ORANGE WATER AND SEWER AUTHORITY

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

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.
   B. Intergovernmental Parks Work Group Meeting on April 10, 2019 at 5:30 p.m. in the Southern Human Services Center
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 (Yinka Ayankoya)

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. Minutes of the February 28, 2019 Meeting of the Board of Directors (Andrea Orbich)
5. Minutes of the March 14, 2019 Closed Session of the Board of Directors to Discuss a Personnel Matter (Robert Morgan)

Regular Agenda

Discussion and Action

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

Discussion

8. Review Fiscal Year 2020 Draft Budget and Rate Adjustment Information (Stephen Winters)
9. Review Human Resources Committee Recommendation on Retiree Health Insurance Benefit (Robert Morgan/Stephanie Glasgow/Stephen Winters)
10. Review Human Resources Committee Recommendation on Deferred Compensation (457) Plan Benefit (Robert Morgan/Stephanie Glasgow/Stephen Winters)

Summary of Board Meeting Action Items

11. 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

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

OWASA Board of Directors – 12 Month Board Meeting Schedule (March 22, 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	Set date for Public Hearings – FY 20 Budget & Rates ↻ **Annual Update of the Energy Management Plan** ↻ Award the WWTP Solids Thickening Improvements and Headworks Rehabilitation Construction Contract FY 20 Draft Budget & Rates and Proposed Staff Rate Adjustment Recommendation ↻ Review HR Committee Recommendation on Retiree Health Insurance & 457 deferred compensation 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** Award the Manning and Country Club Water Main Replacement Construction Contract 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 (Tentative) Approve Changes to Retiree Health Insurance & 457 Deferred Compensation 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	

OWASA Board of Directors – 12 Month Board Meeting Schedule (March 22, 2019)

Month	Board Meetings		Committee & Other Meetings
	Work Session	Business Meeting	
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	
October 2019	CS – ED Review 10/10/2019	Q1 Financial Report **Strategic Trends Report and Strategic Plan Update** Water Main Break and WTP/WWTP Reliability and Risk Assessment Action Plans Progress Report 10/24/2019	
November 2019	**(Tentative) LRWSP – Draft Evaluation of Water Supply and Demand Management Alternatives** 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 **(Tentative) LRWSP – Final Evaluation of Water Supply and Demand Management Alternatives** 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.

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

Agenda Item

- Resolution Setting the Date of May 23, 2019 for a Public Hearing on OWASA's Fiscal Year (FY) 2020 Budget

Background

- General Statutes (G.S.) of North Carolina require that before adopting the annual budget, the Board shall hold a public hearing at which time any persons who wish to be heard on the budget may comment.

- Notice of the time and place of the public hearing shall be advertised prior to the date of the public hearing, and a copy of the budget is to be provided to news media in the county.

- Notice is to be mailed to the University, the Towns of Chapel Hill and Carrboro and to Orange County.

- In order to satisfy public notice requirements and to allow for budget adoption tentatively scheduled for June 13, 2019, the attached resolution sets May 23, 2019 as the date of the public hearing on OWASA's budget.

Action Needed

- Adopt the Resolution Setting the Date of May 23, 2019 for a Public Hearing on OWASA's FY 2020 budget

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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

MEMORANDUM

TO: Board of Directors

THROUGH: Ed Kerwin

FROM: Stephen Winters, CPA

DATE: March 22, 2019

SUBJECT: Resolution Setting the Date of May 23, 2019 for a Public Hearing on OWASA's Fiscal Year (FY) 2020 Budget

Purpose and background

Section 159-12 of the General Statutes (G.S.) of North Carolina requires that before adopting the annual budget, the Board shall hold a public hearing at which time any persons who wish to be heard on the budget may comment. Historically, the OWASA Board of Directors has conducted the public hearing during the second meeting in May. Statutes also require that the proposed budget be filed with the Clerk to the Board where it shall remain available for public inspection until the budget ordinance is adopted.

Notice of the time and place of the public hearing shall be advertised prior to the date of the public hearing, and a copy of the budget is to be provided to news media in the county. Additionally, the notice is to be mailed to the University of North Carolina at Chapel Hill, the Towns of Chapel Hill and Carrboro, and to Orange County.

The attached resolution sets May 23, 2019 as the date of the public hearing on OWASA's FY 2020 budget. Adoption of the budget is tentatively scheduled for June 13, 2019.

Stephen Winters, CPA
Director of Finance and Customer Service

Resolution Setting the Date of May 23, 2019 for a Public Hearing on OWASA's Fiscal Year 2020 Budget

Whereas, Section 159-12 of the General Statutes of North Carolina requires a Public Hearing on the budget for the ensuing fiscal year; and

Whereas, in accordance with Section 7.05 of the Bond Order, and Section 159-13 of the General Statutes of North Carolina, the Board of Directors of Orange Water and Sewer Authority shall adopt an Annual Budget for the Fiscal Year 2020 on or before the first day of July 2019; and

Whereas, said proposed Budget will be placed with the Clerk to the Board and will be available for public inspection;

Now, Therefore, Be It Resolved:

1. That a Public Hearing is hereby set for Thursday, May 23, 2019, at 7:00 P.M., in Chapel Hill Town Hall, for the purpose of receiving public comment on the proposed Fiscal Year 2020 budget.

2. That any interested persons may appear in-person, or by agent or attorney, and present any comments they may have regarding the proposed budget.

3. That notice of the time and place of the Public Hearing shall be advertised and provided at least ten days prior to the date fixed above for the Public Hearing to The University of North Carolina at Chapel Hill, and to the Towns of Chapel Hill and Carrboro and to Orange County.

Adopted this 28th day of March 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item

- Resolution Setting the Date of May 23, 2019 for a Public Hearing on Proposed Revisions to OWASA's Schedule of Rates, Fees and Charges

Background

- Although there is no statutory requirement for a water and sewer authority to hold a public hearing on proposed revisions to rates, OWASA historically holds such a public hearing in conjunction with the public hearing on the annual budget during its second meeting in May.

- The Agreement of Sale and Purchase with The University of North Carolina at Chapel Hill requires that The University be provided a 90-day notice prior to implementing changes in rates, fees and charges.

- The attached resolution sets May 23, 2019, as the date for a public hearing on revisions to rates, fees and charges that, if approved, would go into effect in Fiscal Year 2020.

Action Needed

- Adopt the Resolution Setting the Date of May 23, 2019 for a Public Hearing on Proposed Revisions to OWASA's Rates, Fees and Charges.

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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MEMORANDUM

TO: Board of Directors

THROUGH: Ed Kerwin

FROM: Stephen Winters, CPA

DATE: March 22, 2019

SUBJECT: Resolution Setting the Date of May 23, 2019 for a Public Hearing on Proposed Revisions to OWASA's Schedule of Rates, Fees and Charges

Purpose and background

Although there is no statutory requirement for a water and sewer authority to hold a public hearing on proposed revisions to rates, OWASA historically holds such a public hearing in conjunction with the public hearing on the annual budget during the Board's second meeting in May. Information on the annual budget and revisions to rates provided by staff during the public hearings is typically combined into a single presentation.

Any proposed adjustment to rates, fees and other charges will be recommended to become effective during the new fiscal year. The Agreement of Sale and Purchase with the University of North Carolina at Chapel Hill requires that the University be provided a 90-day notice prior to implementing changes in rates, fees and charges.

The attached resolution sets May 23, 2019, as the date for a public hearing on revisions to rates, fees and charges. Receiving public comment at the hearing will provide sufficient time to consider public input; adopt a revised schedule of rates, fees and other charges before June 30, 2019.

Stephen Winters, CPA
Director of Finance and Customer Service

Resolution Setting May 23, 2019 as the Date for a Public Hearing on Proposed Revisions to OWASA's Schedule of Rates, Fees and Charges

Whereas, the Orange Water and Sewer Authority must charge fees sufficient to provide financial resources to recover the cost of ongoing operations, pay for capital improvements, and provide sufficient financial resources to ensure sustainable fiscal strength and stability; and

Whereas, Section 162A-6 of the General Statutes of North Carolina and Section 7.04 of the Amended and Restated Bond Order adopted September 13, 2001, provide for the revision of such rates, fees and charges;

Now, Therefore, Be It Resolved:

1. That a Public Hearing is hereby set for Thursday, May 23, 2019 at 7:00 P.M., in Chapel Hill Town Hall, for the purpose of receiving public comment on any proposed adjustments to Orange Water and Sewer Authority's rates, fees and charges.

2. That any interested persons may appear in person, or by agent or attorney, to present comments on the proposed modifications to the current schedule of rates, fees and charges.

3. That notice of the time and place of the Public Hearing shall be advertised and shall be provided at least ten days prior to the date fixed above for the Public Hearing to the University of North Carolina at Chapel Hill, Town of Carrboro, Town of Chapel Hill, and Orange County.

Adopted this 28th day of March 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Orange Water and Sewer Authority

Meeting of the Board of Directors

February 28, 2019

The Board of Directors of the Orange Water and Sewer Authority (OWASA) met in a work session on Thursday, February 28, 2019, at 6:00 p.m. in OWASA's Board Room, 400 Jones Ferry Road, Carrboro.

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

OWASA staff present: Mary Darr, Robert Epting, Esq., (Epting and Hackney), Robin Jacobs (Epting and Hackney), Ed Kerwin, Linda Low, Andrea Orbich, Todd Taylor, Mary Tiger, Stephen Winters and Richard Wyatt.

Others present: Heather Benjamin and Meg Holton (UNC Water Resources Manager).

Motions

1. Robert Morgan made a motion to approve the Minutes of the January 10, 2019 Meeting of the Board of Directors; second by Ruchir Vora and unanimously approved.

2. Robert Morgan made a motion to approve the Minutes of the February 14, 2019 Closed Session of the Board of Directors to Discuss a Personnel Matter; second by Ruchir Vora and unanimously approved.

3. BE IT RESOLVED THAT the Board of Directors of the Orange Water and Sewer Authority adopts the Resolution Honoring the Service of Jeff Danner to the Chapel Hill-Carrboro-Orange County Community as a Member of the Orange Water and Sewer Authority. (Motion by John Young, second by Robert Morgan 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.

Jody Eimers announced that Ray DuBose, Ed Kerwin and she provided the Orange County Board of County Commissioners (BOCC) OWASA's Annual Report on February 19, 2019 in Chapel Hill. Topics presented included: Quarterly Meeting with Members of the BOCC; water system resiliency; Sewers for Historic Rogers Road Area; OWASA's Affordability Outreach Program; contributions to OWASA's Care to Share Customer Assistance Program; leak

notification and mobilization with Agua Vista Web Portal; and OWASA's Diversity and Inclusion Program. Ms. Eimers noted one speaker spoke on OWASA's Annual Update and expressed concern about land application of biosolids. The BOCC did not have questions or comments for the speaker.

John Young announced that Ed Kerwin and he attended the February 21, 2019 Chatham-Orange Joint Planning Task Force meeting in Pittsboro. Mr. Young said Mr. Dan LaMontagne, Interim Chatham County Manager, provided an update on the Jordan Lake Western Intake Partners (Durham, Chatham, Pittsboro, OWASA), and that Mr. LaMontagne's slides were provided to the OWASA Board on February 25, 2019. The next meeting for this group is scheduled for May 9, 2019, hosted by Orange County, the agenda may include a presentation regarding Jordan Lake One Water Association and a discussion on stormwater management.

Ruchir Vora announced that the Community Engagement Committee will meet on Tuesday, March 5, 2019 at 9:00 a.m. in the Boardroom to discuss Agua Vista Web Portal.

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

Robert Morgan announced that the Human Resources Committee will meet on Monday, March 18, 2019, at 8:00 a.m. in the OWASA Boardroom to discuss 457 deferred compensation benefit.

John Morris said the Board's 12-month schedule shows discussions on the Long-Range Water Supply Plan topics over the next few months and suggested the Natural Resources and Technical Services (NRTS) Committee meet to discuss this complicated topic. The Board agreed to delay a NRTS Committee meeting on this topic until after initial Board discussions later this spring.

Item One: 12 Month Board Meeting Schedule

The Board accepted this as an information item.

Item Three: Minutes

Robert Morgan made a motion to approve the Minutes of the January 10, 2019 Meeting of the Board of Directors; second by Ruchir Vora and unanimously approved. Please see Motion 1 above.

Item Four: Resolution Honoring the Service of Jeff Danner to the Chapel Hill-Carrboro-Orange County Community as a Member of the Orange Water and Sewer Authority's Board of Directors

John Young made a motion to approve the resolution; second by Robert Morgan and unanimously approved. Please see Motion 3 above.

Item Four: Nomination and Election of the Vice Chair

Yinka Ayankoya said with Jeff Danner's resignation from the Board of Directors at the end of tonight's meeting, the office of Vice Chair is vacant. She said it is understood that the Board's practice of setting one-year term limits for Officers does not apply to a partial term and that five (5) votes are necessary to elect a Vice Chair. Ms. Ayankoya asked for nominations for Vice Chair from the floor.

John Morris nominated Ray DuBose; Ruchir Vora nominated himself, as candidates for election to the office of Vice Chair of the Board of Directors. There were no other nominations, and the nominations were closed.

The Board Clerk distributed ballots for the election of Vice Chair of the Board of Directors, those considered for nomination were Ray DuBose and Ruchir Vora.

In the first round of voting for the Vice Chair of the Board of Directors, those considered to have been in nomination were Ray DuBose and Ruchir Vora, in the vote on the first ballot, neither of the candidates received five votes.

The Board determined without objection to vote a second round for Vice Chair of the Board of Directors, and the nominations were again Ray DuBose and Ruchir Vora. In the vote on the second ballot, Ruchir Vora obtained five votes and was elected as Vice Chair of the Board of Directors for the remainder of the present term.

Item Six: Discuss Draft Communications and Community Engagement Plan

The Board discussed and supported staff moving forward with the draft 2019 Communications and Community Engagement Plan (Plan). The Plan incorporates five key strategies to increase the effectiveness of OWASA's external communications and community engagement throughout the year. The strategies are outlined below:

1. Communicate a narrative linking all of OWASA's work – core key messages, refresh the brand, improve the website, offer optional communication training for all employees
2. Develop unique education activities and partnerships to get people interested and invested in water – establish OWASA Youth Water Academy, communications intern from UNC, Water Wagon events
3. Project competence and provide proof points on what OWASA is doing to bolster system resiliency – potentially behind the scene tours of capital improvement projects, Chamber of Commerce infrastructure session, monthly educational feature on local radio
4. Leverage momentum, support priority focus areas – promote Agua Vista during the Mayors Save Water Challenge, implement Care to Share Day, facilitate community dialogue on forest management, develop a key message bank
5. Continue to improve good practices in emergency communications – collaboration with local government Public Information Officers, document emergency communication processes, cross-promote and amplify messages on partner channels

The Board also supported the organizational web relaunch, brand refresh, design and printing for public education to begin this Fiscal Year (FY19). The Board will review additional information in conjunction with FY 2020 budget prior to approval of additional resources.

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

Ed Kerwin said staff would follow up on the Board's comments to implement the Communication and Community Engagement Plan.

Item Eight: Closed Session

Without objection, the Board continued in Closed Session for the purpose of discussing a personnel matter.

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

Respectfully submitted by:

Andrea Orbich
Executive Assistant/Clerk to the Board

Attachment

Orange Water and Sewer Authority

Closed Session of the Board of Directors

March 14, 2019

The Board of Directors of Orange Water and Sewer Authority met in Closed Session in on Thursday, March 14, 2019, following the Board meeting.

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

Staff present: none.

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ITEM ONE

The Board of Directors met in Closed Session to evaluate Executive Director's semiannual performance review.

No official action was taken at the meeting.

The meeting was adjourned at 9:25 p.m.

_____

Robert Morgan, Chair
Human Resources Committee

Agenda Item

- Award the Mason Farm Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation Construction Contract

Purpose

- To request the Board's approval to award a construction contract for the Mason Farm Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation.

Background

- The Project consists of two separate projects that were bid together.

- The Solids Thickening Improvements includes the replacement of the Gravity Belt Thickeners (GBT's) with Rotary Drum Thickeners (RDT's), related electrical equipment, odor control equipment, related pumps, ancillary process equipment and controls. Plans and specifications were prepared by CDM Smith.

- The Headworks Rehabilitation project includes the installation of bypass pumps, permanent bypass connection points, and concrete rehabilitation of the headworks vaults. Plans and specifications were prepared by Brown and Caldwell.

- Prospective bidders for the construction contract were screened through a prequalification process. Minority outreach was performed for the prequalification process in accordance with standard practice. Nine bidders were prequalified.

- Bids from two prequalified contractors were received and returned to the bidders on February 5, 2019.

- Bids from three prequalified contractors were received on February 15, 2019 and opened. The apparent low bidder was challenged by a second bidder as being non-responsive.

- OWASA chose to rebid the job on February 25, 2019. Bids were received and opened on March 5, 2019. The apparent low bidder was Haren Construction (Haren) $6,522,000.00.

- The Engineer's estimate for the combined Project was $5,380,000.00.

- The Engineer evaluated bids and recommended award of the construction contract to Haren Construction.

Staff Recommendation

- Staff recommends that the Board of Directors adopt the Resolution Awarding the Construction Contract for the Mason Farm Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation Project to Haren Construction in the amount of $6,522,000.00.

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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M E M O R A N D U M

TO: Board of Directors

THROUGH: Ed Kerwin

FROM: Simon Lobdell, P. E.

DATE: March 21, 2019

SUBJECT: **Award the Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation Construction Contract**

Purpose

This memorandum recommends that OWASA award a construction contract to Haren Construction Company ("Haren") for the construction of the Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation.

Background

The Mason Farm Wastewater Treatment Plant (WWTP) uses thickeners to concentrate solids generated at the WWTP for anaerobic digestion to produce biosolids for recycling. The current thickening equipment are gravity belt thickeners (GBTs), which have reached the end of their useful life. Two of the GBTs were installed in 1999, and a third was installed in 2006. OWASA selected an engineering consultant, CDM Smith, to provide design, bidding and construction related services for the Solids Thickening Improvements Project. During design, staff and CDM Smith evaluated alternative technologies and found that installation of Rotary Drum Thickeners (RDTs) would be preferable to replacement in kind of the current GBT's, and in a previous board action on March 22, 2018, OWASA selected an RDT to replace our existing units.

The project scope also includes the improvement of auxiliary systems including the waste activated solids (WAS) pumping, primary solids pumping, odor control systems, new controls system, a new polymer feed system, electrical and HVAC equipment.

During development of the phasing plan for the solids thickening improvements, OWASA found that concrete in a section of the plant headworks structure was in urgent need of repair. The influent flow structure at the headworks facility was corroded to the point that delay in rehabilitation could risk critical structural failure. Brown and Caldwell was selected to develop drawing and specifications for the repair of the headworks.

The rehabilitation of the headworks will require bypassing the full plant flow during the repair. To provide additional value in bypass design, a permanent bypass gate and fixed pipe will be connected to the outlet junction box of the headworks to allow for temporary bypassing in the future and a high flow rental pump will be installed for peak flow conditions in the future. Other options considered included a second outlet structure, fully pumped bypass connections and enlarged primary clarifier bypass connections. The final design solution limits the total cost for the bypass but allows the plant to arrange bypass of the headworks outlet structure with an estimated one to two days of effort as opposed to the months of effort that would be required otherwise.

The two projects, the Solids Thickening Improvements and the Headworks Rehabilitation Project, were funded in the Capital Improvements Program as 278-51 and 278-82 respectively. However, they affect each other due to the demands on operations staff time to manage temporary process modifications and bypasses. We are combining the projects to avoid having multiple contractors on site performing work with concurrent impacts to major plant processes.

Advertising and Bidding

CDM Smith and Brown and Caldwell completed the design drawings and specifications for the improvements and combined their specifications into a single bid package. The bid included Phase A which contained all the Solids Thickening Improvements work and Phase B which included all the headworks rehabilitation work. Prospective bidders were screened through a prequalification process, which involved having interested contractors submit a package outlining their qualifications including past performance on similar projects, credentials of their management team, safety record, etc. Only those firms that clearly demonstrated the capability to adequately perform the project work were invited to submit bids. The Request for Qualifications (RFQ) was posted in June 2018. After review, nine contractors were prequalified to bid on the project.

