 demand projections were then grouped by percentile.

As shown in Figure 2, 99 percent of the Monte Carlo generated sceanrios have an indicated total raw water demand of less than 13.4 mgd by 2070, while one percent to the scenarios indicate that projected raw water demands will be less than 10.1 mgd by 2070. For comparison, the Baseline projection indicates a total raw water demand of 11.95 mgd by 2070. Table 2 also includes a summary of the Baseline demands and demands corresponding to a number of statistical intervals (at regular percentiles) from the MCS.

It is important to note that in modeling the potential ranges of values for each variable, we did not have enough information and understanding to assign statistical probabilities to those ranges; therefore, the projection percentiles shown do not reflect the actual probability that any of the Monte Carlo generated demand scenarios will occur.

However, if it is assumed that the distribution of value ranges for each variable in the MCS actually represents the probability distribution for each of those variables, then the results shown in Figure

2 could be used to express the probability that a given projected total raw water demand would occur in the target year.

Figure 2: Monte Carlo Generated Scenarios for Raw Water Demand Projections Assuming Variations in Growth, Water Use, Conservation, and Weather

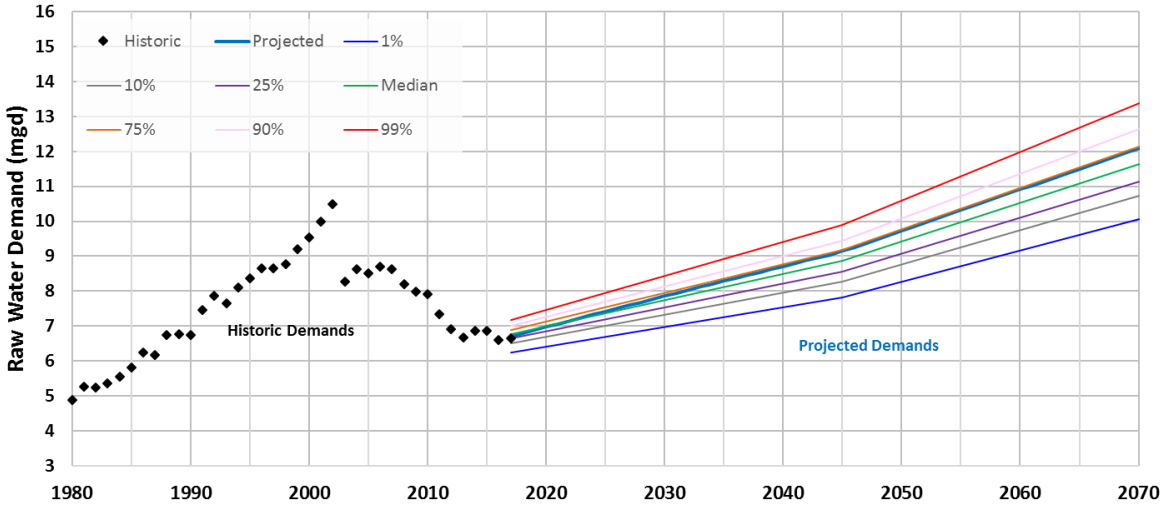


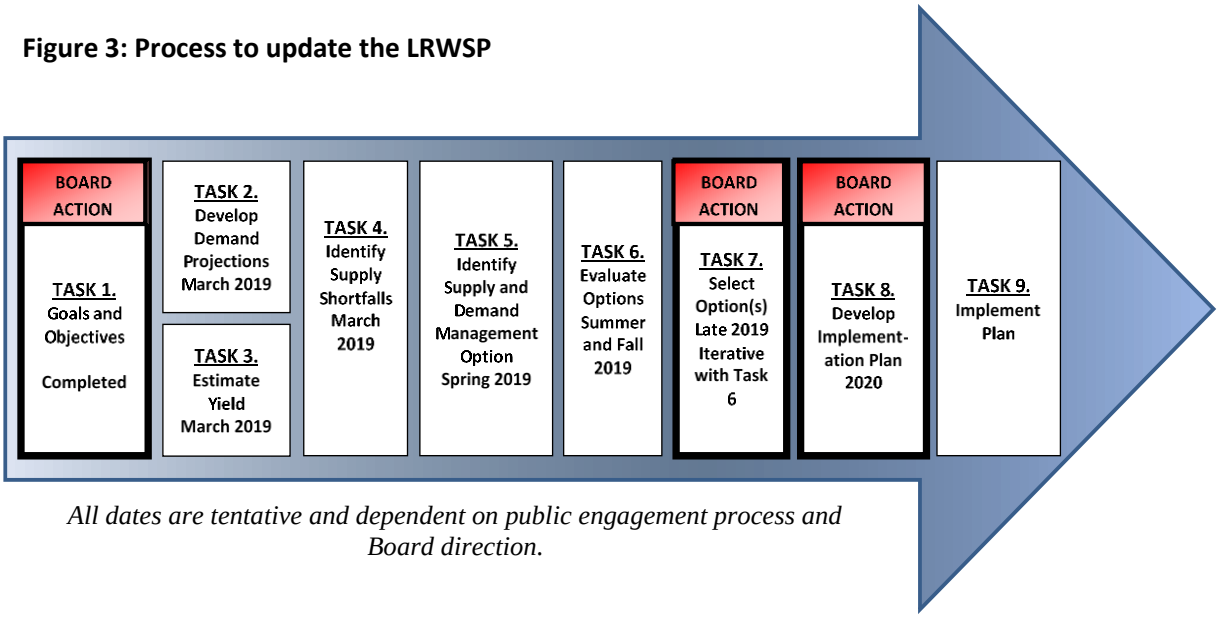
Table 2: Comparison of Baseline Raw Water Demands to Monte Carlo Generated Scenarios

Year	Monte Carlo 1st Percentile	Monte Carlo 10th Percentile	Monte Carlo 25th Percentile	Monte Carlo 50th Percentile	2019 Baseline Total Raw Water Demands	Monte Carlo 75th Percentile	Monte Carlo 90th Percentile	Monte Carlo 99th Percentile
2025	6.69	7.00	7.17	7.37	7.38	7.55	7.70	7.94
2030	6.97	7.32	7.52	7.74	7.79	7.95	8.14	8.43
2035	7.26	7.64	7.86	8.11	8.19	8.36	8.58	8.92
2040	7.54	7.96	8.21	8.49	8.59	8.76	9.01	9.41
2045	7.83	8.28	8.55	8.86	9.00	9.17	9.45	9.90
2050	8.28	8.77	9.07	9.41	9.59	9.76	10.09	10.60
2055	8.73	9.26	9.59	9.97	10.18	10.36	10.72	11.30
2060	9.17	9.75	10.10	10.52	10.77	10.95	11.36	11.99
2065	9.62	10.24	10.62	11.08	11.36	11.55	11.99	12.69
2070	10.07	10.73	11.14	11.63	11.95	12.14	12.63	13.39

Proposed Next Steps:

Figure 3 illustrates the process to update the LRWSP.

Figure 3: Process to update the LRWSP



All dates are tentative and dependent on public engagement process and Board direction.

Staff proposes the following next steps for the LRWSP update:

- Staff incorporates any Board feedback into the final raw water demand projections and report.
- OWASA uses final demand projections as the basis for evaluating the need for and cost-effectiveness of additional supply-side and/or demand-side strategies.
- Staff develops list of supply-side and demand-side strategies to evaluate for the LRWSP plan update and presents this draft list to Board for review, revision, and concurrence (tentatively scheduled for April).
- Staff provide opportunities for public input on Board's approved draft list of supply-side and demand-side strategies in accordance with the Community Engagement Plan finalized in November 2016.

Staff Recommendation:

Staff recommends that the Board provide feedback and guidance concerning the revised water demand projections. Specifically, staff requests feedback on the proposed percentile intervals from the MCS that we should use to capture the likely broad range of uncertainty in the demand projections. Staff recommends the Board consider the following:

- In our future demand projection graphs for our LRWSP, show the Baseline projection as a solid line, and convey the uncertainty of that projection by using a shaded area bounded by either: (a) the 10th and 90th percentile projection outcomes from the Monte Carlo analysis; (b) the 1st and 99th percentile bands from the Monte Carlo analysis; or (c) some other values as directed by the Board. If our future long-term demands are at or around the 99th percentile, they would exceed the estimated reliable yield of our existing reservoirs and the planned shallow Quarry Reservoir expansion sometime after 2060 (our estimated yield with the shallow Quarry Reservoir is 12.6 mgd, and the 99th percentile prediction is 13.4 mgd).
- For water supply planning purposes, use the 90th percentile projection values as the starting point for evaluating the various water supply and demand management alternatives against the goals and objectives approved by the Board on November 10, 2016. Staff recommends using this percentile given the significant downside risk associated with not having plans in place to meet higher demands. We believe that using this percentile balances the risk with the cost of meeting supply; there are relatively minor increases in projected demand between the baseline, 75th percentile and 90th percentile predictions. Note that with the expanded shallow Quarry Reservoir project, we expect we will be able to meet most of our supply needs through 2070 unless we experience new record droughts or unforeseen extended interruptions in our locally-controlled water supply sources.

The above approach would acknowledge the uncertainty, and provide us a reasonable margin of safety. Such an approach may not result in a plan that meets the low probability, worst-case demand and supply scenarios; however, it would likely lead to a set of strategies and cost-effective investments that would be robust and resilient under a wide range of future scenarios.

Given the uncertainty in our long-term water demand projections, staff also recommends that we review the assumptions surrounding the demand projections every five to ten years, or sooner if we see major changes in trends for key assumptions. Consistent with past practice, we do not believe a formal resolution is needed to formalize the periodic review of our projections.

However, if and when the Board is ready for us to move forward using a specific set of water demand projections, we do recommend that the Board consider acting on this matter via approval of a motion, perhaps similar to the following:

"Motion that the Board of Directors authorizes staff to use the demand projections at the ___ percentile as the basis for evaluating potential water supply and demand management options for meeting our community's future water needs."

Information:

- Final Draft Report *Long-Range Water Demand Projections Through 2070 for the Long-Range Water Supply Plan*

Final Draft Report

Long-Range Water Demand Projections Through 2070 for the Long-Range Water Supply Plan Update

March 2019

Orange Water and Sewer Authority

Carrboro, North Carolina

Table of Contents

Abstract i

Acronyms iii

Long-Range Water Demand Projections Through 2070 1

What's The Purpose Of This Report? 1

Has This Projection And Report Been Reviewed By Any Other Parties? 1

What Are Some Key Take-Aways Of This Report? 2

Why Is The Long-Term Water Demand Projection Essential To Owasa? 6

What Has Been The General Accuracy Of Our Past Demand Projections? 7

What Demand Projection Approach Have We Taken For Our 2018 Projection And Why? 9

What Key Assumptions Have We Made For Our Baseline Demand Projection? 10

What Are Some Key Trends And Water Use Factors In Our Service Area? 11

What Is The Basis For The Residential And Non-Residential Growth Projections? 20

What Is The Long-Term Water Demand Projection For Our Service Area? 22

What Data Limitations And Uncertainty Do We Face As We Develop Our Projection? 24

How Sensitive Is The Projection To Changes In Individual Assumptions? 24

How Does Weather Influence Water Demand? 25

Have We Evaluated The Uncertainty In Our Demand Projections? 27

What If Our Service Area Expands Or Our Population And Economy Grow At Faster Rate Than Predicted? 33

Abstract

This report presents a "Baseline" long-term water demand projection for the Orange Water and Sewer Authority (OWASA) service area through the year 2070 as well as ranges of projections assuming different growth, water use, and weather assumptions. Staff used a simple and understandable water demand projection approach that includes water use input variables which we can readily obtain, track, and use. We applied unit demands based on OWASA data to the growth projections for our service area that were recently developed for the regional Metropolitan Transportation Plan using the CommunityViz model. As part of this process, the Triangle J Council of Governments used the CommunityViz tool to estimate where population and employment growth would occur. Those growth projections included data for 2045 and for build-out conditions, which staff assumed would occur in 2070. If build-out occurs sooner, our projected demands would occur earlier, and if it occurred later, the projected demands would occur later.

The key steps in our approach to develop the Baseline projection presented in this report are:

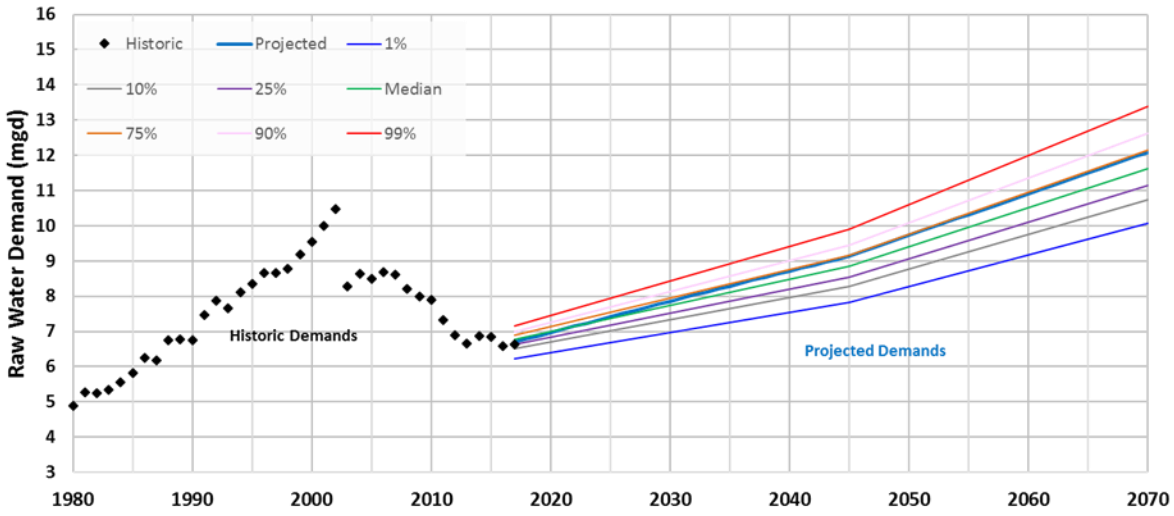
1. Determine the annual demands for the "Base Year" (calendar year 2017).
2. Determine the water use factors or unit demands based on 2014-2017 billed use data that will be applied to single family residential, master-metered multi-family residential, University of North Carolina (UNC) and UNC Health Care, and other types of commercial development. These most recent four years of data were used to reflect the most recent customer behaviors.
3. Use the CommunityViz model to obtain the number of new dwelling units for single family and multi-family development and employment square footage for both the "2045 Scenario" and "Build-Out Scenario". Assume that growth is linear and that build-out occurs in 2070.
4. Apply the water use factors from step 2 to the growth projections.
5. Adjust demands from existing and new development to reflect conservation assumptions.
6. Add the projected demands for the new development to the projected demand from existing customers to obtain the projected total demands by our customers.
7. Factor in water treatment and distribution system losses to derive the total projected demand on our water supply reservoirs.
8. Evaluate the sensitivity of the results to changes in key assumptions.

Table A1 and Figure A1 illustrate the projected demands following these steps along with the results of an uncertainty analysis using a Monte Carlo simulation.

Table A1: Baseline Raw Water Demand Projections Compared to Monte Carlo Simulation Projections

Year	Monte Carlo				2019 Baseline Total Raw Water Demands	Monte Carlo		
	1st Percentile	10th Percentile	25th Percentile	50th Percentile		75th Percentile	90th Percentile	99th Percentile
2025	6.69	7.00	7.17	7.37	7.38	7.55	7.70	7.94
2030	6.97	7.32	7.52	7.74	7.79	7.95	8.14	8.43
2035	7.26	7.64	7.86	8.11	8.19	8.36	8.58	8.92
2040	7.54	7.96	8.21	8.49	8.59	8.76	9.01	9.41
2045	7.83	8.28	8.55	8.86	9.00	9.17	9.45	9.90
2050	8.28	8.77	9.07	9.41	9.59	9.76	10.09	10.60
2055	8.73	9.26	9.59	9.97	10.18	10.36	10.72	11.30
2060	9.17	9.75	10.10	10.52	10.77	10.95	11.36	11.99
2065	9.62	10.24	10.62	11.08	11.36	11.55	11.99	12.69
2070	10.07	10.73	11.14	11.63	11.95	12.14	12.63	13.39

Figure A1: Monte Carlo Generated Scenarios for Raw Water Demand Projections Assuming Variations in Growth, Water Use, Conservation, and Weather



Acronyms

AMI	advanced metering infrastructure
Comm	commercial
CY	calendar year
DU	dwelling unit
FY	fiscal year
GIS	geographic information system
gpd	gallons per day
IMSFR	individually metered single family residential
LRWSP	Long-Range Water Supply Plan
MCS	Monte Carlo simulation
MFMM	multi-family master metered residential
mgd	million gallons per day
mo	month
OSBM	Office of State Budget and Management
OWASA	Orange Water and Sewer Authority
RCW	reclaimed water
SD	standard deviation
sq ft	square feet
TJCOG	Triangle J Council of Governments
UNC	University of North Carolina

Final Draft Report:
Long-Range Water Demand Projections Through 2070 for the Long-Range Water Supply Plan Update

WHAT'S THE PURPOSE OF THIS REPORT?

This report presents a "Baseline" long-term water demand projection for the Orange Water and Sewer Authority (OWASA) service area through the year 2070 as well as ranges of projections assuming different growth, water use, and weather assumptions. It provides an overview of the supporting information, analyses, and methods used to develop the projections, and it highlights some of the key uncertainties and sensitivities that surround the Baseline demand projection. The Baseline projection and report have been prepared by OWASA staff, and incorporate the results of supporting technical work performed by Hazen and Sawyer to evaluate uncertainty and effects of weather on customer demands.

Discussion and refinement of the assumptions, Baseline projection, uncertainties, and sensitivity analysis is the Board of Directors' and staff's initial work task relating to the planned update of OWASA's 2010 Long-Range Water Supply Plan (LRWSP). The 2010 LRWSP had a 50-year planning horizon, but conditions and assumptions have changed since that was prepared. As part of OWASA's Strategic Plan, the Board of Directors identified the need to update the LRWSP to incorporate the best available information on projected long-term water demands, adequacy of existing supplies, anticipated capacities and costs of supply-side and demand-side strategies, and other key factors.

HAS THIS PROJECTION AND REPORT BEEN REVIEWED BY ANY OTHER PARTIES?

Yes. Following the Board of Directors' review of the draft projection report at its November 15, 2018 meeting, staff sought external review and comment on the preliminary Baseline projection and draft report. The report was provided to the Towns of Carrboro and Chapel Hill, Orange County, the University of North Carolina at Chapel Hill (UNC), UNC Health Care, the Chapel Hill Carrboro Chamber of Commerce, and several of our regional partners (Town of Cary, Chatham County, City of Durham, Town of Hillsborough, Orange County, City of Raleigh, and Triangle J Council of Governments (TJCOG)). We did not receive any major comments; several comments helped us refine the Monte Carlo analysis described later in this report and reinforced the importance of evaluating the effects of weather on overall system demands, which is also presented later in this report.

Hazen and Sawyer, OWASA's engineering consultant selected to provide support for updating the LRWSP, also completed a review of the report and supporting spreadsheets. In addition, they performed the Monte Carlo analysis described later in this report. Overall, Hazen and Sawyer thought the method and report were well done and consistent with water industry best practices. Other specific comments that Hazen and Sawyer made and evaluated further include:

- The water use values for residential consumption were conservative, but reasonable. Hazen and Sawyer looked at this more closely in the Monte Carlo analysis described later in this report.
- The projection assumed existing accounts continue usage similar to that observed in Calendar Year (CY) 2017. Hazen and Sawyer concluded that since 2017 was a relatively normal year in terms of weather, the demand projections would not be skewed by using 2017 as the take-off point for the projections.

- There was one typographical error that resulted in a minor mathematical error in OWASA's spreadsheet model. This was corrected before the analyses of uncertainty and effects of weather on customer demands was performed; the corrected demands are reflected in this revised report.
- It may not be reasonable to assume that the service area boundary does not change before 2070. This uncertainty is addressed through the "what if" analyses described in this report, and in a separate projection scenario that assumed approximately doubling the current population by 2070. (In comparison, the Baseline projection reflects about a 63% increase in population by 2070.)

WHAT ARE SOME KEY TAKE-AWAYS OF THIS REPORT?

Some of the key points are:

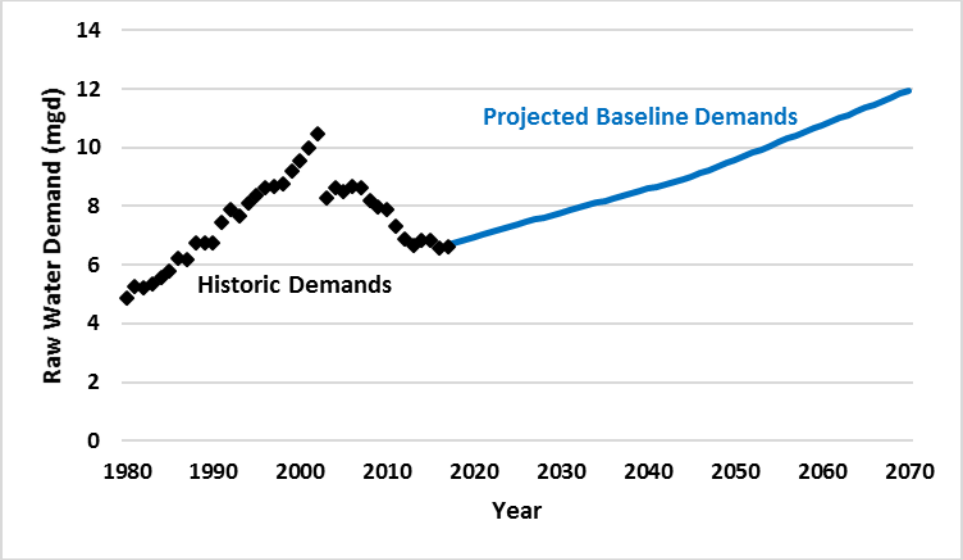
- The Baseline long-term water demand projection through the year 2070 is based on the most up-to-date housing unit and economic growth (non-residential space and employment) projections and water use trends analyses available for the OWASA service area. The development projections include a 2045 development scenario, and a "build-out" scenario that does not correspond to any specific time horizon beyond 2045. The development scenarios were originally developed as part of a collaborative regional modeling (CommunityViz model) and planning project for preparation of the 2045 Metropolitan Transportation Plan. To inform its long-term planning efforts, OWASA depends on population, employment, and growth projections developed by or for the Town of Chapel Hill, Town of Carrboro, the UNC Chapel Hill, and UNC Health Care.
- We believe our water demand modeling and projection approach is appropriate given the available data, lack of more specific local development and population growth projections for our service area, and uncertainty surrounding many of the variables and assumptions upon which our baseline projection has been based.
- The Baseline demand projection presented in this report is lower than the corresponding demand projection for the "Expected Scenario" included in OWASA's 2010 LRWSP. Table 1 provides a summary comparison of the two projections. Figure 1 illustrates these latest Baseline projections along with historic raw water demands.

Table 1.
Comparison of Raw Water Demand Projections from 2010 LRWSP and March 2019 Report

Year	2019 Baseline Total Raw Water Demands*	2010 LRWSP Projected Raw Water Requirements*	Percent Change from 2010 Projection
2025	7.38	9.03	-18.3%
2030	7.79	9.68	-19.5%
2035	8.19	10.24	-20.0%
2040	8.59	10.79	-20.4%
2045	9.00	11.33	-20.6%
2050	9.59	11.86	-19.1%
2055	10.18	12.39	-17.8%
2060	10.77	12.91	-16.6%
2065	11.36	N/A	N/A
2070	11.95	N/A	N/A

** Includes 10% adjustment to account for non-revenue water (fire-fighting, flushing, leaks, etc.) based on about 10 years of OWASA data*

Figure 1.
Historic and Projected Raw Water Withdrawals



- Past projections by OWASA and other agencies have typically over-projected long-term water demands for the OWASA service area. Various long-term water demand forecasts prepared during the period from 1969 to 2008 for the Chapel Hill-Carrboro area exceeded our 2017 actual demands by about 5% to 120%. When projections are much higher than actually occurs, it could lead us to

make costly, unneeded investments to expand our infrastructure, stranding resources that would be better allocated elsewhere. Some key contributing factors may be that past projections: (a) under-estimated the extent to which our customers would reduce their use of water through water use efficiency and conservation measures; (b) under-estimated the effects that seasonal rates, increasing block rates, and increasing price of water and wastewater services would have on our customers' water consumption behavior; (c) over-estimated the rate of population and economic growth for our service area; and (d) under-estimated the amount of higher density, mixed use development that uses less water on a square footage basis.

Our "Expected Scenario" demand projection from the 2010 LRWSP is within about 15% of our actual raw water demands for 2017.

- The Carrboro, Chapel Hill, and Orange County planning departments participated in the regional transportation plan modeling effort to develop growth projections and allocations for the respective planning jurisdictions in the region; however, the towns have not recently prepared any official long-term population and economic growth forecasts. Chapel Hill just commenced a 2049 Land Use Plan update project that will focus on key growth areas throughout the town. Carrboro is embarking on a comprehensive planning process in 2019; this work is anticipated to be completed in 2021 and may result in changes in projected population growth and land use mix for the Town. As these and other major local planning studies proceed, the information developed could require changes in our water and sewer demand projections. Staff from UNC-CH and UNC Health Care also provided information that was incorporated into the CommunityViz model. UNC-CH is updating its Master Plan, but specific growth projections for UNC-CH are not yet available. The North Carolina Office of State Budget and Management (OSBM) has prepared a 20-year (2037) population growth projection for the State and each of its 100 counties; however, OSBM does not prepare any population projections for municipalities within the state.

- Although long-term planning is important, it is extremely difficult if not impossible to foresee all the technological, legal, socio-economic, climatological, and other changes and events that will occur in the future – especially for the 50-year planning horizon we are using. The accuracy of population, economic growth, and associated water demand projections will likely decline the farther into the future we project.

- There is uncertainty surrounding many of the key factors that will shape the future water demands of our service area, such as:

    - the rate of population and employment growth that is projected to occur;
    - the types of residential and non-residential growth projected to occur (as compared to the development projections from the regional transportation model);
    - the extent to which low impact development (green infrastructure to capture stormwater, water-smart landscaping, etc.), high performance building, and other development trends and applicable regulatory requirements will affect future demands;
    - the extent to which water use efficiency and water use habits will change over time and affect water demands by our existing and future customers;
    - how future water use will be affected by changes in price, household size and income, etc.; and
    - the effect that a warming climate may have on long-term water demands (irrigation demands, cooling water requirements, etc.).

The installation of OWASA's new advanced metering infrastructure (AMI) system in 2019 will help us address some of the uncertainty by providing data on shorter and more consistent time frames (monthly period used for billing will be the same for all accounts; currently accounts are read and billed on 3 different cycles each month), but projections into the future are always inherently uncertain. AMI may also result in additional demand reductions as customers become more aware of their water use and leaks are identified and fixed more quickly.

- Recognizing the uncertainty surrounding our assumptions and Baseline projection, we have evaluated a range of future demand scenarios in order to inform our decisions about how we plan for and address uncertainty. To do this, we retained a consultant to help us complete a Monte Carlo Simulation analysis (also known as multiple probability simulation) which generated 5,000 different demand projection scenarios (i.e. outcomes). Each outcome reflects a different range of inputs for 15 variables (assumptions) included in the demand projection model. Figure 2 and Table 2 show the range of those 5,000 demand scenarios. The high projection range line (99%) indicates that 99% of the 5,000 scenarios had demands at or below that projection line. The low projection range line (1%) indicates that 99% of the scenarios had demands above that projection line. The range in projected demand outcomes for 2045 spanned from 1.2 mgd (-13%) below the Baseline projection to 0.9 mgd (10%) above the Baseline projection. The range of outcomes for 2070 was slightly greater, with an increase of as much as 1.4 mgd (12%) above the Baseline, and a decrease of 1.9 mgd (16%) compared to the Baseline.

Figure 2.
Summary of 5,000 Projections Scenarios Developed Using Monte Carlo Simulation Analysis

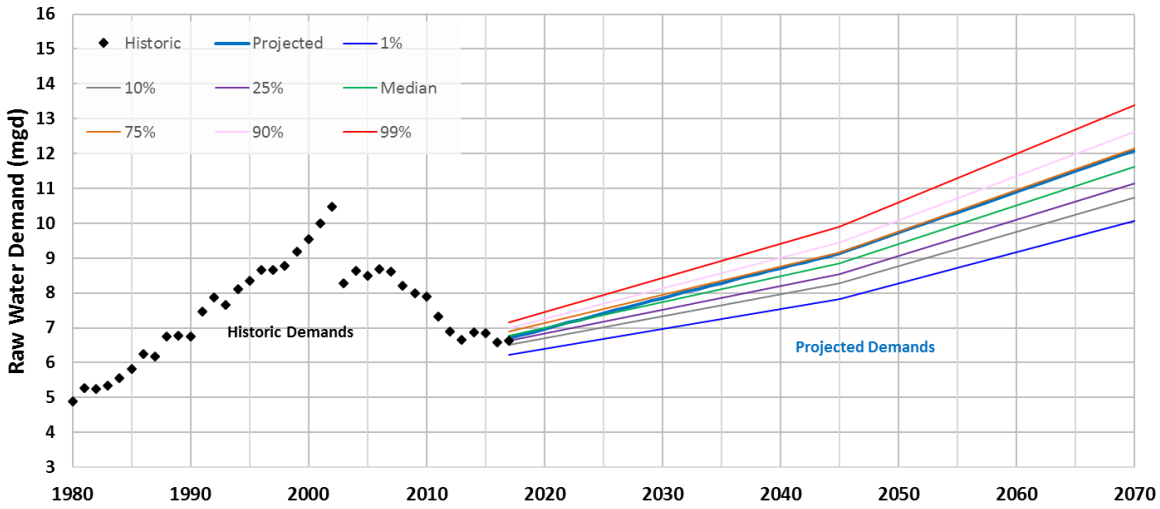


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2030	6.97	7.32	7.52	7.74	7.79	7.95	8.14	8.43
2035	7.26	7.64	7.86	8.11	8.19	8.36	8.58	8.92
2040	7.54	7.96	8.21	8.49	8.59	8.76	9.01	9.41
2045	7.83	8.28	8.55	8.86	9.00	9.17	9.45	9.90
2050	8.28	8.77	9.07	9.41	9.59	9.76	10.09	10.60
2055	8.73	9.26	9.59	9.97	10.18	10.36	10.72	11.30
2060	9.17	9.75	10.10	10.52	10.77	10.95	11.36	11.99
2065	9.62	10.24	10.62	11.08	11.36	11.55	11.99	12.69
2070	10.07	10.73	11.14	11.63	11.95	12.14	12.63	13.39

WHY IS THE LONG-TERM WATER DEMAND PROJECTION ESSENTIAL TO OWASA?

Preparation of a long-term water demand projection is an essential task for OWASA, and is the first step in the update of our LRWSP. It is required to evaluate how much water we expect our customers will need us to provide in the future, the ability (reliable yield) of our existing water sources to meet future needs, and the need for and cost-effectiveness of additional supply-side development and/or demand-side management strategies (including the expansion of our reclaimed water system).

The long-term demand projection is also essential for other purposes, such as:

- evaluating the need for capacity improvements to our drinking water treatment plant, pumping and storage facilities, and distribution system; and
- developing our long-range wastewater flow projection, which in turn will be used to inform our plans and decisions regarding the need for and timing of future investments in capacity expansions in our wastewater collection and treatment system.

The long-term demand projections have important implications for OWASA, our customers, and the environment. If our projections are overly conservative (much higher than actually occurs in the future), we face the risk of making costly, unneeded investments to expand the capacity of our water, wastewater, and reclaimed water (RCW) system infrastructure. If our projections are too low, we could face greater risks during drought, more frequent and severe water use restrictions, and potential limitations on new development and connections to our water, wastewater, and reclaimed water systems.

Either outcome could have a number of negative effects, such as higher charges and greater inconvenience and hardship for our customers, loss of public confidence, and greater impacts on the environment and the local economy.

In light of the long lead times involved in water supply planning, design, permitting, and development, our approach is to use a 50-year planning horizon. We acknowledge that the level of uncertainty increases

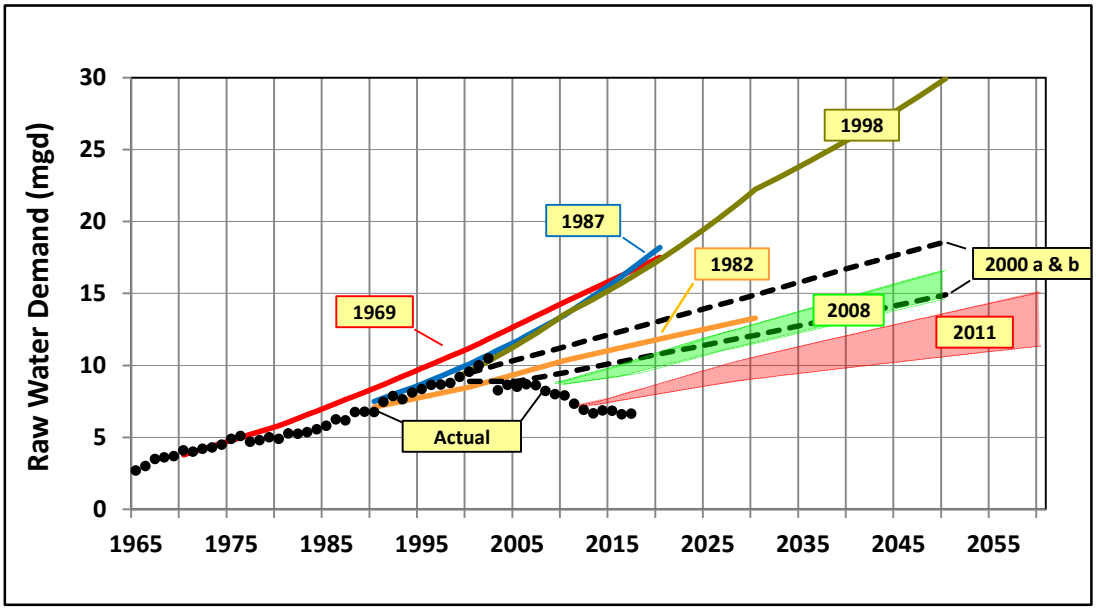
the farther into the future our projections go, but we believe preparation of a 50-year projection enables us to proactively and strategically evaluate and consider alternative strategies for meeting the long-term water, wastewater, and reclaimed water needs of the Chapel Hill-Carrboro community in a more sustainable manner.

In light of the importance of our long-range demand forecast on infrastructure planning and investments, our general practice is to review our long-range projections every five years or when major changes in key trends and assumptions are identified, and revise the projections (and associated long-term plans) as needed to reflect the changed conditions.

WHAT HAS BEEN THE GENERAL ACCURACY OF OUR PAST DEMAND PROJECTIONS?

OWASA and other agencies have issued several long-term water demand projections for the Chapel Hill-Carrboro community. The oldest projection we have reviewed was from 1969, and the most recent was prepared for the 2010 LRWSP, as revised in 2011. Figure 3 shows how those projections compared to our historical annual raw water demands.

Figure 3.
Past Long-Range Water Demand Projections Compared to Actual Water Withdrawals



1969: *Report to the the University of North Carolina on Water Supply for Chapel Hill, North Carolina,* Hazen and Sawyer Engineers, August 1969.

1982: *Final Cane Creek EIS,* NC Department of Natural Resources and Community Development, Division of Environmental Management, September 1982.

1987: *Main Report, Eno River Capacity Use Investigation,* NC Department of Natural Resources and Community Development, December 1987.

1998: *UPDATE 98.xls,* unpublished Microsoft Excel spreadsheet file, Orange Water and Sewer Authority, 1998, Ed Holland, Planning Director.

2000a: "Baseline" projection, from *Comprehensive Water and Sewer Master Plan, Technical Memorandum 3.3, Long-Term Demand Forecasts with Conservation,* CH2MHill, January 21, 2000.

2000b: "Active Conservation" projection, from *Comprehensive Water and Sewer Master Plan, Technical Memorandum 3.3, Long-Term Demand Forecasts with Conservation,* CH2MHill, January 21, 2000.

2008: "Higher Conservation, Greater Reuse" and "Less Conservation, Less Reuse" demand projections, from *Annual Review and Update of Strategic Trends and Master Plan Issues,* staff memorandum to OWASA Board of Directors, October 17, 2008.

2011: OWASA Projections, Long-Range Water Supply Plan; revised 8/30/2011

A key observation shown in Figure 3 is that starting around 2000, our community's actual water demands have been considerably lower than what was previously projected to occur in our service area over the long-term. The projections prepared during the period from 1969 to 2008 for the Chapel Hill-Carrboro community have exceeded our 2017 actual demands by about 30% to 120%. At projection year 10 and 20 (10 and 20 years from the date the projection was completed), the projections for years 10 and 20 were off by a range of -3% to 43% and -13% to 143%, respectively.

In hindsight, these older projections did not anticipate the demand reduction effects of water conservation and efficiency, nor the effects of seasonal rates, increasing block rates, and increasing price of water and wastewater services. They also over-estimated the future rate of population growth for the Chapel Hill-Carrboro community. The shift from single-family to multi-family residential development in our service area likely played a role. Projections made prior to 2006 did not anticipate the substantial reductions in raw water demands that resulted from implementation of the drinking water treatment plant process recycling system in 2002, or the reclaimed water (RCW) system in 2009. Reclaimed water now meets approximately 10 percent of the community's water needs.

Another key observation is that the very stable period of linear growth in water demands came to an end around the time of the record drought of 2001-2002.

A concerted effort was made to incorporate these factors in our most recent projections done for the 2010 LRWSP; explicit calculations were included for estimated conservation by existing customers, new connections, and the RCW system. The 2010 projection for 2017 is within about 15% of our actual adjusted raw water demands for 2017. However, some of the assumptions made for that projection are not expected to hold up over time. For example, development of Carolina North, the University's planned major satellite campus, was expected to be underway by now, but those plans are now on indefinite hold.

WHAT DEMAND PROJECTION APPROACH HAVE WE TAKEN FOR OUR 2018 PROJECTION AND WHY?

After considering the data requirements, complexities, and uncertainties involved in different water demand projection methods, staff has used a simple and understandable water demand projection approach that includes water use input variables which we can readily obtain, track, and use. In the absence of long-term population and development projections from Carrboro and Chapel Hill, we apply those water use input factors to the residential dwelling unit and non-residential (employment and non-residential square footage) growth projections for our service area that were recently estimated for the regional CommunityViz model developed by TJCOG.

The key steps in our approach for the Baseline projection presented in this report are:

1. Determine the annual demands for the "Base Year" (CY 2017).
2. Determine the water use factors (i.e, gallons per day per dwelling unit for residential demand and gallons per day per square foot for nonresidential demand) based on 2014-2017 billed use data that will be applied to the various types of development included in the population and economic growth projections from the CommunityViz model.
3. Use the "2045 Scenario" growth projections to determine the 2045 water demand projection. Assume that additional growth will occur at a constant linear rate between now and 2045.
4. Assume that the "Build-Out Scenario" growth projections in the CommunityViz model correspond to 2070, the year through which our LRWSP extends. We further assume that this additional growth occurs at a constant linear rate from 2045 to 2070. The regional communities involved in the CommunityViz modeling effort did not define a build-out year, but the resulting rate of growth from our simple assumption is fairly consistent with the growth rate through 2045 based on that assumption. From this, we believe our approach for modeling build-out seems reasonable.

5. Apply the water use factors to the growth projections.
6. Adjust demands from existing development to reflect the assumed rate at which those demands will decline as our existing customers implement additional permanent water conservation measures.
7. Adjust the water use factors for future development to reflect assumed reductions resulting from continued improvements in water use efficiency in new development.
8. Add the projected water demands for the new development to the projected demand from existing customers to obtain the projected total demands by our customers.
9. Factor in water treatment and distribution system losses to derive the total projected demand on our water supply reservoirs.
10. Evaluate the sensitivity of the results to changes in key assumptions.

WHAT KEY ASSUMPTIONS HAVE WE MADE FOR OUR BASELINE DEMAND PROJECTION?

Key assumptions we have made for developing our Baseline projection through 2070 are:

1. OWASA's service area as defined in the *Water and Sewer Management, Planning and Boundary Agreement* will remain unchanged, and we will not provide wholesale or retail water service beyond the existing Urban Service Area boundary of Carrboro and Chapel Hill.
2. Federal and state regulations will allow us to continue with our RCW program and our water treatment plant process water recycling system.
3. Dwelling unit and economic growth projections (employment and non-residential development) through 2045 are assumed to be consistent with the projections from the CommunityViz 2045 Scenario. As noted above, we assume the growth projected to occur by 2045 occurs at a uniform rate between now and then, and that the CommunityViz Build-Out scenario growth projections for our service area will be realized at a linear rate from 2046 to 2070.
4. Water use factors for the various types of projected development are based on recent unit demands determined from our water use analysis, as summarized in a later section of this report. The key water use assumptions for new development are:

    a. new individually-metered single-family residences will use 4,200 gallons/unit/month;
    b. new master-metered multi-family dwelling units will use 3,300 gallons/unit/month; and
    c. new non-residential development will use 75 gallons/day/1,000 square feet.

    The Town of Cary recently completed a detailed analysis of billed water use among its major customer classes. As a check, OWASA staff compared the above factors based on our billing data, and they are similar to those that Cary developed.
5. Non-revenue water (such as water used for line flushing and firefighting, and water lost via system leaks) will continue to be approximately 10% of our raw water demands.
6. There will not be any major expansion of our RCW system, and our annual RCW demands will remain constant through the 50-year planning horizon based on information provided to us by UNC-CH regarding their plans for reclaimed water use.

Our projections also reflect the assumption that unitized water use (e.g. per dwelling unit for residential, or per 1,000 sq. ft for non-residential development) will continue to decline over time as a result of the effects of the U.S. Environmental Protection Agency's WaterSense program, the U.S. Department of Energy's Energy Star program, early leak detection provided by our investment in automatic metering infrastructure, and the nation-wide water efficiency requirements specified in the Energy Policy Act of 1992.

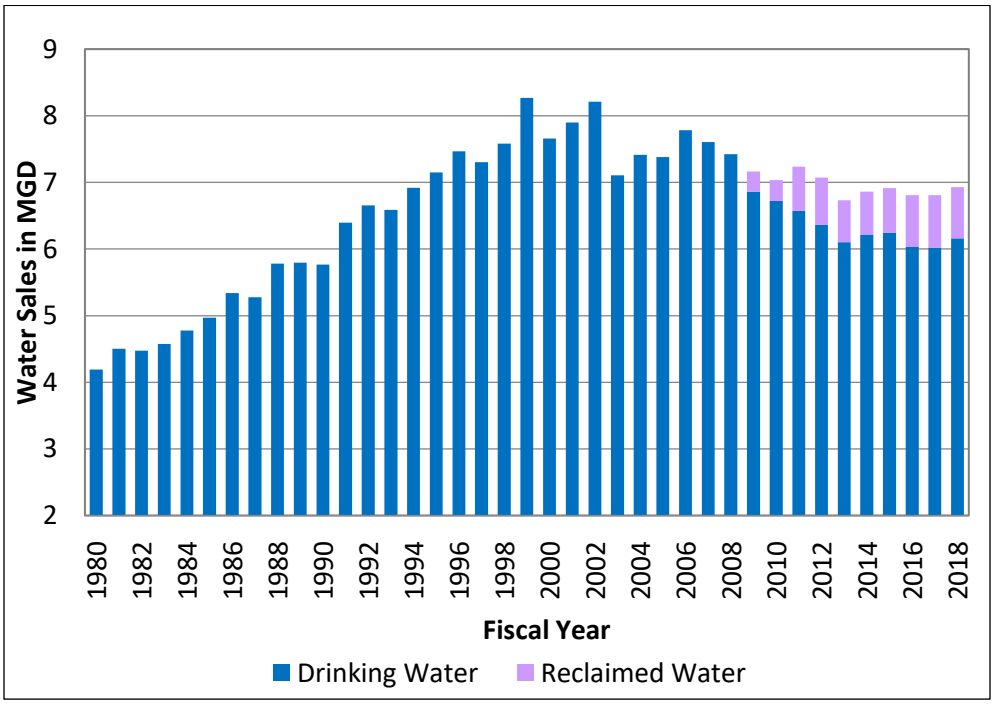
WHAT ARE SOME KEY TRENDS AND WATER USE FACTORS IN OUR SERVICE AREA?

The water use metrics incorporated in the Baseline projection have been derived from staff's recent analysis of billed water use data for OWASA's major customer classes, as summarized below.

Overall Water Use by Our Customers

Figure 4 shows the annual average-day billed water use, in millions of gallons per day (mgd), for our drinking water and RCW systems for Fiscal Years (FY) 1980 to 2018. Like Figure 3, this graph shows a remarkably linear rate of growth in billed use from 1980 through about 2002, followed by a steady decline since 2006 which appears to have bottomed out around 2013.

Figure 4.
Average-Day Billed Water Use by OWASA Customers (Drinking Water and Reclaimed Water)
Fiscal Years 1980 - 2018

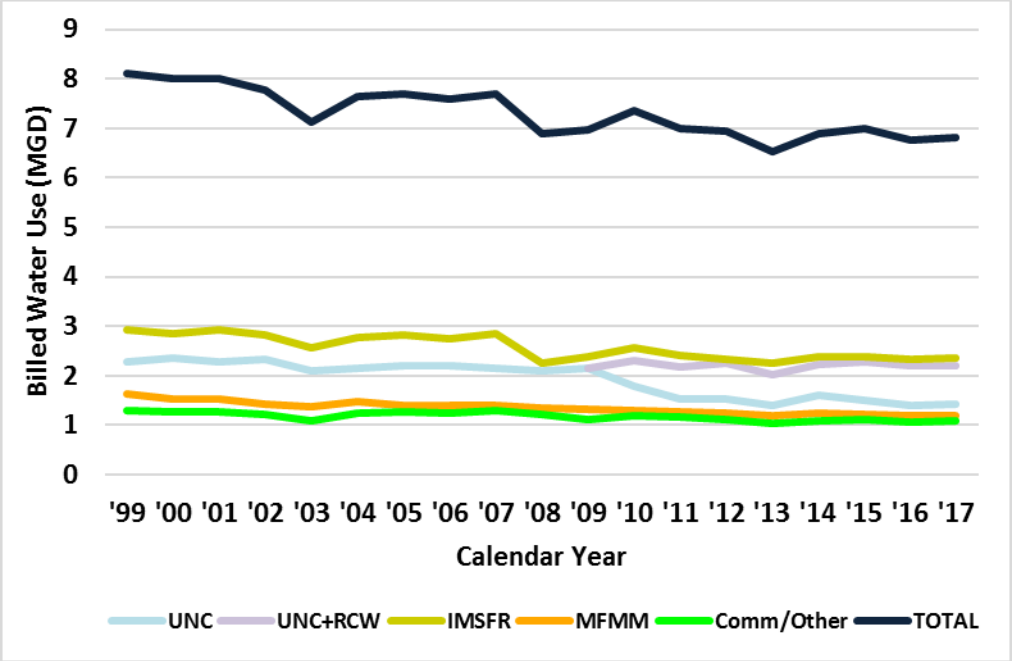


This figure also shows that RCW billed water use has remained relatively stable over the past few years. No major new RCW customers were added to the system during that time.

Figure 5 shows the historical annual average-day billed water demands for OWASA's four major customer groups for CY 1999 to 2017. The four groups are:

- Individually-Metered Single Family Residential (IMSFR);
- Multi-Family, Master-Metered Residential (MFMM);
- Commercial/Retail/Other (Comm/Other); and
- UNC/UNC Health Care.

Figure 5.
Average Annual Billed Water Use By Major Customer Group, CY 1999 – 2017 (in MGD)



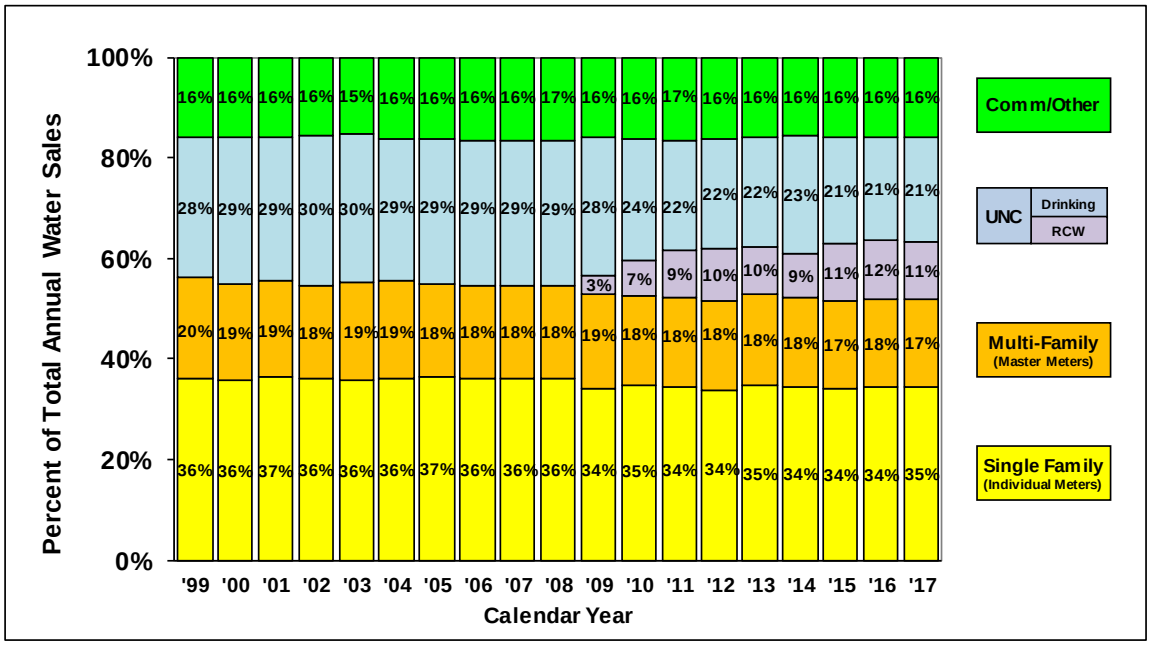
The key take-away from this graph is that the demand for water across each of these major sectors generally declined through 2013-2014, and has remained relatively stable for the past few years. Some key factors contributing to declines shown above include:

- coincidental implementation of seasonal water conservation rates for all customers in 2002 and of increasing block water rates for our individually-metered single family residential customers in 2007;
- the 2001-2002 record drought and near-record drought of 2007-2008, both of which involved extensive water conservation education and outreach efforts (as well as the implementation of drought surcharges in the 07-08 drought) across the region and required mandatory water use restrictions to reduce demands and extend the local supply;
- implementation of private submetering and rebilling systems in many of the master-metered multi-family complexes in our service area;

- implementation of many major water use efficiency improvements by UNC-CH and UNC Health Care; and
- the State's enactment of Session Law 2007-546 (Senate Bill 668) in 2007, which required that water use in all existing buildings owned by the State and The University of North Carolina be reduced by at least 20% compared to FY 2002-2003 water use. The reductions were required to be achieved by December 31, 2009. The law also requires that all new State buildings, including those built by UNC-CH, be a minimum of 20% more water-efficient than previously required under the State Plumbing Code.

Figure 6 shows the relative *portion* of total annual billed sales for our four major customer groups for CY 1999 – 2017. The key take-away from this graph is that the relative demand for water across these major sectors has remained relatively constant for nearly the past twenty years.

Figure 6.
Percent of Total Annual Billed Water Sales, By Major Customer Group, CY 1999 – 2017

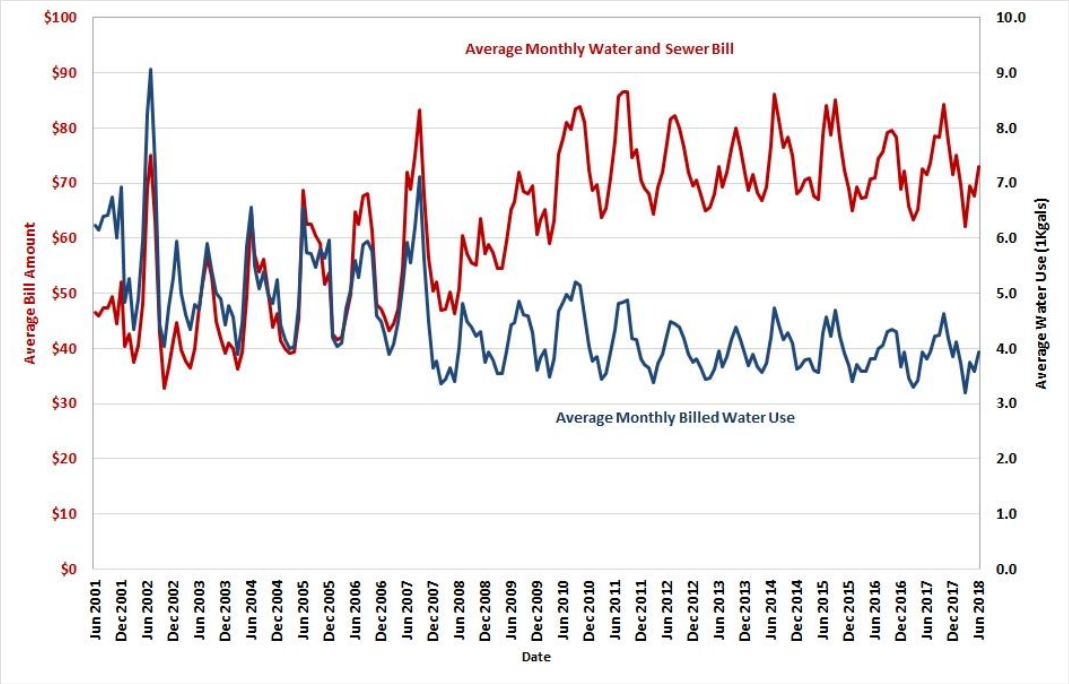


While the proportionate amount of billed use across our major customer classes has been relatively stable for many years, it is uncertain whether this trend will continue.

Water Use by Individually-Metered Single-Family Residential (IMSFR) Customers

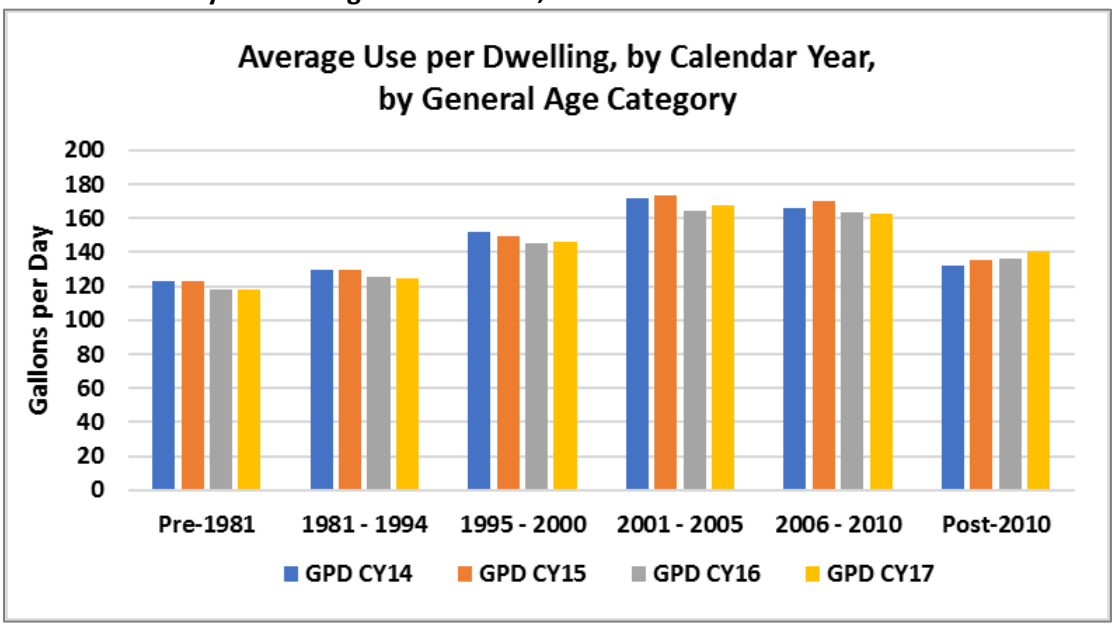
Figure 7 shows the average monthly billed water use for our IMSFR customers for the period 2001 to 2017. The 12-month running average declined substantially from 2001 through about 2013, and has remained relatively constant at 4,000 gallons/month since that time. A major step reduction occurred in 2007 when OWASA adopted its increasing block rate structure. Another smaller reduction in demands is observed after 2002 when OWASA adopted seasonal rates. Coincidentally, those rate structures changes were made about the same time as two extreme droughts (record drought of 2001-2002 and extreme drought of 2007-2008). In recent years, annual average monthly billed use among this major customer class has remained relatively stable at about 4,000 gallons/month/account.