On December 18, 2018, the invitation for bids was issued to the prequalified contractors and publicly advertised. Only two bids were received on the initial bid date of February 5, 2019 and, being fewer than the minimum of three required for bid opening on a formal contract, were returned unopened to the bidders. Per North Carolina General Statute 143-132, the contract was re-advertised, the project was rebid and three bids were received on February 15, 2019 and opened publicly. English Construction was the low, responsible bidder. However, Haren Construction Company lodged a bid protest that English Construction's bid should be considered non-responsive due to failure to list certain protected classes of subcontractors on their bid. The protest was found to have merit, and after consultation with OWASA Counsel, staff chose to modify the bid documents and re-bid the project.

On February 25, 2019, the project was re-bid and three bids were received on March 5, 2019 and opened publicly. In this round, Haren Construction Company was the low responsible responsive bidder. A copy of the certified bid tabulation is attached with the Engineer's recommendation to award (Attachment 1), and the results are summarized below:

Description	Haren	English	Carolina Civilworks	Engineer's estimate
PHASE A Solids Thickening Improvements	$5,140,000.00	$5,365,000.00	$6,017,057.00	$4.244,000.00
PHASE B Headworks Rehabilitation	$1,382,000.00	$1,300,000.00	$1,359,782.80	$1,136,000.00
GRAND TOTAL BASE BID (ALL PHASES)	**$6,522,000.00**	**$6,665,000.00**	**$7,376,839.80**	**$5,380,000.00**

OWASA and its consultants reviewed Haren's bid and are satisfied that the bid is fully responsive.

Minority and Women Business Enterprise (MWBE) Participation

OWASA's Minority Business Participation Outreach Plan and Guidelines include all of the statutory requirements from the State of North Carolina, and specify a 10% goal for participation by minority businesses. In keeping with standard practice, OWASA staff took several actions to solicit minority participation in this contract, including advertising the Request for Qualifications in the Greater Diversity News, the North Carolina Institute of Minority Economic Development, OWASA's website, and plan rooms, and requiring bidders to follow "good faith" efforts to solicit participation by minority subcontractors. The apparent low bidder (Haren) identified MWBE participation for three discrete tasks. The summary of these subcontracts is shown below.

Subcontract	Amount	% of contract value	Minority Designation
CITI (Controls)	$437,173.00	6.7%	Hispanic
Dover (Insulation)	$79,635.00	1.2%	Women
CMT (Coatings)	$63,516.00	1%	Women
Total	**$580,316.00**	**8.9%**	

Bid Analysis and Recommendation

The project bidding was notably difficult and resulted in significant delays to the project. Although nine contractors were prequalified to bid, only two bids were received for the project initially and the third bid was not competitively priced. However, when considering how close the two low bidders were in overall price, staff is satisfied that the proposed contract amount represents a competitive market price for this work. The engineer's estimate of construction cost was $5.38 million but by the final bid date, the estimate was more than 6 months out of date. Staff anticipated an increased cost due to market conditions. Bids significantly exceeded

the engineering estimate and based on feedback received from contractors and consultants, the low number of bids for this project appears to reflect the current general bidding climate. With an increasing number of private and public projects competing for a limited set of qualified utility contractors, prices have been increasing in the market. The complexity of the bid also detracted from some contractor's interest in the work and notably, the multi-step commissioning plan that allowed OWASA operations staff sufficient time to adjust to new processes and temporary bypasses was identified as a cost and risk driver for bidders.

Haren's ability to complete this project successfully was evaluated thoroughly during the prequalification process, and they have demonstrated sufficient qualifications in past project performance (including the Reclaimed Water Facility construction and the Aeration Basin and Odor Improvements Project, both of which were major CIP projects at the WWTP), personnel qualifications/experience, reference checks, and all other rated categories.

CDM Smith's recommendation that the construction contract for this project be awarded to Haren is attached along with the certified bid tabulation (Attachment 1). OWASA staff concurs with this recommendation and requests the Board's adoption of the attached resolution (Attachment 2) awarding the construction contract to Haren.

Please let me know if you have any questions or need additional information. I can be reached at 537-4247 or smlobdell@owasa.org. Thank you.

Simon Lobdell P.E.
Utilities Engineer

Attachment 1 – Engineer's Recommendation for Award and Certified Bid Tabulation
Attachment 2 – Resolution

CDM Smith
5400 Glenwood Avenue, Suite 400
Raleigh, North Carolina 27612
tel: 919 325-3500
fax: 919 781-5730

March 15, 2019

Mr. Simon Lobdell, P.E.
Orange Water and Sewer Authority
400 Jones Ferry Road
Carrboro, North Carolina 27510

Subject: Orange Water and Sewer Authority
Mason Farm WWTP Solids Handling Improvements and Headworks Corrosion and Odor Control Improvements
Engineer's Recommendation of Award

Dear Mr. Lobdell:

On March 5, 2019 three bids were received for the Orange Water and Sewer Authority Mason Farm WWTP Solids Handling Improvements and Headworks Corrosion and Odor Control Improvements Project. CDM Smith has reviewed these bids and has prepared the enclosed certified bid tabulation for your reference. The Bidders are listed in the bid tabulation in numerical order based on the low bidder first.

The three bidders on the project are as follows:

Bidder	Grand Total Base Bid
Haren Construction Co.: Etowah, TN	$6,522,000.00
English Construction Co.: Lynchburg, VA	$6,665,000.00
Carolina Civilworks, Inc.: Raleigh, NC	$7,376,839.80

Haren and English both acknowledged the receipt of Addendum No. 1, Carolina Civilworks did not. Bid Bonds, Non-Collusion Affidavits, and M/WBE Forms were provided with each of the three bids. In addition to CDM Smith's bid review, Brown and Caldwell conducted a check on Haren's proposed concrete coatings subcontractor, Petrin, and due to lack of references, has found apparent cause for concern with Haren using them as a subcontractor. Haren has since proposed using Carolina Management Team (CMT) as the coatings subcontractor, which has been found acceptable.

Based on the information stated above, CDM Smith recommends that the OWASA award a construction contract in the amount of $6,522,000.00 to Haren Construction for the referenced project.

Should you have any questions about this information, please do not hesitate to contact us.

Very truly yours,

William R. Mason, P.E.
CDM Smith

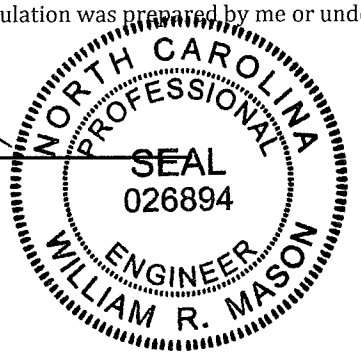
cc: R. Stroud, CDM Smith
J. Treadway, CDM Smith
T. Nangle, Brown and Caldwell

Orange Water and Sewer Authority
Mason Farm WWTP Solids and Headworks Improvements
Bid Results - March 5, 2019 - 3:00PM

Bid Item		Description	Haren	English	Carolina Civilworks
Phase A	1	Phase A, Except Base Bid 2 and3	$4,166,219.00	$4,242,449.00	$4,738,117.00
	2	Phase A RDT	$500,000.00	$552,000.00	$548,389.00
	3	Phase A CITI	$398,781.00	$430,551.00	$430,551.00
	4	Fire Alarm System	$25,000.00	$90,000.00	$250,000.00
	5	Phase A Contingency	$50,000.00	$50,000.00	$50,000.00
GRAND TOTAL BASE BID (PHASE A)			$5,140,000.00	$5,365,000.00	$6,017,057.00
Phase B	1	Phase B, Base Bid	$1,212,613.00	$1,140,911.00	$1,189,700.00
	2	Phase B Unit Cost	$79,075.00	$70,000.00	$78,190.80
	2a	Concrete Repair (1/4" to 1-1/4")	$4,725.00	$9,000.00	$10,432.80
	2b	Concrete Repair (1-1/4" to 2")	$5,850.00	$4,300.00	$5,005.00
	2c	Concrete Repair (2" and deeper)	$34,500.00	$26,600.00	$28,566.00
	2d	Concrete Protective Coatings	$34,000.00	$30,100.00	$34,187.00
	3	Phase B CITI	$38,392.00	$38,392.00	$38,392.00
	4	Phase B CITI Taxes	$1,920.00	$697.00	$3,500.00
	5	Phase B Contingency	$50,000.00	$50,000.00	$50,000.00
GRAND TOTAL BASE BID (PHASE B)			$1,382,000.00	$1,300,000.00	$1,359,782.80
GRAND TOTAL BASE BID (ALL PHASES)			**$6,522,000.00**	**$6,665,000.00**	**$7,376,839.80**

The bids tabulated herein were publicly opened and ready aloud at 3:00pm on the 5th day of March, 2019 at the OWASA Administration Building in Carrboro, NC and all said bids were accompanied by either a certified check or bidder's bond.

I hereby certify that this bid tabulation was prepared by me or under my supervision.



William R. Mason, P.E., BCEE
CDM Smith Inc.

Resolution Awarding a Construction Contract for the Mason Farm Wastewater Treatment Plant Solids Thickening Improvements and Headworks Rehabilitation Project

Whereas, there is a need to rehabilitate the solids thickening equipment at the Mason Farm Wastewater Treatment Plant solids handling facility; and

Whereas, there is a need to rehabilitate the concrete in the headworks facility; and

Whereas, plans and specifications for the construction of this project have been prepared by CDM Smith and Brown and Caldwell; and

Whereas, advertisement for contractor qualifications was published on the websites of the North Carolina Institute of Minority Economic Development, North Carolina Department of Administration, and OWASA on June 21, 2018, and nine contractors were qualified to bid at the time of the bid; and

Whereas, on December 18, 2018, the prequalified contractors were formally invited to submit construction bids for the project, and after receiving only two bids on the first bid opening date of February 5th, 2019 the project was re-bid; and

Whereas, three bids were subsequently received on February 15, 2019; and

Whereas, the low responsible bidder was challenged by a second bidder as being non-responsive; and

Whereas, because the challenge could not be resolved without adjudication, the project was subsequently revised and the Project was bid on February 25, 2019; and

Whereas, three bids were received on March 5, 2019; and

Whereas, Haren Construction Company of Etowah, Tennessee has been determined to be the low responsive, responsible bidder for the project; and

Whereas, on June 14th, 2018 the Board of Directors approved a resolution authorizing funds for the Capital Improvements Projects, including funds for this project;

Now, Therefore, Be It Resolved:

1. That the Orange Water and Sewer Authority Board of Directors awards the construction contract to Haren Construction Company, the low responsive, responsible bidder for the Mason Farm WWTP Solids Thickening Improvements and Headworks Rehabilitation Project, in accordance with the approved plans and specifications, in the amount of $6,522,000.00, subject to such change orders as may apply.

2. That the Executive Director be, and hereby is, authorized to execute said contract, subject to prior approval of legal counsel, and to approve and execute change orders and such documents as may be required in connection with the construction contract.

Adopted this 28th day of March, 2019.

_____
Yinka Ayankoya, Chair

ATTEST:

_____
Raymond E. DuBose, Secretary

Agenda Item

- Energy Management Plan Update

Purpose

- To obtain the Board's feedback and guidance on and approval of the proposed Energy Management Plan Update

Background

- OWASA uses a lot of energy to operate our water, wastewater and reclaimed water facilities, protect the environment, and provide service to about 83,000 residents through about 21,650 customer accounts in the Carrboro-Chapel Hill community. In Calendar Year 2018, our facilities used about 67 billion BTUs of energy – enough to power about 1,800 homes for a year. That energy came at a cost of $1.2 million, comprising about 5% of our annual operating expenses in Fiscal Year 2018.

- Since 2010, we have reduced our greenhouse gas emissions associated with our use of purchased natural gas and electricity by 40%.

- On April 13, 2017, the Board approved OWASA's first formal, comprehensive Energy Management Plan

- On March 8, 2018, the Board approved the 2018 Energy Management Plan Update

- The Draft 2019 Energy Management Plan Update documents our progress towards our energy management goals and objectives and presents updated recommendations and proposed strategies for further improving our use of energy and reducing our carbon footprint.

Action Needed

- Staff requests questions, feedback, and approval on the Energy Management Plan Update. If the Board needs additional information and/or requests changes to the report, approval can occur at a later date.

- Key items on which staff seek feedback and approval are:
    - Pursuit of implementation of proposed energy management strategies, including the issuance of an RFP for a solar (PV) lease project
    - Deadline extension of Objective 1 from 2020 to 2022
    - Integration of Objective 5 into Objective 1 and abandonment as a stand-alone objective
    - Overall progress towards energy management goals and objectives

- Consistent with past practice, we do not believe a formal resolution is needed for this matter. However, we do recommend that if and when the Board supports moving forward with the proposed plan, it consider acting on this mater via approval of a motion, perhaps along the lines of the following:

> *"Motion that the Board of Directors approves the proposed 2019 Energy Management Plan Update and authorizes staff to proceed to implement the program in accordance with the approached described in the proposed plan."*

Attachment

- Draft Energy Management Plan Update

OWASA'S ENERGY MANAGEMENT PLAN UPDATE

This document provides an update of Orange Water and Sewer Authority's (OWASA) use of energy in our facilities and what we've done and plan to do to use energy more efficiently, use renewable energy sources, and reduce our greenhouse gas (GHG) emissions. By reducing our use of energy and increasing our use of renewable energy sources, we can help reduce the demand for water resources, improve environmental impact of our operations, reduce costs, and improve reliability and resiliency.

March 2019

ORANGE WATER AND SEWER AUTHORITY

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

Background

OWASA uses a lot of energy to operate our water, wastewater and reclaimed water facilities, protect the environment, and provide service to about 83,000 residents through about 21,650 customer accounts in the Carrboro-Chapel Hill community. In Calendar Year 2018, our facilities used about 67 billion BTUs of energy – enough to power about 1,800 homes for a year. That energy came at a cost of $1.2 million, comprising about 5% of our annual operating expenses in Fiscal Year 2018.

On the other end of the wire, it takes a lot of water to produce the electricity we use. By reducing our use of energy and increasing our use of renewable energy sources, we can help reduce the demand for water resources, improve environmental impact of our operations, reduce costs, and improve reliability and resiliency.

In 2014, the OWASA Board of Directors identified the "Implementation of an Energy Management Program" to be a top strategic priority for the organization. Since that time, with the assistance of OWASA staff, the OWASA Board of Directors has reviewed an assessment of OWASA's energy use, established Calendar Year (CY) 2010 as the baseline year, identified concrete goals and objectives against that baseline, worked with staff to define an energy management program, and developed and approved a plan that seeks to achieve the following objectives:

Objective 1: Reduce use of purchased electricity by 35% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Objective 2: Reduce use of purchased natural gas by 5% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Objective 3: Beneficially use all WWTP biogas ~~by 2022~~[1], provided the preferred strategy is projected to have a positive payback within the expected useful life of the required equipment.

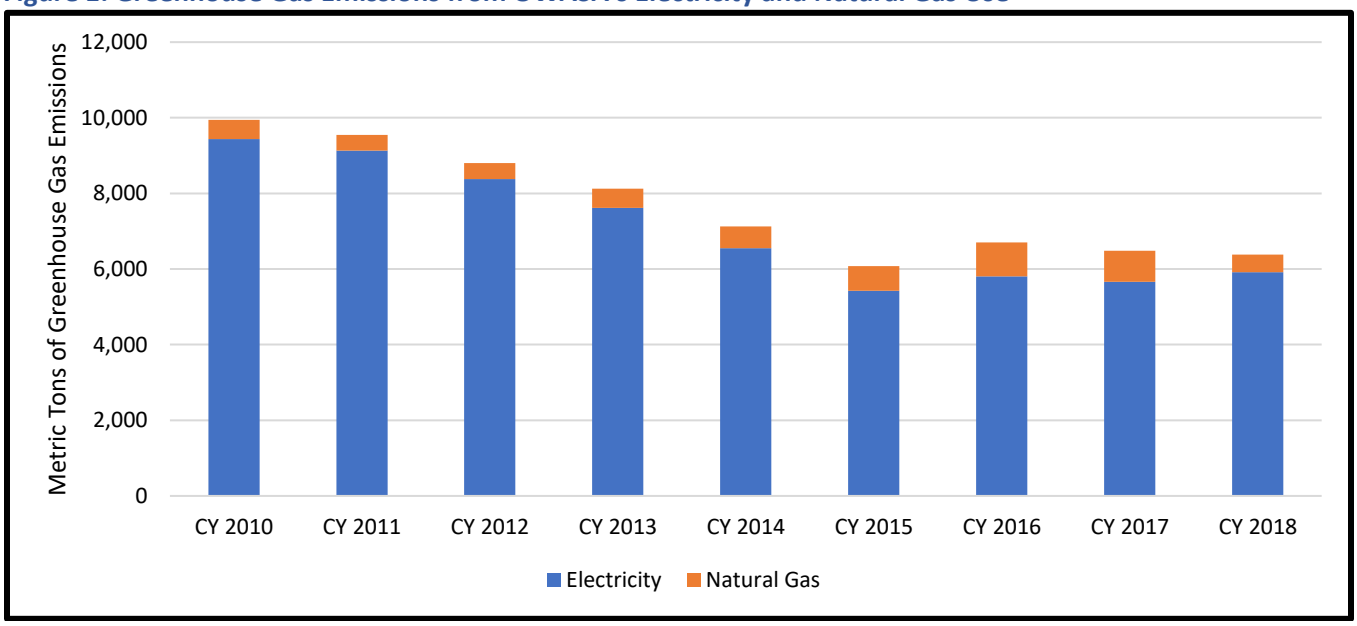
Objective 4: Formally engage local governments and partners in discussion about potential development of biogas-to-energy project at the Mason Farm WWTP.

Objective 5: Seek proposals for third-party development of renewable energy projects on OWASA property.

In the pursuit of these objectives, OWASA is committed to reduce our direct emissions of greenhouse gases. **Since 2010, we have reduced our greenhouse gas emissions associated with our use of purchased natural gas and electricity by 40%,** from about 10,600 metric tons per year to 6,400. Approximately 1,300 metric tons of this reduction is due to a decline in the carbon intensity of Duke Energy's generation portfolio (from 0.93 pounds per kWh in 2010 to 0.76). The remaining reduction is due to OWASA's improved energy efficiency and conservation. Figure 1 shows the annual greenhouse gas emissions attributed to OWASA's electricity and natural gas over the past nine years.

[1] In 2018, the OWASA Board of Directors determined that there was no apparent and cost-effective strategy to achieve this goal by 2022. As a result, the OWASA Board abandoned the 2022 deadline, but maintained the commitment long-term.

Figure 1: Greenhouse Gas Emissions from OWASA's Electricity and Natural Gas Use



OWASA's Energy Management Program is designed to systematically identify and evaluate energy management opportunities and to pursue those deemed to be cost-effective for the organization (defined as having a positive net present value within the rated life of the asset). It is also structured to more directly integrate energy management and clean energy strategies into our everyday decision-making. OWASA's Energy Management Program involves staff from across the organization, including a committed group of individuals serving on the organization's Energy Team, as well as numerous partners and stakeholders. Our program employs a comprehensive, systematic methodology for identifying, evaluating, and prioritizing clean energy strategies that will increase the sustainability of our organization and community for years to come. (Appendix A summarizes the criteria that the OWASA Energy Team uses to prioritize clean energy strategies, as well as how each of the new proposed strategies compare to this framework.) Our Energy Management Plan is a result of the collective contributions of all those involved in our Program.

This document serves as an update to OWASA's 2017 Energy Management Plan (EMP), OWASA's first formal, organization-wide evaluation of ways to better manage energy across all our facilities and the 2018 Energy Management Plan Update. It documents our progress towards our energy management goals and objectives and presents updated recommendations and proposed strategies for further improving our use of energy and reducing our carbon footprint.

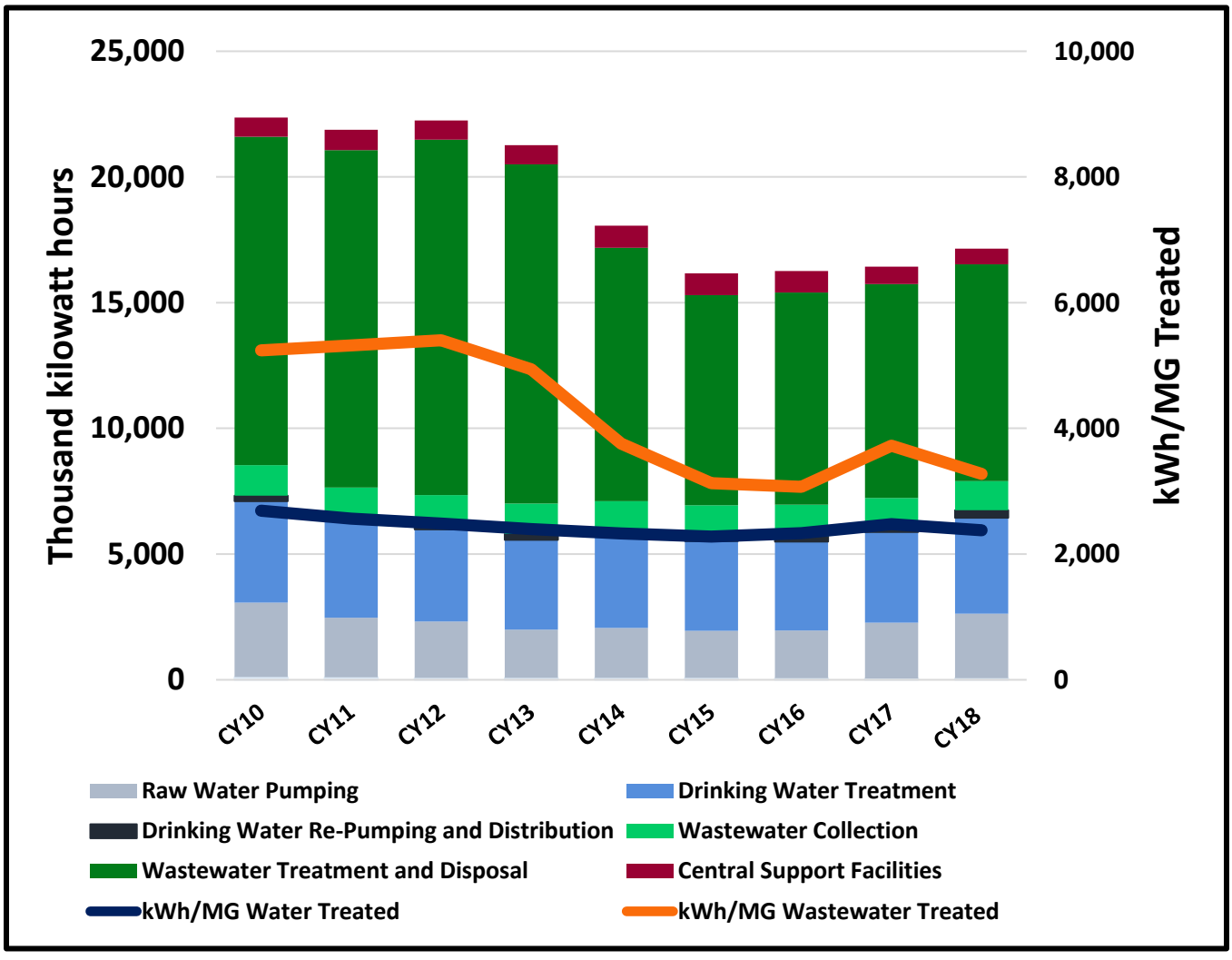
The remainder of this document is organized around the five goals and objectives of OWASA's Energy Management Program. Each section provides an update of our progress against each goals and proposes next steps in moving forward on each objective.

Objective 1: Reduce use of purchased electricity by 35% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Trends in Electrical Energy Use and Costs

Figure 2 shows nine years of historical electrical energy use across all OWASA facilities, by major functional area (serviced by Duke Energy Carolinas and Piedmont Electric Membership Corporation). The trend demonstrates a significant and sustained reduction in energy use throughout this time, realized from investments in more energy efficient equipment and processes. **In 2018, OWASA collectively used 23% less electrical energy than in 2010.**

Figure 2: Electrical Energy Use and Intensity, by Calendar Year, by Major Functional Area



In 2010, OWASA was billed $1.26 million for electricity at an average of $0.0575 per kWh. In 2018, we were billed $1.13 million at an average of $0.0672 per kWh. In absolute dollars, we spent about $132,000 less on electricity in 2018 than in 2010. However, if we had used the same amount of electrical energy in 2018, as we did in 2010, but were charged at 2018 levels, we would have paid about $345,000 more.

Through our energy management efforts, we avoided over $345,000 in annual operating and maintenance expenses in FY18.

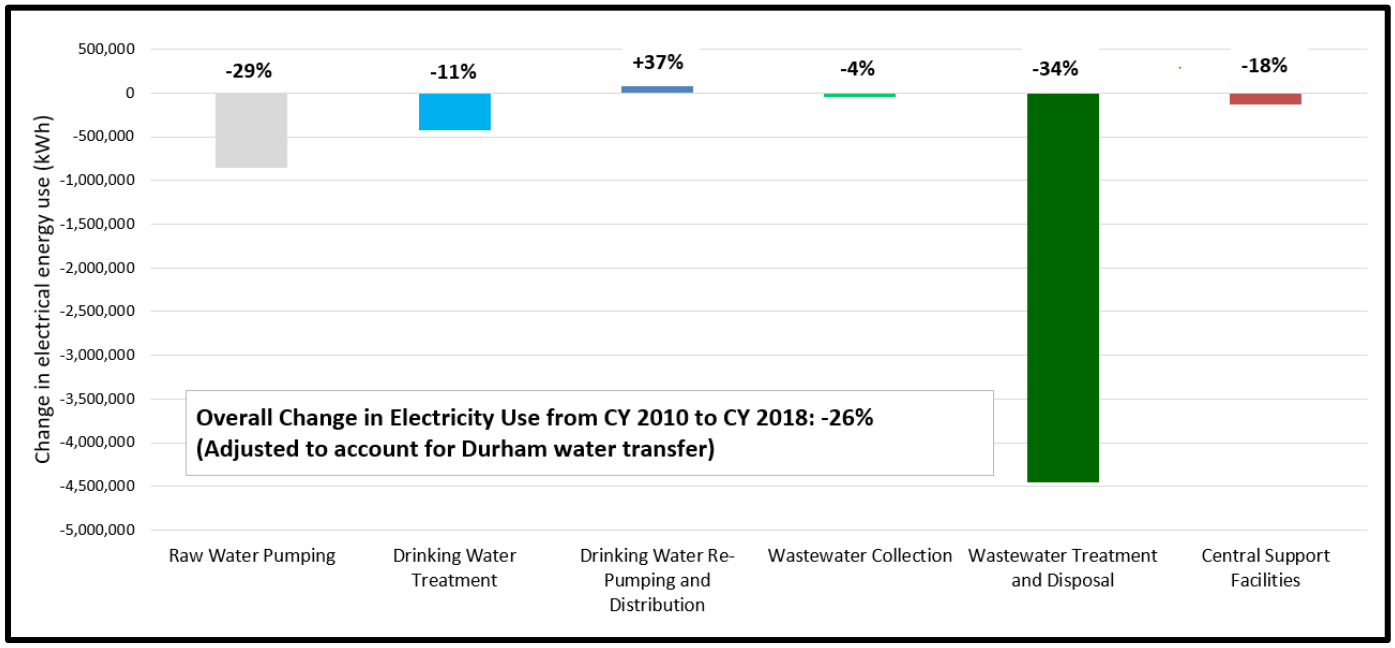
Additionally, our energy management efforts involve a detailed and regular analysis of our energy tariffs and contract demands. As such, our avoided costs are lower than what they would have been without these efforts. In other words, we have made changes over the last nine years that have brought down our blended per kWh rate. For example, we adjusted the contract demand for three facilities, which we estimate avoided an additional $13,000 each year in energy costs. After a cost-benefit analysis, we opted out of participation (i.e. contribution) to Duke Energy's energy efficiency rider at the Wastewater Treatment Plant and Cane Creek Reservoir complex. We estimate this saved OWASA approximately $50,000 last year. In 2020, we will opt out of this rider at the 400 Jones Ferry Road complex to save another $25,000 per year. Additionally, we intentionally shift demand to off-peak periods when we can to reduce our demand charges.

Summary of Implemented Energy Management Strategies

When taken on the whole, in 2018, we actually used about 700,000 kWh more than in 2017 (as shown in Figure 2). That increase almost directly translates to the estimated additional energy required to provide the City of Durham with about 375 million gallons of finished drinking water in 2018. OWASA provided this finished drinking water to the City of Durham at their request while they conducted maintenance on their two drinking water plants. Three hundred and seventy five million gallons is equivalent to about 2 months of OWASA's typical demand. The additional energy required to pump and treat 375 million gallons of raw water and to pump 375 million gallons of treated water to Durham increased our energy use by an estimated 677,000 kWh.

Figure 3 shows the change in electrical energy use since 2010, by functional area, after adjusting (i.e. subtracting) for the additional energy required to supply the City of Durham. The size of the bar represents the amount of absolute change in electrical energy use, while the text within the figure shows the percent change for that functional area. **When adjusted for our water supply to Durham, OWASA used 26% less electrical energy in 2018 than in 2010.**

Figure 3: Change in Electrical Energy Use Since Calendar Year 2010, by functional area



These reductions are attributable to the following projects and practices:

Increase in Aeration Efficiency at Wastewater Treatment Plant (WWTP): The most significant reduction in electrical energy use over the past nine years has been in wastewater treatment and disposal, primarily due to a $8.4 million investment in energy efficient blowers, mixers, and fine bubble diffused aeration system (funded with a 20-year, 0% interest loan from the NC State Revolving Fund). This capital project has resulted in a reduction of about 4.0 million kWh/year and represents, about an 18% reduction against our 2010 baseline.

Raw Water Pumping Efficiency Upgrade: We've also seen a significant decrease in the amount of energy used for raw water pumping. This is in-part due to the installation of a new, low-flow pump and variable frequency drive (VFD) at the University Lake Pump Station which has enabled us to better optimize system-wide raw water pumping across a wide range of demand conditions. The University Lake Pump Station Improvement project cost about $300,000, most of which was funded with an American Reinvestment and Recovery Act grant. We estimate that this project is responsible for a reduction of about 500,000 kWh per year, representing a 2% reduction against our 2010 baseline.

Water Conservation and Use of Reclaimed Water: Our customers' water use stewardship has helped to reduce our use of energy across the board, from pumping raw water, treating and delivering drinking water, collecting wastewater, and treating and disposing of wastewater. In 2018, we treated about 274 million less gallons of water than in 2010, despite a 6.2% increase of customer accounts.

About half of this demand reduction can be attributed to a concurrent increase in reclaimed water demands. Since 2010, we increased our annual production and delivery of reclaimed water from about 195 million to 245 million gallons which we estimate uses about three-quarters of the energy required to pump and treat raw water from our reservoirs. Given current energy use intensity estimates for finished drinking water, wastewater treatment, and reclaimed water treatment and delivery, we estimate that our

customers' increased water use stewardship corresponds to an estimated annual energy savings of about 650,000 million kWh per year (about 3% of the 2010 baseline).

LED Lighting: We estimate that another 50,000 kWh of the reduction of electricity use is attributable to LED lighting replacement. Over the next year, as we realize the savings of a now-almost-comprehensive replacement of lighting with LED, we anticipate these savings to grow to 300,000 kWh/year (1% of 2010 baseline).

Energy-Minded Decision Making: We estimate that the remaining 3% of the baseline reduction is the result of a suite of energy efficiency projects, such as cool roof installations on buildings, HVAC upgrades, replacement of pumps, motors, and motor controls with more efficient equipment and VFDs, and an ongoing commitment to optimization in our operations with energy management in-mind.

Organizational Energy IQ: There are also a series of strategies implemented in recent years to develop the energy "IQ" of the organization and integrate energy data into day-to-day decision making. It is difficult to quantify the impact of these initiatives but overtime their impact can be significant.

Over the last two years, we have received outside funding to host two in-depth energy workshops in our facilities. Last year, the NC State University Industrial Assessment Center funded an expert in pump efficiency from the Department of Energy (DOE) to teach a two-day course at OWASA, using our pump stations as class examples.

Additionally, we have deployed a series of online tools to help inform the maintenance and replacement of our infrastructure with energy in mind. Access to energy data can be powerful for energy savings as well as asset management. For example, last summer (2018), we noticed that energy use at the Calvander Finished Water Pump Station had almost doubled (from 7,500 kWh/month to 14,500 kWh/month). Triggered by this dramatic increase in energy use, our maintenance team investigated and found that a check valve was sticking, causing the pumps to work much harder than necessary. Fixing the problem in a timely manner prevented energy waste and protected the health of the pump.

We have also piloted a dynamic pump optimization tool that provides real-time information (based on actual pump curves) on the most energy efficient pumping scheme to achieve desired flows. This resources helps to inform real time energy efficient decision-making by our Operations Team.

Update on Electrical Energy Management Strategies (described in detail in Appendices A and B)

To meet our goal of 35%, we need to reduce our annual electrical energy use by an additional 1.9 million kWh, another 9 percentage points of the 2010 baseline. The 2017 EMP and the 2018 EMP Update identified a series of energy management strategies to pursue and evaluate. We have continued to identify and evaluate new and upcoming energy management strategies.

The following section provides a summary of strategies that have been recently completed, are underway, and are proposed to pursue or evaluate. Table 1 below lists each of these strategies, their estimated electrical energy reduction potential (if enough information is available to develop an estimate), a four-year timeline, cost estimates, and assignment of the responsible party for moving forward with each strategy. Appendix B provides a more detailed description of each one.

Projects recently completed: We have recently completed a suite of a suite of energy management strategies for which it is too early to fully measure their impact on energy use. **We estimate that these projects will ultimately reduce our use of purchased electricity by at least 412,000 to 497,000 kWh per year (1.8-2.2% of the 2010 baseline).**

Projects underway: There is another suite of energy management strategies that are currently underway. **For those strategies for which we can estimate savings, we estimate that these projects will ultimately reduce our purchased electricity by at least 87,650 to 175,300 kWh per year (0.4-0.8% of the 2010 baseline).**

Projects currently in CIP: Of the projects in our CIP, seven have the potential to improve the energy efficiency of our operations. For these projects, the reduction in energy savings is a secondary rather than primary objective. From preliminary information that we have on some of these projects, **we estimate that this suite of strategies has the potential to reduce purchased electricity by at least 178,000 to 597,000 kWh per year (0.8-2.7% of the 2010 baseline)**. Other projects are too early in the engineering and design phase to estimate energy savings. (Please note that timing of these projects may change in the FY20-FY24 CIP.)

Strategies to implement: Based on a favorable evaluation against the six criteria of OWASA's Energy Management Program, the Energy Team recommends the implementation of four additional strategies in the coming years. **This suite of strategies is estimated to reduce our use of purchased electricity by at least an additional 460,000 to 600,000 kWh per year (about 2.1-2.7% of the 2010 baseline).** These projected savings would result from the installation of solar photovoltaic (PV) systems installed at the Cane Creek Reservoir and/or Biosolids Management Land.

Strategies to evaluate: Based on their potential but given current uncertainty about their specific cost and benefits, the Energy Team recommends further evaluation of six additional strategies. These projects have potential, but for many, it is currently unclear what the realized energy impact would be. For those that we can estimate**, this suite of strategies could potentially reduce our use of purchased electricity by 48,000 to 65,000 kWh per year (about 0.2-0.4% of the baseline).**

Table 1: Project Plan for Electricity Management Strategies and Estimated Energy Savings and Costs

Energy Management Strategy	Estimated Potential Energy Savings (kWh)	Timeline and Cost (in $1,000s) Light shading: Study Dark shading: Implement				Project Management
		FY19	FY20	FY21	FY22	
Recently Completed						
Admin Building Heating, Ventilation, and Air Conditioning (HVAC) System Upgrade (280-06)	175,000 - 200,000					Engineering
High-Performance SCADA System (278-73)	NQ					Engineering
LED Lighting Retrofit (Admin Building, WTP, and Ops Center) (280-12)	232,000-290,000[2]					Sustainability
Pump Training Course	NQ					Sustainability
Electricity Sub-Metering	NQ					Plant Staff/CITI
Online OWASA Energy Dashboard	NQ	3	3	3	3	Sustainability
Optimize WWTP Filter Backwash	10,000 - 15,000					WWTP Operations
Controls on WWTP Headworks Conveyor System	5,000-7,000					WWTP Ops/ Maintenance
Underway						
Pump Optimization Tool (Finished Water Pump Station)	TBD	6	6	6	6	Sustainability/Ops
Motor Management Program	TBD	12				Sustainability/ Maintenance
Pump Station Operational Assessments	TBD		88	Pursue cost-effective recommendations		Engineering
WWTP Non-Potable Water Conservation	20,000-40,000					Sustainability/ Maintenance
HVAC: Equipment Replacement (As needed and >15 years old) (272-51)	67,650-135,300	45	10	125	55	Maintenance
WWTP UV System Energy Assessment	TBD					WWTP Ops and Maintenance
Partnership for Clean Water Self-Assessment and Optimization	TBD					WWTP Ops and Maintenance
Real-Time Nitrification Control System at WWTP	TBD		30			WWTP Ops & Eng.
Currently In CIP						
University Lake Pump Station Improvements (270-11)	40,000-120,000					Engineering

[2] Energy use reduction mitigated by increases in energy use during HVAC upgrade

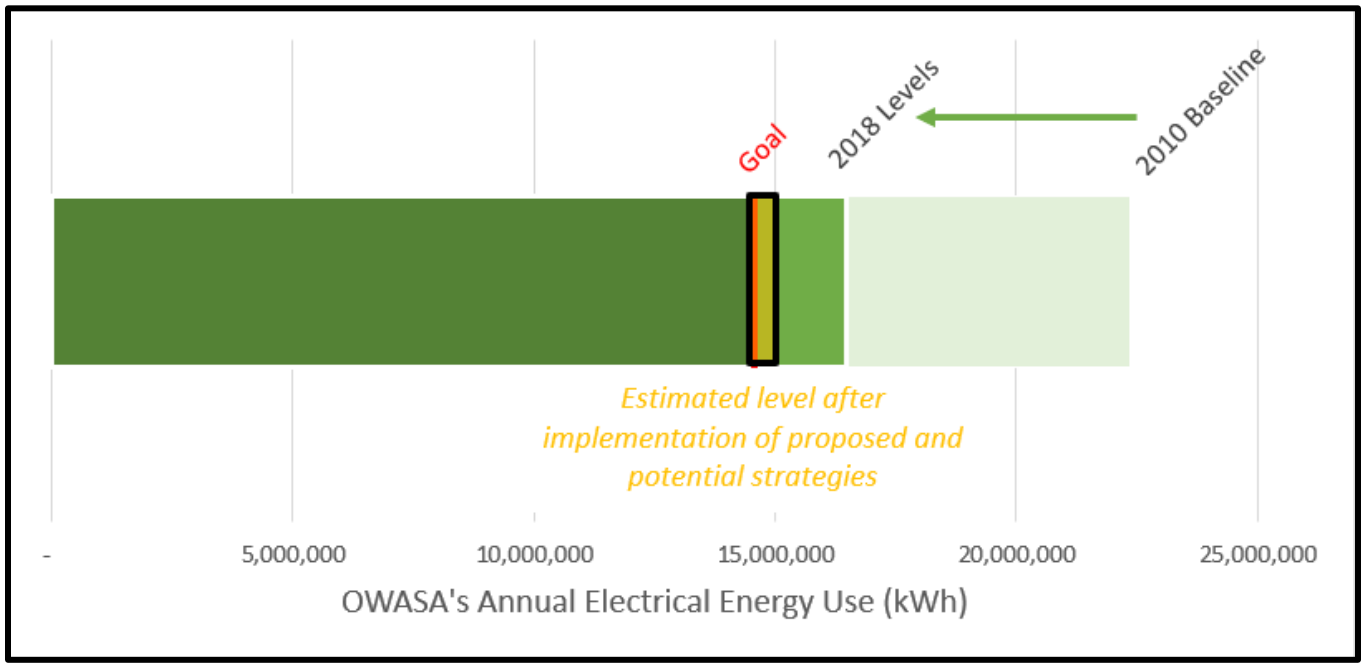
Energy Management Strategy	Estimated Potential Energy Savings (kWh)	Timeline and Cost (in $1,000s) Light shading: Study Dark shading: Implement				Project Management
		FY19	FY20	FY21	FY22	
Reduction of Inflow and Infiltration in Wastewater System (276-17 & 18)	NQ					Engineering
Building Envelope Rehabilitation (278-68)	TBD					Engineering
Cane Creek Raw Water Transmission Main (271-05)	TBD					Engineering
Cane Creek Pump Station Improvements (270-16)	138,000–227,000					Engineering
Off-Site Biosolids Mixing Project (TBD)	TBD					Engineering
Finished Water Pump Rehabilitation and Replacement (272-42)	TBD					Engineering
Implement and Evaluate						
Pilot pump monitoring tool on 2 pump stations	TBD		32	3	3	Sust/WWTP Ops/ Maintenance
Distribution System Pressure Zone Balance	TBD					Sustainability/ WTP Ops
Solar PV Lease at Cane Creek Reservoir and/or Biosolids Management Lane	460,000-600,000					Sustainability
Balance WWTP Odor Control System	TBD		40			WWTP Ops & Maintenance
Analysis of Operational Changes with Odor Control System	*TBD*		10			WWTP Ops & Sustainability
Increase level of Morgan Creek Wet Well	*TBD*					WWTP Ops & Maintenance
Expanded Use of Integrated Pump Optimization Tool	*TBD*					Sustainability and Operations
Pilot Fine Bubble Diffusion Technology	*40,000 – 50,000*					Engineering/Ops/ Sustainability
Water tank-mounted micro-wind turbine	*8,000-45,000*					Engineering/ Sustainability
Battery back-up analysis	*TBD*					Engineering

Fiscal Year 2020 Budget: In addition to what is budgeted for projects currently in the CIP, the following is requested in the FY20 budget to pursue evaluation and implementation of the strategies listed above:

- Technical Assistance and Consultants: $40,000 for Odor Control System Balancing + $10,000 for Odor Testing at Aeration Basins
- Operating Budget:
  - Admin: $3,000 (Online Energy Dashboard) + $42,000 (Design and First Year Lease Payments for solar PV system)
  - WTP: $6,000 (Pump Optimization Tool)
  - WWTP: $30,000 (Real-time nitrate and ORP probes) +$32,000 (Lift Station Guardian)

Figure 4 shows our current progress towards Objective 1 and the estimated range of electrical use levels anticipated after implementation of proposed strategies (illustrated by the black outline).