Figure 7.
Average Monthly Billed Water Use and Billed Charges for OWASA's Individually-Metered Single Family Residential Customer Class - 2001 to 2017



We have used IMSFR billing data and County tax parcel data to analyze average daily water use by general age range of IMSFR dwelling units in our service area. The age ranges selected are intended to reflect the times when major changes occurred in national water efficiency requirements. Figure 8 shows how average daily billed water use during CY 2014 – 2017 has varied, by general age range of dwelling units. One general observation from this graph is that homes built from 2010 to present appear to be using less water than homes built between 2001 and 2010. That could reflect the installation and use of more water-efficient fixtures and appliances in newer homes; however, it could also be a function of household size, house and/or lot size, and other factors.

Figure 8.
Average Daily Billed Use for Individually-Metered Single Family Residences, by General Age of Residence, for Calendar Years 2014 - 2017



Based on the analysis of use by dwelling age and the average use for IMSFR units as a whole, staff recommends using an average water use factor of 140 gallons/day (4,200 gallons/month) for new IMSFR dwelling units built in the OWASA service area.

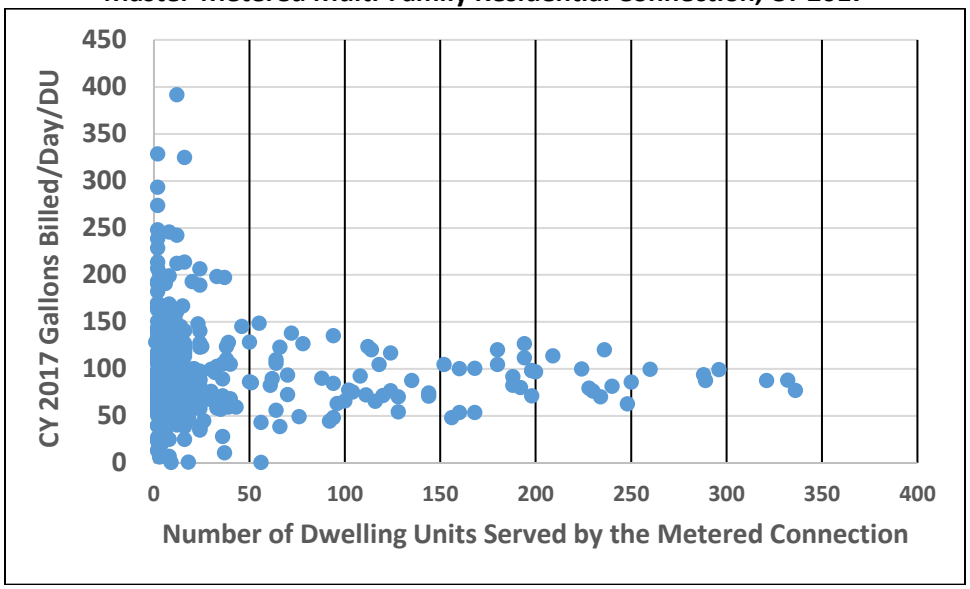
Water Use by Master-Metered Multi-Family Residential Customers

As shown in Figure 6, water use by OWASA's Multi-Family Master-Metered Residential (MFMM) customer class has historically accounted for about 17 to 20% of average-day water sales. As shown in Figure 5, overall water use in this class steadily declined from CY 1999 to around CY 2013, but has been relatively stable for the past few years.

One key factor that has substantially affected water use within our MFMM customer class is the installation of private submetering and rebilling systems in both old and new apartment complexes. A prior analysis by OWASA concluded that a number of existing apartment complexes in our service area reduced their overall average water use by around 15 to 20% after installing private submetering and rebilling systems. That is consistent with the findings of the *National Multiple Family Submetering and Allocation Billing Program Study* which reported that submetering and rebilling achieved an average water savings of more than 15% (21.8 gallons/day/unit).

For those MFMM customer accounts for which we have dwelling unit counts (covers about 16,000 dwelling units), we have analyzed average-day water use per dwelling unit, assuming full occupancy (which results in an under-estimate of the actual water use/occupied unit). Figure 9 shows distribution of CY 2017 average-day use per unit by MFMM service connection for which we have data on the number of units. The overall average was about 100 gallons per day/unit; however, we again emphasize that the actual use per *occupied* unit would be higher.

Figure 9.
Average-Day Billed Water Use/Dwelling Unit by Number of Units Served for Master-Metered Multi-Family Residential Connection, CY 2017



Some key factors affecting water use in the MFMM customer class are: the age and size of the dwelling units; the number of occupants per unit; the occupancy (vacancy) rates of the various complexes; the presence of swimming pools, laundry facilities, and other features; the extent to which water use efficiency measures have been installed; and the extent to which private submetering and rebilling systems have been implemented, as discussed above.

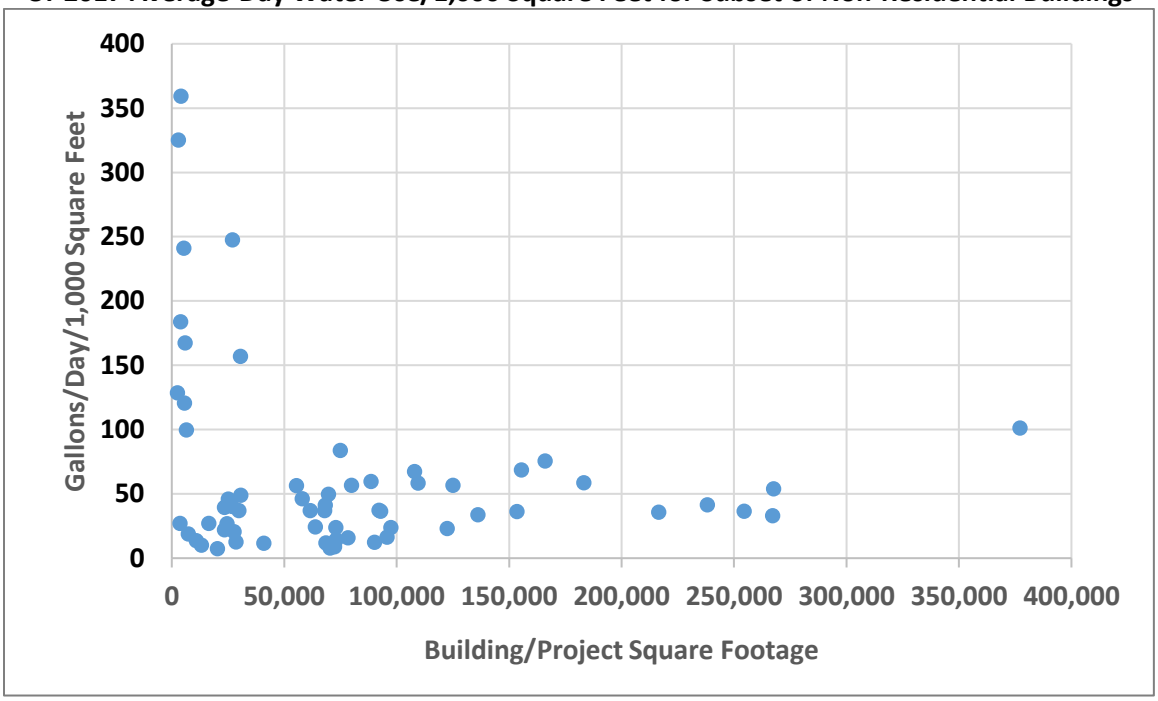
Based on our analyses, staff recommends using an average water use factor of 110 gallons/day for new MFMM dwelling units built in the OWASA service area. This factor includes a modest adjustment for general water use for offices, laundry areas, swimming pools, and other common facilities that are oftentimes metered separately from the residential buildings.

Water Use by Non-Residential, Non-UNC/UNC Health Care Customers

Figure 5 summarizes average annual billed water use for our Non-Residential, Non-UNC/UNC Health Care customers, also referred to as our Commercial/Other customer group. This broad group includes commercial, office, retail, and institutional customers, as well as some major mixed use development projects, such as East 54, 140 West, and Greenbridge.

Figure 10 shows CY 2017 average-day water use/1,000 square feet for a subset of more than 60 Non-Residential, Non-UNC/UNC Health Care buildings of various types and sizes. Together, those buildings represent about 5 million square feet of building area. CY 2017 average day use was 34 gpd/1,000 square feet and the median use was 37 gpd/1,000 square feet.

Figure 10.
CY 2017 Average-Day Water Use/1,000 Square Feet for Subset of Non-Residential Buildings



Water Use by UNC and UNC Health Care

Figure 5 shows average annual billed water use for our UNC and UNC Health Care customers from CY 1999 - 2017. The use of water by UNC-CH and UNC Health Care declined during the early to mid-2000s, after which water use associated with new growth of the main campus and hospital generally offset major gains UNC-CH and UNC Health Care achieved in water use efficiency in their existing buildings. RCW use on the main campus began in April 2009 and has been stable for about the last three years. UNC-CH and UNC Health Care do not have any current plans to connect any major facilities to the RCW system in the foreseeable future, but continue to look for cost-effective opportunities to expand their use of RCW.

Figure 11 shows CY 2017 average-day water use/1,000 square for about 180 UNC buildings of various types that together have nearly 13 million square feet of space. The average-day water use for those buildings was about 56 gpd/1,000 square feet and the median was 28 gpd/1,000 square feet. This analysis under-estimates the actual requirements of these buildings, as it excludes the associated water requirements for UNC-CH's central heating and cooling facilities and operations that serve many of the buildings included in the above analysis.

Figure 11.
CY 2017 Average-Day Water Use/1,000 Square Feet for Subset of UNC Buildings

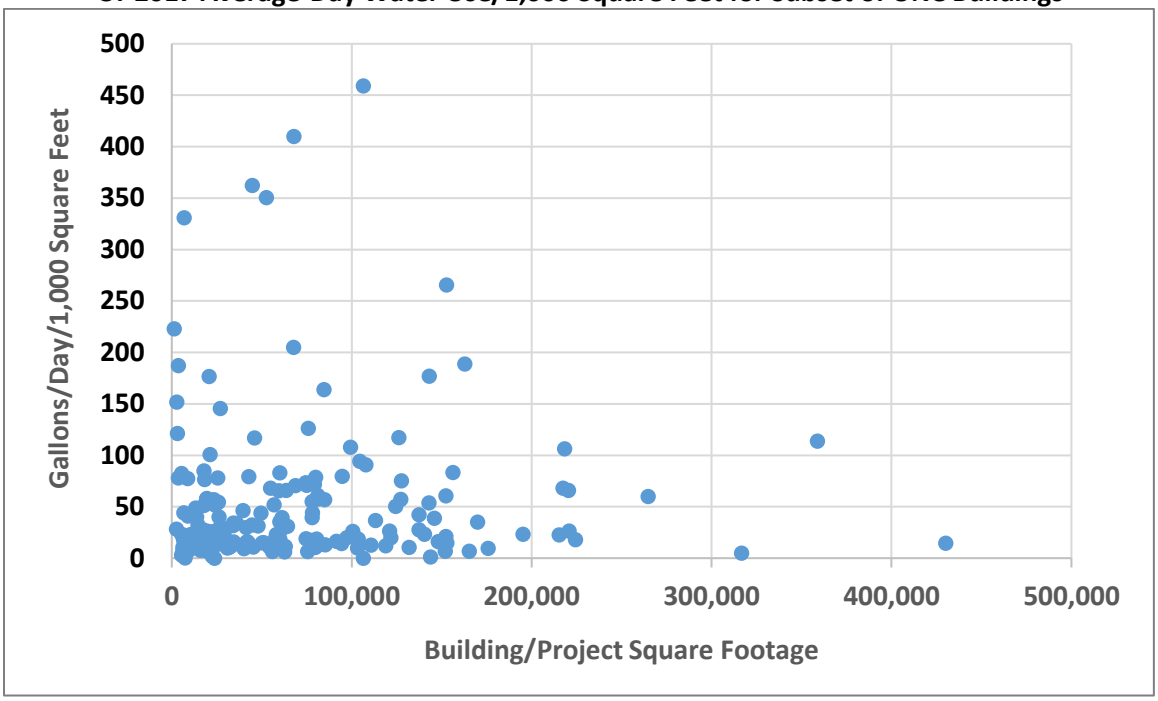
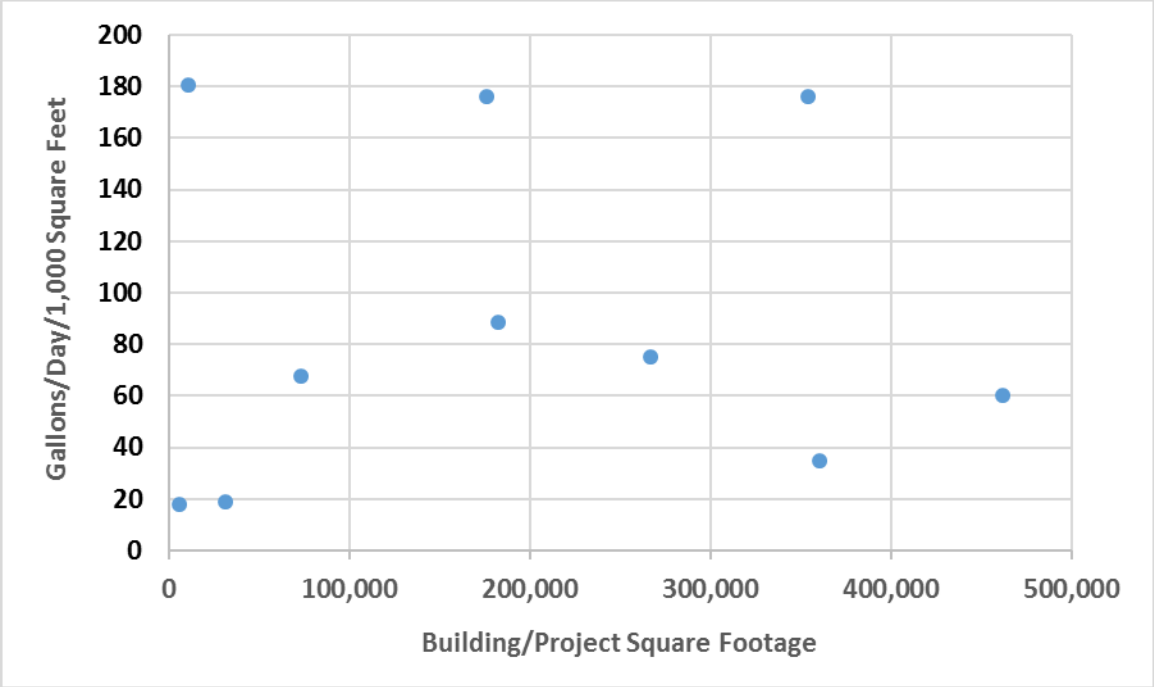


Figure 12 shows average-day water use during CY 2017 for 10 major UNC Health Care buildings on or in close proximity to the main campus. These buildings total about 1.8 million square feet of building area, and had an average use of 92 gpd/1,000 square feet and a median of about 71 gpd/1,000 square feet. There is wide variability in water uses in these buildings as they range from the main campus hospital which uses large amounts of water per square foot for major surgical and care services, to administration and imaging buildings which use lower amounts of water per square foot. This analysis under-estimates the actual requirements of these buildings, as it excludes the associated water requirements for the central heating and cooling facilities and operations that serve most of the buildings included in the above analysis.

Figure 12.
CY 2017 Average-Day Water Use/1,000 Square Feet for Subset of UNC Health Care Buildings



Summary of Non-Residential Building Water Use

The data shown in Figures 10 through 12 show that there is a lot of variability in water use among the non-residential buildings and customers in our service area. The combined analysis of four years (CY 2014 – 2017) of billed water use for nearly 300 non-residential buildings and commercial centers totaling nearly 20 million square feet of building area indicated an overall average water use factor of about 60 gpd/1,000 square feet. However, this is considered an under-estimate of actual use, as it excludes UNC-CH's and UNC Health Care's use of water and reclaimed water for central heating and cooling operations that serve many of the buildings included in the above analysis; new non-residential use may not have access to reclaimed water. To account for this, we increased UNC-CH and UNC Health Care's use by 30 percent (per Figure 6, RCW water meets approximately one third of UNC's water needs) which resulted in an average use across all the non-residential uses of over 72 gpd/1,000 square feet. Based on this, staff recommends using a water use factor of 75 gpd/1,000 square feet for new, non-residential building space projected for our service area.

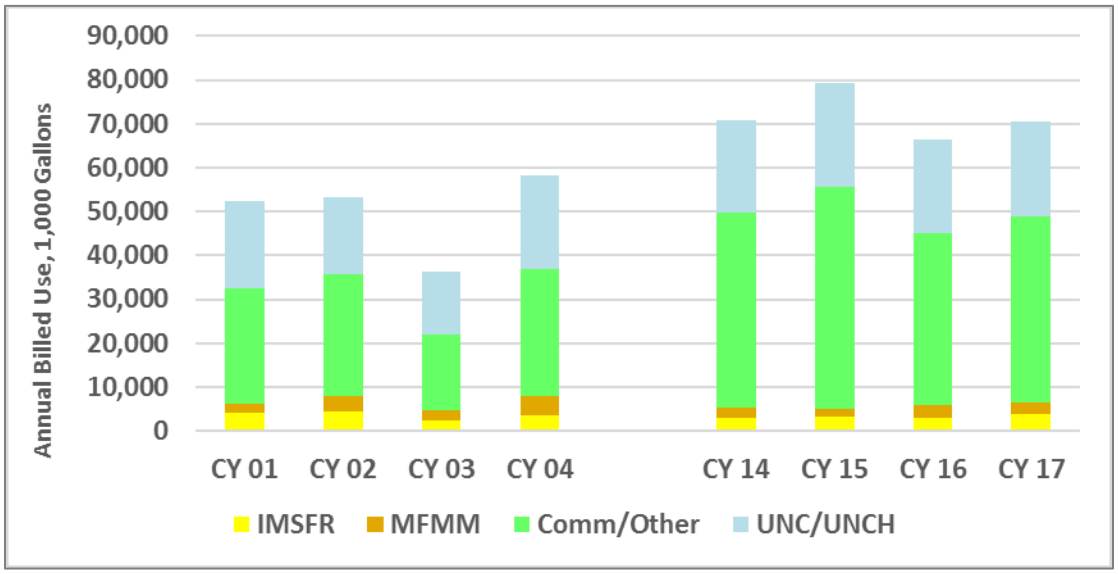
Water Use Through Irrigation Meters

The aforementioned analyses and graphs include billed drinking water use through irrigation meters serving customers within the four major customer groups. Billed drinking water use through irrigation meters has averaged slightly less than 0.2 mgd for the last four calendar years, accounting for only slightly more than 3% of the total billed drinking water use by our customers.

However, as shown in Figure 13, a comparison of the four-year period from CY 2014 – 2017 with four-year period from CY 2001 – 2004 indicates that billed drinking water use through separate irrigation meters has increased more than 40% compared to the CY 2001 – 2004 period. The number of separate irrigation meters has increased by more than 30% since 2004; however, the overall average use per meter was 8%

lower in CY 2017 than in CY 2004. Some irrigation demands are now being met by the RCW system and harvested rainwater, thereby offsetting the need to use our essential drinking water supply sources for irrigation.

Figure 13.
Comparison of Average-Day Billed Drinking Water Use for Irrigation-Only Meters For the Periods CY 2001 – 2004 and CY 2014 - 2017



Our Baseline projection does not assume any proportionate increase in irrigation demands in our service area.

WHAT IS THE BASIS FOR THE RESIDENTIAL AND NON-RESIDENTIAL GROWTH PROJECTIONS?

As discussed above, our Baseline water demand projection is largely driven by the residential and non-residential growth projections prepared for the Carrboro-Chapel Hill area as part of the 2045 Metropolitan Transportation Plan. Those growth projections were developed by local governments in portions of ten counties in the Triangle region with assistance from TJCOG. Using information provided by those local governments, including expected land use and development constraints for 2045, TJCOG used the Triangle CommunityViz 2.0 Model to project where future growth would occur in the region. The OSBM's 20-year, county-level population projections for 2037 were extended to 2045 and then used in the model to determine the amount of residential growth allocated at the county level. The CommunityViz model was used to spatially allocate the projected growth based on land suitability, development constraints, the type of place each parcel is today and what the applicable local planning department expects it to be in the future, and other factors.

TJCOG provided OWASA a parcel-level dwelling unit and economic (employment and non-residential square footage) growth projection database which was incorporated into OWASA's Geographic Information System (GIS). The database included the growth allocation data for the OWASA service area for the 2045 Scenario and the "Build-Out" scenario (which as noted above has an unspecified timetable).

The allocations are the additional growth the regional model projects to occur within the OWASA service area, based on the input of the local planning departments and other factors as summarized above.

Table 3 summarizes the 2045 and Build-Out allocations from the CommunityViz model. (Note: the non-residential place types used in CommunityViz were determined based on assumed transportation demand factors, not water use. For this report, we assume all new non-residential development uses will have the same water use intensity factor – 75 gpd/1,000 square feet, which was discussed above).

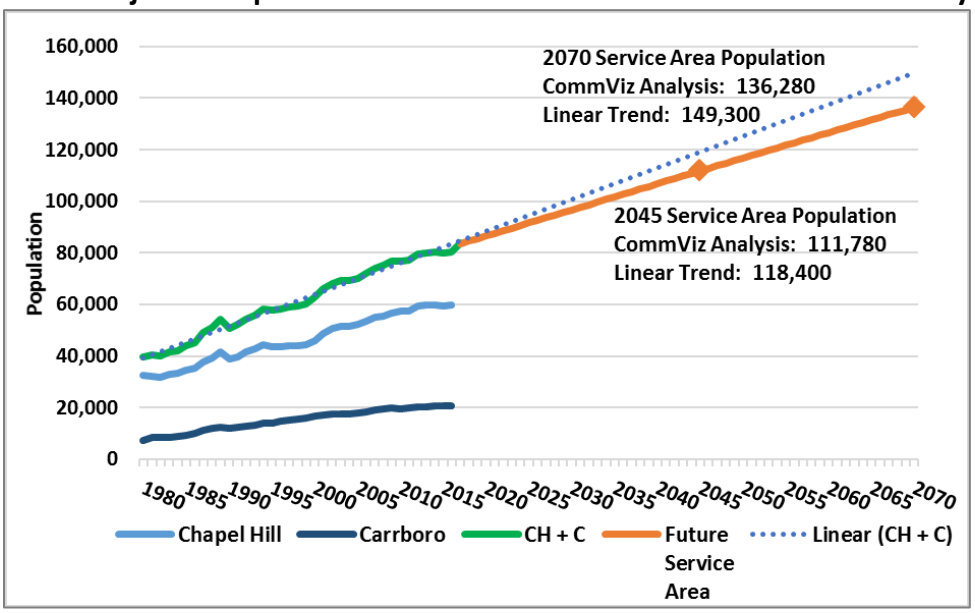
Table 3.
Residential Dwelling Unit and Non-Residential Building Space
Growth Allocations from CommunityViz 2045 and Buildout Scenario

Development Type	Units	# People per DU [a]	New Residential Growth (Dwelling Units) [b]		Projected # of New Residents Added		Annualized Rates # New Dus/Year	
			2045	Build-Out	2045	Buildout	2018 - 2045	2046 - 2070
Single-Family Residential	# DUs	2.6	3,639	3,639	9,461	9,461	130	0
Multi-Family Residential	# DUs	2.1	9,001	20,712	18,902	43,495	321	468
RESIDENTIAL SUBTOTAL:			**12,640**	**24,351**	**28,364**	**52,957**	**451**	**468**

Development Type	Units	# Emp. /1,000 SF	New Non-Residential Growth		Projected # of New Employees Added		Annualized Rates # New Non-Res SqFt/Year	
			2045	Build-Out	2045	Buildout	2018 - 2045	2046 - 2070
Industrial	Sq. Ft.	1.8	514,444	519,444	926	935	18,373	200
Office	Sq. Ft.	3.3	5,203,030	10,186,061	17,170	33,614	185,823	199,321
Service-Low	Sq. Ft.	2.9	6,774,483	11,863,793	19,646	34,405	241,946	203,572
Service-High	Sq. Ft.	3.2	775,938	6,221,563	2,483	19,909	27,712	217,825
Retail	Sq. Ft.	2.9	2,877,931	9,142,069	8,346	26,512	102,783	250,566
NON-RESIDENTIAL SUBTOTAL:			**16,145,826**	**37,932,930**	**48,571**	**115,375**	**576,637**	**871,484**

We then used the household population density factors from the CommunityViz model to determine the additional number of residents projected for our service area for each of the two scenarios. That population increase was added to our 2017 Baseline year population estimate for our service area (approximately 83,300 people), and then compared to the Year 2045 and Year 2070 population estimates we derived by extending the historical trend line for population growth in the OWASA service area, which is assumed to be the same as the trend line for the combined population of Carrboro and Chapel Hill. Figure 14 shows the results of that comparison.

Figure 14.
Linear Trend Projection for Future Combined Population of Chapel Hill and Carrboro as Compared to Projected Population of OWASA Service Area Based on CommunityViz Model



These two different methods provide reasonably similar results, as the projected total service area population indicated from the CommunityViz 2045 and Build-Out (2070) scenarios is about 6,600 (5.6%) and 13,000 (8.7%) less, respectively, than the total service area population projected simply by extending the historical linear growth trend line for our service area. Staff also compared the projections to those provided in the recent State of the Community Report, an annual report developed by the Chapel Hill Carrboro Chamber of Commerce; that report showed 2050 projections for the towns (which varies a little from our service area) of 128,755 based on a linear projection from 1990-2010 data. This is about 12,270 (9.4%) more than predicted from the orange line in Figure 14. The 2050 projection for the towns was 102,310 based on a recent, short-term linear trend projection from 2010-2017 data. This is about 12.3% lower than the projection derived using the CommunityViz growth projections, since recent growth has been slower than the longer-term historical rate shown in Figure 14.

These projections are also within the range of population projections developed by Dr. Michael Walden, professor of agricultural and resource economics at NC State University. His 2017 book "North Carolina Beyond the Connected Age: the Tar Heel State in 2050" includes a map of population growth by County. He projects Orange County to grow between 35 and 69 percent between 2010 and 2050. Assuming that Chapel Hill and Carrboro grow at the same rate, by 2050 the combined population of the two towns would be between 103,700 and 129,800.

WHAT IS THE LONG-TERM WATER DEMAND PROJECTION FOR OUR SERVICE AREA?