Figure 4: Summary of Progress Towards Objective 1



The projects for which we can currently assign energy savings potential will likely get us very close to our energy objective, with two important caveats described below.

1) Meeting our goals requires successful implementation of a large scale (about a 400-500 kW) solar photovoltaic installation. Based on preliminary analysis, the 2018 EMP recommended the installation of an OWASA-financed 733 kW ground-mounted solar PV system at the Cane Creek Reservoir. Upon a more detailed analysis of the time-of-production versus our time-of-use rates, it was determined that too much energy would be generated (and subsequently sold or offset) at off-peak times (i.e. lower rates), thereby making the project financially unviable. Without this project, we expected to fall short of meeting our goal by 100,000 to 900,000 kWh/year.

   In the last year, a lease program for smaller scale systems became available in our energy market at the scale at which we are interested. Under a solar lease, an approved third-party finances and installs a solar PV system for the host party (OWASA). During the lease term, the third-party takes

advantage of federal tax incentives, not available to non-profit and governmental organizations, which effectively brings down the price of the system for OWASA. Throughout the lease term, the third-party maintains the system and OWASA realizes the savings on our energy bill. At the end of the lease term, OWASA would have the option to purchase the solar PV system at fair-market value, or to extend or terminate the lease.

This program could be potentially economically viable for OWASA if the fair-market value is competitive and/or if the social cost of carbon is incorporated into the analysis.

Staff recommends that we issue a Request for Proposals for a solar lease for one or two sites: a small portion of cleared land at the Cane Creek Reservoir (400 kW) and/or the Biosolids Management Land (100 kW). If one or more proposals have the potential to provide a positive net present value within 20 years (with or without accounting for the social cost of carbon), staff will bring a summary and analysis of these proposals to the Board for approval before moving forward.

2) If the energy savings from the projects for which we can quantify savings are realized, we are likely to get very close to our goal. Moreover, there are many "TBD" projects identified for which it is too early to estimate and assign energy savings. Regardless, it is very unlikely that our energy reduction goal will not be met by the end of Calendar Year 2020. Given the timing of some of the larger Capital Improvement Projects with the greatest potential to reduce our use of electricity, achievement of our goal to reduce purchased electricity by 2020 will be delayed by about 2 years (end of 2022). Staff recommends adjusting our energy management goal to 2022.

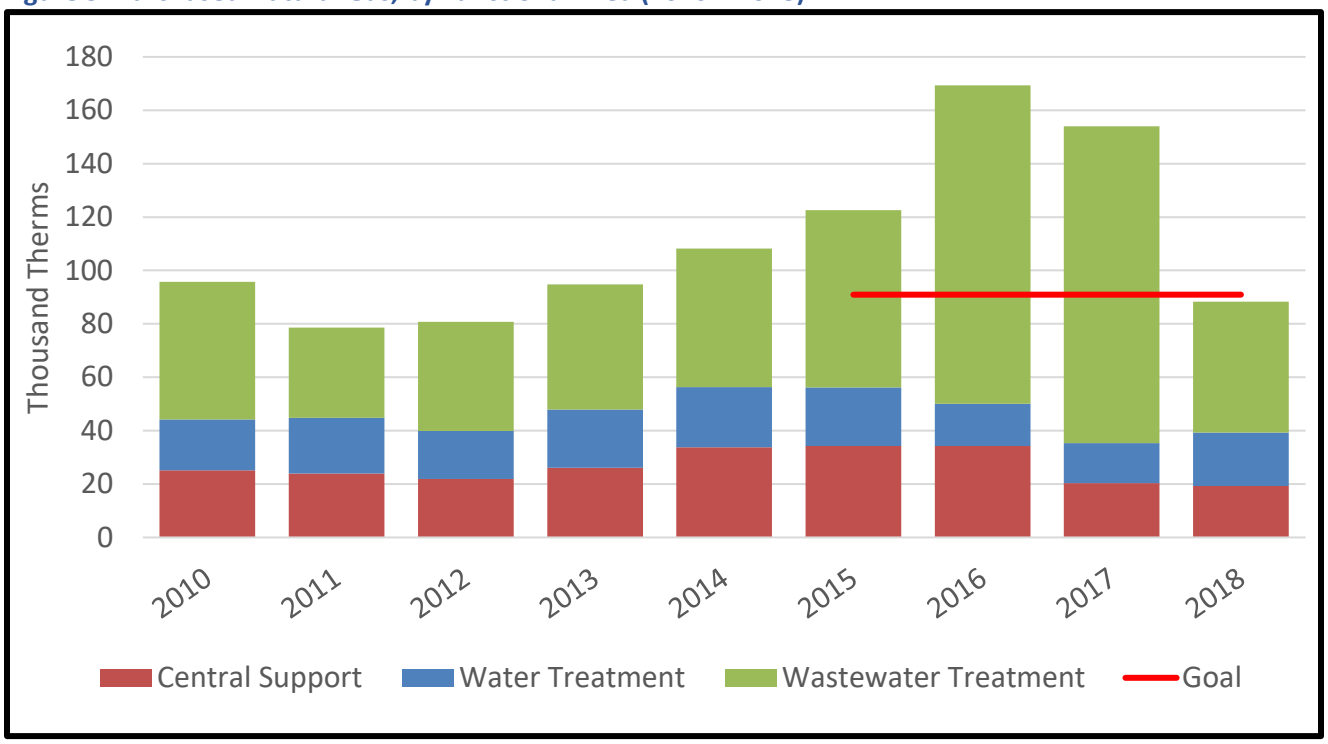
Objective 2 – ACHIEVED!

Reduce use of purchased natural gas by 5% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Trends in Natural Gas Use and Costs

Figure 5 shows historical natural gas use across the major functional areas, based on monthly billing data for our nine different natural gas accounts over the past nine years and how this use compares to our goal of reducing purchased natural gas by 5% from 2010 levels.

Figure 5: Purchased Natural Gas, by Functional Area (2010 – 2018)



In 2018, we surpassed our goal and used 8% less natural gas than in 2010. We anticipate using even less in 2019.

The primary driver for meeting this goal was bringing the biogas-to-boiler system back online at the Mason Farm WWTP, which has historically accounted for the largest amount of natural gas we use. Primarily natural gas is used mostly as a supplemental fuel for running the two boilers that heat anaerobic digestors for solids treatment. Methane – or biogas – is produced as a by-product of the digestion process, and under normal operations, is used as the primary fuel in our boilers at the plant. However, from 2015 through March 2018, we had to rely almost exclusively on natural gas to heat the boilers while two digesters and our gas storage unit were undergoing major rehabilitation. In restoring the biogas-to-boiler system in March 2018, we reduced our natural gas use at the WWTP by about 70,000 therms.

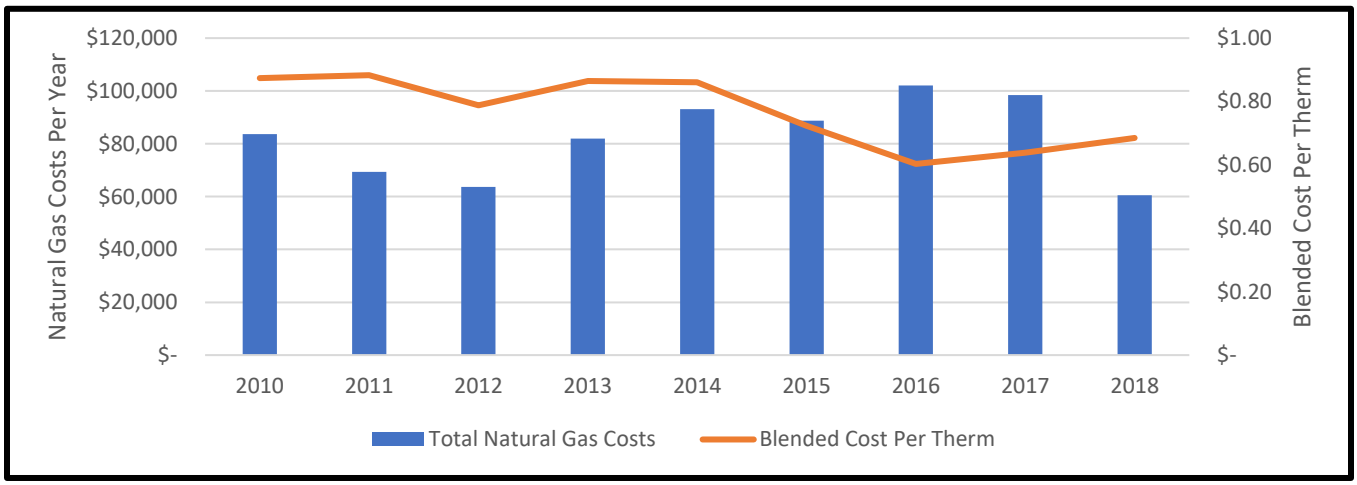
We also use natural gas for space and water heating at our 400 Jones Ferry Road campus. The new HVAC system in the Administration Building will significantly reduce our use of natural gas for space

heating. Once fully commissioned, we expect that the system will result in a savings of 7-11,000 therms per year.

In other spaces, adjustments to thermostats, improvements to building insulation, and investment in high efficiency HVAC equipment is expected to further help reduce our use of natural gas.

Figure 7 summarizes trends in natural gas costs over the past nine years**. Our natural gas conservation resulted in about $23,000 less in expenditures in Calendar Year 2018 than in 2010.** This conservation will be even more valuable to the organization if and when natural gas prices increase to the levels they were earlier in the decade.

Figure 7: OWASA's Natural Gas Costs (2010 – 2018)



We are committed to sustaining our reduction in natural gas use and continuing to identify cost-effective opportunities to further decrease our use of natural gas, alongside a reduction in electricity use.

Objectives 3 and 4

Beneficially use all WWTP biogas ~~by 2022~~, provided the preferred strategy is projected to have a positive payback within the expected useful life of the required equipment.

Formally engage local governments and partners in discussion about potential development of biogas-to-energy project at the Mason Farm WWTP.

Given financial uncertainties regarding analyzed options to beneficially use all WWTP biogas and the lingering potential for regional collaboration on a more economically feasible project, in 2018, the OWASA Board of Directors agreed to repair the biogas-to-boiler system, support complementary analysis of potential regional partners, and abandon a previously set goal to have a biogas-to-energy project completed by 2022. The following section summarizes updates from last year.

Repair the biogas-to-boiler system: Over the past year, OWASA staff focused on repairing and maintaining the biogas-to-boiler system, which is estimated to beneficially use about half of the methane-rich biogas generated at the WWTP. By restoring this system, we reduced our use of

purchased natural gas by about 70,000 therms and our natural gas bill by about $40,000 and reduced our greenhouse gas emissions by about 350 metric tons (equivalent to about 73 passenger vehicles driven for one year).

Support complementary analysis of potential partners

Town of Carrboro to use/purchase renewable compressed natural gas (rCNG): We have evaluated various options to convert all of the biogas generated at its WWTP into energy of various forms, including renewable compressed natural gas (rCNG) for vehicle fuel. We estimate that at current production rates, this biogas could be refined to generate about 125,000 diesel gallon equivalents (DGE) or about 140,000 gasoline gallon equivalents (GGE) of rCNG vehicle fuel each year.

OWASA has conducted a preliminary financial analysis to assess the viability of investing in the infrastructure required to convert and utilize the biogas generated as rCNG. On its side, OWASA considered the costs of a gas treatment system, a fueling station, tube trucking to mobilize the fuel, and the cost of converting and supporting a small CNG-fueled fleet.

Currently, there are outside funding opportunities to help recover the costs of this infrastructure. In fact, the economic viability of converting wastewater biogas into vehicle fuel by OWASA is driven heavily by the sale of Renewable Identification Numbers (RIN). A RIN is a tracking mechanism (and corresponding marketplace tool) established to help achieve the national renewable fuel standard. Currently, RIN values for vehicle fuel generated from cellulosic sources (such as wastewater) can be sold for a high value as a D3 fuel. Potential funding sources on the fleet conversion side include North Carolina's share of funds from the national settlement of the VW lawsuit and other federal grant programs.

Interestingly, the economics are more influenced by the sale of RINs than the gas itself. It is critical, for the viability of the project, to be able to use all of the gas, in order to sell associated RINS.

In recent years, OWASA's vehicle fleet uses much less vehicle fuel equivalents than could be produced by a biogas-to-rCNG fuel system at the Mason Farm WWTP. Our fleet would likely use only about 20% of the vehicle fuel produced by such a system. Therefore, it would be essential to partner with one or more other agencies that would be willing to purchase and use the excess rCNG for their own vehicle fleet, thereby enabling us to realize the full revenue potential form the sale of the associated RINs.

In the Summer of 2017, OWASA staff met with potential partners across the region to assess the interest and readiness to convert a fleet to CNG-powered vehicles and purchase rCNG from OWASA. The Town of Carrboro expressed an interest in evaluating alternative fleet fueling strategies for the Town's entire fleet. On an annual basis, the Town of Carrboro uses about 83,000 gasoline gas equivalents to fuel vehicles. At the surface, this seemed a good fit.

In the summer of 2018, OWASA hosted an Environmental Finance Center Leaders in Environment and Finance (LEAF) Fellow; she conducted an analysis of the economic viability of the Town of Carrboro's potential fleet conversion to CNG-ready vehicles.

As a basic cost-benefit analysis filter, her analysis only evaluated vehicles for which the cost of conversion (even new vehicles must be upgraded to run off of CNG) would be recovered in fuel savings, based on their fuel-efficiency and number of miles driven. In other words, vehicles that are not driven a lot would not be converted because the cost of conversion would not be made up by fuel savings. The lower the cost of rCNG, the more vehicles that it makes sense to convert. For some vehicles that are driven very little, even at $0.00 per GGE of rCNG, it did not make financial sense to pay the additional costs of vehicle conversion.

Although her analysis went on to consider the individual economic viability of fueling the Town of Carrboro's fleet, the fact that (a) it did not make sense to convert all of the Town's fleet to CNG-ready vehicles (even at $0.00 per GGE) and (b) therefore, it could not utilize more than 61,000 gallons of rCNG per year, undercut the financial viability of the cost of generating a usable rCNG at the Mason Farm WWTP and the infrastructure required to refuel vehicles. In other words, because we could not sell all of the high-dollar RINS, the project was no longer economically viable for OWASA.

Support for Orange County Waste Reduction Plan: Some communities have increased the production of biogas by co-digesting other organic wastes at their wastewater plant digesters. Such a strategy increases the economic and/or environmental benefits of their biogas-to-energy project. Recognizing the potential benefits of such an approach, OWASA submitted a letter of support to Orange County Solid Waste Department for their Waste Reduction Plan. In the letter, OWASA expressed interest in working with Orange County to explore collaborative approaches to incorporating our digester facility into a regional organics recycling strategy. The County has not yet issued a Request for Proposals (RFP) for preparation of its Solid Waste Reduction Plan; however, we will closely follow the County's work and provide assistance in evaluating this and other opportunities for collaboration.

Other Updates: OWASA staff are in-discussions on the timing and scope of an update to a Wastewater Treatment Plant Master Plan. Biogas-to-energy, as well as FOG receiving and co-digestion strategies, will be an important consideration in any update to the Master Plan.

Although, there are no obvious paths forward at this time, we will continue our commitment to identify a cost-effective strategy to utilize 100% of the biogas generated at the WWTP. In the meantime, we will remain diligent in our efforts to utilize at least ½ of the gas in our boilers needed to heat the digesters.

Objective 5

Seek proposals for third-party development of renewable energy projects on OWASA property

After the OWASA Board of Directors set an objective to seek proposals for third-party development of renewable energy projects on OWASA property in 2015 (with solar in-mind), North Carolina legislators passed House Bill 589 (Session Law 2017-198). House Bill 589 significantly changed the regulatory framework and process for solar development in the state. Over the past year, the North Carolina Utilities Commission has worked with Duke Energy and other stakeholders to define the programs defined in the law. OWASA staff have tracked the development of these programs to assess their viability for OWASA. Below is a high-level summary of various program authorized under the law and their potential application, or lack-thereof, to OWASA.

- **Competitive Procurement for Renewable Energy:** The first of four "Tranches" of competitive proposals issued by Duke Energy for large-scale solar development are currently under-review. The winning bids are expected to be announced in late March 2019. Preliminary analysis suggests that the average cost proposed for such solar generation projects will be around 0.00673/kWh, which is much less than the "avoided cost" terms available through Duke Energy's traditional Power Purchase Agreement that was in place in North Carolina. It appears that the scale that is needed to compete in the RFP process does not lend itself to small projects (<10 MW), like the kind that OWASA would likely be interested in pursuing.
- **Green Source Advantage (GSA):** GSA is designed to allow participants to offset some/all of their energy consumption with new renewable energy resources. Participants in GSA pay a monthly amount to support an offsite renewable energy facility and realize an equivalent amount of dollar savings on their energy bill. Unfortunately, the way that the program is structured, participants will spend more than they save for an indefinite amount of time. Participation in this program would be a sound economic investment for OWASA compared to other strategies for energy use reduction and/or carbon reduction strategies.
- **Solar Lease Program:** The law authorized a framework for small-scale solar generation project leasing. Given that OWASA is unable to take advantage of tax breaks for renewable energy project investments, this is potentially a viable option to mitigate the upfront costs of solar PV development. It allows another party to monetize the incentives of such a project. As discussed previously in this report, pursuit of this option has been integrated into our strategy to meet Objective 1.
- **Solar Rebates:** House Bill 589 provides for a $0.75/watt rebate for solar energy projects, up to a maximum of $75,000 for municipal/government customers like OWASA. This rebate can be integrated into a solar lease project and will be pursued by OWASA if and when a solar lease project is initiated.

As imagined, the large-scale public-private partnership upon which this objective was modeled is not currently a viable strategy in North Carolina. Moreover, in 2017, we worked with solar project developers about a large-scale solar project, but they were determined to be economically and technically unviable. The smaller scale solar lease option has been integrated into strategies for meeting Objective 1. Given this, OWASA staff recommend that we abandon this as a stand-alone objective.

Summary

OWASA's Energy Management Program is a comprehensive and inclusive approach to electricity and natural gas use across the organization. Through implementation of the program, we have realized and sustained energy use and greenhouse gas emission reductions.

In approving this update of the Energy Management Plan, the OWASA Board of Directors is specifically requested to approve:

1. Pursuit of implementation of energy management strategies at a cost of $153,000 in FY20
    a. $42,000 of this request is allocated to the estimated upfront cost and one year of lease payments for two solar PV systems. If the RFP results in cost-effective proposals, staff will bring a summary back to the Board of Directors for approval.
2. Deadline extension of Objective 1 from 2020 to 2022
3. Integration of Objective 5 into Objective 1 and abandonment as a stand-alone objective

Background Resources

OWASA's Strategic Plan that identifies "Implementation of an Energy Management Program" as Strategic Initiative #4 (adopted on June 9, 2016)

Baseline Assessment of Energy Use and Management Efforts and Potential Goals and Objectives for the Energy Management Plan (approved by the OWASA Board on June 25, 2015) provides (a) a baseline assessment of OWASA's energy use; (b) an overview of energy management strategies to date; and (c) the following goals and objectives for Energy Management.

Objective 1: Reduce use of purchased electricity by 35% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Objective 2: Reduce use of purchased natural gas by 5% by the end of Calendar Year 2020 compared to the Calendar Year 2010 baseline.

Objective 3: Beneficially use all WWTP biogas by 2022, provided the preferred strategy is projected to have a positive payback within the expected useful life of the required equipment.

Objective 4: Formally engage local governments and partners in discussion about potential development of biogas-to-energy project at the Mason Farm WWTP.

Objective 5: Seek proposals for third-party development of renewable energy projects on OWASA property.

Revised Charter for Energy Management Plan (approved to the OWASA Board on May 20, 2016) outlines a timeline and methodology for developing OWASA's Energy Management Plan.

Energy Management Program and Project Evaluation Framework (approved by the OWASA Board on September 8, 2016) summarize an approach to instituting an Energy Management Program at OWASA that objectively and sustainably meets goals and objectives. In addition, staff designed the program to:

- Foster a clean energy culture at OWAS through employee engagement and continuous improvement and innovation,
- Ensure strategic and prompt pursuit of clean energy opportunities, and
- Pursue cost-effective clean energy strategies

Energy Management Program: Stakeholder Engagement Plan (approved by the OWASA Board on September 8, 2016) outlines how to engage defined stakeholders in the implementation of the Energy Management Program, including reference to supplemental Community Engagement Plans for high-profile, community-oriented clean energy projects.

Using a Social Cost of Carbon to Evaluate Clean Energy Projects: A Potential Policy Approach for OWASA
On September 8, 2016, the Board agreed to incorporate the social cost of carbon (SCC) in our business case evaluations of clean energy projects, and to base the economic value of carbon emission reductions on the Federal Interagency Social Cost of Carbon Working Group's central value for the SCC (2018 value of $40 per metric ton of carbon dioxide emissions, at a 3% discount rate). The Board agreed that inclusion of the SCC in business case evaluations would influence, but not on its own propel the pursuit of a clean energy project. This provides a method for quantifying and engaging the community in a discussion about the willingness to pay for carbon emission reductions.

2017 Energy Management Plan was approved by the OWASA Board of Directors on April 13, 2017. This plan summarizes OWASA's Energy Management Program and the strategies proposed to meet the goals and objectives set by the OWASA Board of Directors.

Update on Exploration of Potential Biogas-to-Energy Project Partnership Opportunities (presented to NRTS Committee on September 26, 2017) provides an update on staff's efforts to further explore biogas-to-energy project partnership opportunities with technical staff from our local government partners.

Potential Biogas-to-Energy Project Opportunities (presented to NRTS Committee on December 5, 2017) provides an update of considerations and options for moving forward with a biogas-to-energy project at the Mason Farm Wastewater Treatment Plant, including case study information, an assessment of partnership potential, and staff commentary.

2018 Energy Management Plan Update was approved by the OWASA Board of Directors on March 8, 2018. This document provides an update of OWASA's energy use in our facilities and strategies proposed and underway to use energy more efficiently, use renewable energy sources, and reduce our greenhouse gas emissions.

Appendix A: Strategy Evaluation Summary

The following strategies were identified by OWASA staff and advisors as opportunities to reduce our use of purchased electricity and/or natural gas. Each strategy in the table is linked to an energy strategy summary in Appendix B.

After reviewing energy strategy summaries, the OWASA Energy Team met on March 6, 2019 to review, discuss, and prioritize each of the energy strategies. As reviewed, discussed, and accepted by the OWASA Board of Directors, the OWASA Energy Team evaluated each strategy qualitatively against the following six criteria (and guiding considerations). Each cell of the table below is color-coded to indicate whether a strategy is favorable, neutral, or unfavorable against each criterion.

1. Financially Responsible (High level)
   a. Likely a good use of public funds
   b. Financial viability of similar projects in similar organizations and circumstances
   c. Opportunities for outside funding/financing
2. Realistic/Implementable
   d. Degree to which the strategy has been proven at a scale relevant to our operation
   e. Organizational capacity to undertake and manage the project
   f. Reasonable amount of staff time to implement
3. Operational Impacts
   g. Consistent with how OWASA wants to operate
   h. Degree to which strategy helps to resolve an existing or expected problem
   i. Impact on safety, comfort, and productivity
4. Energy/Carbon Reduction Potential
   j. Potential to reduce OWASA's energy use and/or carbon emissions
5. Coordination with Other Projects
   k. Interdependence with other project(s)
   l. Potential to take advantage of economies of scale to save money and/or staff time
6. Community Impacts
   m. Stakeholder enthusiasm
   n. Coordination with community initiatives

Each Team Member provided a recommendation as how to best move forward with the strategy: **implement (1-4)**, **study (5-10)**, **defer until upgrade of related unit (11)**, or **defer indefinitely (none)**.

Energy Strategy		Financially Responsible (High level)	Realistic/ Implementable	Operational Impacts	Energy/Carbon Reduction Potential	Coordinates with Other Projects	Community Impacts
1	Use of Lift Station Guardian at Two Wastewater Pump Stations	Modest cost	Relatively new technology from proven company; relatively easy to install	Calculates flow and can proactively predict pump failure	Potential energy savings from identification of less than ideal pumping conditions	Units are mobile, can be used to estimate inflow and infiltration	NA
2	Distribution System Water Balance Analysis	Modest requirement of staff time	Yes	Develops a KPI that can be tracked regularly	Potential energy savings from identification of wasteful pumping	Operational use of AMI data	NA
3	Issue Request for Solar Lease Proposals at Cane Creek Reservoir and/or Biosolids Management Sites	No up-front investment; during lease term, likely paying more for lease than savings; financial benefit comes once system purchased; risk if fair market value is not competitive	New program approved in North Carolina for this scale of solar development	Maintenance of PV systems covered in lease Minor complications of mowing in area	Significant impact on reducing purchased electricity (offset ~500,000-700,000 kWh/year; ~2-3% of baseline)	No	Represents a significant clean energy investment Potential concerns of neighbors regarding reflectivity

Energy Strategy		Financially Responsible (High level)	Realistic/ Implementable	Operational Impacts	Energy/Carbon Reduction Potential	Coordinates with Other Projects	Community Impacts
4	Recommission odor control system	Modest investment	Yes	Output will inform day-to-day operations of odor control system	As one of the largest energy-using systems at the WWTP, opportunity in optimization	Impacts processes throughout plant	No
5	Impact evaluation of operational changes with aeration basin odor scrubbers	Ultimately, minor marginal costs for large savings in energy	Potential political obstacles	Relatively none	Potentially large impact (up to 500,000 kWh/year)	Approaching time to replace filter media in carbon scrubbers dedicated to aeration basins	Large potential community backlash; opportunity for community conversation
6	Increase level of Morgan Creek wet well	Operational strategy that requires minimal upfront investment beyond monitors and controls	Has potential, but also some challenges, if it complicates operations at the Plant	Need to investigate ways to automate Morgan Creek wet well levels	To be determined – impacts significant energy using process at WWTP	No	Important to ensure that any adjustments do not cause objectionable off-site odors or sanitary sewer overflows
7	Expanded use of integrated pump optimization tool	If appropriate application, modest investment	Yes	Use of the right pump for the right flow condition can reduce pump wear and tear Better control of pump start/stop operations	Potential to reduce modest portion of the energy used for finished water pumping	Helpful in developing baseline prior to comprehensive pump station upgrade	No
8	PERLEMAX Harmonic Oscillator for Fine Bubble Diffusion	If effective, on the cusp of being financially responsible at the low-end of projected savings	Very new technology; unknown impact on critical process	Easy to turn off and on Potentially extends life of membranes Potentially complicates operations	If fully implemented, has the potential to reduce energy used by blower by 150,000 – 400,000 kWh (savings from improved aeration and avoiding turning on second blower)	No	No
9	Water tank-mounted micro-wind turbine	Low cost, but low impact, as well	Impact unknown; new technology	None	Modest unique energy generation opportunity (~15,000 kWh/year per turbine)	No	No
10	Use of batteries to improve system resilience, reduce energy costs, and utilize renewable energy	Unknown; cost of batteries has come down and are expected to continue to decline	Rapidly changing environment and new approach to back-up power supply Uncertain interconnection environment	Potential to avoid deploying mobile generators when power is out	If partnered with renewable energy, has the potential to reduce energy use Otherwise, more of an energy optimization project	Initial analysis could be incorporated into generator fuel study planned for FY21	Yes, would temporarily reduce noise associated with generators
11	Hyperboloid mixer in onsite biosolids tank	High-cost, not likely recovered by energy savings alone	Yes	Current mixing technology is not effective and creates issues with screw press thickener	Energy saving potential in recent analysis is likely inflated; however, it would result in measurable energy savings	No	No

Appendix B: Energy Management Summaries – 2019 Update

Energy Management Strategies Recently Completed

Administration Building Heating, Ventilation, and Air Conditioning (HVAC) System Upgrade (280-06): This project will be completed in Spring 2019. Once completed, it is projected to reduce energy use in the Administration Building by about 200,000 kWh per year (~1% of our baseline), 11 kW in electric demand, and 7,000 -12,000 therms of natural gas use per year (~7-13% of our 2010 baseline). We applied for a Custom Energy Efficiency Incentive from Duke Energy and were offered a $14,000 upon completion.

High Performance SCADA System at Wastewater Treatment Plant (278-73): We are currently finalizing this project. Among other things, this project allows us to generate reports and dashboards for many different factors, including energy use, and will help us better understand and manage energy use at the wastewater treatment plant. Based on our experience at Mason Farm, we will consider the development of a similar system at the Jones Ferry Road Water Treatment.

LED Lighting Retrofit (280-12): In early 2018, we retrofitted approximately 1,500 light fixtures on the 400 Jones Ferry Road campus (Admin Building, Water Treatment Plant, and Operations Center). We also finished retrofitting the laboratory at the Mason Farm WWTP and various pump stations across the service area with LED lighting. We project that these retrofits will save a combined total of about 250,000 kWh/year. The total lighting retrofit on the Jones Ferry campus cost $120,000, but we received a Duke Energy incentive that brought the final cost down to $65,000. Ultimately, this project has a net present value of +$90,000 over the thirteen-year life of the lights (~$120,000, if accounting for the social cost of carbon).

Pump Training Course: In July 2018, a pump expert from the Department of Energy taught a two-day course on pumping system assessment. This workshop provides an in-depth discussion of energy efficiency factors for pumping systems, with an emphasis on considering the system instead of just individual components. Seventeen OWASA staff members (operators, maintenance, engineers, managers, and directors) participated in the training that used OWASA pump systems as course examples. The cost of the course was covered by the NC State University Industrial Assessment Center; NCSU students participated, as well.

Electricity Sub-Metering: We are sub-metering some of our largest energy using processes at both Plants, including the Finished Water Pump Station (WTP), Backwash Pump (WTP), Aeration Basin Blowers (WWTP), and the Reclaimed Water Pump Station (WWTP). The data from these sub-meters are incorporated into the SCADA dashboard, so that operators can analyze trends in energy use and incorporate those trends into real-time decision-making and plant process simulation models. Additionally, these data are archived for subsequent in-depth analysis.

Online OWASA Energy Dashboard: In 2018, we partnered with Facility Dude's, a private company, to implement its Energy Manager online database and dashboard for OWASA's energy bills. By putting this data into a database that is accessible by OWASA staff, we can better track, trend, and understand our energy use. For example, last summer (2018), we

noticed that energy use at the Calvander Finished Water Pump Station had almost doubled (from 7,500 kWh/month to 14,500 kWh/month). Triggered by this dramatic increase in energy use, our maintenance team investigated and found that a check valve was sticking, causing the pumps to work much harder than necessary. Fixing the problem in a timely manner prevented energy waste and helped to protect the health of the pump. On a smaller scale, in monitoring energy use data at the Cane Creek Reservoir, we identified that a heater in an on-site well pump house was constantly running and driving up energy use and cost.

Optimize WWTP Filter Backwash: We have six denitrification filters at the Mason Farm Wastewater Treatment Plant that require backwashing to remove solids that accumulate on the filters and reduce filter performance. We use two 50-horsepower pumps (installed in 2005) to backwash the filters, but only one runs at a time. We also use two air blowers (at 100 and 150 hp each). We backwash filters based on time.

In 2018, we reduced the number of backwashes from 14 times per week to 10 times per week with no measurable adverse impact to solids concentrations in our effluent. We estimate that this operational change reduced energy use of the system by about 15,000 kWh/year.

Controls on Headworks Conveyor System (WWTP): When wastewater enters the WWTP, large debris and grit are removed from the influent and conveyed into dumpsters. Currently, the conveyor is controlled by a timer. During a walk-through conducted as part of the US Department of Energy's In-Plant Energy Management Training at the WWTP in May 2017, it was observed that the conveyor was running even though no debris or grit was on it. Based on the horsepower and run-time of the system, the existing system is only estimated to use about 28,000 kWh/year. We recently installed paddles to reduce the time that the conveyors are running with nothing on them. Assuming it reduces the time the conveyor runs by about 25 percent, this strategy will save about 7,000 kWh/year.

Energy Management Projects Underway

Pump and Motor Asset Management Program: OWASA uses most of its energy running pumps and motors. Therefore, optimization of pump and motor operations, maintenance, and repair and replacement decisions has a significant potential to reduce energy use at OWASA. OWASA's asset management program includes more than 350 motors and 350 pumps, with the largest being the 700 horsepower pumps at the Cane Creek Reservoir raw water pump station. OWASA staff researched different approaches and strategies for monitoring and using energy use information to inform how our pumps and motors can be operated in a more energy efficient manner, as well when and how they are maintained and replaced. This analysis has led to the pump and motor management strategies that are underway.

Pilot of Pump Optimization Tool at Finished Water Pump Station: In 2018, we launched the application of a dynamic pump optimization tool that provides real-time information on the actual and potential specific energy (kWh/MG) of running one or more finished water pumps. The tool also assesses real-time pump performance (against the pump curve) and calculates a financial analysis on repair/replacement value for each pump based potential energy savings. The Water Treatment Plant Operators are currently

using this system in advisory mode, however, there is the option to run it in automatic mode, where it selects the most efficient level at which to operate the pump station.

Our finished water flows are relatively consistent and not very dynamic. Ultimately, the tool has revealed the fact that there is one pump that is efficient at typical flows. (An exception being when it was first launched, and we were supplying water to Durham. The tool informed us that in using Pumps 4 and 7 to meet Durham's concurrent needs, we would use about 70 kWh LESS per million gallons pumped. In making this change, we saved an estimated 15,000 kWh over the final two weeks that we supplied water to Durham.) Despite this experience, the tool has had limited value in "normal" day-to-day decision-making at this particular pump station, as currently designed, from an energy management perspective.

However, the tool has been a resource in the current evaluation of the pump station, helping to inform the value of VFDs and pumping configurations. We will keep this too in service through the pump station upgrade (CIP Project No. 272-42).

Motor Management Program: OWASA has engaged Advanced Energy to assist in developing a complete inventory of our motor fleet and conducting a comprehensive cost-benefit analysis of repair and replace decisions. OWASA will use the results of this analysis to inform more formal repair versus replacement rules. In addition, Advanced Energy will provide motor management training to staff from maintenance, engineering, purchasing, management, and plant operations.

Pump Station Operational Assessments: It is difficult to apply broad design specifications to pump stations. The design, hydraulics, and operating environment must be considered on an individual basis to determine if and how improvements (i.e. structural, safety, energy, mechanical, electrical, etc.) can be made.

OWASA has engaged Kimley-Horn to evaluate operations at twelve wastewater pump stations. Each pump station evaluation will include pump performance testing, condition assessment, and energy usage analysis. Kimley-Horn will develop a report for each pump station that provides recommendations on efficient operations and asset condition. The following stations will be evaluated as part of this project.

Pump Station Name	Annual Energy Use (kWh)	Number of Associated Pump	Total Associated horsepower
Rogerson Drive	750,000	4	800
Morgan Creek	580,000	4	400
Reclaimed Water	550,000	4	650
NSL	440,000	4	300
Intermediate Pump Stations #1 and #2	400,000	6	330
Non-Potable Water	92,000	3	75
Countryside	67,000	2	68
Lake Ellen	41,000	2	60
Eastowne	28,000	2	100

Knolls	25,000	2	60
Meadowmont #1	22,000	2	30

Energy saving opportunities that are identified in the assessments will vary due to size, pump and motor characteristics and condition, volumes pumped, etc.

Wastewater Treatment Plant Non-Potable Water (NPW) Conservation: Non-potable water (i.e wastewater treatment plant effluent) is re-used throughout the Mason Farm WWTP for various processes that require water. The current non-potable water system provides process water throughout the plant and runs underground. While we have metered total NPW use for a little over a year (we use about 360,000 gallons of non-potable water use per day), we do not meter it on a process level. We anticipate a 30% reduction in NPW energy use from the new pumps and the NPW water use reduction from the new rotary drum presses for solids, taking energy use from the system from about 11,500 kWh per month to 8,000 kWh per month for an annual savings of about 40,000 kWh. Assuming water conservation could reduce pump run time by 25 percent, the energy use of this system could be reduced another 24,000 kWh per year.

The proposed next steps for this project are:

- Meter NPW use throughout the plant to help quantify the amount of water lost to leaks (cost to meter individual systems throughout the plant)
- Audit NPW water uses for water conservation opportunities (cost to audit the water system and repair)

This project has been delayed a year. We anticipate installing the meters in FY20. However, it will be difficult to get a full picture of NPW system energy and water use until after the Solids Thickening Improvement Project is complete in 2021.

HVAC Energy Efficient Upgrade of Equipment Greater than 15 Years Old: A 2016 Energy Assessment of OWASA's HVAC Equipment conducted by Advanced Energy recommended that OWASA replace cooling units at the end of their rated service life (15 years) with high efficiency units. High efficiency cooling units have features such as advanced controls, larger heat transfer surfaces, and electronically commutated (EC) motors. They also use significantly less energy than their standard efficiency counterparts. Although high efficiency units (equal to or greater than 15 SEER) cost more than standard efficiency, Advanced Energy calculated the average payback of the additional cost to be 2.35 years without considering the social cost of carbon, and 1.9 years with accounting for the social cost of carbon.

In the past, we have operated smaller HVAC units until it was not functioning well and could not cost-effectively be repaired (i.e. run to failure). Our strategy accelerates replacement in order to achieve energy savings. By planning ahead, we can spend the time to research the most cost-effective equipment with the highest sensible energy rating.

The following equipment is expected to be replaced, as part of this and other CIP projects.

Location	HVAC Unit	Estimated Energy Savings (kWh/yr)	Associated Project
WTP	Belt Press S. Electric Room	8,000	WTP Belt Filter Press Replacement (272-37)
WTP	Belt Press N. Electric Room	8,000	
WTP	Thickened Solids Pump Station	2,500	WTP Sedimentation Basin Rehabilitation (272-38)
Ops	Vehicle Maintenance Office	300	HVAC Replacement Program (272-51)
Ops	Operations Building	17,000	
Ops	Maintenance Office	1,000	
Ops	Maintenance Meter Shop	500	
WWTP	Switchgear Building	20,000	
WWTP	Laboratory	27,000	
WWTP	Screen Headworks	10,00	
WWTP	Filter Building	25,000	
WWTP	IPS #1	1,000	WWTP Intermediate Pump Station Rehabilitation (278-54)
WWTP	IPS #2	25,000	
Total		**135,300 kWh/year**	

UV System Energy Assessment (WWTP): The UV Disinfection System at the Wastewater Treatment Plant is estimated to use about 5% of the annual electrical energy use at the WWTP (about 400,000 kWh per year). Currently, our UV banks are flow-paced (banks and lamps turn on and off, depending on the flow), and we use high-efficiency light bulbs. Although we are measuring the transmissivity of the water, it is not directly being used to control the system. If we can incorporate a real-time transmittance information and control system, we could potentially turn down the UV system light intensity automatically when it is not demanded by the water quality. Additional investigation is needed to determine if this is possible and cost-effective given our existing UV system.