Following the methods and assumptions summarized above and in Table 4 and the simplified equation which follows, we have developed a Baseline water demand projection for our service area. Table 5 summarizes the projected water demands for five-year increments through 2070.

Table 4.
Assumptions Impacting Raw Water Projection Model Equation

Description	Assumptions
Baseline Year	2017
New IMSFR Use	140 gpd
New MFMMR Use	110 gpd
New Non-Residential Use	75 gpd/1000 square feet
Existing Residential Conservation	10%
Existing Non-Residential Conservation	5%
New IMSFR Conservation	10%
New MFMMR Conservation	5%
New Non-Residential Conservation	10%
Non-revenue Water	10%

Our General Equation for Projecting Future Raw Water Demand:

Future Demands = ((2017 Billed Use Demands + (# New SFR Units)*(140 gpd) + (# New MFMMR Units)*(110 gpd) + (New Non-res square footage)*(.075 gpd/sq ft) – (Conservation savings from existing buildings + Conservation savings from new buildings))*1.1

Table 5.
Baseline Raw Water and Customer Demand Projections from 2019 Projection Model
(Figures shown are in mgd)

Year	Projected Customer Demands		2019 Total Raw Water Demands*
	Drinking Water Demands	Reclaimed Water Demands	
2025	6.71	0.77	7.38
2030	7.08	0.77	7.79
2035	7.45	0.77	8.19
2040	7.81	0.77	8.59
2045	8.18	0.77	9.00
2050	8.72	0.77	9.59
2055	9.25	0.77	10.18
2060	9.79	0.77	10.77
2065	10.32	0.77	11.36
2070	10.86	0.77	11.95

** Includes 10% adjustment to account for non-revenue water (fire-fighting, flushing, leaks, etc.) based on about 10 years of OWASA data*

Based on the growth and development projections and water use assumptions summarized in this report and incorporated in the demand projection, growth in our non-residential water demands is expected to increase at a faster rate than our residential sector water demands.

WHAT DATA LIMITATIONS AND UNCERTAINTY DO WE FACE AS WE DEVELOP OUR PROJECTION?

The information and understanding and the techniques we have used to develop the Baseline projection are imperfect; therefore, our Baseline projection contains uncertainty. Some key sources of uncertainty are:

- the rate of population growth that is projected to occur;
- the rates and types of residential and non-residential growth projected to occur (as compared to the development projections from the regional transportation model);
- the potential for local governments to agree to expand the urban service area boundary, thereby opening up additional land for growth and development that will require water and sewer services from OWASA;
- the extent to which low impact development, high performance building, and other development trends will affect future demands;
- the extent to which water use efficiency and water use habits will change over time and affect water demands in both existing developments and new developments;
- the effect that a warming climate, with attendant changes in temperatures, precipitation, evapotranspiration, and other factors, will have on long-term water demands, such as irrigation and cooling water requirements; and
- how future water use will be affected by changes in water and sewer service pricing, household income; and
- the potential for a new business which has a high demand for water, etc.

HOW SENSITIVE IS THE PROJECTION TO CHANGES IN INDIVIDUAL ASSUMPTIONS?

We have evaluated how sensitive the projection is to changes in several of the key assumptions. Table 6 summarizes how certain changes in key assumptions affect the long-term demand projection.

Table 6.
Sensitivity of Baseline Projection to Changes in Single Assumptions

Change in Key Assumption	Projected Effect on Drinking Water Demands	Projected Effect on Raw Water Demands
Projected number of dwelling units or water use factor for residential use is 10% greater than the Baseline	Increase by 0.15 mgd by 2045 0.26 mgd by 2070	Increase by 0.16 mgd by 2045 0.28 mgd by 2070
Projected growth in non-residential square footage is 15% greater than assumed in the Baseline	Increase by 0.17 mgd by 2045 0.39 mgd by 2070	Increase by 0.19 mgd by 2045 0.43 mgd by 2070
RCW service is extended to meet cooling tower water demands at UNC's Cogeneration Plant	Annual billed drinking water demands would be about 0.09 mgd lower, but overall total billed sales would remain the same.	Annual raw water withdrawals would be about 0.10 mgd lower .
Urban service area is extended and water service is provided to a Meadowmont or Southern Village type development intensity over a 1,000 acre area	Increase by 0.58 mgd at project build-out	Increase by 0.64 mgd at project build-out
Water plant process water recycling system is no longer in service	N/A	Increase by 0.53 mgd by 2045 0.72 mgd by 2070
Reclaimed water system is no longer in service	Increase by 0.77 mgd This increase would mostly occur during the peak demand summer months.	Increase by 0.85 mgd This increase would mostly occur during the peak demand summer months.

HOW DOES WEATHER INFLUENCE WATER DEMAND?

Water demands in our service area generally increase as temperature increases, and decrease as precipitation increases. The influence of weather on demands is more pronounced for some of our customer classes than others. To help us quantify the relationship between changes in weather and demands and to further inform our demand projection efforts, we retained Hazen and Sawyer to complete a statistical analysis of those relationships. (The study did not include an analysis of the impacts of price on demands.)

Figure 15 shows the relationship of mean annual high temperatures and total annual precipitation during the period 1980 to 2018. This shows a negative, but generally weak, correlation between increasing precipitation and temperature. This means that temperature and precipitation are not independent of each other even on a scale as long as a year. As total precipitation increases above average for the period, the mean high temperature generally decreases, and vice versa. This statistical relationship is very similar for the months of April through November for that same 29-year period.

Figure 15.
Relationship of Departure from Annual Average for Total Precipitation and Mean High Temperature: 1980 – 2017 Compared to Long-Term Average

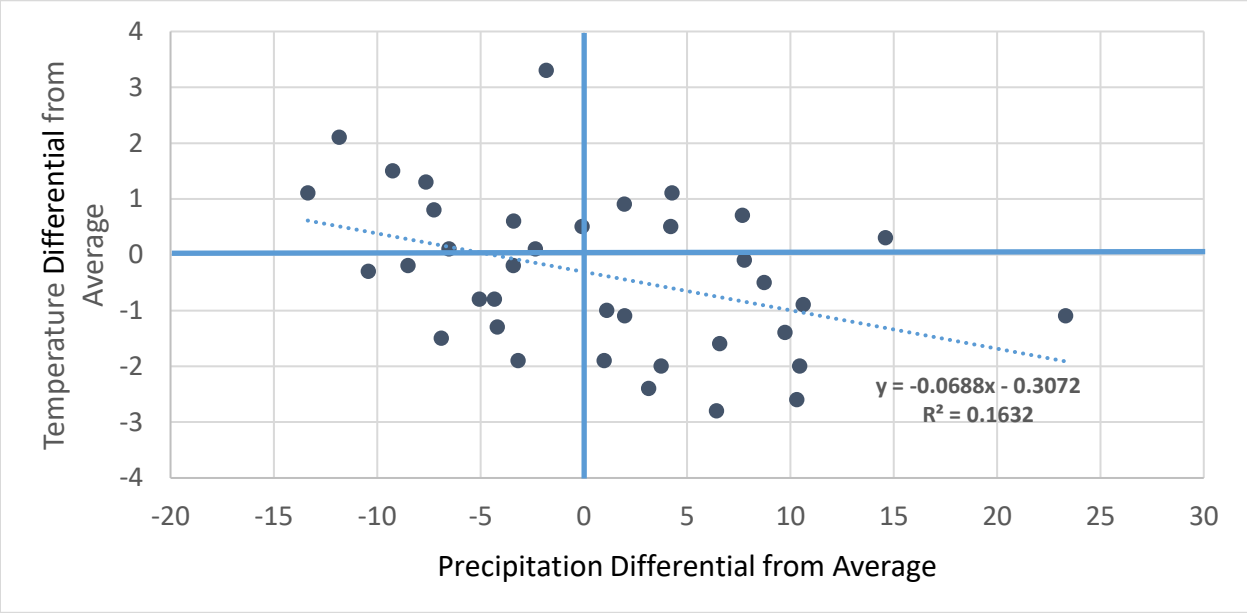


Table 7 summarizes how total annual demands for each of our major customer groups (normalized to account for growth in customer accounts) generally vary as total precipitation and average daily high temperatures vary for the aggregate period from April through November. These relationships are derived from weather and demand data for 2010 to 2017. Those months were selected as they show the strongest overall correlation between weather and total water demand for our service area. They also correspond to the monthly billing periods which generally overlap the growing season and the time of year when cooling demands are greatest.

Table 7.
General Effects of Precipitation and Temperature on Water Demands

Major Customer Group	Precipitation Effect on Demand per Standard Deviation (1 SD = 6.57")	Temperature Effect on Demand per Standard Deviation (1 SD = 1.54° F)	Correlation R^2 Value
Individually Metered Single Family	-2.5%	+2.2%	0.79
Master Metered Multifamily	-2.9%	+0.8%	0.47
UNC/UNC Health Care[1]	-1.7%	+1.7%	0.52
Commercial/Other	-1.4%	+2.2%	0.85

[1]This is the determined influence of weather on the aggregate of potable and RCW water demands since RCW usage was being phased in over the period of analysis

As noted in the following section, these weather and demand relationships have been incorporated into an analysis of the uncertainty in the assumptions incorporated into our demand projection.

HAVE WE EVALUATED THE UNCERTAINTY IN OUR DEMAND PROJECTIONS?

To further consider the range of potential future water demand scenarios, OWASA completed a more systematic "What If…?" analysis with assistance from Hazen and Sawyer. The purpose of this analysis was to help OWASA better understand the possible range of future demands given the uncertainty in the value of many of our assumptions. This sort of understanding and visualization is difficult with more than about 2 uncertain variables using a "What if" approach. Our consultant developed a Monte Carlo Simulation (MCS) for this purpose and it begins with our demand equation shown between Table 4 and Table 5. MCS relies on repeated random sampling of variables whose future values are inherently uncertain. In this case, the MCS involved running 5,000 different trials in which the value assigned to 15 different variables included in the Baseline demand projection were randomly sampled. The variables sampled for the MCS are responsible for factors such as growth and development rates, water use intensity, conservation and occupancy variables (assumptions) and annual weather conditions. For each MCS scenario, each variable was randomly changed within the specified ranges shown in Table 8. The table also shows the original assumptions upon which the Baseline projection was developed.

Table 8.
Ranges Used for Each Variable Included in Monte Carlo Simulation Analysis and Comparison to Values Used in Baseline Projection

Variable	Baseline Assumption	Bounds for MCS Scenarios (% Change from Baseline)		
		Lower	Upper	Most Likely
Growth and Development Variables				
New SFR Units through 2045	130 DUs/year	-20%	+20%	0
New MFMMR Units through 2045	321 DUs/year	-20%	+20%	0
New SFR Units 2045 to 2070	0 DUs/year[1]	N/A	N/A	N/A
New MFMMR Units 2045 to 2070	468 DUs/year	-30%	+50%	0
New Non-Res Development through 2045	576,637 sf/year	-25%	+25%	-10%
New Non-Res Development 2045 to 2070	871,484 sf/year	-50%	+50%	-10%
Water Usage Characteristics				
Initial SFR Unit Usage Factor for New Development	4,200 gallons/mo.[2]	-10%	+20%	0
Initial MFMMR Unit Usage Factor for New Development	3,300 gallons/mo.[3]	-10%	+20%	0
Initial Non-Res Usage Factor for New Development	75 gallons/day/ 1,000 square feet	-20%	+20%	0
Phased Conservation and Occupancy adjustment for existing Res	-10%	-25%	0%	-10%
Phased Conservation and Occupancy adjustment for existing Non-Res	-5%	-20%	0%	-5%
Phased Conservation and Occupancy adjustment for new SFR	-10%	-25%	+10%	-10%
Phased Conservation and Occupancy adjustment for new MMMFR	-5%	-15%	0%	-5%
Phased Conservation and Occupancy adjustment for new Non-Res	-10%	-30%	+10%	-10%
Precipitation	Inputs based on prior Monte Carlo on weather described below			
Temperature	Inputs based on prior Monte Carlo on weather described below			

[1]The CommunityViz model did not have any single family residential development after 2045.
[2]For the Monte Carlo analysis, assumed new SFR most likely consumption would be 3,800 gallons/mo.
[3]For the Monte Carlo analysis, assumed new MMMFR most likely consumption would be 3,040 gallons/mo.

While it was initially hoped that the MCS analysis could be used to help convey the probability associated with a range of future demand scenarios, this could not be done because data-based statistical probabilities could not be determined for many of the 15 variables. Alternatively, the results of the 5,000 MCS scenarios were generally grouped into percentiles (not probability ranges) which are graphically depicted on Figure 16. As shown on that figure, 99% of the MCS-generated scenarios have an indicated total raw water demand of less than 13.4 mgd by 2070, while 1% of the scenarios have an indicated total raw water demand of less than 10.1 mgd by 2070. For comparison, the Baseline projection indicates a total raw water demand of 11.95 mgd by 2070.

If it is assumed that the distribution of value ranges for each variable in the MCS analysis actually represents the probability distribution for each of those variables, then the results shown in Figure 16 and Table 9 could be used to express the probability that a given projected total raw water demand would occur in the target year.

Figure 16.
MCS-Generated Scenarios

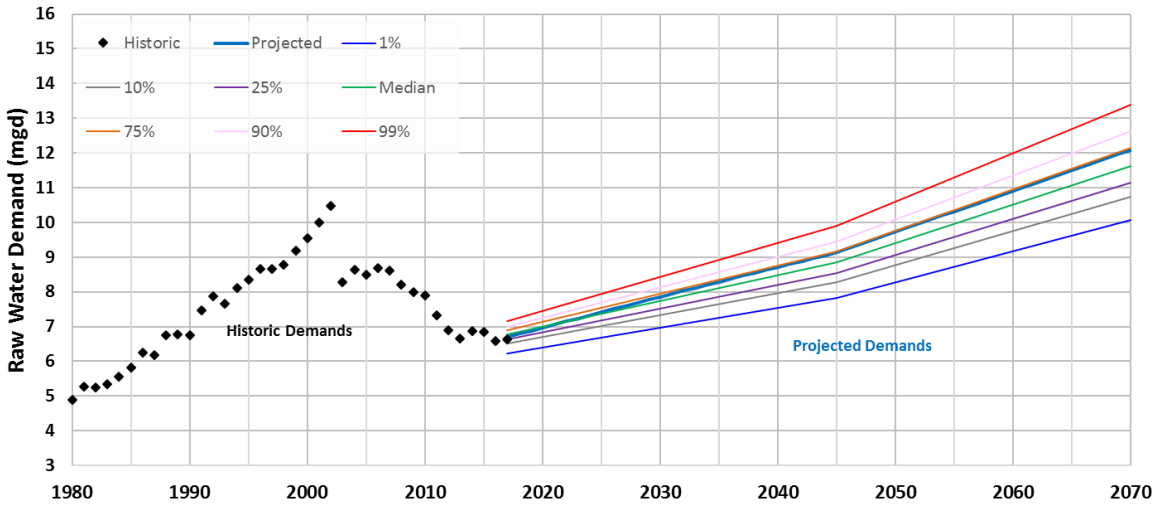


Table 9.
Comparison of Baseline Raw Water Demand Projections to Monte Carlo Projections

Year	Monte Carlo 1st Percentile	Monte Carlo 10th Percentile	Monte Carlo 25th Percentile	Monte Carlo 50th Percentile	2019 Baseline Total Raw Water Demands	Monte Carlo 75th Percentile	Monte Carlo 90th Percentile	Monte Carlo 99th Percentile
2025	6.69	7.00	7.17	7.37	7.38	7.55	7.70	7.94
2030	6.97	7.32	7.52	7.74	7.79	7.95	8.14	8.43
2035	7.26	7.64	7.86	8.11	8.19	8.36	8.58	8.92
2040	7.54	7.96	8.21	8.49	8.59	8.76	9.01	9.41
2045	7.83	8.28	8.55	8.86	9.00	9.17	9.45	9.90
2050	8.28	8.77	9.07	9.41	9.59	9.76	10.09	10.60
2055	8.73	9.26	9.59	9.97	10.18	10.36	10.72	11.30
2060	9.17	9.75	10.10	10.52	10.77	10.95	11.36	11.99
2065	9.62	10.24	10.62	11.08	11.36	11.55	11.99	12.69
2070	10.07	10.73	11.14	11.63	11.95	12.14	12.63	13.39

The MCS analysis also provides insight on each variable's relative contribution to the variance in the projected demands for the 5,000 scenarios. Figures 17 and 18 summarize the percent of overall demand variance resulting from the uncertainty in each variable in the 2045 and 2070 demand projections, respectively. The contribution to variance of each variable is directly related to how each of the 15 variables influences the demand equation as well as the assumptions within the MCS about the potential range for each variable described in Table 8.

Figure 17.

2045 Demand Projections for MCS Scenarios: Percent of Variance Explained by Different Variables

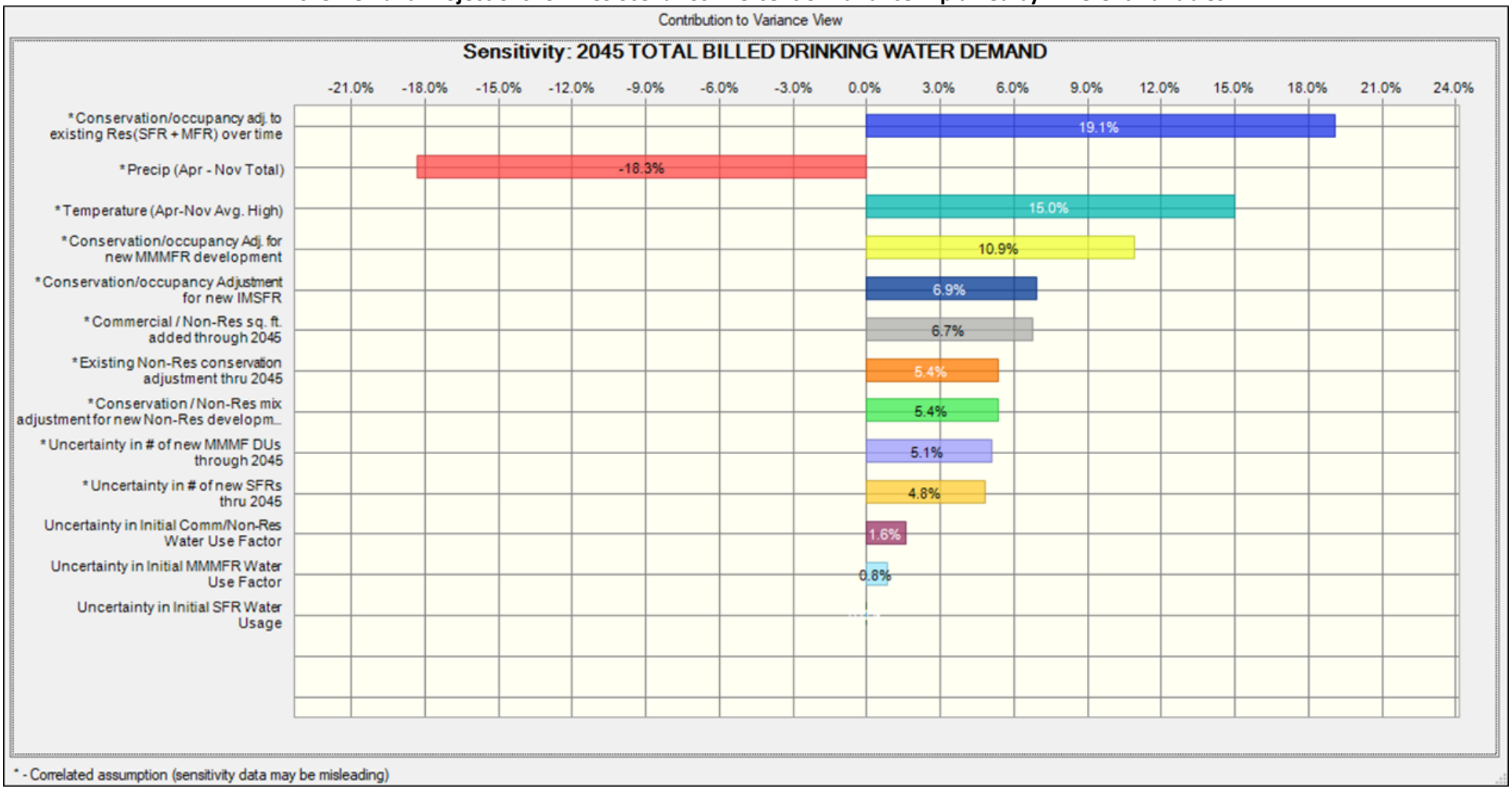
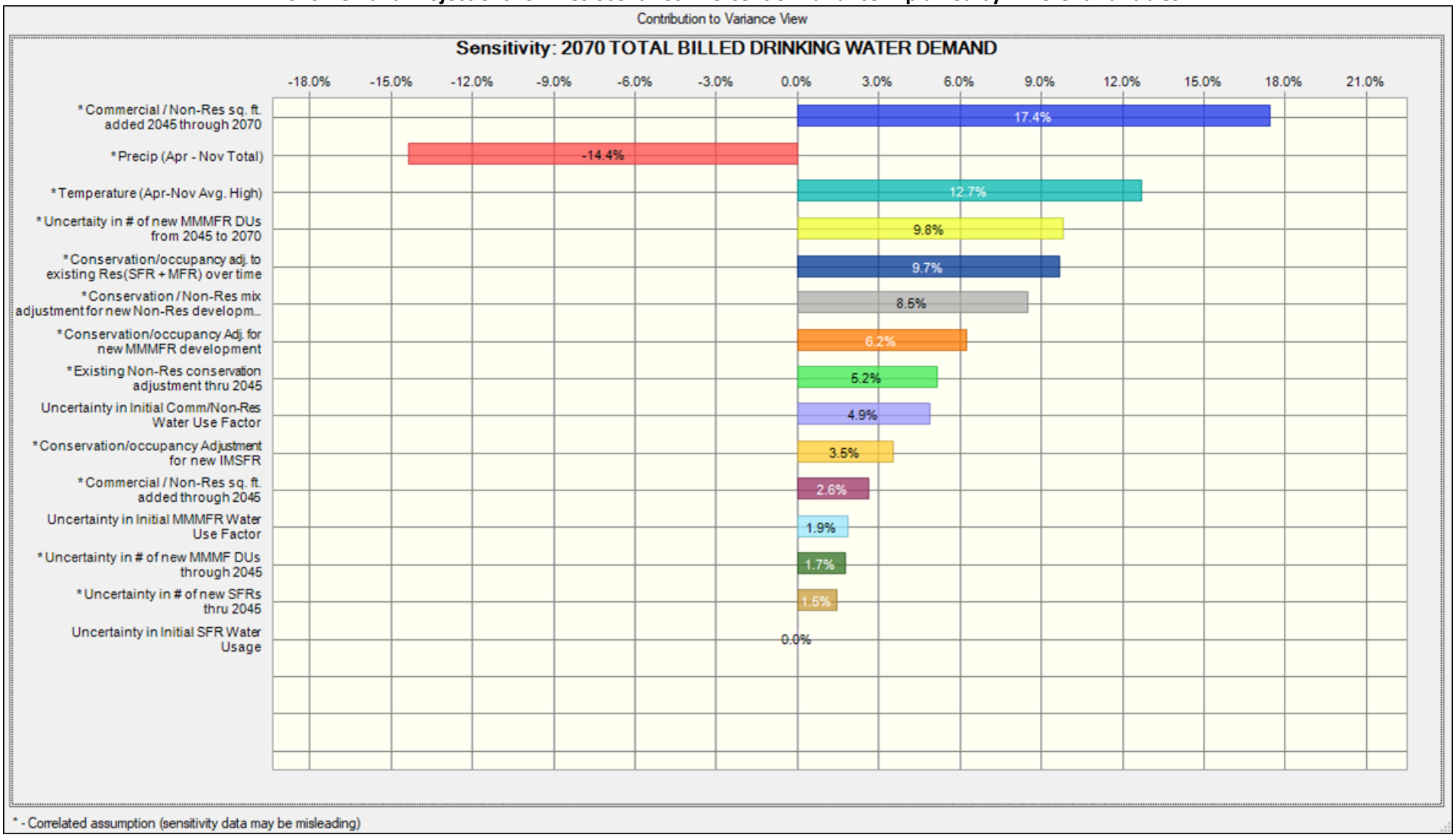


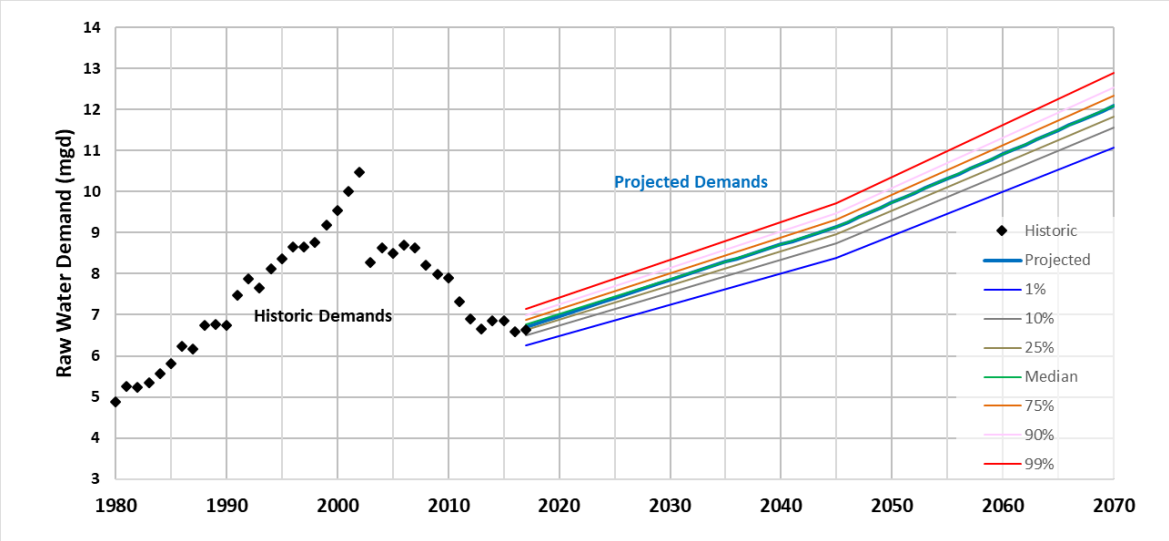
Figure 18.
2070 Demand Projections for MCS Scenarios: Percent of Variance Explained by Different Variables



Hazen and Sawyer also used MCS analysis to show how annual weather conditions could affect future demands, assuming all other assumptions are held constant. For this analysis, 5,000 weather trials were generated by varying the total annual precipitation and mean high temperature. The corresponding demand projections were developed by factoring in the weather-demand response relationships described in Table 7.

The results of that analysis are shown in Figure 19 and reflect how annual demands could change assuming that (a) the recent historical relationships between weather and customer demand response continue, and (b) future annual weather conditions remain reasonably consistent with our historical weather records. One major limitation with this analysis is that both of these assumptions are likely to be incorrect to some degree. Downscaled climate models for our region generally indicate that temperatures are likely to rise and precipitation amounts and patterns may be different than they have been in the past. In the long-run our customers are likely to adapt to that change. Therefore, especially for the more distant future portions of our projection horizon, the specific historical weather-demand response relationships among our various customer groups may shift. This is an area where further research will be needed to inform our future long-term projections.

Figure 19.
MCS-Generated Scenarios for Baseline Demand Projection
Assuming Variations in Future Total Precipitation and Mean High Temperatures



WHAT IF OUR SERVICE AREA EXPANDS OR OUR POPULATION AND ECONOMY GROW AT FASTER RATE THAN PREDICTED?

Future population and economic growth are the most significant driving factors in our demand projections, so major shifts in population and economic trends can have large impacts on our projections. One comment received from local government staff who reviewed the draft report concerned the potential for climate change to cause such major shifts. As sea level rise, tropical storm intensity and resulting storm surge grow more severe, and saltwater intrusion increases in coastal areas, populations

and economic development may move inland. It is not unreasonable to assume the Triangle Region in general, including the OWASA service area, could be on the receiving end of this migration.