Wastewater treatment plant maintenance staff are bringing in the manufacturer of the UV System (WEDECO) for 4 days of maintenance and training in the Spring or Summer of 2019. We are requesting that energy management be incorporated into this discussion and analysis be conducted on the energy savings potential of a change in operations and maintenance of the UV system.

The City of Grand Rapids, Michigan moved from an exclusively flow-paced UV disinfection system to one that incorporated real-time monitoring of % ultraviolet transmittance (%UTV) and light intensity. They reduced energy use of the system by 65%. A 65% reduction in the amount of energy that we use for UV disinfection would reduce energy use at our WWTP by an estimated 210,000 kWh per year, but we don't yet know if we could achieve this level of savings.

Partnership for Clean Water Self-Assessment: In 2019, OWASA staff will conduct an in-depth self-assessment in pursuit of the Partnership for Clean Water at the WWTP. The self-assessment will involve detailed review of unit processes, including energy use intensity. It is anticipated that through this self-assessment staff will identify low to no-cost opportunities to optimize operations and reduce energy use.

Utility Participant in Water Research Foundation Research Project on "Application of Big Data for Energy Management in Water Utilities": OWASA volunteered to serve as a utility participant on a Water Research Foundation (WRF) project to research how to better understand how big data can be successfully utilized to manage and optimize current energy management schemes in water and wastewater utilities. The project is being funded by WRF, a national organization of which OWASA is a member. In volunteering to engage with the team that is awarded the funding, we hope to glean lessons learned from leaders inside and outside the utility industry on how we can better use our energy data to optimize our energy use and energy-using equipment.

Finished Water Pump Rehabilitation and Replacement (272-42) AECOM is conducting an operational assessment of the finished water pumping systems. This will include a review of recent SCADA records and the recently installed pump optimization tool (Specific Energy) to identify, evaluate, and quantify the near- and long-term energy efficiency and conservation opportunities of the entire finished water pump station and associated processes, operations, and equipment. Prior water distribution system hydraulic model calibration/development work by AECOM indicated undefined pressure head restrictions in the mains around the WTP that AECOM will investigate as part of this assessment.

Real-Time Nitrification Control System (WWTP): Although we have achieved great energy efficiency in our aeration system at the Mason Farm WWTP, this process still uses about 25% of the electricity used at the Plant (approximately 1.6 million kWh per year). Energy is used to power blowers in aerated basins that help to reduce nutrients and organic matter in the water; mixers run in all basins to maintain an environment that supports the necessary biology. The aeration system is run to maintain dissolved oxygen concentrations at optimum levels for the biological treatment process. By optimizing the biological treatment process and aeration system, wastewater treatment utilities can reduce energy and chemical use while improving treatment performance.

In 2019, we will install real-time nitrate and ORP (oxidation reduction potential) probes that will help us optimize the biological treatment process and aeration system. We will install two probes at the back-end of the process. If these prove valuable in optimizing operations, we will consider installing more probes. The data will be integrated into the SCADA system and will allow for real-time "dialing" of blowers and mixers. The system is expected to cost $30,000.

Projects Currently in the CIP Identified with Potential to Reduce Energy Use

University Lake Pump Station Improvements (270-11): Historically, the energy use intensity (kWh used to pump a million gallon of water) to pump raw water has been lower for the Cane Creek Pump Station, despite being almost 10 miles further from the Jones Ferry Road Water Treatment Plan. This project will replace three of the existing four, old raw water pumps at University Lake with two efficient pumps with VFDs. The VFDs will help achieve energy savings across a wide range of flows and eliminate the need for energy-wasting throttle valves.

Ultimately, this upgrade will give us higher efficiency at flow rates greater than 3 MGD (when we would be using one of the larger pumps). Moreover, it increases our flexibility to decrease energy intensity of raw water pumping.

Estimated energy savings: 40,000-120,000 kWh/year (depending on flow rates from University Lake)

Reduction of Inflow and Infiltration (I&I) in Wastewater Collection System (276-57): We have begun a sewer modeling project in which we are installing flow monitors and rain gauges throughout the collection system to better quantify the amount of I&I in our system. This information will help inform and prioritize collection system repair and replacement projects with the goal to reduce I&I. It is difficult to quantify the energy impact of this project.

Building Envelope Rehabilitation (278-68): This project includes the rehabilitation of building envelope systems (roofs, walls, windows, etc.) at a prioritized set of OWASA's buildings and structures as recommended by a FY 2017 condition assessment. This project has the potential to reduce heating and cooling load on the impacted buildings. Impacts on energy use will be incorporated into decision-making for these projects.

Cane Creek Raw Water Transmission Main Capacity Study (271-05): In advance of the planned upgrade of the Cane Creek Pump Station, the Capital Improvement Program (CIP) includes a project in FY19 to evaluate the friction coefficient of the existing 24-inch diameter raw water main from the Cane Creek Reservoir to the Quarry Reservoir. This test will help determine if the main needs to be cleaned to restore its designed carrying capacity. This study and any related follow-up work are planned to be completed prior to initiation of design on the pump station improvements.

Additionally, the 2017 Energy Management Plan evaluated in-pipeline turbines for hydropower generation and recommended that pursuit of this specific strategy be "delayed until upgrade". This Main Capacity Study is an opportunity to consider current technology and infrastructure upgrades that could be viable for generating in-line hydropower in the raw water transmission line. It has been estimated by previous studies that there is enough flow and fall from Cane Creek Raw Water Main to the head of the Jones Ferry Road Water Treatment Plant to generate about 250,000 kWh/year.

Cane Creek Pump Station Improvements (270-16): Funds are included in the CIP for adding automatic generator transfer switchgear, building a permanent enclosure for the generator, and installing variable frequency drives (VFD) on the two 700 horse power (dual speed) pumps. An

analysis conducted by the NC State University Industrial Assessment Center estimated that the installation of VFDs at the Cane Creek Pump Station could result in a savings of 138,000 – 227,000 kWh per year. In addition, early on in our design review process, we will evaluate the potential to incorporate the integration of battery storage and renewable energy strategies for extended back-up generation into early design reviews.

This project, combined with the University Lake Pump Station Improvements, has the potential to significantly reduce our energy use for raw water pumping.

Off-Site Biosolids Mixing Project (TBD): Use of our off-site biosolids storage tanks has increased significantly over the past few years, as we work to meet our goal of applying 75% of our biosolids directly to agricultural land as a liquid. The off-site storage tanks serve as a buffer and help us to manage biosolids volumes when conditions (such as weather) do not allow us to appy biosolids directly to farmland. In 2018, we used 500,000 kWh to load, unload, and mix biosolids at the off-site storage facility. That was twelve times more energy than we used at this facility in 2010.

The FY20 Capital Improvement Plan will propose funding for an analysis of mixing alternatives for the off-site storage tanks. This request is primarily driven by the need to improve the effectiveness of mixing in the storage tanks; however it has the added potential benefit of improving the efficiency of mixing.

Energy Management Strategies to Pursue and Evaluate

1. **Use of Specific Energy's Lift Station Guardian Software-as-Service at Two Wastewater Pump Stations:** The Lift Station Guardian (LSG) is a related product to the pump optimization tool (Specific Energy) piloted at the Jones Ferry Road WTP Finished Water Pump Station. This product is similar to the pump optimization tool because it conducts pump performance analysis (monthly rather than daily) and provides recommendations on when the cost of pump repair or replacement is less than energy savings. LSG conducts high resolution monitoring of lift station behavior to track pump health and support preventative maintenance decisions. Our current practice is to run a pump to failure provided we have pumping system redundancy. This can be a challenge under current situations where it may take up to 16 weeks to replace a pump. Knowing ahead of time when a pump might fail could help us get ahead of this.

   The Lift Station Guardian calculates flow. Because wastewater flow is more difficult to measure, the Lift Station Guardian utilizes a method to calculate flow from the tank shape. These interval flow calculations would be valuable in tracking inflow and infiltration. The tool can also be configured to provide alerts to maintenance and operations staff with amperage is high given the flow, an indication the pump may need to be unclogged. In sum, there are likely more operational benefits to this technology than energy savings, but it is all integrated.

   This technology could be valuable at lift stations that do not have flow meters and/or have historic issues with inflow and infiltration. From an energy perspective, the larger (i.e. more energy intensive) candidates would be the Lake Ellen[3], Heritage Hills, Countryside, Knolls and Eastowne

[3] Lake Ellen pumps are the oldest pumps listed (circa 2005).

Pump Stations. According to Specific Energy, the data has the potential to be integrated into the Ignition SCADA system. The Lift Station Guardian unit is mobile and can be removed and reinstalled at another pump station.

The Mustang Special Utility District in Aubrey, Texas has installed the LGS on 20 lift stations. They are primarily using it in lieu of a typical PLC. They can get a unit installed in about 4 hours.

The Energy Team (with the support of the Wastewater Treatment and Biosolids Recycling Manager) recommends the purchase and use of one unit at a wastewater collection pump station and one unit at an in-plant pump station.

Initial costs are about $14,000 per unit plus $1,500 in annual fee. The total cost of this pilot would be about $32,000 for installation and $3,000 ongoing costs, which could be discontinued at any time, if the system was deemed ineffective. Units are mobile and could be moved between pump stations, which could be helpful in estimating inflow and infiltration at other pump stations.

2. **Conduct water balance between drinking water distribution system pressure zones:** OWASA has two pressure zones in its distribution system: the 740 (elevation) zone and the 642 zone**.** All of the water in the 740 pressure zone is "imported" from the 640 pressure zone. There are isolation valves between the two systems that should be closed on a regular basis but can be opened if needed to release water from the 740 zone to the 642 zone. With AMI data, we can now conduct a mass balance analysis to determine if all of the water pumped into the 740 zone is "consumed" in the 740 zone, or if there is the potential that water is "leaking" back into the 640 zone. Leaking water equates to wasted energy to pump the water into the 740 zone.

   The proposed strategy is to conduct and establish an ongoing analysis to determine if this occurring. It is anticipated that this analysis can be conducted by staff, with the assistance of a summer intern.

3. **Issue Request for Solar Lease Proposals at Cane Creek Reservoir and/or Biosolids Management Land:** OWASA's 2018 Energy Management Plan Update recommended the installation of an OWASA-financed ground-mount solar system at the Cane Creek Reservoir. The project was projected to be economically viable when using the blended average cost of electricity ($0.068/kWh). However, a more detailed, follow-on financial analysis that aligned the time-of-solar production with time-of-use tariffs charged to the Cane Creek Pump Station determined that the average avoided cost of energy produced by the solar system would be closer to $0.044/kWh. This destroyed the economics for an OWASA-financed solar PV System. Under current electricity rates, successful development of a solar PV project will require partnership with a private third party that can take advantage of federal tax credits and incentives.

   In 2017, North Carolina passed the Competitive Energy Solutions for NC (HB 589) bill. This new law authorized various programs identified to advance solar development in the state. Over the last year, the Utilities Commission has been working with Duke Energy and other stakeholders to define the specific parameters of those programs.

   One potentially viable solar program for OWASA purposes is a solar lease. Under a solar lease, an approved third-party finance and installs a solar PV system for use by another party, such as OWASA. During the lease team, the third-party takes advantage of federal tax incentives, which ar

not available to non-profit and governmental organizations, which effectively brings down the price of the system. Throughout the lease term, the third-party maintains the system, and OWASA realizes savings on our energy bill while reducing its use of electricity produced by fossil fuels.

At the end of the lease term, OWASA could (a) purchase the system at fair market value determined at time of purchase; (b) upgrade system and sign new lease term; or (c) remove system at no cost. It is unlikely that, during the lease term, the energy savings will exceed the annual lease payment. This arrangement is likely to result in a positive cash flow once the system is purchased back from the lessor, assuming the fair market value is competitive. If OWASA was not ready to purchase the system at the determined fair market value, it would be in the interest of the lessor to negotiate a competitive lease agreement, as the system would have little value to them upon removal.

Currently, there are two companies approved by the NC Utilities Commission to offer solar leases: Duke Energy and Eagle Solar and Light. With the consult of the National Renewable Energy Laboratories and solar developers, OWASA staff have identified two potential sites to install a ground-mount solar PV system: at the Cane Creek Reservoir Site and on a portion of Field 1 on the biosolids management site.

Preliminary analysis shows that the Cane Creek Reservoir could support at 400-kW ground-mount solar system and that the Biosolids Management Site could support a 100-kW system, which would offset a combined total of about 460,000-600,000 kWh/year (about 2-3% of the baseline) with an estimated lease payment of $27,000 -$38,000/year. As stated before, these systems would likely not result in positive cash flow during the lease term. However, when taking into account the social cost of carbon and/or a competitive buy-back cost (or releasing agreement), both systems are economically viable (i.e. positive net present value within 20 years).

The Energy Team recommends that we move forward with issuing a Request for Proposals for a lease agreement for a ground-mount solar PV system at the Cane Creek Reservoir and Biosolids Management Sites. If at least one of the proposals is economically viable, staff will submit information on the viable proposal(s) to the OWASA Board of Directors for approval.

For planning purposes, we are requesting a budget placeholder of $42,000 for FY20 based on a preliminary analysis of a solar lease agreement.

4. **Recommission odor control system (WWTP):** The Mason Farm WWTP has multiple odor control systems located throughout the plant. Air from various processes in the plant are pumped to chemical and dry media scrubbers. The odor control system is estimated to use approximately 900,000 kWh per year. In 2018, Hazen and Sawyer conducted a high-level balancing assessment of the odor control system that included a review of duct sizing, air intakes, and the ability to appropriately balance the system. As a follow-on, it was recommended that OWASA conduct a recommissioning of its odor control system to ensure that there is balance in the system. This process would help ensure that the odor control system is working as efficiently and effectively, as possible. It could also inform settings for changes in operations, to help maintain balance in the system. The potential energy savings that could be realized from commissioning the odor control system are uncertain, but as one of the largest energy-using systems at the WWTP, fine-tuning odor control operations has great potential. The cost of this service is estimated to be about $40,000.

5. **Impact and cost evaluation of operational changes with aeration basin odor scrubbers (WWTP):** There is potential value in reassessing the costs and benefits of how the dry media scrubber system for the aeration basins are operated. This system, alone, is estimated to use about 500,000 kWh/year. It is an opportune time to assess the costs/benefits, as it is nearing the time to replace the carbon in the filters (about $50,000 project).

   The odor control system was designed to treat the air from all aerated cells, as well as the nitrified sludge (NSL) basins. However, about two years ago, plant staff adjusted how the aeration basins are operated, and began aerating two uncovered cells – without a significant change in observed odors by staff or odor complaints from neighbors.

   The Energy Team recommends, due the significant contribution of this system to the Plant's energy use, an analysis of the value of the current level of operation of the odor system for these basins. The Team does not make this recommendation lightly, knowing the requirements of the Plant's Special Use Permit from the Town of Chapel Hill to receive no odor complaints. Nonetheless, it seems a timely and worthy consideration to evaluate the impact and costs of current operations. If analysis identified a modified schedule/mode of operations is technically feasible, the next step would be to engage neighbors and stakeholders in a discussion on the costs-and-benefits, perhaps accompanied by a blind study.

   The initial step proposed is to conduct an odor assessment (estimated cost $10,000). Additionally, operation of the carbon scrubbers on the aeration basins will be incorporated into the odor control system recommissioning.

6. **Increase operating level of Morgan Creek Pump Station Wet Well (WWTP):** We currently keep the Morgan Creek Wet Well at an elevation of about 3.2 feet. Based on horsepower and run-time, we estimate that the Morgan Creek Pump Station uses about 933,000 kWh per year. Running the system with higher wet well levels would decrease static head in the system and reduce the amount of energy required to pump influent into the plant (given that we have VFDs on these pumps).

   The Morgan Creek Pump Station is one of the twelve pump stations that will be evaluated in the Pump Station Evaluation Project. From that analysis, staff will calculate the energy benefits associated with running the wet well higher, and compare that against the operational risk. The Energy Team recommends that analysis be factored into consideration of running the wet well at higher levels.

7. **Expanded use of integrated pump optimization tool (Specific Energy Dynamic Pump Optimization Software-As-Service):** In 2018, we launched the application of a dynamic pump optimization tool that provides real-time information on the actual and potential specific energy (kWh/MG) of running one or more finished water pumps. The tool also assesses real-time pump performance (against the pump curve) and calculates a financial analysis on repair/replacement value for each pump based potential energy savings.

Ultimately, installing the Dynamic Pump Optimization Tool on the Finished Water Pump Station cost $16,500 in set up fees ($7,500 for the tool and $9,000 for system integration) and $6,075 in an annual license. Fees are based on connected horsepower and whether or not there is a VFD. Now that the initial station has been integrated, we anticipate that CITI costs will be lower for set-up.

Although the tool has provided useful information as to the operations of the Finished Water Pump Station, our experience with the tool has shown that, for day-to-day conservation, it would likely result in more energy savings if installed on a pump station with more variable flows and pump options. Potential applications include: University Lake Pump Station (once upgraded with new pumps and VFDs), Reclaimed Water Pump Station, and/or Rogerson Drive Pump Station. We do anticipate that the use of the tool will be valuable in projecting the energy savings potential in the Finished Water Pumping Study and operating the pump station post-upgrade. If this proves true, it could be a valuable resource to install on pump stations prior to a significant upgrade. Moreover, the tool is also a valuable resource in informing prescriptive maintenance. It calculates when the value of repair or replacement (from an energy perspective) exceeds the cost.

The Energy Team recommends that we continue to consider the use of this tool with other pump stations, in particular the University Lake Pump Station once upgrades are completed.

8. **PERLEMAX Harmonic Oscillator for Fine Bubble Diffusion (WWTP):** This patented technology decreases the size of bubbles produced by fine bubble diffusion in order to increase Oxygen Transfer Rate. The unit requires two drop legs of approximately equal demand (+/- 50%). The air oscillates between the two sides at a rate faster than the bubbles of the fine bubble diffuser naturally form, thereby causing smaller diameter bubbles. The decrease in bubble size leads to an increase in surface area for oxygen transfer into the water. There is an increase in pressure on the header from the oscillator but the increased energy usage resulting from the higher pressure is more than offset by the decrease in the aeration energy requirements to meet oxygen demand in the system.

   The current configuration of the aeration basins has two aerated cells next to each other fed from the main header. This is reportedly ideal for the geometry of the PERLEMAX unit. The system would be installed in such a way that it can be isolated and the existing aeration process returned to pre-oscillator installation configuration by closing a pair of isolation valves at each drop leg. The near-term intention is to install a single oscillator as a pilot-scale test and proof of concept.

   The first installation will resolve conflicts with header design and may require some field fabrication of piping. However, the final configuration should be replicable to the two other sets of aeration drops. Once installed on all three pairs of aerated cells, the plant should see a noticeable reduction in aeration demand, and a reduction in the amount of time that a second blower is required to be in service. The second blower may be required only during those times when flows or oxygen demands are abnormally high.

   The system is estimated to cost about $60,000 -$80,000 per unit for a total cost of about $180,000 - $240,000 for the existing plant. In other applications, this technology has reduced energy use by 15-20%. Based on our energy monitoring data, our aeration blowers use about 1.6 million kWh/year.

If fully implemented and it achieves the energy savings claimed by the manufacturer, the PERLEMAX system could reduce WWTP electricity use about 250,000 kWh per year (about $15,000 per year in power costs) at current flows and treatment levels. There are potentially additional energy savings that could be realized if this technology could help reduce instances where a second blower was needed. In addition, this technology has the potential to increase the longevity of fine bubble diffusion membranes and time between blower maintenance.

This technology has been piloted in the United Kingdom (Sheffield) on a pilot scale equivalent to one set of our basins. The pilot was initiated for costs savings and stabilization of the process. They have realized an 18% reduction in energy demand. Other pilots have been performed in the UK and Europe.

The Energy Team sees a lot of potential in this technology but has concerns about the upfront costs combined with a relatively new technology. Thus, the Energy Team recommends that OWASA continue to monitor the use of the PERLEMAX system with other utilities and seek opportunities to get financial support for an experimental installation of 1 oscillator (at $60,000 -$80,000). Research funding could be sought to help monitor and verify aeration performance by noting average aeration demand for cells before and after installation.

9. **Water tank-mounted micro-wind turbine:** The 2017 Energy Management Plan considered the installation of large-scale wind turbines and found such an approach for OWASA unviable given the generally low average wind speeds in our region. However, micro-wind turbines have recently emerged as potentially promising for installation on elevated water tanks. The installations would be relatively simple and for water tanks with associated or nearby energy use, could help offset small but continuous energy needs. These turbines (such as this https://www.halo.energy/technology) are relatively small, 20-kW installations with the potential to generate 8,000 – 15,000 kWh per year. They are designed to take advantage of the wind tunnel created by the round shape of the tank itself. It is estimated that a unit would cost about $20,000 to purchase plus installation costs. Although the generation potential is relatively small, the Energy Team recognizes the unique nature of this renewable energy generation potential and recommends additional analysis of a potential pilot application at the Nunn Mountain Elevated Tank.