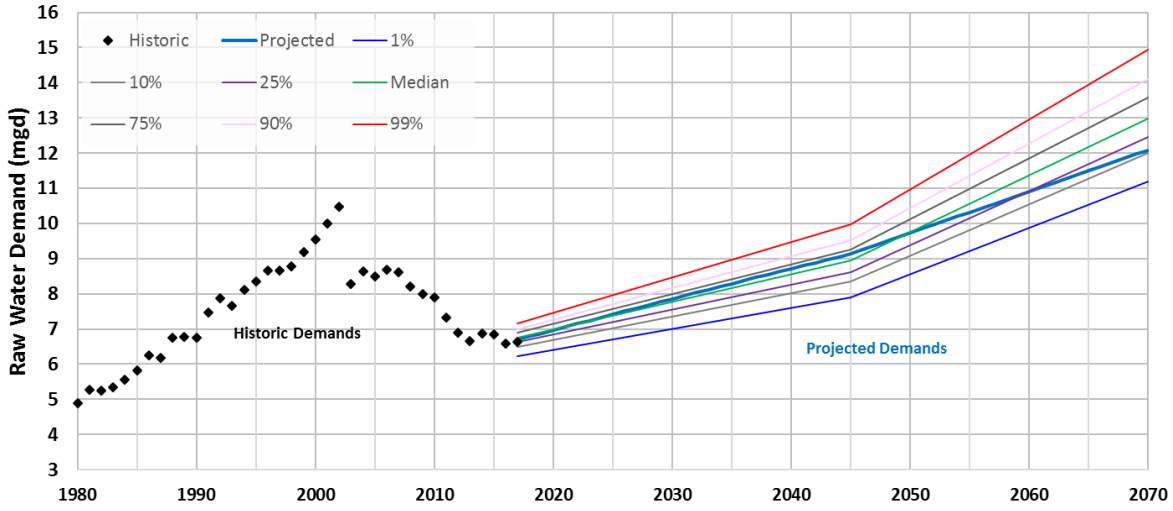
Even in lieu of climate driven population migration, the state population projection used to drive regional and local projections may under-project future growth. For example, in 2007, thirty-thousand.org projected that by 2070, North Carolina's population will increase to 21.4 million, which is more than double our state's current population. We note this projection because of their accuracy in projecting our state's 2018 population: their projection for North Carolina's 2018 population was 10.42 million, which is very similar to the US Census Bureau's July 1, 2018 estimate of 10.38 million. Given the above, it may not be realistic to assume that our service boundary is stationary for the next 50 years.

To address this concern, Hazen completed an additional Monte Carlo analysis that was identical to the one described in Table 8, with the exception of the following population and growth-related parameters:

- Number of new MFMM units from 2045-2070 – the range evaluated was 0% to +100% centered around +50%.
- Non-residential square footage from 2045-2070 – the range evaluated was -10% to +80% centered around +40%.
- Non-residential square footage from 2017-2045 was varied from -25% to +25% (same as original Monte Carlo analysis), but was centered around 0%, rather than -10%.

This "high-growth" Monte Carlo analysis resulted in a 99th percentile raw water demand of 14.9 mgd and a 1 percentile raw water demand of 11.2 mgd. The results are illustrated in Figure 20. These high-growth projections are about 11% to 12% higher than the corresponding percentiles for the Monte Carlo analysis described earlier in this report.

Figure 20.
MCS-Generated Scenarios for High Population Growth Scenario



Agenda Item 11:

Review Preliminary Fiscal Year 2020 Budget Information

Purpose:

The purpose of this discussion is to provide the Board of Directors with:

- Information about the draft operating budget for Fiscal Year (FY) 2020.
- A summary of the next steps in the budget development process.

The Board of Directors will continue to discuss these topics, as necessary, in order to be prepared to hold public hearings, tentatively scheduled for May 23, 2019, and make final budget and rates decisions at the June 13, 2019 Board meeting.

Budget and rate adjustment status:

Staff has developed a draft of the FY 2020 operating budget. A draft of the 5-year Capital Improvements Program (CIP) and capital equipment budgets will be provided at the March 28, 2019 Board meeting. Staff will also provide the Board with preliminary rate adjustment alternatives for consideration at the March 28th meeting.

Budget preparation efforts to date:

Our draft operating budget is based on the needs of the organization and our continued commitment to provide high value to our customers. We began the process of developing the FY 2020 budget in December 2018. We completed budget request worksheets for each department, compiled the information, performed various analyses, and held budget request review meetings.

Summary of the draft operating budget:

Expenditures in the draft FY 2020 operating budget total approximately $23.9 million. This is about 6.2% greater than the FY 2019 operating budget. The attachment to this memo includes:

- Page 1 – Summary of the draft FY 2020 operating budget and how it compares to prior years.
- Pages 2-4 – Detailed all-departments draft of the FY 2020 operating budget with prior year comparisons.
- Page 5-29 – Detailed draft FY 2020 operating budgets for each department.
- Pages 30-31 – Detail of Professional Fees in the draft FY 2020 operating budget (all departments).

Approach to developing the draft FY 2020 budget:

We have drafted the FY 2020 operating budget based on "normal operating conditions" without contingencies. This increases our risk of exceeding the budget if we incur higher than normal costs from, for example, chemical price increases, more instances of equipment failures, etc. However, OWASA's financial condition, including reserve funds, allows us to manage the finances of the organization with a leaner budget.

One of the intended outcomes of establishing reserves is to be better prepared for contingencies that can adversely affect the organization and the customers we serve. Without adequate reserves, we may not be able to react timely and effectively to situations such as a critical asset failure, significant and sudden decrease in water demand, or the effects of a natural disaster. Having adequate reserves also helps us reduce the risk of needing to suddenly increase rates to address unbudgeted expenditures.

Assumptions and highlights:

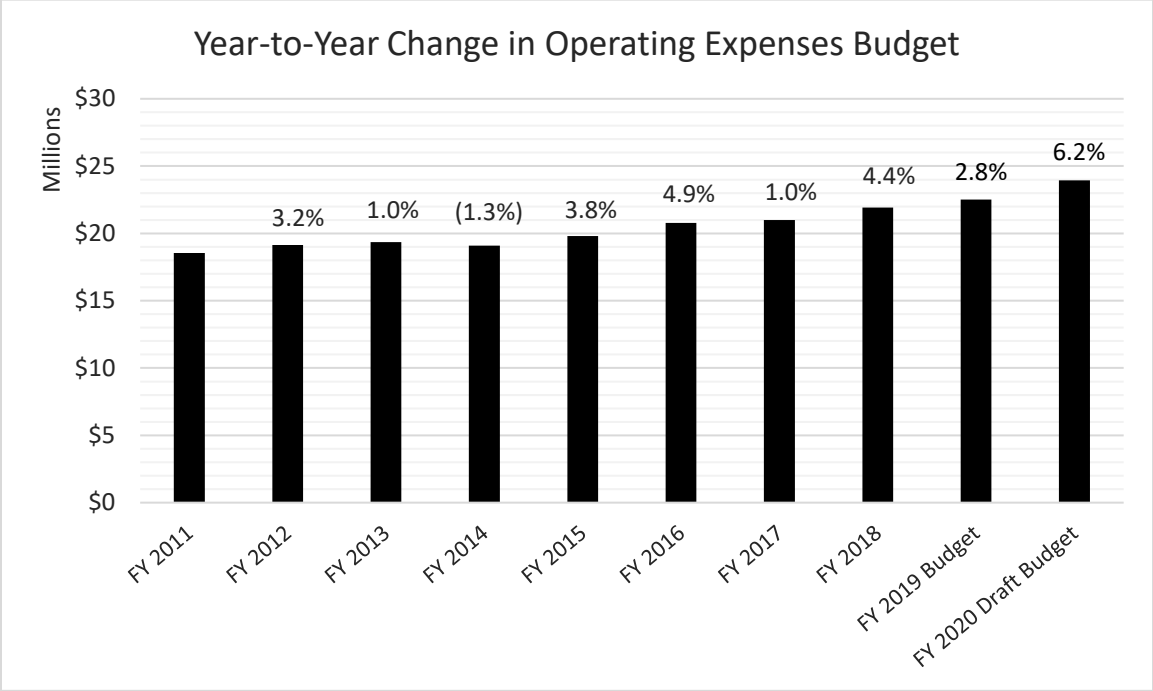
- The budget is being developed so that all of our Financial Management Policy objectives may be met.
- 2.5% vacancy allowance – the personnel compensation budget has been reduced by about $200,000, to account for position vacancies.
- No increase in health insurance costs. This will be adjusted once we receive information from our health insurance provider.
- Price increases for certain chemicals based on information provided by vendors.
- A placeholder for a 4% merit and cost of labor (combined) increase is included. The Board is scheduled to discuss employee wage increases on May 9, 2019.
- 141 Board authorized positions with 136 funded for FY 2019. This includes:
    - Funding for an additional Maintenance Mechanic position at the wastewater treatment plant.
    - Funding for an additional Administrative Assistant position in the Executive Director's department to assist with a variety of tasks including support of our communications plan activities.
    - Funding for the additional (fourth) Utilities Engineer position approved by the Board in FY 2019.
    - No funding for two previously funded and currently vacant Utility Mechanic positions (made possible through savings from implementing Agua Vista).
- The draft operating budget includes $75,000 for consulting assistance to continue our work to implement our diversity and inclusion program.
- $185,000 for consulting services to help us comply with provisions of the American Water Infrastructure Act of 2018 including $85,000 to conduct a security assessment and remediation of issues of our supervisory control and data acquisition (SCADA) system.
- $50,000 for consulting services to assist in updating our construction standards and specifications.
- $125,000 for consulting services to assist us in improving our water distribution unidirectional flushing program.
- $100,000 for consulting services to support communication plan activities.
- $53,000 for recurring operational costs for the Agua Vista system's customer portal.
- Wastewater treatment nutrient removal requirements in the Jordan Lake Rules have been delayed by the NC General Assembly until 2024.

Operating budget comparative information:

The Board's Finance Committee met on December 5, 2018 to review the operating budget and to explore alternatives for reducing expenses. Based on the Committee's review and discussion of analysis provided by staff, and the organization's desire to focus on system resiliency, the Committee chose not to undertake a project or projects to identify and implement new innovative approaches to operating the

utility. However, we will continue our practice of looking for ways to optimize operations, manage costs, and watch for innovations (e.g., advanced metering infrastructure).

The Finance Committee found the analysis helpful and selected information from the December 5 meeting has been updated and provided below.



On average, operating expenses have increased about 3% per year since FY 2011. The draft FY 2020 budget is about $1.4 million or 6.2% greater than the FY 2019 budget. The primary differences between the FY 2019 budget and the draft FY 2020 budget include:

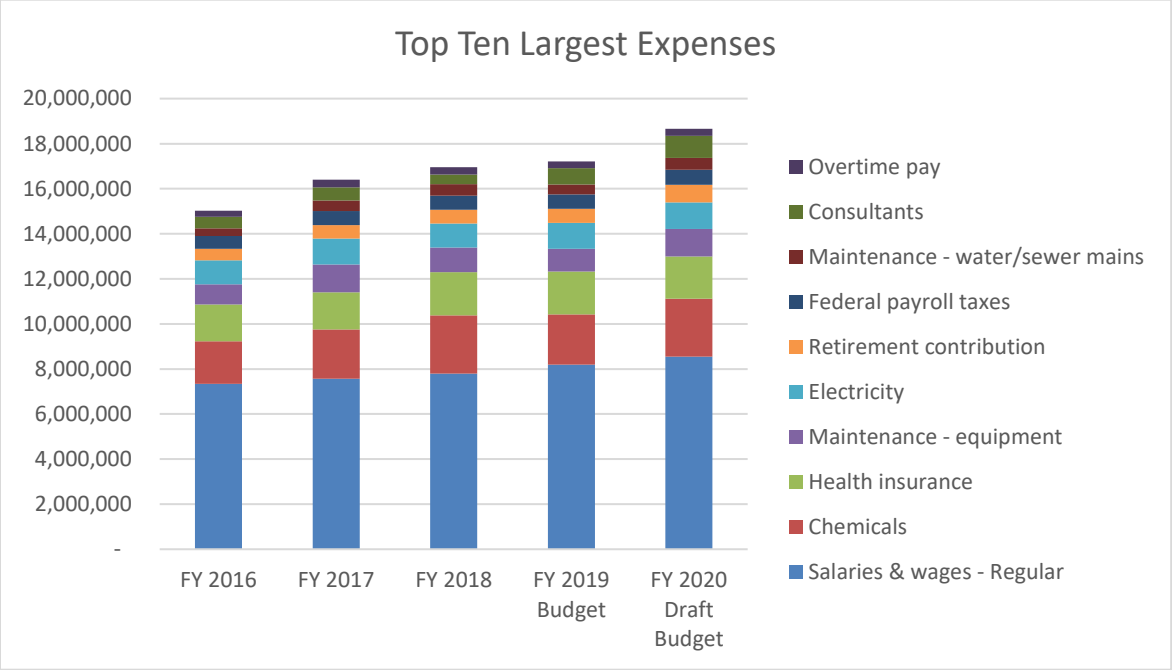
Expenses	Increase	% Increase	Explanation
Total salaries and wages	$359,000	4.2%	• One (net) added position • 4% merit/COLA increase
Payroll taxes and employee benefits	$216,000	5.6%	• Local Government Employee Retirement System employer contribution increase from 7.5% to 8.95% of wages
Chemicals	$330,000	14.8%	• Price and usage increases
Maintenance	$324,000	10.6%	• Agua Vista system maintenance • Funds to repair broken distribution system valves • Additional maintenance costs at wastewater plant including wet-well and reclaimed water reservoir tank cleaning and inspection
Professional services	$196,000	12.0%	• Various projects and tasks referred to on page 2 above

Expenses	Increase	% Increase	Explanation
Communications	$60,000	32.5%	• Materials, advertising for community education • Advertising for open positions
Total of these items	$1,485,000		

Each year, ten expense items comprise about three-fourths of total operating expenses.

Operating Expenses	FY 2016	FY 2017	FY 2018	FY 2019 Budget	FY 2020 Draft Budget	FY20 % total
Salaries & wages - Regular	7,343,784	7,564,689	7,799,169	8,194,681	8,555,668	36%
Chemicals	1,888,608	2,190,143	2,576,434	2,235,122	2,565,568	11%
Health insurance	1,631,609	1,654,664	1,922,043	1,900,302	1,872,578	8%
Maintenance - equipment	890,594	1,235,063	1,096,049	1,002,665	1,228,323	5%
Electricity	1,075,155	1,148,288	1,061,802	1,150,645	1,170,820	5%
Retirement contribution	510,262	598,985	617,219	627,773	785,366	3%
Federal payroll taxes	569,007	619,190	615,628	636,309	666,474	3%
Maintenance - water/sewer mains	331,459	465,747	521,596	437,800	523,618	2%
Consultants	514,344	583,364	418,381	733,500	973,200	4%
Overtime pay	267,682	339,115	329,755	295,620	312,228	1%
Top 10 expenses total	15,022,504	16,399,248	16,958,076	17,214,417	18,653,843	78%
Total operating expenses for FY	20,054,246	20,998,593	21,614,359	22,523,981	23,930,920	100%
Additional information						**Decision-Maker**
Funded positions	127.5	132.5	134.0	135.0	136.0	OWASA Board
Cost of labor adjustment	NA	1.5%	1.0%	1.0%	1.0%	OWASA Board
Merit adjustment	3.0%	1.5%	3.0%	3.0%	3.0%	OWASA Board
Health insurance adjustment	21.4%	15.0%	6.8%	-6.0%	0.0%	OWASA Board and Insurer
Retirement system contribution	7.00%	7.31%	7.50%	7.50%	8.95%	LGERS Board
Payroll taxes - soc. sec. & medicare	7.65%	7.65%	7.65%	7.65%	7.65%	Fed. Govt.

Top ten expense information is also shown in the graph below.



Observations about the top ten largest expenses

1. Employee compensation, taxes and benefits account for about 55% of our annual operating expenses.
    a. Regular salaries and wages make up about 36% of annual expenses. Over the last five years, the average annual increase in salaries and wages has been between 2% and 4%. Based on the Board's stated intentions, future merit increases will be at least 2.9%. Cost of labor will be determined based on market data.
    b. Health insurance makes up about 8% of annual expenses. Health insurance rates are a function of benefits offered and claims experience.
    c. Mandatory employer contributions to the Local Government Employees Retirement System for FY 2020 will be 8.95% of total employee wages. (While not an OWASA expense, employees are required to contribute 6% of wages.) OWASA's contributions average about 3% of total annual expenses.
    d. Employer-paid federal payroll taxes are 7.65% of total wages and also average about 3% of total annual expenses.
2. Chemicals expense averages 10% to 12% of total expenses each year. The unit price of chemicals is somewhat volatile, and the quantity used by our drinking water and wastewater treatment plants is impacted by the volume and condition of the water entering the plants. Recent levels of organic compounds in our raw water supply have required the use of more chemicals in treating drinking water. Wetter than average conditions have also required higher volumes of chemical-use to treat wastewater and prevented us from land applying our biosolids which in turn increases our use of polymer to aid in dewatering.
3. Total maintenance expenses make up about 14% of annual expenses. We separately track maintenance for different types of assets. Maintenance of equipment (everything other than

pumps, reservoirs and tanks, buildings, pipelines, and vehicles) is the largest maintenance line-item and averages about 5% of annual operating expenses.

4. Electricity costs average about 5% of total annual expenses. The Board has set a goal to reduce purchased electricity by 35% by the end of Calendar Year (CY) 2020 compared to the CY 2010 baseline.

Budget and rate setting process next steps:

Public hearings on the budget and rates are tentatively scheduled for May 23, 2019. A final budget and proposed rate schedule are tentatively scheduled to be presented for approval at the Board work session on June13, 2019.

1. Staff will present a revised (if necessary) draft of the operating budget, a draft of the 5-year CIP budget, and rate adjustment alternatives at the Board's March 28, 2019 meeting.
2. Staff will incorporate feedback from the March 14 and March 28 Board meetings into the budget and financial plan.
3. Staff anticipates presenting an updated draft of the FY 2020 budget and rate adjustment recommendation to the Board of Directors on April 11 in advance of the public hearings.
4. Staff will prepare a revised (if necessary) draft of the FY 2020 budget and rate adjustment recommendation for presentation at public hearings tentatively scheduled for May 23rd.
5. At the public hearings, the Board will receive and consider comments from customers and other stakeholders.
6. After considering public input, the Board of Directors will discuss and provide guidance to staff on the final draft of the FY 2020 budget and rate adjustment recommendation.
7. Staff will finalize the FY 2020 budget and rate adjustment recommendation and is scheduled to present it for adoption by the Board of Directors at its meeting on June 13, 2019.

Action requested:

Review the draft FY 2020 operating budget information and provide guidance.

Information:

Draft FY 2020 operating budget information

Orange Water and Sewer Authority
Draft FY 2020 Budget Information

	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request	FY20 Amounts in last year's model	FY20 Budget Compared to FY19 Forecast	FY20 Budget Compared to FY19 Budget	FY20 Budget compared to amount in last year's model
Operating Expenses	20,998,593	21,614,359	22,523,981	22,795,118	23,930,920	23,276,870	5.0%	6.2%	2.8%
Capital Equipment	1,724,456	1,178,175	1,001,135	1,001,135	TBD	900,000			
CIP	9,692,697	15,085,000	20,952,000	18,001,000	TBD	27,287,000			
Total	32,415,746	37,877,534	44,477,116	41,797,253	23,930,920	51,463,870			

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request		Dollar variance FY20 v FY19 Budgets	Percent variance FY20 v FY19 Budgets		Dollar variance FY20 Budget v FY19 Forecast	Percent variance FY20 Budget v FY19 Forecast
	SALARIES											
5010	SALARIES AND WAGES, REGULAR	7,564,689	7,799,168	8,194,681	7,983,489	8,555,668		360,987	4.4%		572,180	7.2%
5020	SALARIES AND WAGES, OVERTIME	339,115	329,755	295,620	312,228	306,670		11,049	3.7%		(5,558)	-1.8%
5050	STANDBY PAY	48,427	49,994	44,627	61,590	60,200		15,573	34.9%		(1,390)	-2.3%
5060	PART-TIME	158,427	91,225	93,606	111,182	64,754		(28,852)	-30.8%		(46,428)	-41.8%
5070	PER DIEM	11,550	11,900	15,000	14,611	15,000		-	0.0%		389	2.7%
	Total	8,122,208	8,282,042	8,643,535	8,483,099	9,002,292		358,757	4.2%		519,192	6.1%
	PAYROLL TAXES AND EMPLOYEE BENEFITS											
5110	FICA	619,190	615,628	636,309	628,527	666,474		30,165	4.7%		37,947	6.0%
5120	RETIREMENT CONTRIBUTION	598,985	617,219	627,773	636,349	785,366		157,593	25.1%		149,018	23.4%
5121	DEFERRED COMPENSATION	187,565	179,845	170,560	168,373	161,720		(8,840)	-5.2%		(6,653)	-4.0%
5130	WORKERS COMPENSATION	173,042	188,876	86,249	140,885	136,912		50,663	58.7%		(3,972)	-2.8%
5140	HEALTH INSURANCE	1,654,664	1,922,043	1,900,302	1,814,954	1,872,578		(27,724)	-1.5%		57,624	3.2%
5141	DENTAL INSURANCE	46,651	53,233	55,563	55,165	58,610		3,047	5.5%		3,445	6.2%
5142	VISION INSURANCE	34,411	27,566	35,000	28,625	32,000		(3,000)	-8.6%		3,375	11.8%
5143	WELLNESS PROFRA REIMBURSEMENT	2,074	2,087	2,400	2,339	2,400		-	0.0%		61	2.6%
5144	RETIREES & COBRA INSURANCE	198,402	196,582	211,406	213,395	231,470		20,065	9.5%		18,076	8.5%
5150	DISABILITY INSURANCE	33,833	34,621	36,843	34,396	32,668		(4,175)	-11.3%		(1,728)	-5.0%
5160	AUTOMOBILE ALLOWANCE	6,750	6,250	6,000	6,250	6,000		-	0.0%		(250)	-4.0%
5161	UNEMPLOYMENT TAX	1,968	3,290	10,000	7,403	8,000		(2,000)	-20.0%		597	8.1%
5170	UNIFORMS	61,126	69,089	55,473	56,814	58,678		3,205	5.8%		1,864	3.3%
5180	GROUP LIFE & A.D. & D.	41,128	40,992	42,859	40,266	39,746		(3,113)	-7.3%		(520)	-1.3%
5190	VACATION ACCRUED	10,975	15,491	-	-	-		-			-	
	Total	3,670,764	3,972,812	3,876,738	3,833,739	4,092,623		215,885	5.6%		258,884	6.8%
	UTILITIES											
5210	ELECTRICITY	1,148,288	1,061,802	1,150,645	1,174,298	1,170,820		20,175	1.8%		(3,478)	-0.3%
5231	TELEPHONE - LOCAL	106,991	125,990	125,440	131,646	118,700		(6,740)	-5.4%		(12,946)	-9.8%
5233	CELL PHONES	53,441	55,523	61,300	63,781	63,500		2,200	3.6%		(281)	-0.4%
5240	FUEL	108,750	89,042	69,888	49,196	56,900		(12,988)	-18.6%		7,704	15.7%
5250	WASTE DISPOSAL	253,596	225,665	289,430	389,623	271,780		(17,650)	-6.1%		(117,843)	-30.2%
	Total	1,671,066	1,558,022	1,696,703	1,808,544	1,681,700		(15,003)	-0.9%		(126,845)	-7.0%
	MATERIALS AND SUPPLIES											
5310	CHEMICALS	2,190,143	2,576,434	2,235,122	2,371,234	2,565,568		330,446	14.8%		194,333	8.2%
5315	LAND APPLICATION	54,340	11,634	50,000	84,283	50,000		-	0.0%		(34,283)	-40.7%
5320	SMALL TOOLS	16,269	22,733	22,446	41,337	25,905		3,459	15.4%		(15,432)	-37.3%
5330	SUBSCRIPTIONS	1,510	1,897	1,765	1,465	2,115		350	19.8%		650	44.4%
5340	LAKE SUPPLIES	21,340	33,029	35,060	35,067	42,320		7,260	20.7%		7,253	20.7%
5350	FUEL - VEHICLES	118,980	169,344	165,555	164,561	169,349		3,794	2.3%		4,788	2.9%
5360	OFFICE SUPPLIES	34,923	24,942	46,660	44,867	44,650		(2,010)	-4.3%		(217)	-0.5%
5365	COMPUTER EQUIPMENT & PARTS	90,410	80,778	87,300	87,140	85,600		(1,700)	-1.9%		(1,540)	-1.8%
5370	LABORATORY EXPENSES	233,071	247,945	240,214	245,390	229,860		(10,354)	-4.3%		(15,530)	-6.3%
5380	SAFETY SUPPLIES	59,565	46,511	87,933	79,725	70,462		(17,471)	-19.9%		(9,263)	-11.6%

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request	Dollar variance FY20 v FY19 Budgets	Percent variance FY20 v FY19 Budgets	Dollar variance FY20 Budget v FY19 Forecast	Percent variance FY20 Budget v FY19 Forecast
5390	OTHER	24,967	25,164	21,400	30,369	26,050	4,650	21.7%	(4,319)	-14.2%
	Total	2,845,518	3,240,411	2,993,454	3,185,440	3,311,879	318,424	10.6%	126,439	4.0%
	MAINTENANCE									
5410	MAINTENANCE - EQUIPMENT	1,235,063	1,096,049	1,002,665	1,039,443	1,228,323	225,658	22.5%	188,880	18.2%
5413	MAINTENANCE - PUMPING EQUIPMENT	336,492	239,682	384,225	408,331	354,875	(29,350)	-7.6%	(53,456)	-13.1%
5415	MAINTENANCE - RESERVOIR & TANK	153,520	226,114	194,500	194,522	205,500	11,000	5.7%	10,978	5.6%
5420	FACILITIES	8,435	74,360	32,300	33,791	111,050	78,750	243.8%	77,259	228.6%
5421	BUILDINGS	263,700	238,353	293,225	277,836	264,825	(28,400)	-9.7%	(13,011)	-4.7%
5422	MAINTENANCE - MAINS	465,747	521,596	437,800	437,800	523,618	85,818	19.6%	85,818	19.6%
5423	MAINTENANCE - METERS	162,006	140,033	341,900	354,715	317,400	(24,500)	-7.2%	(37,315)	-10.5%
5424	MAINTENANCE - HYDRANTS	37,695	16,867	23,519	23,519	23,229	(289)	-1.2%	(289)	-1.2%
5425	MAINTENANCE - SERVICE LINES	83,280	60,704	82,777	84,004	82,324	(453)	-0.5%	(1,680)	-2.0%
5430	GROUNDS	75,289	97,616	87,000	85,640	85,830	(1,170)	-1.3%	190	0.2%
5440	MOTOR VEHICLES	201,735	175,214	186,000	185,053	193,400	7,400	4.0%	8,348	4.5%
	Total	3,022,962	2,886,588	3,065,911	3,124,653	3,390,374	324,463	10.6%	265,721	8.5%
	PROFESSIONAL SERVICES									
5500	LEGAL	280,300	287,796	240,000	279,350	260,000	20,000	8.3%	(19,350)	-6.9%
5510	ACCOUNTING	38,263	30,756	32,000	31,969	32,000	-	0.0%	31	0.1%
5520	ENGINEERING	970	4,794	7,500	3,750	7,500	-	0.0%	3,750	100.0%
5530	INSURANCE	230,788	226,495	228,800	235,211	236,160	7,360	3.2%	949	0.4%
5560	COLLECTION SERVICES	34,624	27,332	40,000	40,000	40,000	-	0.0%	-	0.0%
5570	CONSULTANTS	583,364	418,381	733,500	787,866	973,200	239,700	32.7%	185,334	23.5%
5580	FINANCIAL SERVICES	233,949	262,756	253,877	253,338	177,086	(76,791)	-30.2%	(76,252)	-30.1%
5581	TRUSTEE SERVICES	11,561	11,900	20,000	19,925	20,000	-	0.0%	75	0.4%
5590	OTHER	61,859	47,492	86,000	84,275	92,000	6,000	7.0%	7,725	9.2%
	Total	1,475,678	1,317,702	1,641,677	1,735,684	1,837,946	196,269	12.0%	102,262	5.9%
	COMMUNICATIONS									
5610	POSTAGE AND FREIGHT	79,590	93,752	113,200	120,504	122,265	9,065	8.0%	1,761	1.5%
5620	CUSTOMER INFORMATION	41,575	22,852	25,387	57,974	45,896	20,509	80.8%	(12,078)	-20.8%
5630	ADVERTISING	36,924	69,737	35,950	56,971	65,950	30,000	83.4%	8,979	15.8%
5690	OTHER	5,000	3,914	8,950	8,950	8,950	-	0.0%	-	0.0%
	Total	163,089	190,255	183,487	244,400	243,061	59,574	32.5%	(1,339)	-0.5%
	PRINTING AND REPRODUCTION									
5700	PRINTING AND REPRODUCTION	7,980	4,485	10,850	9,950	10,300	(550)	-5.1%	350	3.5%
	Total	7,980	4,485	10,850	9,950	10,300	(550)	-5.1%	350	3.5%
	EDUCATION AND DEVELOPMENT									
5810	EDUCATION AND DEVELOPMENT	103,681	101,637	173,830	158,610	184,616	10,786	6.2%	26,006	16.4%
5840	BOARD TRAVEL	-	300	-	-	-	-		-	
	Total	103,681	101,937	173,830	158,610	184,616	10,786	6.2%	26,006	16.4%

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request		Dollar variance FY20 v FY19 Budgets	Percent variance FY20 v FY19 Budgets		Dollar variance FY20 Budget v FY19 Forecast	Percent variance FY20 Budget v FY19 Forecast
	MISCELLANEOUS											
5910	DUES AND MEMBERSHIPS	37,770	135,737	147,383	149,787	148,029		646	0.4%		(1,758)	-1.2%
5920	CONSERVATION	3,703	1,595	6,000	9,666	6,100		100	1.7%		(3,566)	-36.9%
5925	EASEMENTS		1,000	6,000	3,000	7,500		1,500	25.0%		4,500	150.0%
5930	OVERAGES AND SHORTAGES	(486)	1,331	-	-	-		-			-	
5940	UNCOLLECTABLE ACCOUNTS	27,717	59,649	30,000	30,291	31,000		1,000	3.3%		709	2.3%
5950	RENT AND LEASES	66,171	59,376	113,163	114,138	68,400		(44,763)	-39.6%		(45,738)	-40.1%
5960	FOREST MANAGEMENT	(560)	12,280	12,000	12,000	22,000		10,000	83.3%		10,000	83.3%
5970	BOARD EXPENSES	3,378	3,721	7,000	7,000	7,000		-	0.0%		-	0.0%
5980	RECRUITMENT	-	632	4,000	4,000	4,000		-	0.0%		0	0.0%
5990	OTHER	60,227	47,675	72,250	78,720	72,100		(150)	-0.2%		(6,620)	-8.4%
	Total	197,920	322,996	397,796	408,602	366,129		(31,667)	-8.0%		(42,473)	-10.4%
	Total Personnel Services	11,792,972	12,254,854	12,520,273	12,316,838	13,094,915		574,642	4.6%		778,077	6.3%
	Total Operating Services	9,487,894	9,622,396	10,163,708	10,675,883	11,026,004		862,296	8.5%		350,122	3.3%
	Total Operating and Maintenance	21,280,866	21,877,250	22,683,981	22,992,721	24,120,920		1,436,939	6.3%		1,128,198	4.9%
	CONSTRUCTION CREDIT	(282,273)	(262,891)	(160,000)	(197,603)	(190,000)		(30,000)	18.8%		7,603	-3.8%
	Net	20,998,593	21,614,359	22,523,981	22,795,118	23,930,920		1,406,939	6.2%		1,135,802	5.0%

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

EXECUTIVE DIRECTOR
DEPT : 01

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	597,276	575,580	612,381	618,644	696,414
5020	SALARIES AND WAGES, OVERTIME	205	129		0	
5060	PART-TIME	58,458	27,537	30,000	29,248	0
5070	PER DIEM	11,550	11,900	15,000	14,611	15,000
	TOTAL SALARIES	667,489	615,146	657,381	662,502	711,414
FRINGE BENEFITS						
5110	FICA	48,579	42,451	45,673	44,610	51,883
5120	RETIREMENT CONTRIBUTION	44,722	43,350	47,106	48,194	63,927
5121	DEFERRED COMPENSATION	18,285	17,565	6,240	6,400	6,240
5130	WORKERS COMPENSATION	20,839	21,525	15,000	17,201	15,000
5140	HEALTH INSURANCE	76,741	85,346	88,985	87,429	98,252
5141	DENTAL INSURANCE	2,414	2,552	2,691	2,768	3,276
5150	DISABILITY INSURANCE	1,943	1,771	2,079	1,823	1,989
5160	AUTOMOBILE ALLOWANCE	6,750	6,250	6,000	6,250	6,000
5180	GROUP LIFE & A.D. & D.	2,369	2,174	2,341	2,284	2,218
5190	VACATION ACCRUED	(13,399)	15,686	0	0	0
	TOTAL FRINGE BENEFITS	209,243	238,670	216,115	216,958	248,784
UTILITIES						
5210	ELECTRICITY	43,125	29,107	40,000	44,493	40,000
5233	CELL PHONES	4,500	3,750	5,250	4,781	6,500
5240	FUEL	10,642	8,480	12,059	7,181	600
	TOTAL UTILITIES	58,267	41,337	57,309	56,455	47,100
MATERIALS AND SUPPLIES						
5330	SUBSCRIPTIONS	1,180	1,641	800	800	1,150
5360	OFFICE SUPPLIES	8,470	2,501	6,500	6,500	6,550
5380	SAFETY SUPPLIES	360	114	625	625	250

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

EXECUTIVE DIRECTOR
DEPT : 01

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5390	OTHER	893	415	0	254	0
	TOTAL MATERIALS AND SUPPLIES	10,903	4,671	7,925	8,179	7,950
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT		0	0	0	0
	TOTAL MAINTENANCE	-	0	0	0	0
PROFESSIONAL SERVICES						
5500	LEGAL	280,300	287,796	240,000	279,350	260,000
5530	INSURANCE	35,829	37,613	38,000	60,598	61,200
5570	CONSULTANTS	48,996	157,934	33,000	27,545	137,700
5590	OTHER		0	0	0	0
	TOTAL PROFESSIONAL SERVICES	365,125	483,343	311,000	367,493	458,900
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	8,024	11,170	12,500	13,817	18,200
5620	CUSTOMER INFORMATION	41,575	22,852	25,387	57,974	45,896
5630	ADVERTISING	1,596	5,104	3,950	5,450	15,950
5690	OTHER - televising Board Meetings	5,000	3,914	8,950	8,950	8,950
	TOTAL COMMUNICATIONS	56,195	43,040	50,787	86,192	88,996
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	190	433	1,250	1,250	1,250
	TOTAL PRINTING AND REPRODUCTION	190	433	1,250	1,250	1,250
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	8,231	14,920	28,530	28,530	22,480
5840	BOARD TRAVEL		300	0	0	0
	TOTAL TRAVEL	8,231	15,220	28,530	28,530	22,480
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	17,355	17,992	22,729	24,729	21,550

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

EXECUTIVE DIRECTOR
DEPT : 01

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5920	CONSERVATION	3,703	1,595	6,000	9,666	6,100
5970	BOARD EXPENSES	3,378	3,721	7,000	7,000	7,000
5990	OTHER	2,797	6,178	4,250	4,250	3,850
	TOTAL MISCELLANEOUS	27,233	29,486	39,979	45,645	38,500
Total Personnel Services		876,732	853,816	873,495	879,461	960,199
Total Operating Services		526,144	617,530	496,780	593,743	665,176
Total Operating and Maintenance		1,402,876	1,471,346	1,370,275	1,473,204	1,625,375
CONSTRUCTION CREDIT		(114,070)	(123,422)	(70,000)	(75,042)	(70,000)
		1,288,806	1,347,924	1,300,275	1,398,162	1,555,375

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

CUSTOMER SERVICE
DEPT:02

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	409,856	440,063	447,983	447,236	469,216
5020	SALARIES AND WAGES, OVERTIME	858	742	0	365	0
5060	PART TIME	15,492	3,925	0	8,060	0
	TOTAL SALARIES	426,206	444,730	447,983	455,661	469,216
FRINGE BENEFITS						
5110	FICA	33,281	34,468	35,149	35,053	36,815
5120	RETIREMENT CONTRIBUTION	31,035	33,249	34,460	34,846	43,072
5121	DEFERRED COMPENSATION	14,580	13,400	14,560	14,653	15,080
5130	WORKERS COMPENSATION		0	0	1,444	0
5140	HEALTH INSURANCE	98,011	117,549	111,414	111,292	111,121
5141	DENTAL INSURANCE	3,006	3,476	3,431	3,580	3,788
5150	DISABILITY INSURANCE	2,139	2,200	2,139	2,080	2,072
5170	UNIFORMS		0	0		0
5180	GROUP LIFE & A.D. & D.	2,595	2,749	2,780	2,702	2,657
5190	VACATION ACCRUED	4,497	4,457			
	TOTAL FRINGE BENEFITS	189,144	211,548	203,934	205,650	214,604
UTILITIES						
5233	CELL PHONES	1,500	1,500	1,500	1,500	1,500
	TOTAL UTILITIES	1,500	1,500	1,500	1,500	1,500
MATERIALS AND SUPPLIES						
5320	SMALL TOOLS		0	0	0	0
5350	FUEL - VEHICLES		0	0	0	0
5360	OFFICE SUPPLIES	2,015	2,040	3,000	3,000	3,000
5380	SAFETY SUPPLIES	13	14	0	0	0
5390	OTHER - MATERIALS	383	0	0	0	0
	TOTAL MATERIALS AND SUPPLIES	2,411	2,054	3,000	3,000	3,000
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	1,240	1,240	0	0	0
5440	MOTOR VEHICLES		0	0	0	0
	TOTAL MAINTENANCE	1,240	1,240	0	0	0

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

CUSTOMER SERVICE
DEPT:02

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
PROFESSIONAL SERVICES						
5530	INSURANCE		0	0	0	0
5550	CLERICAL SERVICES		0	0	0	0
5560	COLLECTION SERVICES	34,624	27,332	40,000	40,000	40,000
5570	CONSULTANTS		0	0	0	0
5590	OTHER		0	0	0	0
	TOTAL PROFESSIONAL SERVICES	34,624	27,332	40,000	40,000	40,000
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	53,250	56,405	75,000	72,547	75,000
	TOTAL COMMUNICATIONS	53,250	56,405	75,000	72,547	75,000
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	709	0	1,000	600	500
	TOTAL PRINTING AND REPRODUCTION	709	0	1,000	600	500
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	6,738	658	5,000	18,790	15,000
	TOTAL EDUCATION & DEVELOPMENT	6,738	658	5,000	18,790	15,000
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS		0	0	0	0
5930	OVERAGES AND SHORTAGES	(486)	1,331	0	0	0
5940	UNCOLLECTABLE ACCOUNTS	27,717	59,649	30,000	30,291	31,000
5960	INCENTIVE TO CONNECT		0	0	0	0
5990	OTHER	434	143	0	0	0
	TOTAL MISCELLANEOUS LINE	27,665	61,123	30,000	30,291	31,000
Total Personnel Services		615,350	656,278	651,917	661,311	683,820
Total Operating Services		128,137	150,312	155,500	166,728	166,000
Total Operating and Maintenance		743,487	806,590	807,417	828,038	849,820

ANNUAL BUDGET REQUEST SUMMARY **ENGINEERING AND PLANNING**
FISCAL YEAR 2020 **DEPT : 03**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	1,088,266	1,197,939	1,242,039	1,215,958	1,381,927
5020	SALARIES & WAGES - OVERTIME	8,449	6,909	8,750	11,725	12,000
5060	PART TIME	19,902	13,380	20,000	26,940	20,000
	TOTAL SALARIES	1,116,617	1,218,228	1,270,789	1,254,623	1,413,927
FRINGE BENEFITS						
5110	FICA	85,415	89,983	97,452	94,494	108,428
5120	RETIREMENT CONTRIBUTION	82,876	90,607	95,541	95,015	126,854
5121	DEFERRED COMPENSATION	21,800	21,880	22,880	22,407	19,240
5130	WORKERS' COMPENSATION	4,652				
5140	HEALTH INSURANCE	188,221	229,698	221,423	214,420	231,882
5141	DENTAL INSURANCE	5,077	5,977	6,175	6,289	7,259
5150	DISABILITY INSURANCE	4,824	5,030	5,007	4,693	4,464
5180	GROUP LIFE & A.D. & D.	5,622	4,990	5,125	4,842	4,835
5190	VACATION ACCRUED		0	0	0	0
	TOTAL FRINGE BENEFITS	398,487	448,165	453,604	442,153	502,961
UTILITIES						
5233	CELL PHONES	8,444	8,850	9,800	9,625	10,800
	TOTAL UTILITIES	8,444	8,850	9,800	9,625	10,800
MATERIALS AND SUPPLIES						
5320	SMALL TOOLS	486	2,862	2,185	2,185	1,905
5330	SUBSCRIPTIONS	218	172	665	665	665
5350	FUEL - VEHICLES & EQUIP.	3,697	3,206	5,500	4,573	5,500
5360	OFFICE SUPPLIES	1,536	4,199	3,560	4,160	4,000
5380	SAFETY SUPPLIES	766	1,468	3,205	3,205	3,695
5390	OTHER	(292)	784	1,200	1,200	1,350
	TOTAL MATERIALS AND SUPPLIES	6,411	12,691	16,315	15,988	17,115

ANNUAL BUDGET REQUEST SUMMARY **ENGINEERING AND PLANNING**
FISCAL YEAR 2020 **DEPT : 03**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
MAINTENANCE						
5440	MOTOR VEHICLES	4,354	1,889	2,000	1,599	1,500
	TOTAL MAINTENANCE	4,354	1,889	2,000	1,599	1,500
PROFESSIONAL SERVICES						
5520	ENGINEERING	970	4,794	7,500	3,750	7,500
5570	CONSULTANTS	71,127	37,777	180,000	155,763	235,000
	TOTAL PROFESSIONAL SERVICES	72,097	42,571	187,500	159,513	242,500
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	344	557	600	406	650
	TOTAL COMMUNICATIONS	344	557	600	406	650
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	1,760	242	2,100	2,100	2,050
	TOTAL PRINTING & REPRODUCTION	1,760	242	2,100	2,100	2,050
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	15,430	16,685	28,060	18,010	28,545
	TOTAL EDUCATION & DEVELOPMENT	15,430	16,685	28,060	18,010	28,545
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	2,563	2,520	3,025	3,025	3,285
5920	CONSERVATION		0	0	0	0
5925	EASEMENTS		1,000	6,000	3,000	7,500
5960	FOREST MANAGEMENT	(560)	12,280	12,000	12,000	22,000
5990	OTHER	81	442	500	500	750
	TOTAL MISCELLANEOUS	2,084	16,242	21,525	18,525	33,535

ANNUAL BUDGET REQUEST SUMMARY **ENGINEERING AND PLANNING**
FISCAL YEAR 2020 **DEPT : 03**

EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
Total Personnel Services	1,515,104	1,666,393	1,724,393	1,696,776	1,916,888
Total Operating Services	110,924	99,727	267,900	225,766	336,695
Total Operating and Maintenance	1,626,028	1,766,120	1,992,293	1,922,542	2,253,583

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

HUMAN RESOURCES
DEPT : 04

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	212,040	216,143	293,115	244,637	294,075
5020	SALARIES AND WAGES, OVERTIME		61	200	563	200
5060	PART-TIME		0	0	13,339	0
	TOTAL SALARIES	212,040	216,204	293,315	258,538	294,275
FRINGE BENEFITS						
5110	FICA	16,297	15,827	22,998	19,415	23,074
5120	RETIREMENT CONTRIBUTION	16,000	16,229	22,547	18,903	26,995
5121	DEFERRED COMPENSATION	6,480	6,240	6,240	5,280	3,640
5140	HEALTH INSURANCE	37,362	47,962	59,006	46,256	53,433
5141	DENTAL INSURANCE	1,316	1,522	1,840	1,553	1,951
5142	VISION INSURANCE	34,411	27,566	35,000	28,625	32,000
5143	WELLNESS PROFRA REIMBURSEMENT	2,074	2,087	2,400	2,339	2,400
5144	RETIREES & COBRA INSURANCE	198,402	196,582	211,406	213,395	231,470
5150	DISABILITY INSURANCE	1,026	948	1,312	1,006	991
5161	UNEMPLOYMENT TAX	1,968	3,290	10,000	7,403	8,000
5170	UNIFORMS		0	200	117	200
5180	GROUP LIFE & A.D. & D.	1,129	1,033	1,378	1,071	1,101
5190	POST EMPLOYMENT BENEFITS		0	0	0	0
	TOTAL FRINGE BENEFITS	316,465	319,286	374,327	345,361	385,254
UTILITIES						
5233	CELL PHONES	1,500	1,500	2,650	2,650	2,800
	TOTAL UTILITIES	1,500	1,500	2,650	2,650	2,800
MATERIALS AND SUPPLIES						
5330	SUBSCRIPTIONS	112	84	300	0	300
5350	FUEL					1,000
5360	OFFICE SUPPLIES	1,358	1,642	3,200	3,200	3,200
5380	SAFETY SUPPLIES	1,401	331	3,000	3,000	3,500
5390	OTHER	75	37	500	500	500
	TOTAL MATERIALS AND SUPPLIES	2,946	2,094	7,000	6,700	8,500

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
MAINTENANCE						
5440	MOTOR VEHICLES					400
	TOTAL MATERIALS AND SUPPLIES	0	0	0	0	400
PROFESSIONAL SERVICES						
5570	CONSULTANTS	140,969	112,458	292,500	402,582	271,500
5590	OTHER	20,755	17,898	50,000	48,264	50,000
	TOTAL PROFESSIONAL SERVICES	161,724	130,356	342,500	450,847	321,500
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	3,260	6,482	4,000	8,000	4,000
5630	ADVERTISING	34,278	64,464	32,000	51,522	50,000
	TOTAL COMMUNICATIONS	37,538	70,946	36,000	59,522	54,000
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	466	158	1,000	1,000	1,000
	TOTAL PRINTING AND REPRODUCTION	466	158	1,000	1,000	1,000
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	4,670	652	10,100	9,804	12,900
	TOTAL EDUCATION & DEVELOPMENT	4,670	652	10,100	9,804	12,900
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	1,454	5,270	10,000	10,000	11,000
5980	RECRUITMENT		632	4,000	4,000	4,000
5990	OTHER	17,743	15,685	45,000	45,000	45,000
	TOTAL MISCELLANEOUS	19,197	21,587	59,000	59,000	60,000
Total Personnel Services		528,505	535,490	667,642	603,899	679,529
Total Operating Services		228,041	227,293	458,250	589,522	461,100
Total Operating and Maintenance		756,546	762,783	1,125,892	1,193,421	1,140,629

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	441,158	400,480	401,044	401,546	419,167
5020	SALARIES AND WAGES, OVERTIME	944	339	0	56	0
5060	PART TIME	20,163	0	0	0	0
	TOTAL SALARIES	462,265	400,819	401,044	401,602	419,167
FRINGE BENEFITS						
5110	FICA	33,203	28,758	29,822	29,374	30,988
5120	RETIREMENT CONTRIBUTION	33,450	30,244	30,850	31,265	38,477
5121	DEFERRED COMPENSATION	8,120	4,160	4,160	4,367	4,680
5140	HEALTH INSURANCE	64,428	67,676	63,615	63,225	62,679
5141	DENTAL INSURANCE	1,764	1,591	1,591	1,637	1,700
5150	DISABILITY INSURANCE	1,491	1,432	1,574	1,476	1,362
5180	GROUP LIFE & A.D. & D.	1,751	1,624	1,630	1,583	1,525
5190	VACATION ACCRUED		0	0	0	0
	TOTAL FRINGE BENEFITS	144,207	135,485	133,243	132,927	141,411
UTILITIES						
5233	CELL PHONES	3,125	3,000	3,000	3,000	3,000
5250	WASTE DISPOSAL	3,445	2,764	2,500	2,499	2,500
	TOTAL UTILITIES	6,570	5,764	5,500	5,499	5,500
MATERIALS AND SUPPLIES						
5360	OFFICE SUPPLIES	4,774	2,410	3,500	3,031	3,500
5390	OTHER	10,443	3,997	8,000	7,484	8,000
	TOTAL MATERIALS AND SUPPLIES	15,217	6,407	11,500	10,515	11,500
PROFESSIONAL SERVICES						
5510	ACCOUNTING	38,263	30,756	32,000	31,969	32,000
5570	CONSULTANTS	55,516	75,055	50,000	50,000	50,000
5580	FINANCIAL SERVICES	233,949	262,756	253,877	253,338	177,086

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

EXPENDITURE CLASSIFICATION		FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5581	TRUSTEE SERVICES	11,561	11,900	20,000	19,925	20,000
5590	OTHER	28,643	29,594	24,000	23,889	30,000
	TOTAL PROFESSIONAL SERVICES	367,932	410,061	379,877	379,121	309,086
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	3,719	6,524	4,000	4,000	4,000
5630	ADVERTISING	1,050	169	0	0	0
	TOTAL COMMUNICATIONS	4,769	6,693	4,000	4,000	4,000
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	2,258	3,204	2,000	1,500	2,000
	TOTAL PRINTING AND REPRODUCTION	2,258	3,204	2,000	1,500	2,000
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	6,411	8,683	11,600	9,406	9,600
	TOTAL EDUCATION & DEVELOPMENT	6,411	8,683	11,600	9,406	9,600
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	1,910	1,690	2,445	2,410	2,445
5950	RENT AND LEASES	3,480	2,654	3,400	3,370	3,400
5990	OTHER	665	123	0	(1)	0
	TOTAL MISCELLANEOUS	6,055	4,467	5,845	5,779	5,845
Total Personnel Services		606,472	536,304	534,287	534,529	560,577
Total Operating Services		409,212	445,279	420,322	415,819	347,531
Total Operating and Maintenance		1,015,684	981,583	954,608	950,349	908,108

ANNUAL BUDGET REQUEST SUMMARY **INFORMATION TECHNOLOGY**
FISCAL YEAR 2020 **DEPT : 07**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	385,986	436,372	435,118	427,442	437,287
5020	SALARIES AND WAGES, OVERTIME	2,116	2,153	4,000	2,951	4,000
5060	PART TIME			0	0	0
	TOTAL SALARIES	388,102	438,525	439,118	430,393	441,287
FRINGE BENEFITS						
5110	FICA	28,968	32,022	34,140	32,755	34,154
5120	RETIREMENT CONTRIBUTION	29,092	33,109	33,471	33,296	40,141
5121	DEFERRED COMPENSATION	4,340	5,160	5,200	5,233	5,200
5140	HEALTH INSURANCE	61,647	82,235	76,785	73,753	68,607
5141	DENTAL INSURANCE	2,006	2,513	2,499	2,480	2,368
5150	DISABILITY INSURANCE	1,432	1,807	1,822	1,678	1,500
5180	GROUP LIFE & A.D. & D.	1,550	2,011	1,722	1,664	1,582
5190	VACATION ACCRUED			0	0	0
	TOTAL FRINGE BENEFITS	129,035	158,857	155,639	150,860	153,551
UTILITIES						
5231	TELEPHONE - LOCAL	106,991	125,990	125,440	131,646	118,700
5233	CELL PHONE STIPENDS	6,780	8,250	8,250	11,375	8,000
	TOTAL UTILITIES LINE	113,771	134,240	133,690	143,021	126,700
MATERIALS AND SUPPLIES						
5330	SUBSCRIPTIONS			0	0	0
5360	OFFICE SUPPLIES	6,924	5,994	10,000	8,286	10,000
5365	COMPUTER EQUIPMENT & PARTS	90,410	80,778	87,300	87,140	85,600
5380	SAFETY SUPPLIES	92		0	0	0
5390	OTHER			0	0	0
	TOTAL MATERIALS AND SUPPLIES	97,426	86,772	97,300	95,426	95,600
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	239,071	324,972	342,105	402,586	473,103
	TOTAL MAINTENANCE	239,071	324,972	342,105	402,586	473,103
PROFESSIONAL SERVICES						
5570	CONSULTANTS	80,750	24,682	115,000	87,225	149,000

ANNUAL BUDGET REQUEST SUMMARY **INFORMATION TECHNOLOGY**
FISCAL YEAR 2020 **DEPT : 07**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5590	OTHER			0	0	0
	TOTAL PROFESSIONAL SERVICES	80,750	24,682	115,000	87,225	149,000
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	21,459	19,752	21,890	21,646	22,050
	TOTAL EDUCATION & DEVELOPMENT	21,459	19,752	21,890	21,646	22,050
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS			0	0	0
5950	RENTS AND LEASES	50,115	48,754	42,763	45,768	46,000
5990	OTHER	4,788		0	0	0
	TOTAL MISCELLANEOUS LINE	54,903	48,754	42,763	45,768	46,000
Total Personnel Services		517,137	597,382	594,757	581,252	594,839
Total Operating Services		607,380	639,172	752,748	795,673	912,453
Total Operating and Maintenance		1,124,517	1,236,554	1,347,505	1,376,925	1,507,291

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

WATER SUPPLY AND TREATMENT
DEPT : 11

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	1,325,275	1,233,932	1,232,533	1,193,765	1,338,402
5020	SALARIES AND WAGES, OVERTIME	103,773	100,202	78,110	79,868	79,170
5050	STANDBY PAY	5,311	5,626	5,127	8,562	17,200
5060	PART-TIME	24,356	37,831	28,606	32,213	29,754
	TOTAL SALARIES	1,458,715	1,377,591	1,344,377	1,314,408	1,464,525
FRINGE BENEFITS						
5110	FICA	112,220	103,818	96,706	96,485	105,013
5120	RETIREMENT CONTRIBUTION	108,135	101,781	94,810	95,981	122,858
5121	DEFERRED COMPENSATION	31,200	28,200	28,080	26,480	27,560
5130	WORKERS COMPENSATION	41,547	50,184	30,000	35,024	35,000
5140	HEALTH INSURANCE	320,722	334,910	317,834	300,018	313,265
5141	DENTAL INSURANCE	8,796	9,782	9,817	9,581	10,161
5150	DISABILITY INSURANCE	6,415	5,829	5,902	5,767	5,470
5170	UNIFORMS	15,582	18,198	12,000	13,451	14,000
5180	GROUP LIFE & A.D. & D.	7,795	7,145	7,206	6,700	6,724
5190	VACATION ACCRUED	397	(18,998)	0	0	0
	TOTAL FRINGE BENEFITS	652,809	640,849	602,356	589,487	640,052
UTILITIES						
5210	ELECTRICITY	258,275	282,196	247,890	250,822	257,245
5233	CELL PHONES	9,350	8,735	8,100	8,100	9,600
5240	FUEL	13,781	15,796	14,000	11,177	14,000
5250	WASTE DISPOSAL	95,681	141,538	114,850	115,044	97,200
	TOTAL UTILITIES	377,087	448,265	384,840	385,143	378,045
MATERIALS AND SUPPLIES						
5310	CHEMICALS	1,330,413	1,613,128	1,307,650	1,307,346	1,520,336
5320	SMALL TOOLS	2,798	8,866	6,000	6,176	6,000
5330	SUBSCRIPTIONS			0	0	0
5340	LAKE SUPPLIES	21,340	33,029	35,060	35,067	42,320
5350	FUEL - VEHICLES & EQUIP.	13,445	27,032	20,510	20,443	17,784
5360	OFFICE SUPPLIES	3,985	1,954	7,500	7,290	5,000
5370	LABORATORY EXPENSES	114,778	124,079	117,854	123,030	124,980
5380	SAFETY SUPPLIES	22,412	12,420	26,085	17,877	9,550
5390	OTHER	3,299	3,334	5,200	5,260	5,200