10. **Use of batteries to improve system resilience, reduce energy costs, and utilize renewable energy**: According to Bloomberg New Energy finance, the price of a lithium-ion battery dropped 73% since 2010, due in part to technology improvements and economies of scale. We are approaching a time where batteries could be used to provide back-up power for small pump stations, which would potentially be a more resilient approach than mobile generators for managing power outages. Moreover, when partnered with renewable energy generation, batteries can provide options for significantly reducing our use of purchased electricity and evening out our demand on the grid. As OWASA considers power resiliency for the future, the Energy Team recommends that analysis of what situations and at what price points do batteries become a viable option for system resiliency, energy cost reduction, and renewable energy integration in OWASA's operations. In particular, the Energy Team recommends that the upcoming study of diesel fuel capacity needs at our pump stations include a consideration of the incorporation of batteries for back-up generation needs (particularly at smaller pump stations).

Energy Management Strategies to Delay Until Upgrade

11. **Hyperboloid mixer in onsite biosolids tank (WWTP):** Currently, we use a 128 horsepower diffused air mixing system in the onsite biosolids storage tank. This system includes a fixed coarse bubble diffuser grid located near the floor of each of the biosolids holding tanks (fed by the blowers used for aeration). The system is operated intermittently prior to scheduled removal of the material. Due to settling between operation, transfer pumps are used to recirculate material to supplement the current system. Nonetheless, material still accumulates, and the tanks are taken off-line for cleaning about twice per year.

    In 2018, CDM Smith conducted a business case analysis of replacing the current system with a more effective hyperboloid mixer. (They also analyzed the operational costs and benefits of running the current diffused air mixing system continuously.) In their analysis, they estimated that the current system uses about 300,000 kWh/year assuming our current intermittent operating strategy. (If it ran continuously, it would use approximately 839,000 kWh/year.) Assuming the same intermittent operating strategy, CDM Smith estimated that two new 30-hp gear-driven hyperboloid mixers would use about 140,000 kWh/year. The up-front cost for the new mixers is estimated to be approximately $410,000.

    On costs alone, this is not likely to be an economically viable choice when compared to current operations. However, CDM recognizes that the new system would likely be more reliable, relieve the demands on the main aeration system, and reduce the impact of mixing equipment on the odor control system. The Energy Team recommends that a hyperboloid mixer be considered when operational needs require the upgrading of the biosolids storage tank mixing system.

Agenda Item

- Review Fiscal Year 2020 Draft Budget and Rate Adjustment Information

Purpose

- To provide the Board of Directors with information about the draft Operating Expense, Capital Improvements Program (CIP) and Capital Equipment Budgets for Fiscal Year (FY) 2020.

- The projected annual rate increases for FY 2020-2024 range from 4-6%, which is higher than the projected rates last year of 2-4%. Drivers for additional investments in our draft operating and capital budgets include supporting our commitment to the community to improve the reliability and resiliency of our services and rising construction costs.

- At this stage of developing the budget and analyzing the need for a rate adjustment, staff is still preparing budget and rate options and recommendations for the Board's consideration.

- Staff plans to continue its analysis and present rate adjustment alternatives to the Board when discussions on budget and rates continue at the Board's April 11, 2019 Work Session.

Action Requested

- Provide guidance to staff regarding any additional information the Board would like to review regarding the Draft FY 2020 budget and rates.

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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

MEMORANDUM

TO:	Board of Directors
THROUGH:	Ed Kerwin
FROM:	Stephen Winters, CPA
DATE:	March 22, 2019
SUBJECT:	Review Fiscal Year 2020 Draft Budget and Rate Adjustment Information

Purpose

The purpose of this discussion is to provide the Board of Directors with information about the draft Operating Expense, Capital Improvements Program (CIP) and Capital Equipment Budgets for Fiscal Year (FY) 2020. The Board will continue to discuss these topics, as necessary, in order to be prepared to hold public hearings on May 23, 2019 and make final budget and rates decisions at the June 13, 2019 Board meeting.

At this early stage of developing the budget and analyzing the need for a rate adjustment, staff is still preparing budget and rate options and recommendations for the Board's consideration at the April 11, 2019 Work Session.

Overview

The draft budget described in this memo represents the true costs of providing high-quality, safe and reliable water and wastewater services. The rates projected cover the cost of funding the draft capital and operating budgets and meeting the financial measurement goals established by the Board.

The projected annual rate increases for FY 2020-2024 range from 4-6%, which is higher than the projected rates last year of 2-4%. Drivers for additional investments in our draft operating and capital budgets include supporting our commitment to the community to improve the reliability and resiliency of our services and rising construction costs.

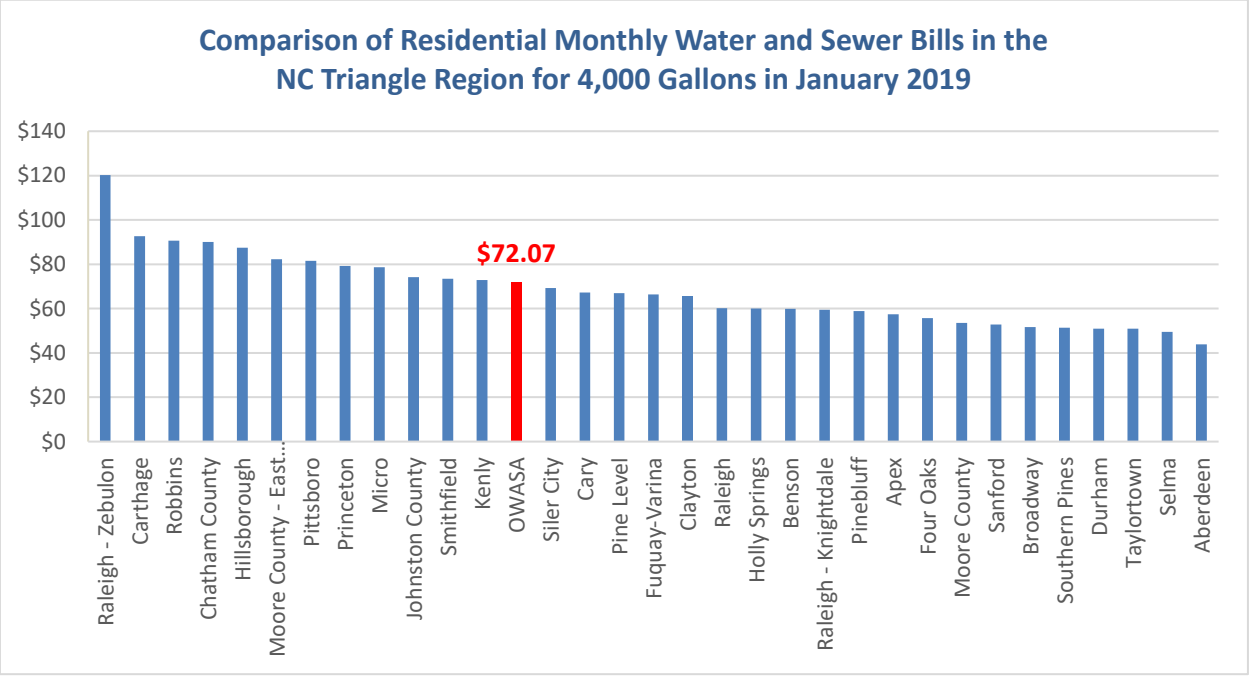
- In 2018, two hurricanes and a large water main break that resulted in a community-wide boil water advisory exposed risks and opportunities for enhanced resiliency. These events also highlighted the importance of a reliable water and wastewater system for essential services in our community (e.g. hospital/education/businesses). We are planning for greater investment in risk reduction and resiliency improvement (both in the operating and capital budgets). This includes activities that the Board has already agreed to jumpstart in the current fiscal year, such as a more aggressive valve maintenance program, the replacement of piping and valves at the water treatment plant, the addition of a utilities engineer for project execution, and resources needed for enhanced emergency communications.
- We are accounting for increases in maintenance and chemical costs, as well as continued escalation in construction costs due to material prices and a less competitive bidding environment. For example, the engineer's estimate for work at the wastewater treatment plant to utilize more efficient technology for solids thickening and to renovate portions of the structure where sewage first enters the plant was $5,380,000; the low bid was $6,522,000.

- We are taking a more thoughtful and strategic approach to inform and engage the community. The Communications and Community Engagement Plan approved by the Board earlier this year creates engaging and dynamic opportunities to inform our customers as to how their fees are used and the value of the services OWASA provides.
- We are continuing to strive to improve the way we do business. As an organization, we are committed to investing time and energy into increasing diversity and creating a more inclusive environment. And with the Agua Vista web portal, we are providing our community with more tools and resources to manage water use.
- At the same time, we are identifying and investing in ways to save and manage costs. Last year, we took advantage of about $14 million in low-interest loans provided by the state for water and wastewater projects, saving our customers in interest costs. The Board recently granted the authority to pursue an additional $8.4 million in low-interest loans from the state. We completed the investment in Agua Vista which will provide the community financial returns in years to come. And we realized over $400,000 of avoided costs as a result of our investment in energy efficiency and conservation.

OWASA is a non-profit, community-owned water and wastewater utility. Our investments in water and wastewater infrastructure are not supported by taxes nor federal grants: only fees paid by customers for services. We reinvest the fees paid by our customers directly into the treatment plants, pipes, and people that will serve our community for years to come.

We appreciate our customers for their partnership. Beyond paying their OWASA bill each month, the cost and commitment borne by our community to use water wisely and protect the wastewater system pays dividends ecologically and economically.

The following graph shows how OWASA's current rates for 4,000 gallons of water use per month (the average monthly amount used by households in our service area) compares with other utility rates in the Triangle.



Summary of the draft budget

Expenditures in the draft FY 2020 Budget include

Category	Amount (in thousands)
Operating Expenses	$23,767
Capital Equipment Expenditures	990
Capital Improvements Program (CIP)	28,857
Debt Service on Outstanding Bonds and Loans	7,444
Total	$61,058

Operating Expenses

The Board reviewed the draft Operating Expense Budget at its meeting on March 14, 2019. The following are adjustments that have been made to the draft.

Operating Expense Adjustments	Increase (Decrease)
Energy management projects:	
Solar lease 1st year expenses	43,000
Odor control system balancing	40,000
Odor testing-aeration/NSL basins	10,000
Lift station guardian	32,000
Due to anticipated timing of the work, 50% of website upgrade expenses have been moved from FY19 to FY20	22,500
Standards and specifications update has been deferred	(50,000)
Health insurance - we are anticipating a 5.8% decrease	(94,000)
Reduction of consulting expenses in HR due to filling the Safety and Risk Manager position	(25,000)
Reduction in consulting expenses for diversity and inclusion program (staff taking on certain tasks)	(25,000)
Reduction in projected Agua Vista maintenance expenses	(37,600)
Maintenance contract for closed-circuit video security system	12,255
Increase in price of sodium permanganate	8,000
Increase in price of ferric sulfate	45,000
Decrease in price of caustic	(9,600)
Reduction of projected valve maintenance expenses (one crew of two staff will be on valve maintenance for 1/2 of FY20, draft budget included costs for full-year	(81,000)
Elimination of meter puchases	(9,200)
Unidirectional flushing consulting project deferred	(125,000)
Added cost of valve exercising equipment rental	60,000
Added cost of generator repair at the wastewater treatment plant	86,000
Eliminated the proposed addition of a maintenance mechanic at the wastewater treatment plant	(88,000)
Based on current attrition rate, increased vacancy allowance from 2.5% to 3% of regular wages	(43,875)
Added cost-differential of proposed new 457 plan	55,640
Total adjustments	(173,880)

Assumptions and Highlights in the Draft Operating Expense Budget

- The budget is being developed so that all of our Financial Management Policy performance objectives may be met.
- 3% vacancy allowance – the personnel compensation budget has been reduced by about $244,000, to account for position vacancies.
- A decrease in health insurance costs of 5.8%. This will be adjusted as we receive more information from our health insurance provider.
- Price changes for certain chemicals based on information provided by vendors.
- A placeholder for a 4% merit and cost of labor (combined) increase. The Board is scheduled to discuss employee wage increases on May 9, 2019.

- 141 Board authorized positions with 135 funded for FY 2020. This includes:
    - 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 an 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 $50,000 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.
- $100,000 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.

Capital Equipment Expenditures

A list of capital equipment purchases included in the draft budget can be found in Table 3 of Attachment 1.

Capital Improvements Program
CIP needs are identified by hydraulic models, risk/prioritization models, after-action reviews, OWASA's Energy Management Program, master planning studies, condition assessments, staff observations, regulatory or contractual requirements, repair and maintenance work order evaluation, community feedback, and strategic planning. After CIP projects are identified, a staff team prioritizes projects using a weighted criteria model. In addition to the results of this project prioritization, staff accounts for project interrelationships, coordination with other entities (Towns, Department of Transportation, etc.), project urgency, implementation considerations, and other external schedule constraints.

Attachment 2, Table 1 includes brief information about the required and proposed FY 2020 projects. The draft FY 2020 CIP Budget totals $28.9 million, or about $1.6 million more than the amount we projected last year. Projects which are already underway (highlighted in blue) comprise about 95% of the draft FY 2020 CIP Budget.

The draft FY 2020-2024 CIP Budget is shown in Attachment 2, Table 2, with required projects and projects already underway highlighted in blue and new projects highlighted in pink. The draft FY 2020-2024 CIP Budget totals $110.1 million, or about $15 million higher than the projections we made last year. The increase in this 5-year total is due to two primary factors: 1) new projects or scope increases on current projects intended to improve system reliability and resiliency, and 2) anticipated cost increases for upcoming or future construction.

The draft FY 2020-2024 CIP Budget was developed based on the following assumptions:

- Current levels of service will be maintained.
- CIP will be fully staffed (i.e., Engineering Associate, Engineering Manager, and four Utilities Engineers).
- Service area growth will remain within projections.
- Reclaimed water system will not be expanded.
- Mason Farm Wastewater Treatment Plant (WWTP) will continue to produce Class A biosolids.
- Biosolids recycling will continue at roughly 75% land application and 25% dewatering.
- No CIP funding is included for a biogas-to-energy project at the WWTP or a solar photovoltaic system at Cane Creek Reservoir.

- Our Jordan Lake allocation will be maintained, and funding is included for anticipated planning and preliminary design efforts for a regional water intake/treatment facility at Jordan Lake.
- No funding or investments for construction of infrastructure that may be necessary to obtain improved (guaranteed) agreements with the City of Durham and Town of Cary for water purchases during extreme droughts or operational emergencies.
- The regulatory environment for water treatment, wastewater treatment, reclaimed water and biosolids recycling will remain substantially as it is today.

We are comfortable that the levels of investment presented in this CIP Budget leaves OWASA well-postured to remain the sustainable, responsible and environmentally focused organization that this community deserves and has come to expect.

Rate Adjustment Information

Staff has been working with rate consultants to update OWASA's 15-year financial plan and analyzing the need for increases in monthly water and sewer rates. Based on the planning work we have completed so far, staff believes it is necessary to increase monthly rates over the next several years. The following table shows rate increases that would provide the funds necessary for meeting the organization's goals as described above.

FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
6.0%	5.0%	5.0%	5.0%	4.0%

Last year, we projected rate increase as follows:

FY 2020	FY 2021	FY 2022	FY 2023	FY 2024
2.0%	3.0%	4.0%	4.0%	4.0%

We will continue our analysis and present alternatives to the Board when discussions on budget and rates continue at the April 11, 2019 Work Session.

Next Steps

We plan to discuss the FY 2020 Budget and present rate adjustment alternatives at the April 11, 2019 Board meeting. Public hearings for the budget and rates are tentatively scheduled for May 23, 2019 and the Board's final approval is scheduled for June 13, 2019.

Action Requested

Provide guidance to staff regarding any additional information the Board would like to review regarding the draft FY 2020 Budget.

Stephen Winters, CPA
Director of Finance and Customer Service

Attachments: Attachment 1, Table 1 – Summary of draft FY 2020 Budget
Attachment 1, Table 2 – Details of draft FY 2020 Budget including Professional Services
Attachment 1, Table 3 – Draft FY 2020 Capital Equipment Budget
Attachment 2, Table 1 – Draft FY 2020 CIP Budget
Attachment 2, Table 2 – Draft FY 2020-24 CIP Budget

	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	23,766,948	23,276,870	4.3%	5.5%	2.1%
Capital Equipment	1,724,456	1,178,175	1,001,135	1,001,135	990,000	900,000			
CIP	9,692,697	15,085,000	20,952,000	18,001,000	28,857,000	27,287,000			
Total	32,415,746	37,877,534	44,477,116	41,797,253	53,613,948	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	8,415,928		221,246	2.7%		432,439	5.4%
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	8,862,551		219,016	2.5%		379,452	4.5%
	PAYROLL TAXES AND EMPLOYEE BENEFITS											
5110	FICA	619,190	615,628	636,309	628,527	662,463		26,153	4.1%		33,936	5.4%
5120	RETIREMENT CONTRIBUTION	598,985	617,219	627,773	636,349	780,673		152,900	24.4%		144,325	22.7%
5121	DEFERRED COMPENSATION	187,565	179,845	170,560	168,373	217,360		46,800	27.4%		48,987	29.1%
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	1,716,477		(183,826)	-9.7%		(98,477)	-5.4%
5141	DENTAL INSURANCE	46,651	53,233	55,563	55,165	58,270		2,706	4.9%		3,105	5.6%
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	32,468		(4,375)	-11.9%		(1,928)	-5.6%
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	39,516		(3,343)	-7.8%		(750)	-1.9%
5190	VACATION ACCRUED	10,975	15,491	-	-	-		-			-	
	Total	3,670,764	3,972,812	3,876,738	3,833,739	3,982,687		105,949	2.7%		148,948	3.9%
	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	2,618,568		383,446	17.2%		247,333	10.4%
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	3,364,879	371,424	12.4%	179,439	5.6%
	MAINTENANCE									
5410	MAINTENANCE - EQUIPMENT	1,235,063	1,096,049	1,002,665	1,039,443	1,338,978	336,313	33.5%	299,535	28.8%
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	555,618	117,818	26.9%	117,818	26.9%
5423	MAINTENANCE - METERS	162,006	140,033	341,900	354,715	308,200	(33,700)	-9.9%	(46,515)	-13.1%
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	3,523,829	457,918	14.9%	399,176	12.8%
	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	746,950	13,450	1.8%	(40,916)	-5.2%
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	1,611,696	(29,981)	-1.8%	(123,988)	-7.1%
	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	31,450	22,500	251.4%	22,500	251.4%
	Total	163,089	190,255	183,487	244,400	265,561	82,074	44.7%	21,161	8.7%
	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	175,100		102,850	142.4%		96,380	122.4%
	Total	197,920	322,996	397,796	408,602	469,129		71,333	17.9%		60,527	14.8%
	Total Personnel Services	11,792,972	12,254,854	12,520,273	12,316,838	12,845,238		324,965	2.6%		528,400	4.3%
	Total Operating Services	9,487,894	9,622,396	10,163,708	10,675,883	11,111,709		948,001	9.3%		435,827	4.1%
	Total Operating and Maintenance	21,280,866	21,877,250	22,683,981	22,992,721	23,956,948		1,272,967	5.6%		964,226	4.2%
	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	23,766,948		1,242,967	5.5%		971,830	4.3%

ANNUAL BUDGET REQUEST SUMMARY -
FISCAL YEAR 2020

DEPT : 01
EXECUTIVE DIRECTOR

	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	692,843
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	707,843
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	92,554
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	243,086
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

ANNUAL BUDGET REQUEST SUMMARY -
FISCAL YEAR 2020

DEPT : 01
EXECUTIVE DIRECTOR

	EXPENDITURE CLASSIFICATION	FY2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5380	SAFETY SUPPLIES	360	114	625	625	250
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	31,450
	TOTAL COMMUNICATIONS	56,195	43,040	50,787	86,192	111,496
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