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
	TOTAL MATERIALS AND SUPPLIES	1,512,470	1,823,842	1,525,859	1,522,490	1,731,170
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	450,898	292,092	258,830	258,472	295,980
5413	MAINTENANCE - PUMPING EQUIPMENT	106,049	101,477	134,225	131,939	104,875
5415	MAINTENANCE - RESERVOIR & TANK	153,520	226,114	194,500	194,522	205,500
5420	FACILITIES	7,685	39,660	32,300	32,717	51,050
5421	BUILDINGS	228,716	219,312	258,225	242,836	227,825
5423	MAINTENANCE - METERS	20,303	14,804	107,300	105,880	93,200
5430	GROUNDS	66,504	85,335	75,000	73,640	73,830
5440	MOTOR VEHICLES	23,209	23,605	24,000	23,453	15,000
	TOTAL MAINTENANCE	1,056,884	1,002,399	1,084,380	1,063,460	1,067,260
PROFESSIONAL SERVICES						
5530	INSURANCE	80,386	77,780	78,000	70,910	72,000
5570	CONSULTANTS	53,724	600	63,000	63,000	0
5590	OTHER	12,461		12,000	12,122	12,000
	TOTAL PROFESSIONAL SERVICES	146,571	78,380	153,000	146,032	84,000
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	1,094	1,535	4,000	4,842	3,200
5630	ADVERTISING					
	TOTAL COMMUNICATIONS	1,094	1,535	4,000	4,842	3,200
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION			0	0	0
	TOTAL PRINTING AND REPRODUCTION	0	0	0	0	0
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	9,999	9,439	16,350	9,890	12,150
	TOTAL EDUCATION & DEVELOPMENT	9,999	9,439	16,350	9,890	12,150
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	5,651	71,245	73,159	73,158	73,284
5950	RENTS AND LEASES		3,385	52,000	50,000	4,000
5990	OTHER	2,288	187	2,000	3,835	2,000
	TOTAL MISCELLANEOUS	7,939	74,817	127,159	126,993	79,284

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
Total Personnel Services	2,111,524	2,018,440	1,946,733	1,903,895	2,104,577
Total Operating Services	3,112,044	3,438,677	3,295,588	3,258,850	3,355,109
Total Operating and Maintenance	5,223,568	5,457,117	5,242,321	5,162,745	5,459,686

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

WATER DISTRIBUTION
DEPT : 12

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	1,342,886	1,533,066	1,623,045	1,614,054	1,626,079
5020	SALARIES AND WAGES, OVERTIME	76,145	68,511	67,000	67,000	67,000
5050	STANDBY PAY	29,314	27,586	24,000	32,213	27,000
5060	PART-TIME	20,056	8,552	15,000	1,383	15,000
	TOTAL SALARIES	1,468,401	1,637,715	1,729,045	1,714,650	1,735,079
FRINGE BENEFITS						
5110	FICA	118,047	122,112	127,347	129,169	127,585
5120	RETIREMENT CONTRIBUTION	114,583	122,611	124,850	130,569	149,266
5121	DEFERRED COMPENSATION	37,540	39,220	40,560	40,580	37,960
5130	WORKERS COMPENSATION	40,844	46,577	31,249	36,361	34,777
5140	HEALTH INSURANCE	386,000	488,700	486,379	473,849	453,172
5141	DENTAL INSURANCE	10,959	13,268	13,965	14,217	14,103
5150	DISABILITY INSURANCE	6,730	7,358	8,225	8,002	6,884
5170	UNIFORMS	22,831	25,525	22,273	22,048	22,478
5180	GROUP LIFE & A.D. & D.	8,872	9,549	10,260	9,724	9,072
5190	VACATION ACCRUED	4,693	10,375	0	0	0
	TOTAL FRINGE BENEFITS	751,099	885,295	865,108	864,517	855,297
UTILITIES						
5210	ELECTRICITY	186,892	180,730	187,349	187,349	187,541
5233	CELL PHONES	8,550	10,050	11,050	11,050	9,000
5240	FUEL	4,392	5,978	4,300	4,300	4,300
5250	WASTE DISPOSAL	217	175	500	500	500
	TOTAL UTILITIES	200,051	196,933	203,199	203,199	201,341
MATERIALS AND SUPPLIES						
5320	SMALL TOOLS	6,031	5,137	5,955	24,670	10,000
5330	SUBSCRIPTIONS			0	0	0

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

WATER DISTRIBUTION
DEPT : 12

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5350	FUEL - VEHICLES & EQUIP.	33,934	49,092	42,000	42,000	42,000
5360	OFFICE SUPPLIES	2,650	1,976	3,400	3,400	3,400
5380	SAFETY SUPPLIES	20,617	19,505	24,061	24,061	22,968
5390	OTHER	6,096	13,190	5,000	10,000	7,500
	TOTAL MATERIALS AND SUPPLIES	69,328	88,900	80,416	104,131	85,868
MAINTENANCE						
5422	MAINTENANCE - MAINS	332,718	352,709	337,800	347,800	402,573
5422	MAINTENANCE - MAINS RCW			10,000	0	10,000
5423	MAINTENANCE - METERS	62,055	10,620	19,600	33,835	9,200
5424	MAINTENANCE - HYDRANTS	37,695	16,867	23,519	23,519	23,229
5425	MAINTENANCE - SERVICE LINES	75,868	60,048	52,777	54,004	52,324
5440	MOTOR VEHICLES	70,060	58,623	60,000	60,000	61,500
	TOTAL MAINTENANCE	578,396	498,867	503,696	519,158	558,826
PROFESSIONAL SERVICES						
5570	CONSULTING					125,000
5530	INSURANCE	9,775	8,837	8,400	8,793	7,680
	TOTAL PROFESSIONAL SERVICES	9,775	8,837	8,400	8,793	132,680
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	1,591	2,764	1,200	4,992	5,000
	TOTAL COMMUNICATIONS	1,591	2,764	1,200	4,992	5,000
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	359	448	1,500	1,500	1,500
	TOTAL PRINTING AND REPRODUCTION	359	448	1,500	1,500	1,500
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	11,198	15,937	20,250	15,727	23,416
	TOTAL EDUCATION & DEVELOPMENT	11,198	15,937	20,250	15,727	23,416

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

WATER DISTRIBUTION
DEPT : 12

	EXPENDITURE CLASSIFICATION	**FY 2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	205	1,521	1,400	1,730	1,730
5990	OTHER	3,424	1,426	500	500	500
	TOTAL MISCELLANEOUS	3,629	2,947	1,900	2,230	2,230
Total Personnel Services		2,219,500	2,523,010	2,594,153	2,579,167	2,590,376
Total Operating Services		874,327	815,633	820,561	859,730	1,010,862
Total Operating and Maintenance		3,093,827	3,338,643	3,414,715	3,438,897	3,601,238
CONSTRUCTION CREDIT		(155,777)	(100,491)	(90,000)	(90,733)	(90,000)
		2,938,050	3,238,152	3,324,715	3,348,163	3,511,238

ANNUAL BUDGET REQUEST SUMMARY **WASTEWATER TREATMENT**
FISCAL YEAR 2020 **DEPT : 21**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	1,250,545	1,300,039	1,379,366	1,333,522	1,374,959
5020	SALARIES AND WAGES, OVERTIME	132,362	128,084	109,360	121,501	116,300
5050	STANDBY PAY	3,509	4,439	4,000	7,348	4,000
	TOTAL SALARIES	1,386,416	1,432,562	1,492,726	1,462,371	1,495,259
FRINGE BENEFITS						
5110	FICA	106,455	107,787	108,227	108,316	107,881
5120	RETIREMENT CONTRIBUTION	104,136	108,441	106,105	109,411	126,214
5121	DEFERRED COMPENSATION	31,540	31,920	30,160	30,253	27,040
5130	WORKERS' COMPENSATION	41,899	46,592	0	38,513	37,135
5140	HEALTH INSURANCE	279,956	326,297	330,738	307,009	326,530
5141	DENTAL INSURANCE	7,977	8,827	9,599	9,113	9,814
5150	DISABILITY INSURANCE	5,736	6,026	6,377	5,677	5,638
5170	UNIFORMS	13,005	14,273	12,000	12,042	12,000
5180	GROUP LIFE & A.D. & D.	6,638	6,825	7,294	6,741	6,989
5190	VACATION ACCRUED	11,608	(4,596)	0	0	0
	TOTAL FRINGE BENEFITS	608,950	652,392	610,500	627,076	659,242
UTILITIES						
5210	ELECTRICITY	535,658	467,022	544,656	560,884	566,500
5233	CELL PHONES	7,700	7,975	9,750	9,750	10,500
5240	FUEL	75,543	52,810	35,000	22,009	33,000
5250	WASTE DISPOSAL	154,253	81,188	171,580	271,580	171,580
	TOTAL UTILITIES	773,154	608,995	760,986	864,223	781,580
MATERIALS AND SUPPLIES						
5310	CHEMICALS	659,501	777,145	727,472	863,889	815,232
5311	CHEMICALS - ODOR CONTROL			0	0	0
5315	LAND APPLICATION	54,340	11,634	50,000	84,283	50,000
5320	SMALL TOOLS	5,333	4,558	5,000	5,000	5,000
5350	FUEL - VEHICLES & EQUIP.	47,775	65,829	70,045	70,045	79,065
5360	OFFICE SUPPLIES	3,042	1,342	5,000	5,000	5,000
5370	LABORATORY EXPENSES	118,293	123,866	122,360	122,360	104,880
5380	SAFETY SUPPLIES	8,384	11,516	20,000	20,000	20,000
5390	OTHER	2,303	2,795	0	4,171	2,000
	TOTAL MATERIALS AND SUPPLIES	898,971	998,685	999,877	1,174,747	1,081,177

ANNUAL BUDGET REQUEST SUMMARY **WASTEWATER TREATMENT**
FISCAL YEAR 2020 **DEPT : 21**

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	543,854	477,745	401,730	378,385	459,240
5413	MAINTENANCE - PUMPING EQUIPMENT	230,443	138,205	250,000	276,392	250,000
5420	FACILITIES	750	34,700	0	1,074	60,000
5421	BUILDINGS	34,984	19,041	35,000	35,000	37,000
5423	MAINTENANCE - METERS	79,648	114,609	215,000	215,000	215,000
5430	GROUNDS	8,785	12,281	12,000	12,000	12,000
5440	MOTOR VEHICLES	53,136	46,411	40,000	40,000	45,000
	TOTAL MAINTENANCE	951,600	842,992	953,730	957,850	1,078,240
PROFESSIONAL SERVICES						
5530	INSURANCE	98,652	93,804	96,000	87,274	87,600
5570	CONSULTANTS	132,282	9,875	0	1,750	5,000
5590	OTHER			0	0	0
	TOTAL PROFESSIONAL SERVICES	230,934	103,679	96,000	89,024	92,600
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	7,825	8,242	11,400	11,400	11,715
	TOTAL COMMUNICATIONS	7,825	8,242	11,400	11,400	11,715
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION			0	0	0
	TOTAL PRINTING AND REPRODUCTION	0	0	0	0	0
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	12,452	10,374	18,000	18,000	27,000
	TOTAL ED & DEVELOPMENT	12,452	10,374	18,000	18,000	27,000
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	7,322	33,289	32,625	32,625	32,625
5950	RENTS AND LEASES	12,576	4,583	15,000	15,000	15,000
5990	OTHER	27,620	19,949	20,000	24,636	20,000
	TOTAL MISCELLANEOUS	47,518	57,821	67,625	72,261	67,625
Total Personnel Services		1,995,366	2,084,954	2,103,226	2,089,447	2,154,500
Total Operating Services		2,922,454	2,630,788	2,907,618	3,187,506	3,139,937
Total Operating and Maintenance		4,917,820	4,715,742	5,010,844	5,276,953	5,294,437

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

SEWER COLLECTION
DEPARTMENT : 22

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
SALARIES						
5010	SALARIES AND WAGES, REGULAR	511,401	465,554	494,429	486,685	518,144
5020	SALARIES AND WAGES, OVERTIME	14,263	22,625	28,200	28,200	28,000
5050	STANDBY PAY	10,293	12,343	11,500	13,467	12,000
	TOTAL SALARIES	535,957	500,522	534,129	528,352	558,144
FRINGE BENEFITS						
5110	FICA	36,725	38,402	38,794	38,855	40,654
5120	RETIREMENT CONTRIBUTION	34,956	37,598	38,033	38,869	47,563
5121	DEFERRED COMPENSATION	13,680	12,100	12,480	12,720	15,080
5130	WORKMEN'S COMPENSATION	23,261	23,998	10,000	12,343	15,000
5140	HEALTH INSURANCE	141,576	141,670	144,123	137,702	153,636
5141	DENTAL INSURANCE	3,336	3,725	3,955	3,948	4,190
5150	DISABILITY INSURANCE	2,097	2,220	2,405	2,194	2,299
5170	UNIFORMS	9,708	11,093	9,000	9,163	10,000
5180	GROUP LIFE & A.D. & D.	2,807	2,892	3,122	2,957	3,044
5190	VACATION ACCRUED	3,179	8,567	0	0	0
	TOTAL FRINGE BENEFITS	271,325	282,265	261,911	258,751	291,466
UTILITIES						
5210	ELECTRICITY	124,338	102,747	130,750	130,750	119,534
5233	CELL PHONES	1,992	1,913	1,950	1,950	1,800
5240	FUEL	4,392	5,978	4,530	4,530	5,000
5250	WASTE DISPOSAL			0	0	0
	TOTAL UTILITIES	130,722	110,638	137,229	137,229	126,334
MATERIALS AND SUPPLIES						
5310	CHEMICALS	200,229	186,161	200,000	200,000	230,000
5311	CHEMICALS - ODOR CONTROL			0	0	0
5320	SMALL TOOLS	1,621	1,310	3,305	3,305	3,000
5350	FUEL - VEHICLES & EQUIP.	20,129	24,185	27,500	27,500	24,000

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

SEWER COLLECTION
DEPARTMENT : 22

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5360	OFFICE SUPPLIES	169	884	1,000	1,000	1,000
5380	SAFETY SUPPLIES	5,520	1,143	10,957	10,957	10,499
5390	OTHER	1,767	612	1,500	1,500	1,500
	TOTAL MATERIALS AND SUPPLIES	229,435	214,295	244,262	244,262	269,999
MAINTENANCE						
5422	MAINTENANCE - MAINS	133,029	168,887	90,000	90,000	111,045
5425	MAINTENANCE - SERVICE LINES	7,412	656	30,000	30,000	30,000
5440	MOTOR VEHICLES	50,976	44,686	60,000	60,000	70,000
	TOTAL MAINTENANCE	191,417	214,229	180,000	180,000	211,045
PROFESSIONAL SERVICES						
5530	INSURANCE	6,146	8,461	8,400	7,636	7,680
	TOTAL PROFESSIONAL SERVICES	6,146	8,461	8,400	7,636	7,680
COMMUNICATIONS						
5610	POSTAGE AND FREIGHT	483	73	500	500	500
	TOTAL COMMUNICATIONS	483	73	500	500	500
PRINTING AND REPRODUCTION						
5700	PRINTING AND REPRODUCTION	2,238	0	2,000	2,000	2,000
	TOTAL PRINTING AND REPRODUCTION	2,238	0	2,000	2,000	2,000
EDUCATION AND DEVELOPMENT						
5810	EDUCATION AND DEVELOPMENT	7,093	4,537	14,050	8,807	11,475
	TOTAL ED & DEVELOPMENT	7,093	4,537	14,050	8,807	11,475
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	1,310	2,210	2,000	2,110	2,110
5990	OTHER	387	3,542	0	0	0
	TOTAL MISCELLANEOUS	1,697	5,752	2,000	2,110	2,110

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

SEWER COLLECTION
DEPARTMENT : 22

EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
Total Personnel Services	807,282	782,787	796,040	787,103	849,610
Total Operating Services	569,231	557,985	588,442	582,545	631,143
Total Operating and Maintenance	1,376,513	1,340,772	1,384,482	1,369,648	1,480,753
CONSTRUCTION CREDIT	(12,426)	(38,978)	0	(31,828)	(30,000)
	1,364,087	1,301,794	1,384,482	1,337,820	1,450,753

Orange Water and Sewer Authority Draft
FY 2020 Budget Professional Services Detail (Includes Consultants)

Item No.	Description	Dept	FY19 Budget	FY20 Draft Budget
1	Legal	Executive Director	240,000	260,000
2	Insurance-Public Officials	Executive Director	26,000	26,400
3	Energy Management Plan	Executive Director	30,000	
4	American Water Infrastructure Act of 2018 Compliance	Executive Director	-	100,000
5	Interpreter service for hearing impaired	Executive Director	1,000	1,000
6	Miscellaneous	Executive Director	2,000	2,000
7	Energy Dashboard	Executive Director		3,200
8	Communications support	Executive Director		31,500
9	Insurance-Property & Casualty	Executive Director, WTP, WWTP, Distribution, Collection	202,800	209,760
10	Credit checks, collection fees	Customer Service	40,000	40,000
11	Miscellaneous survey work - easement surveys, boundary surveys, manholes, etc.	Engineering and Planning	7,500	7,500
12	Update standards and specifications	Engineering and Planning		50,000
13	Recurring annual membership payment to the Triangle Water Supply Partnership	Engineering and Planning	22,000	25,000
14	Long-Range Water Supply Plan (LRWSP) - update	Engineering and Planning	148,000	140,000
15	Water and sewer capacity evaluations for new developments	Engineering and Planning	10,000	20,000
16	Hill, Chesson and Woody	Human Resources	60,000	62,000
17	Employee Assistance Program	Human Resources	4,500	4,500
18	Envirosafe (safety consulting (audits of facilities, programs) and safety training services)	Human Resources	52,500	52,500
19	HR department - administrative support	Human Resources	15,000	15,000
20	South Orange Technical Rescue	Human Resources	6,500	6,500
21	Diversity/employee development training programs	Human Resources	100,000	75,000
22	Other (fit for drug screens, fitness for duty testing, background investigations, etc.)	Human Resources	64,000	64,000
23	Compliance Training	Human Resources	20,000	22,000
24	Core Training (per Diversity and Inclusion Program plan)	Human Resources	20,000	20,000
25	Annual financial audit	Finance	32,000	32,000
26	Annual rate revenue sufficiency study (Burton & Associates)	Finance	50,000	50,000
27	Trustee services, Rating agency fees, variable rate bond arrangements, credit card processing, bank fees, payroll processing	Finance	297,877	227,086
28	Cabling	IT	15,000	10,000
29	Network vulnerability assessment	IT	60,000	
30	Network engineering support			24,000
31	Cloud-hosted VoIP Planning and Design	IT	30,000	
32	Finance and billing system support	IT	10,000	10,000
33	Evaluation of enterprise IT system (by UNC School of Government	IT		20,000
34	SCADA security assessment and remediation	IT		85,000
35	Update operations and maintenance manual	Water Treatment and Supply	50,000	
36	Taste and Odor panel training	Water Treatment and Supply	13,000	
37	Orange Grove Fire Department	Water Treatment and Supply	12,000	12,000

Item No.	Description	Dept	FY19 Budget	FY20 Draft Budget
38	Unidirectional flushing	Water Distribution		125,000
39	Land application permit renewal	Wastewater Treatment		5,000
	Total		1,641,677	1,837,946

Agenda Item 12:

Draft Conceptual Approaches to Secure Access to OWASA's Jordan Lake Allocation

Purpose:

To inform the Board of Directors on potential alternatives to access our Jordan Lake allocation to evaluate as part of the Long-Range Water Supply Plan update.

Background:

- The North Carolina Environmental Management Commission granted OWASA an allocation of water from Jordan Lake of 5 percent of the water supply pool. This equates to a yield of approximately 5 million gallons per day.
- Jordan Lake improves the reliability and resiliency of OWASA's water supply system by diversifying our water supply portfolio.
- Currently OWASA can access its allocation by obtaining drinking water from the Cary/Apex water treatment plant. This water would be transferred to OWASA through the Cary/Durham interconnections and the Durham/OWASA interconnections.
- OWASA has mutual aid agreements with both the Town of Cary and City of Durham. These mutual aid agreements are not intended for long-term transfers, and they do not obligate any party to withdraw, treat, and/or deliver Jordan Lake water to us.

Board Action:

No Board action is needed. Alternatives to access OWASA's Jordan Lake allocation will be evaluates as part of the update of the Long-Range Water Supply Plan.

Information:

- Draft OWASA Long-Range Water Supply Plan Issue Brief: Conceptual Approaches to Secure Access to OWASA's Jordan Lake Allocation

DRAFT OWASA Long-Range Water Supply Plan Issue Brief: Conceptual Approaches to Secure Access to OWASA's Jordan Lake Allocation March 2019

Purpose

This report is provided in response to the OWASA Board of Directors' November 15, 2018 request for summary information about the Jordan Lake water supply option, key issues relating to our efforts to ensure reliable access to that supply, and potential options to access our allocation.

Background

OWASA is in the process of updating its Long-Range Water Supply Plan (LRWSP) which will serve as a roadmap for ensuring a high quality, reliable and adequate supply of water for the Chapel Hill-Carrboro community through 2070. The LRWSP will include long-term demand projections; evaluate alternative water supply and demand management strategies; and describe the actions, projects, and investments that OWASA plans to make to meet anticipated long-term needs.

As discussed in our 2010 LRWSP, one of our key supply-side alternatives is to use water from Jordan Lake, a federally-constructed multi-purpose reservoir located several miles south-southeast of Chapel Hill. OWASA secured an allocation from the State of North Carolina which allows us to withdraw approximately 5 million gallons per day (mgd) from the lake and have mutual aid agreements in place with the Town of Cary, and City of Durham to access the allocation through interconnections. However, we do not own or operate any facilities that enable us to withdraw, pump, and treat Jordan Lake water, nor do we have any long-term interlocal agreements which guarantees access to that water.

These challenges must be resolved if Jordan Lake is to become a viable water supply alternative. These challenges will likely take considerable time and effort to address, as there are complex technical, environmental, financial, and political issues surrounding this option.

The following is an overview of our Jordan Lake allocation, challenges surrounding our ability to access that allocation, and potential options to access that allocation. This overview will be revised as needed to address follow-up questions and guidance from the Board of Directors and as new information becomes available as we further develop the LRWSP.

What is OWASA's Jordan Lake water allocation?

OWASA has a State-approved allocation of five percent of the water supply storage volume in Jordan Lake. The North Carolina Division of Water Resources (DWR) conservatively estimates 100 percent of the water supply pool to provide a yield of 100 mgd (amount that can be continually withdrawn under most hydrologic conditions); thus our allocation has a yield of about 5 mgd.

Are we allowed to use our allocation any time we need it?

Yes, the state allows us to access our allocation at any time. At our request, in March 2013, the North Carolina Environmental Management Commission (EMC) designated our allocation as "Level I," thereby allowing us to use water at any time. However, other agreements and limitations in current infrastructure (discussed in later sections) may prevent us from accessing our allocation.

How long have we held a Jordan Lake water allocation?
We first received a Jordan Lake water allocation during the EMC's initial Round 1 allocation decisions made in 1988. Our original allocation was for ten percent of the water supply storage volume in the lake. At our request, the EMC reduced the allocation to five percent in the Round 3 allocation process, which was concluded in 2002.

Why Do We Hold an Allocation of Jordan Lake Water?
More than thirty years ago, while Cane Creek Reservoir was under construction, OWASA recognized the need to diversify our portfolio of long-term water supply options and identified Jordan Lake and the expanded Quarry Reservoir as two key long-term strategies for improving the reliability and resiliency of the community's water supply system. The need for a diverse water supply portfolio is even greater today.

Our existing water supplies, together with our planned expansion of the Quarry Reservoir, are expected to be adequate to meet expected demands under most hydrologic conditions. (Note: Cane Creek Reservoir is vulnerable to droughts that last longer than a year and to back-to-back droughts due to the small ratio between its watershed size and storage capacity; this small ratio results in long refill times for the reservoir). Therefore, we do not currently plan to use Jordan Lake as part of our regular water supply (i.e., University Lake, Cane Creek Reservoir, and the Quarry Reservoir). However, there are several scenarios under which we may need to use water from Jordan Lake, such as:

(a) If we have an extended (longer than a year) or extreme drought;
(b) If one of our existing reservoirs is temporarily or permanently out-of-service (either for planned maintenance on the dam or an unplanned breach from a natural disaster);
(c) If climate change results in a reduction in the reliable yield of our reservoirs;
(d) If drinking water demands are much higher than our projections (due to one or more factors such as increased growth and development in our service area; a warmer and drier climate; and/or a temporary or permanent reduction in the use of reclaimed water and/or the process water recycling at the drinking water treatment plant); and/or
(e) If there is a situation that carries significant water quality concerns in the reservoir(s).

Are water supply storage allocations a "permanent" right to use the lake?
No. North Carolina administrative code 15A NCAC 02G .0507 states that:

- The EMC "…may adjust, reassign, or transfer water supply storage allocations if it determines necessary following an investigation of needs or changes in the project's water supply storage capacity."
- "Level I allocations will be reviewed for possible reassignment if the recipient does not begin to withdraw water within five years of the effective date of allocation or is not using and withdrawing the water as proposed in the application." (Note: OWASA's latest application to maintain its Jordan Lake allocation clearly stated that we intended to use the water as a back up emergency supply and thus OWASA is currently using the water as proposed in the application).
- Level I or Level II allocations will be rescinded if the allocation holder fails to meet any of the conditions applicable to the allocation, including payment of applicable capital and operating costs to the state.

Approximately 96 percent of the lake's water supply storage has been allocated to nine different entities (Cary-Apex-Morrisville-RTP; Chatham County, City of Durham, Hillsborough, Holly Springs, Orange County, OWASA, Pittsboro, and Raleigh). The allocations are based on projected 30-year needs through 2045;

approximately 99 percent of the lake's water supply storage is needed for the Triangle Region through 2060. As our region grows, there is likely to be greater competition for future drinking water supply sources. This could increase the likelihood that the EMC will need to consider rescinding, reducing, and/or transferring existing Jordan Lake water storage allocations to meet changing conditions.

Does OWASA own or operate any facilities at Jordan Lake?
We do not own any water withdrawal, treatment, or conveyance facilities at Jordan Lake. We do own about 125 acres of forested land just west of the lake, south of US Highway 64, in Chatham County, which was previously studied and found to be a desirable location to withdraw water from Jordan Lake. That land was acquired (most of it in 1989) for potential use as a future water treatment facility site if and when needed by OWASA and/or other parties in the region. The state expects there will be only one additional intake on Jordan Lake on the west side and will be regional in nature.

How do we access water from the Lake now?
The only way we can currently obtain water from our Jordan Lake allocation is if other utilities agree to withdraw, treat, and deliver that water to us through existing treated water interconnections. The primary approach to accomplish this is for Cary to withdraw and treat our allocation at the Cary-Apex Water Treatment Plant, then send that treated water through Cary's water system interconnection with Durham, which in turn would "wheel" that water to us through our two existing interconnections with Durham.

Short-term transfer arrangements and services can be implemented under our existing mutual aid water agreements with Cary and Durham. However, those existing agreements are not intended for long-term transfers, and they do not obligate those parties to withdraw, treat, and/or deliver Jordan Lake water to us.

Chatham County also has a water treatment plant at Jordan Lake, and we can receive about 1 mgd through our treated water interconnection with Chatham County. We do not have a mutual aid agreement with Chatham County.

How much water can we obtain through the existing interconnections via Cary and Durham?
We have the short-term ability to obtain 6 to 7 mgd through our existing agreements and interconnection arrangements with Durham and Cary. However, the actual amount we can obtain from Jordan Lake at a given time will be limited by the capacity of the existing water withdrawal, treatment, and transmission facilities, and the demands placed on those facilities at the time we need water from the lake. Water system interconnection capacities are the primary factor limiting the amount of Jordan Lake water we can receive from Cary through Durham.

Durham, like OWASA, has a Level I allocation and also does not own or operate any water withdrawal or treatment facilities at Jordan Lake. Durham accesses its allocation via an agreement and interconnection with Cary and does so on a limited basis. Regional water supply modeling studies show that Durham has a greater water supply risk than OWASA, and will need water from Jordan Lake on a more regular basis and at greater volumes than OWASA will need. Durham also has contractual commitments to provide water to Chatham County. Therefore, our ability to obtain Jordan Lake water through Cary could be severely limited in the event Durham simultaneously needs to obtain water through the Cary system in order to meet its own needs and its commitments to Chatham County.

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How much capacity do we want to secure?
The amount of capacity assurance we seek will primarily depend on the assumed drought scenario, our anticipated water demands and supply shortfall, and the cost we would incur (and corresponding benefits we receive) to ensure we can obtain that supply when we need it and in the amounts we need. We will evaluate this question further as we work through the Long-Range Water Supply Plan process.

Has OWASA partnered with other utilities to evaluate the cost of new facilities at Jordan Lake?
Yes. Through our involvement in the Jordan Lake Partnership (now Triangle Water Supply Partnership), we have worked with other utilities to evaluate the scope and costs for one potential approach to developing a new regional water supply intake and drinking water treatment facility on the west side of Jordan Lake, and the major drinking water transmission mains required to deliver water to the participating utilities. It is clear that Jordan Lake will be a very expensive water supply alternative for any utility seeking to use the lake as a new, permanent source of supply. This option will be further evaluated as we update the LRWSP.

What are our options for accessing Jordan Lake?
As a starting point for discussion, Table 1 summarizes some of our options for accessing water from Jordan Lake. These options are generally classified as either "short-term" (for 10 years or less), "intermediate-term" (covers period up until expanded Quarry Reservoir is placed in service), or "long-term" (intended to be permanently in place).

There are a number of possible variations on the options listed in Table 1. A key variable will be the guaranteed volume of water we seek to obtain, and when we want to obtain it. For example, water agreements could include limitations on the amount of water we can obtain during the peak demand season and/or when other utilities, such as Durham, need to concurrently obtain water from the lake. Under this scenario, OWASA would receive water transfers during the off-peak season.

Other variations could include provisions for obtaining water from Durham by giving them an "IOU" to be repaid from our Jordan allocation at a later date. Under this approach, Durham might agree to supply OWASA water from Durham's reservoirs early in a drought, provided Durham had the assurance if could have later access to more water from the drought resistant Jordan Lake source.

Additional options will likely be identified during discussions with the Board and our neighboring utilities, and will be considered during the update of our LRWSP.

Does OWASA need concurrence of its member governments to use Jordan Lake?
OWASA's general counsel continues to be of the opinion that the OWASA Board of Directors is invested with the sole authority, and responsibility, to decide how to obtain the water resources to serve its service area, and that it neither has nor ever had the authority to agree otherwise, either in the Water and Sewer Management, Planning, and Boundary Agreement (WSMPBA), or elsewhere.

In previous discussions with our local partners regarding OWASA's potential use of Jordan Lake, OWASA raised the concern that the WSMPBA may be construed as impeding OWASA's access to its Jordan Lake allocation by its broad prohibition of all cross-jurisdictional water transfers except in times of emergency. A major problem is that the terms "transfer" is not clearly defined by the agreement, and OWASA's use of its Jordan Lake water allocation is not specifically addressed in the agreement.

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Section VII.B of the WSMPBA requires unanimous consent from the elected bodies of Carrboro, Chapel Hill, and Orange County for non-emergency water transfers; therefore, a disagreement by any one of those entities about what constitutes a transfer or an emergency or non-emergency transfer allows that single body to effectively "veto" OWASA's use of its Jordan Lake allocation. Section VII.A.1.c of the agreement also requires unanimous consent for emergency water transfers to continue beyond a 90-day period.

As we update our LRWSP, we will have the opportunity to engage the local governing boards in a dialogue about the advantages and disadvantages of having Jordan Lake as one of our water supply options, and to seek the concurrence of those governing boards before proceeding to invest in new agreements which guarantee water or in new infrastructure to obtain that water.

Closing

Given the technical, economic, and environmental considerations of our potential options for using Jordan Lake as a supplemental supply source, staff believes that OWASA will only be able to use Jordan Lake in collaboration with other utilities in the region. With support from the Board, staff continues to actively participate in discussions and technical studies regarding the potential development and use of new regional water supply facilities at Jordan Lake. Such an approach offers important technical, economic, environmental, and service reliability benefits that would not be possible if water utilities in the region proceed to independently develop facilities required to access water from the lake.

OWASA is committed to work closely with our local governments, stakeholders, and the public to ensure that the Chapel Hill-Carrboro community has a safe, reliable and sustainable supply of drinking water. As we develop more information regarding Jordan Lake and our other supply and demand management options, we will present that to the Board and incorporate it into our new LRWSP.

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Table 1. Summary of Some Options for Accessing Jordan Lake

(There are many variations on these options. They are provided as a starting point for discussion.)

Option	Advantages	Disadvantages
Maintain current arrangement *(Short-Term to Long-Term)*	• No additional costs • No additional actions/approvals are required	• Does not guarantee permanent access to Jordan Lake • Does not improve reliability or redundancy • Existing interconnections are limited • Volume of water available could be limited due to Durham's concurrent needs
Contract for supply guarantee until expanded Quarry Reservoir is placed in service *(Intermediate-Term)*	• Increases reliability until our local capacity is expanded • Cost likely to be more reasonable	• Does not ensure permanent access to Jordan Lake and improve long-term redundancy • Uncertain costs and timetable for developing agreement(s) • Timeframe for approval will depend on Durham and Cary
Enter into new permanent water supply agreements with Cary and Durham to obtain water *(Long-Term)*	• Provides high level of assurance for accessing Jordan Lake	• Will likely be costly to obtain permanent capacity assurance • Capacity availability depends on actions and investments by others • Timeframe for approval will depend on Durham and Cary
Partner on development of new regional facilities on west side of Jordan Lake *(Long-Term)*	• Ensures permanent access to Jordan Lake	• Likely to be high cost • Timing depends on others • No independent control over design, treatment selection, etc.
Enter into interim supply contract with future owner(s) of regional facilities on west side of Jordan Lake *(Intermediate-Term)*	• Increases reliability until Quarry Reservoir is expanded • Avoids cost of permanent ownership	• Does not ensure permanent access to Jordan Lake • Timing depends on others • Facilities may not be on-line in time to meet our needs • Costs are unknown
Enter into permanent supply contract with future owner(s) of regional facilities on west side of Jordan Lake *(Long-Term)*	• Ensures permanent access to Jordan Lake • Likely lower cost than being full Partner in new facilities	• No control over design, treatment capability, capacity expansion, etc.
Independently develop our own facilities to access Jordan Lake *(Long-Term)*	• Provides highest level of assurance • Have full control over facility design, expansion, and O&M	• Highest cost • Greatest environmental impact • Likely not be approved by regulatory agencies

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Agenda Item 13:

Review Board Work Schedule

Purpose:

a) Request(s) by Board Committees, Board Members and Staff
   - Discussion and possible appointment to Orange County's Climate Committee (Yinka Ayankoya)
b) March 28, 2019 Board Meeting
c) April 11, 2019 Work Session
d) Review and update the 12 Month Board Meeting Schedule
e) Review Pending Key Staff Action Items
f) Action Items Recurring Every 3 to 5+ Years

Information:

- Draft agenda for the March 28, 2019 meeting
- Draft agenda for the April 11, 2019 meeting
- 12 Month Board Meeting Schedule
- Pending Key Staff Action Items from Board Meetings
- Action Items Recurring Every 3 to 5+ Years

March 14, 2019

Agenda
Meeting of the OWASA Board of Directors
Thursday, March 28, 2019, 7:00 P.M.
Chapel Hill Town Hall

In compliance with the "Americans with Disabilities Act," interpreter services are available with five days prior notice. If you need this assistance, please contact the Clerk to the Board at 919-537-4217 or aorbich@owasa.org.

The Board of Directors appreciates and invites the public to attend and observe its meetings. Public comment is invited either by petition upon topics not on the Board's agenda, or by comments upon items appearing on the Board's agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

Public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

Announcements

1. Announcements by the Chair
   A. Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.
2. Announcements by Board Members
   A. Update on the March 18, 2019 Human Resources Committee Meeting (Robert Morgan)
3. Announcements by Staff
4. Additional Comments, Suggestions, and Information Items by Board Members (Robert Morgan)

Petitions and Requests

1. Public
2. Board
3. Staff

Consent Agenda

Information and Reports

1. 12 Month Board Meeting Schedule (Yinka Ayankoya/Ed Kerwin)

Action

2. Resolution Setting the Date of May 23, 2019 for a Public Hearing on OWASA's Fiscal Year 2020 Budget (Stephen Winters)
3. Resolution Setting the Date of May 23, 2019 for a Public Hearing on Proposed Revisions to OWASA's Schedule of Rates, Fees and Charges (Stephen Winters)
4. Award the Manning and Country Club Water Main Replacement Construction Contract (Allison Reinert)

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Regular Agenda

Discussion and Action

5. Award the Mason Farm Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation Construction Contract (Simon Lobdell)
6. Annual Update of the Energy Management Plan (Mary Tiger)

Discussion

7. Review Fiscal Year 2020 Draft Budget and Rate Adjustment Information (Stephen Winters)

Summary of Board Meeting Action Items

8. Executive Director will summarize the key action items from the Board meeting and note significant items for discussion and/or action expected at the next meeting

Closed Session

9. The Board of Directors will convene in a Closed Session for the Purpose of Discussing a Personnel Matter (Robert Morgan)

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Agenda
Work Session of the OWASA Board of Directors
Thursday, April 11, 2019, 6:00 P.M.
OWASA Community Room

The Board of Directors appreciates and invites the public to attend and observe its meetings. For the Board's Work Session, public comments are invited on only items appearing on this agenda. Speakers are invited to submit more detailed comments via written materials, ideally submitted at least three days in advance of the meeting to the Clerk to the Board via email or US Postal Service (aorbich@owasa.org/400 Jones Ferry Road, Carrboro, NC 27510).

For items on the agenda, public speakers are encouraged to organize their remarks for delivery within a four-minute time frame allowed each speaker, unless otherwise determined by the Board of Directors.

The Board may take action on any item on the agenda.

Announcements

a. Announcements by the Chair
   - Any Board Member who knows of a conflict of interest or potential conflict of interest with respect to any item on the agenda tonight is asked to disclose the same at this time.

b. Announcements by Board Members
   - Members of the Orange County Board of Commissioners and Orange County Appointees to the OWASA Board will meet on Thursday, April 25, 2019 at 8:00 AM in the OWASA Boardroom to discuss items of mutual interest (Ray DuBose)

c. Announcements by Staff

d. Additional Comments, Suggestions, and Information Items by Board Members (Robert Morgan)

Consent Agenda

Information and Reports

1. Quarterly Report on Board and Committee Meetings (Andrea Orbich)

Regular Agenda

Discussion

2. Review Employee Health and Dental Insurance Renewals (Stephanie Glasgow/Ellen Tucker, Hill, Chesson & Woody)
3. Review Fiscal Year 2020 Budget and Rate Adjustment Information (Stephen Winters)
4. (Tentative) Long-Range Water Supply Plan – Discuss Water Supply and Demand Management Alternatives (Ruth Rouse)
5. Forestry Management – Draft Community Engagement Plan (Linda Low/Ruth Rouse)
6. Propose Amendments to Bylaws (Yinka Ayankoya)
7. Appointment of the Nominating Committee (Yinka Ayankoya)
8. Review Board Work Schedule (Yinka Ayankoya/Ed Kerwin)

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a. Request(s) by Board Committees, Board Members and Staff
b. April 25, 2019 Board Meeting
c. May 9, 2019 Work Session
d. 12 Month Board Meeting Schedule
e. Pending Key Staff Action Items

Summary of Work Session Items

9. Executive Director will summarize the key staff action items from the Work Session

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OWASA Board of Directors – 12 Month Board Meeting Schedule (March 8, 2019)

Month	Board Meetings		Committee & Other Meetings
	Work Session	Business Meeting	
March 2019	Sole Source Procurement of a Belt Filter Press for the Jones Ferry Road Water Treatment Plant Amended policy on Confidentiality of Individual Customers Records Authorize Applying for SRF Loans Resolution Honoring Randy Horton Diversity and Inclusion Update **Review AV/AMI Manual Read** **LRWSP Final Demands and Yield** FY 20 Draft Budget & Rates ( ) Draft Conceptual Approaches to Access OWASA's Jordan Lake Allocation CS – Prepare for ED Interim Review ( ) 3/14/2019	**Annual Update of the Energy Management Plan** ( ) Award the WWTP Solids Thickening Improvements and Headworks Rehabilitation Construction Contract Award the Manning and Country Club Water Main Replacement Construction Contract FY 20 Draft Budget & Rates and Proposed Staff Rate Adjustment Recommendation ( ) Set date for Public Hearings – FY 20 Budget & Rates ( ) CS – ED Interim Review ( ) 3/28/2019	*Community Engagement Committee Meeting to discuss Agua Vista Web Portal (3/5/2019)* *Chapel Hill OWASA Board Members meet with TOCH OWASA Committee (3/14/2019)* *HR Committee Meeting to complete discussion of 457 deferred compensation (3/18/2019)*
April 2019	Review Employee Health and Dental Insurance Renewals ( ) FY 20 Draft Budget and Rate Adjustment Information ( ) **(Tentative) LRWSP – Discuss Water Supply and Demand Management Alternatives** **Forestry Management – Draft Community Engagement Plan** Propose Amendments to Bylaws Appointment of the Nominating Committee ( ) 4/11/2019	Q3 Financial Report ( ) FY 20 Budget and Rates Discussion and Authorize Staff to Publish Proposed Rates Update on Managing Taste and Odor in Drinking Water **Demonstration of Agua Vista Web Portal** Award the Mason Farm Wastewater Treatment Plant Secondary Clarifier Rehabilitation Construction Contract Award the Fordham Boulevard Service Road Water Main Replacements Construction Contract 4/25/2019	*OC Appointees to the OWASA Board meet with Members of Orange County BOCC (4/25/2019)*
May 2019	Approve Employee Health and Dental Insurance Renewals ( ) Discuss Employee Merit Pay for FY 2020 ( ) (Tentative) Update on Potential Western Intake Partnership to access Jordan Lake 5/9/2019	Public Hearings – FY 20 Budget and Rates ( ) (Tentative) Approve New Banking Services Provider Approve Employee Health and Dental Insurance Renewals (if needed) 5/23/2019	
June 2019	Approve FY 20 Budget and Rates, including merit pay decision ( ) **(Tentative) LRWSP – Final Water Supply and Demand Management Alternatives** Award the Dobbins Drive Water and Sewer Replacement Construction Contract Election of Officers ( ) 6/13/2019	TBD 6/27/2019	
July 2019	Diversity and Inclusion Update Award Kensington Drive Water Main Replacement Construction Contract 7/11/2019	TBD 7/25/2019	
August 2019	TBD 8/8/2019	Preliminary 12 Month Financial Report ( ) CIP Semiannual Report ( ) CS – Prepare for General Counsel Review ( ) 8/22/2019	
September 2019	EEO/Affirmative Action Report & Diversity and Inclusion Update ( ) Annual Report on Disposal of Surplus Personal Property ( ) **AMI Low-Flow Leak Alerts** CS – General Counsel Review ( ) 9/12/2019	Annual Report and Financial Audit ( ) Approve General Counsel Engagement ( ) CS – Prepare for ED Review ( ) 9/26/2019	

Current and Pending Key Projects and Strategic Initiatives– in **bold**

OWASA Board of Directors – 12 Month Board Meeting Schedule (March 8, 2019)

Month	Board Meetings		Committee & Other Meetings
	Work Session	Business Meeting	
October 2019	CS – ED Review 10/10/2019	Q1 Financial Report **Strategic Trends Report and Strategic Plan Update** 10/24/2019	
November 2019	TBD 11/14/2019	*Holiday – no meeting*	
December 2019	TBD 12/12/2019	*Holiday – no meeting*	
January 2020	Appoint Audit Firm Employee Health and Dental Insurance Update for FY21 Affordability Outreach Program Update 1/9/2020	Annual Lakes Recreation Report CIP Semiannual Report Q2 Financial Report FY 21 Budget Calendar and Assumptions 1/23/2020	
February 2020	CS – Prepare for General Counsel Interim Review 2/13/2020	CS – General Counsel Interim Review 2/27/2020	

Note: Additional Board Meetings will include matters related to improving reliability and resiliency on OWASA's services.

The 12 Month Board Meeting Schedule shows Strategic Plan initiatives and other priority efforts that the Board and staff plan to give greatest consideration to during the next twelve months. The schedule also shows major recurring agenda items that require Board action, or items that have been scheduled in response to the Board's prior standing request. This schedule does not show all the items the Board may consider in a work session or business meeting. It also does not reflect meetings at which the Board will discuss and act on the update of the Strategic Plan.

The 12 Month Board Meeting Schedule will be reviewed and updated at each monthly work session and may also be discussed and updated at the Board's business meetings.

In addition to the initiatives shown in this schedule, staff will be working on other Strategic Plan and organizational priorities that are not expected to require major additional discussion with the Board except as part of budget deliberations.

The schedule implies that the following Strategic Plan initiatives would be addressed beyond the 12-month period. The Board may conclude that one or more of the following initiatives are higher priority. The schedule will be revised as needed to reflect the Board's priorities, and any additional initiatives that the Board may decide to address.

- Development of a plan and policy framework for OWASA lands is considered a longer-term priority. The NRTS Committee discussed this issue in September 2017 and determined it was lower priority than Forestry Management.
- Water Conservation Plan will be prepared concurrent with update of the Long-Range Water Supply Plan.
- Update of Strategic Plan. On November 15, 2018, the Board and staff agreed to defer update of the Strategic Plan to a date to be determined.

The OWASA Board determines which topics it wants to explore as a full Board (potentially in a work session format) and which topics it wants to assign to Board committees or committee chairs for further analysis and development of recommendations. Board also determines priorities and desired timeframes for addressing topics. Committee meetings will be updated on the schedule routinely.

OWASA Board of Directors – 12 Month Board Meeting Schedule (March 8, 2019)

Abbreviations Used in Draft Schedule:

↻	Recurring agenda item (generally these are "required" items)
AV/AMI	Agua Vista/Advanced Metering Infrastructure
BOCC	Board of County Commissioners
CBOA	Carrboro Board of Aldermen
CE	Community Engagement
CEP	Community Engagement Plan
CHTC	Chapel Hill Town Council
CIP	Capital Improvements Program
COLA	Cost of Labor Adjustment
CS	Closed Session of the Board
CY	Calendar Year
D&I	Diversity and Inclusion
ED	Executive Director
EEO	Equal Employment Opportunity
FY	Fiscal Year
HR	Human Resources
JLP	Jordan Lake Partnership
KPI	Key Performance Indicator
LRWSP	Long-Range Water Supply Plan
MOA	Memorandum of Agreement
MST	Mountains-to-Sea Trail
MFMM	Multi-Family Master Meter
NCDOT	North Carolina Department of Transportation
NRTS	Natural Resources and Technical Services
OC	Orange County
Q	Quarter
RFP	Request for Proposals
SRF	State Revolving Fund
SOW	Scope of Work
TBD	To Be Determined
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Pending Key Staff Action Items from Board Meetings

No.	Date	Action Item	Target Board Meeting Date	Person(s) Responsible	Status
1.	2-28-2019	Considering Board member feedback, finalize the 2019 Communications and Community Engagement Plan. Continue implementation, except those tasks needing funding support (pending Board approval as part of FY 2020 budget).	NA	Low	
2.	2-14-2019	Implement staff's proposed accelerated valve exercise program and keep the Board updated on progress/metrics.	NA	Taylor Rogers	Complete. Email sent to the Board on 3-6-2019. Monthly updates will be provided for the remainder of CY 2019.
3.	2-14-2019	Prepare outline summary of the Board's desired approach for community engagement for forestry management and invite individual Board member feedback via email. Considering feedback, staff will prepare community engagement plan for the Board's review and approval at a future Board meeting.	4-11-2019	Low Rouse Kerwin	Emails sent to the Board on 2-27-2019, 3-4-2019 and 3-7-2019.
4.	2-14-2019	Proceed with water distribution system prioritization model project. Consider condition assessment of raw water mains and update the Board on same via email.	NA	Gangadharan	Underway.
5.	1-24-2019	Provide Board update on matters related to our work to effectively manage taste and odor in our drinking water.	4-25-2019	Loflin Taylor	
6.	1-10-2019	Provide Board progress reports on action items addressing opportunities for improvement identified in Hazen's report on November 5th water main break.	TBD	Taylor Darr Gangadharan Horton	Progress reports will be combined with action items for risk and reliability work at treatment plants.
7.	1-10-2019	Staff will proactively look for and consider opportunities for savings in the FY 2019 O&M budget.	NA	Winters Kerwin Directors	Underway.
8.	12-13-2018	Update Strategic Trends Report to reflect Board Member suggestions.	10-24-2019	Rouse	

Pending Key Staff Action Items from Board Meetings

No.	Date	Action Item	Target Board Meeting Date	Person(s) Responsible	Status
9.	11-15-2018	Incorporate the Board's feedback on the projected demands and yield for the Long-Range Water Supply Plan and provide the additional information that was requested.	3-14-2019	Rouse	Jordan Lake briefing paper emailed on 1-28-2019 and planned for discussion at the March 14th work session. Other items will be addressed in the March 14 agenda package, during the meeting, or through a separate email.
10.	11-8-2018	Schedule full Board discussion on PFAS sampling plan.	TBD	Kerwin	Sampling underway. Ed K. will follow up with Ruchir regarding this matter.
11.	10-25-2018	Incorporate Board feedback on WTP & WWTP Reliability and Risk Assessment Action Plan and provide the Board a yearly progress report via email in October 2019.	NA	Darr Taylor Loflin Dodson	Underway.

OWASA Action Items Recurring Every 3 to 5+ Years

No.	Action Item	Purpose	Board Action Needed	Target Start Date	Target Completion Date	Frequency	Staff Lead
1.	Strategic Plan	Identify key strategic initiatives and corresponding actions for OWASA during the next 3-5 years	1) Participate with and guide staff to develop an updated draft Strategic Plan 2) Invite and consider customer and stakeholder feedback on draft Plan 3) Approve Strategic Plan 4) Provide staff resources and guidance needed to execute the Plan	TBD	Delayed; on 11-15-2018 the Board agreed that progress reports will continue with Annual Review and Updates of Strategic Trends	3-5 years	Executive Director
2.	Local Water Supply Plan and Water Shortage Response Plan	NC General Statues requires Local Water Supply Plan and Water Shortage Response Plan be updated at least every 5 years to be submitted to NC Department of Environmental Quality	1) If staff identifies a policy or material change in the update of the Plans, Board guidance is required 2) Approve Plans	Spring 2022 (if policy or material change)	Spring 2023	5 years	Planning and Development Manager
3.	Water Demand Projections (Long-Range Water Supply Plan will be updated approximately every 10 years, unless there is a significant change in supply or projected demand)	Periodically check the assumptions used to develop our water demand projections	1) Provide staff feedback and guidance on assumptions and methods to develop demand projections 2) Invite and consider stakeholder feedback on draft demand projections	Staff work in process	March 2019	10 years	Planning and Development Manager

OWASA Action Items Recurring Every 3 to 5+ Years

No.	Action Item	Purpose	Board Action Needed	Target Start Date	Target Completion Date	Frequency	Staff Lead
4.	Source Water Protection Plan	Develop plan to protect OWASA's local water supply reservoirs that meets regulations	No Board action needed. Regulation (finalized Jan 2019) requires staff to notify Board when Plan developed and updated. Staff will keep Board apprised of progress and will present a draft plan to Board for feedback in spring/summer 2022.	TBD	1/1/2023	Every 3 years	Planning and Development Manager
5.	Cost of Service Rate Study	1) Ensure OWASA's rates, fees and charges continue to meet the goals of the organization (e.g. sustainability, conservation, affordability, etc.) 2) Update cost allocations and adjust rates as necessary. NC General Statues requires review of System Development Fees every 5 years.	1) Provide guidance to staff on draft Rate Study 2) Invite and consider customer and stakeholder feedback on draft Rate Study 3) Approve Rate Study and annual update of rates, fees and charges as needed	2022	2023	5 years	Director of Finance and Customer Service
6.	Auditor	NC General Statues requires an annual audit of OWASA's finances. It is a best-practice to invite proposals and select best-qualified audit firm every 3 years.	1) Assign 1 or 2 Board Members to participate on staff's panel to select a best-qualified audit firm 2) Award annual contract to audit firm	Winter 2020	Spring 2021	3 years	Director of Finance and Customer Service
7.	Banking Services	It is a best-practice to invite proposals and select a best-qualified financial institution to provide OWASA's various banking needs.	1) Provide guidance to staff on the social responsibility and environmental sustainability criteria to be considered when selecting a best-qualified financial institution for banking services 2) Approve financial institution	July 2018	Fall 2019	10 years	Director of Finance and Customer Service

OWASA Action Items Recurring Every 3 to 5+ Years

No.	Action Item	Purpose	Board Action Needed	Target Start Date	Target Completion Date	Frequency	Staff Lead
8.	Employee Classification Pay and Compensation	It is best-practice every 5-7 years to thoroughly review employee jobs to ensure they are properly classified in their position and to ensure total compensation (pay and benefits) are competitive and meeting OWASA's needs.	1) Provide guidance to staff about goals and objectives for employee total compensation 2) Approve Employee Classification, Pay and Compensation Study & Pay Administration Guidelines	2020	2021	5-7 years	Director of Human Resources and Safety
9.	Financial Management Policy	It is a best-practice to review OWASA's Financial Management Policy periodically to ensure organizational fiscal objectives are appropriate.	1) Provide guidance to staff about OWASA's Financial Management objectives 2) If needed, approve update to Financial Management Policy	2021	2022	5 years	Director of Finance and Customer Service
10.	Audit of OWASA Board Policies and Ordinances (such as Cross-Connection, Sewer Use, Purchasing and Procurement, etc.)	It is a best-practice to have staff audit the various Board approved policies to ensure they are still appropriate. As needs change, staff is responsible to act and inform the Board.	1) Provide guidance to staff on staff's recommended updates to various Board policies. 2) As needed, approve policy updates	2019	2020	5+ years	Executive Director
11.	Energy Management Plan	TBD (after three more years of annual reporting leading up to achievement of 2020 goal)	TBD	TBD	TBD	TBD	Sustainability Manager
12.	Communications and Community Engagement Plan	Establish key communications and community engagement initiatives and corresponding actions for OWASA during the next 3-5 years.	1) Participate with and guide staff to develop a draft Plan 2) Invite and consider customer and stakeholder feedback on draft Plan 3) Approve Plan 4) Provide staff resources and guidance needed to execute the Plan	2019	Ongoing	Annual	Communications and Community Relations Officer

OWASA Action Items Recurring Every 3 to 5+ Years

No.	Action Item	Purpose	Board Action Needed	Target Start Date	Target Completion Date	Frequency	Staff Lead
13.	Human Resources Policy	As needs change, staff is responsible to act and inform the Board	1) Provide guidance to staff on staff's recommended updates to various topics within the HR Policy. 2) As needed, approve policy updates	As needed	As needed	As needed	Director of Human Resources and Safety