ANNUAL BUDGET REQUEST SUMMARY -
FISCAL YEAR 2020

DEPT : 01
EXECUTIVE DIRECTOR

	EXPENDITURE CLASSIFICATION	**FY2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	17,355	17,992	22,729	24,729	21,550
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	46,850
	TOTAL MISCELLANEOUS	27,233	29,486	39,979	45,645	81,500
Total Personnel Services		876,732	853,816	873,495	879,461	950,929
Total Operating Services		526,144	617,530	496,780	593,743	730,676
Total Operating and Maintenance		1,402,876	1,471,346	1,370,275	1,473,204	1,681,605
CONSTRUCTION CREDIT		(114,070)	(123,422)	(70,000)	(75,042)	(70,000)
		1,288,806	1,347,924	1,300,275	1,398,162	1,611,605

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
50	SALARIES						
	5010	SALARIES AND WAGES, REGULAR	409,856	440,063	447,983	447,236	466,809
	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	466,809
51	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	104,676
	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	208,159
52	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
53	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
54	MAINTENANCE						
	5410	MAINTENANCE - EQUIPMENT	1,240	1,240	0	0	0
	5440	MOTOR VEHICLES		0	0	0	0

		EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
		TOTAL MAINTENANCE	1,240	1,240	0	0	0
55	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
56	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
57	PRINTING AND REPRODUCTION						
	5700	PRINTING AND REPRODUCTION	709	0	1,000	600	500
		TOTAL PRINTING AND REPRODUCTION	709	0	1,000	600	500
58	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
59	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	674,969
	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	840,969

ANNUAL BUDGET REQUEST SUMMARY -
FISCAL YEAR 2020

ENGINEERING
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	1,374,840
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	1,406,840
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	218,433
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
5170	UNIFORMS		0	0	(6)	0
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	489,512
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
5390	OTHER	(292)	784	1,200	1,200	1,350
	TOTAL MATERIALS AND SUPPLIES	6,411	12,691	16,315	15,988	17,115
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	185,000
	TOTAL PROFESSIONAL SERVICES	72,097	42,571	187,500	159,513	192,500
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

EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
TOTAL MISCELLANEOUS	2,084	16,242	21,525	18,525	33,535
Total Personnel Services	1,515,104	1,666,393	1,724,393	1,696,776	1,896,352
Total Operating Services	110,924	99,727	267,900	225,766	286,695
Total Operating and Maintenance	1,626,028	1,766,120	1,992,293	1,922,542	2,183,047

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	292,567
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	292,767
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	59,280
5140	HEALTH INSURANCE	37,362	47,962	59,006	46,256	50,334
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	437,795
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

	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	220,250
5590	OTHER	20,755	17,898	50,000	48,264	50,000
	TOTAL PROFESSIONAL SERVICES	161,724	130,356	342,500	450,847	270,250
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	730,561
Total Operating Services		228,041	227,293	458,250	589,522	409,850
Total Operating and Maintenance		756,546	762,783	1,125,892	1,193,421	1,140,411

ANNUAL BUDGET REQUEST SUMMARY
FISCAL YEAR 2020

FINANCE
DEPT : 05

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	417,017
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	417,017
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	59,044
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	137,775
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						

EXPENDITURE CLASSIFICATION		**FY 2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
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
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	554,792
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	902,323

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	435,045
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	439,045
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	64,628
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	149,572
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	435,503
	TOTAL MAINTENANCE	239,071	324,972	342,105	402,586	435,503

	EXPENDITURE CLASSIFICATION	**FY 2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
PROFESSIONAL SERVICES						
5570	CONSULTANTS	80,750	24,682	115,000	87,225	149,000
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	588,617
Total Operating Services		607,380	639,172	752,748	795,673	874,853
Total Operating and Maintenance		1,124,517	1,236,554	1,347,505	1,376,925	1,463,469

	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	1,331,538
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	1,457,662
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	295,096
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	621,882
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	1,573,336
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
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
	TOTAL MATERIALS AND SUPPLIES	1,512,470	1,823,842	1,525,859	1,522,490	1,784,170
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	450,898	292,092	258,830	258,472	308,235
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	1,079,515
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

	EXPENDITURE CLASSIFICATION	**FY 2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
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
Total Personnel Services		2,111,524	2,018,440	1,946,733	1,903,895	2,079,544
Total Operating Services		3,112,044	3,438,677	3,295,588	3,258,850	3,420,364
Total Operating and Maintenance		5,223,568	5,457,117	5,242,321	5,162,745	5,499,908

	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	1,572,740
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	1,681,740
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	390,888
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	793,013
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						

EXPENDITURE CLASSIFICATION		**FY 2017 Actual**	**FY 2018 Actual**	**FY 2019 Budget**	**FY 2019 Forecast**	**FY 2020 Request**
5320	SMALL TOOLS	6,031	5,137	5,955	24,670	10,000
5330	SUBSCRIPTIONS			0	0	0
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	0
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	549,626

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
PROFESSIONAL SERVICES						
5570	CONSULTING					125000
5530	INSURANCE	9,775	8,837	8,400	8,793	7,680
	TOTAL PROFESSIONAL SERVICES	9,775	8,837	8,400	8,793	7,680
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
MISCELLANEOUS						
5910	DUES AND MEMBERSHIPS	205	1,521	1,400	1,730	1,730
5990	OTHER	3,424	1,426	500	500	60,500
	TOTAL MISCELLANEOUS	3,629	2,947	1,900	2,230	62,230
Total Personnel Services		2,219,500	2,523,010	2,594,153	2,579,167	2,474,753
Total Operating Services		874,327	815,633	820,561	859,730	936,662
Total Operating and Maintenance		3,093,827	3,338,643	3,414,715	3,438,897	3,411,415
CONSTRUCTION CREDIT		(155,777)	(100,491)	(90,000)	(90,733)	(90,000)
		2,938,050	3,238,152	3,324,715	3,348,163	3,321,415

	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	1,317,042
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	1,437,342
FRINGE BENEFITS						
5110	FICA	106,455	107,787	108,227	108,316	103,870
5120	RETIREMENT CONTRIBUTION	104,136	108,441	106,105	109,411	121,521
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	296,099
5141	DENTAL INSURANCE	7,977	8,827	9,599	9,113	9,474
5150	DISABILITY INSURANCE	5,736	6,026	6,377	5,677	5,438
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	6,759
5190	VACATION ACCRUED	11,608	(4,596)	0	0	0
	TOTAL FRINGE BENEFITS	608,950	652,392	610,500	627,076	619,336
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	805,632
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
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	1,071,577
MAINTENANCE						
5410	MAINTENANCE - EQUIPMENT	543,854	477,745	401,730	378,385	595,240
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	1,214,240
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
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	2,056,679
Total Operating Services		2,922,454	2,630,788	2,907,618	3,187,506	3,266,337
Total Operating and Maintenance		4,917,820	4,715,742	5,010,844	5,276,953	5,323,016

ANNUAL BUDGET REQUEST SUMMARY -
FISCAL YEAR 2020

DEPARTMENT : 22
SEWER COLLECTION

	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	515,487
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	555,487
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	144,725
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	282,556
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
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
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	143,045
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	243,045
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

	EXPENDITURE CLASSIFICATION	FY 2017 Actual	FY 2018 Actual	FY 2019 Budget	FY 2019 Forecast	FY 2020 Request
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
Total Personnel Services		807,282	782,787	796,040	787,103	838,042
Total Operating Services		569,231	557,985	588,442	582,545	663,143
Total Operating and Maintenance		1,376,513	1,340,772	1,384,482	1,369,648	1,501,185
CONSTRUCTION CREDIT		(12,426)	(38,978)	0	(31,828)	(30,000)
		1,364,087	1,301,794	1,384,482	1,337,820	1,471,185

Item No.	Description	Dept	FY19 Budget	FY20 Draft Budget	Notes regarding revised FY20 Draft
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,	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 deferred
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	26,250	Reduced by $26,250
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	50,000	Reduced by $25,000
22	Other (fit for drug screens, fitness for duty testing, background investigations,	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	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	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	
38	Unidirectional flushing	Water Distribution		-	$125,000 deferred
39	Land application permit renewal	Wastewater Treatment		5,000	
	Total		1,641,677	1,611,696	

Equipment Description	FY 2020 Request	Notes
Engineering and Planning		
2019 F-150 XL 4x4 SuperCab	28,500	Replaces 1998 Ford F150 used by Engineering Technicians that is approaching the end of its useful life and does not fit the 3 person crew that is typically used for survey/gps work.
Survey grade GPS and data logger	26,500	Current unit is becoming obsolete and won't be able to download satelite data. Will no longer be able to get parts or service on current model. Engineering technicians and GIS Program Manager use the equipment to get locations of water and sewer infrastructure for uploading to GIS data management system.
Engineering and Planning total	55,000	
Information Technology		
Three (3) Hyperconverged Servers for Data Center	80,000	Existing data servers are going end-of-support
Fabric Switches for new servers	20,000	Required for new servers
Network and Storage upgrades for WWTP Servers	15,000	Increasing processing requirements require upgrade to existing servers. Existing servers are not end-of-support
Network Intrusion Prevention/Detection solution	25,000	Increase network security through a hardware/software solution to monitor network traffic
Information Technology total	140,000	
Water Supply and Treatement		
2020 F-250 Extended Cab 4X4 with service body	44,000	This is a replacement based on Condition Assessment and Replacement schedule. This is replacement of vehicle # 11_10 which is a 1998 Dodge Ram 3500 service body with 133,943 miles.
Water Supply and Treatement total	44,000	
Water Distribution		
Tandem Dump Truck	150,000	Replace 12-36, truck has metal fatigue issues
F-550 Flat bed truck	60,000	Additional truck for valve crew, truck only to mount existing valve trailer unit
Water Distribution total	210,000	
Wastewater Treatment		
Emergency Bypass Pump	190,000	
Generators	35,000	Clayton Road and N. Lakeshore
Online ORP/Nitrate Monitoring	25,000	Process optimization
Biosolids Tanker	75,000	Replace tanker
Biosolids Road Tractors	150,000	Replace one of the two aging road tractors
Microscope	7,000	Implement Biological Monitoring
Wastewater Treatment total	482,000	
Wastewater Collection		
John Deere 5065E Utility Tractor	37,000	Replace 5300 John Deere Tractor with 2,915 hours. Current equipment is costing approximately $
Ibak Push Camera with pan/tilt	21,700	Replace 10 year old Qcues push camera. Recording function does not work and batteries will not charge
Wastewater Collection total	58,700	
Grand total	989,700	

Department requests that have been deferred to future year

Equipment Description	FY 2020 Request	Notes
Wireless Radio equipment and installation to create OWASA-owned wireless network connection between WWTP and JFR.	45,000	Existing network connectivity between WWTP and JFR is leased Time Warner fiber. Wireless radio would enable vastly increased bandwitdh to improve operations (backups, file retrieval, remote SCADA access, etc) and provide resiliency through redundant network paths. We would reduce but not eliminate the Time Warner connection.
305E-2 Mini Excavator	69,000	Small excavator for service installations and small projects
Mid-sized SUV	28,000	Replace aging Tarus with 4x4 SUV
Chevrolet Tahoe 4x4	40,000	Replace 1999 Ford Explorer, 122,000 miles
4X4 Tool Truck	50,000	4x4 Truck for New Maintenance Mechanic (additional position has been deferred)
Total deferrals	232,000	

Draft FY 2020 CIP

270-04	Jordan Lake Raw Water Supply Allocation	$ 5,000	Ongoing required payment
270-09	Quarry Reservoir Development	$ 15,000	Ongoing required payment
270-11	University Lake Pump Station Improvements	$ 1,998,000	Replacement of aging pumps #1 - #3 with new, more efficient pumps and variable frequency drives (VFD's)
270-28	University Lake Permanganate Facility	$ 200,000	New chemical storage and feed facility to improve water treatment (taste and odor)
271-05	Cane Creek Raw Water Transmission Main Study	$ 25,000	Condition assessment of raw water main
272-37	WTP Belt Filter Press Replacement	$ 300,000	Replacement of existing, aging dewatering equipment that does not have redundancy
272-38	WTP Sedimentation Basin Rehabilitation	$ 1,313,000	Completion of the concrete rehabilitation of sedimentation basin walls and channels
272-39	Concrete Condition Assessment	$ 75,000	Continuation of prioritized assessment of concrete deterioration at various water and wastewater facilities, including assessment of WTP clearwell
272-42	WTP Finished Water Pump (FWP) Improvements	$ 904,000	Improvements to FWP #5 VFD and electrical, and FWPs #4 and #6 pumps/motors
272-46	WTP Chemical Facility Improvements	$ 517,000	Upgrades to several chemical feed systems as identified by WTP/WWTP risk evaluation and other needs to improve reliability and treatment
272-51	HVAC Replacement Program	$ 100,000	Age, condition, and energy efficiency-based equipment replacement based on Advanced Energy audit
273-09	Barbee Chapel Road Booster Pump Station	$ 60,000	Study to re-evaluate location, scope, timing, and cost estimate for replacing the Durham interconnection at Highway 54
275-15	Reimbursement for Distribution System Improvements	$ 50,000	Reimbursements for water main upgrades constructed as part of external projects
275-20	Fordham Service Road Water Main Replacement	$ 1,143,000	Completion of construction along service road south of Fordham Boulevard.
275-21	High Priority Water Main Replacement	$ 2,745,000	FY 2020 funds are primarily for construction of Manning Drive Water Main and Country Club Road Water Main Replacements
275-46	Dobbins Drive Water Main Replacement	$ 1,460,000	Completion of construction; coordinated with Dobbins Drive Interceptor Replacement
275-52	West Cameron Avenue Water Main	$ 298,000	Design and construction; construction to commence in summer 2020
275-53	Distribution System Hydraulic Model	$ 100,000	Placeholder funding for on-call modeling, plus FY 2020-2021 update of full hydraulic model
275-77	Galvanized Water Main Replacements	$ 100,000	Funding for ongoing program to replace or abandon 1.6 miles of galvanized water mains
275-88	Kensington Drive Water Main Replacement	$ 1,270,000	Construction of approximately 3500 feet of water main
275-89	Distribution System Prioritization Model	$ 345,000	Completion of study to reprioritize water main capital projects, determine appropriate investment levels, and develop risk mitigation plans.
275-90	Distribution System Sampling Stations	$ 60,000	Installation of additional 41 sampling sites throughout the system
275-92	Jones Ferry Rd Water Main Replacements	$ 580,000	Project to replace aging assets and provide additional resilience for the complex pipe network adjacent to WTP
276-18	Gravity Sewer Rehabilitation	$ 2,200,000	Near-term identified needs for rehabilitation of collection system
276-45	Bolinwood Drive Interceptor	$ 205,000	Capacity improvements as identified by 2010 Collection System Master Plan
276-48	Dobbins Drive Interceptor Replacement	$ 1,400,000	Completion of construction to increase collection system capacity; coordinated with Dobbins Drive Water Main project
276-53	Creek Crossing Access Improvements	$ 50,000	Sitework to improve vehicular access as needed to maintain facilities (primarily aerial sewer crossings at creeks and streams)
276-57	Gravity Sewer Hydraulic Model	$ 460,000	Updated capacity analysis and master planning for the collection system
276-58	Prince Street Service Replacement	$ 40,000	Completion of construction; design to be complete in FY 2019
277-29	Rogerson Drive Force Main - Northern Routing Study	$ 40,000	Completion of study to evaluate potential future route of redundant force main and alternatives for crossing Highway 54
277-31B	Rogerson Drive Pump Station Rehabilitation Phase 2	$ 553,000	Completion of construction including electrical, HVAC, and odor control upgrades to improve reliability and odor control at the second largest wastewater pump station
277-40	Pump Station Operational Assessments	$ 25,000	Field assessments on select pumping stations to identify potential efficiency improvements
278-11	WWTP Near-Term Asset Rehabilitation	$ 428,000	Funding for minor rehabiltation at WWTP including Switchgear Eletrical study; Filter Building controls upgrade; bridge surveillance; contingency funds for unplanned needs
278-46	Comprehensive Coatings Program	$ 50,000	Continuation of programmatic coating of priority equipment and structures to protect assets and extend their useful life
278-51	WWTP Solids Thickening Improvements	$ 5,176,000	Replace aging gravity belt thickeners with new rotary drum thickeners
278-54	WWTP Intermediate Pump Station Rehabilitation	$ 113,000	Completion of construction of electrical and HVAC upgrades and VFD installation
278-68	Water and Wastewater Facilities Building Envelope Rehabilitation	$ 100,000	Roof replacements as prioritized and scoped from a comprehensive assessment
278-72A	WWTP Secondary Clarifier (SC) Rehabilitation	$ 651,000	Funding is for rehabilitation of concrete and aging equipment in SC #2 and #3
278-78A	WWTP Fermenter Improvements	$ 391,000	Replacement of mechanical equipment recommended following FY 2019 tank inspection
278-80	WWTP Chemical Building, Chemical Storage, and Spray Water Improvements	$ 570,000	Construction of improvements to aging chemical facilities and other improvements
278-82	WWTP Headworks Rehabilitation	$ 1,132,000	Construction to rehabilitate concrete in a critical WWTP structure and add redundancy
278-84	WWTP Security Improvements	$ 50,000	Completion of security improvements identified by a FY 2019 study
278-85	WWTP Gas Monitoring Systems	$ 90,000	Replacement of critical safety monitoring equipment within two plant structures
270-16	Cane Creek Pump Station Improvements	$ 50,000	Electrical improvements and addition of VFD's

Draft FY 2020 CIP

272-49	WTP and WWTP Supervisory Control and Data Acquisition (SCADA) Master Plan	$	100,000	Commencement of master planning for control systems at both plants as recommended by WTP/WWTP Risk Evaluation
276-59	High Priority Manhole Installations	$	15,000	Design/permitting of manhole installations at four locations
278-50	WWTP Warehouse	$	50,000	Planning for future facility to improve operational efficiency
278-78	WWTP Digesters #3 and #4 Condition Assessment	$	50,000	Condition assessment of roof; the results may determine timing of future major digester rehabilitation project
272-new	Near Term Funding for Water Facility Assets	$	100,000	Funding for minor rehab projects at WTP including Trac-Vac system replacement; contingency funds for unplanned needs
272-new	Repair/Rehabilitation of WTP Front Entry	$	50,000	Study and preliminary design of structural repairs to front entryway at WTP
272-new	WTP Electrical Distribution Improvements	$	75,000	Conversion of remainder of plant distribution system to an updated voltage standard; highest priority/risk identified in the WTP/WWTP Risk Evaluation
275-new	Bolinwood Bridge Water Main Replacement	$	100,000	Design and commencement of construction for water main replacement to repair damage from Hurricane Florence
275-new	Westwood Neighborhood Water and Sewer Rehabilitation	$	50,000	Planning, including community engagement and alternatives analysis
275-new	Near-term Funding for Water Distribution System - Rehabilitation	$	750,000	Large valve repair/replacement projects identified from valve inspections
278-new	Offsite Biosolids Storage Improvements	$	80,000	Evaluation of potential mixing improvements as well as improvements to process monitoring

Subtotals

Projects underway as of March 21, 2019	$	27,387,000
Projects not underway, but included in the FY19-23 CIP	$	265,000
New projects for FY 20	$	1,205,000
Total FY 2020	**$**	**28,857,000**

Draft FY 2020 - 2024 CIP

CIP No.	Project	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
270-04	Jordan Lake Raw Water Supply Allocation	$ 5,000	$ 5,000	$ 5,000	$ 5,000	$ 5,000	**$ 25,000**
270-09	Quarry Reservoir Development	$ 15,000	$ 15,000	$ 15,000	$ 15,000	$ 15,000	**$ 75,000**
270-11	University Lake Pump Station Improvements	$ 1,998,000	$ -	$ -	$ -	$ -	**$ 1,998,000**
270-16	Cane Creek Pump Station Improvements	$ 50,000	$ 50,000	$ 800,000	$ 1,200,000	$ -	**$ 2,100,000**
270-28	University Lake Permanganate Facility	$ 200,000	$ 1,854,000	$ -	$ -	$ -	**$ 2,054,000**
270-29	University Lake Fishing Pier and Boat Launch	$ -	$ -	$ 70,000	$ -	$ -	**$ 70,000**
270-30	Cane Creek Dam Rehabilitation	$ -	$ 50,000	$ 500,000	$ -	$ -	**$ 550,000**
270-31	Cane Creek Resurfacing	$ -	$ -	$ 125,000	$ -	$ -	**$ 125,000**
270-new	Jordan Lake Western Intake Projects	$ -	$ 150,000	$ 150,000	$ 150,000	$ 150,000	**$ 600,000**
271-05	Cane Creek Raw Water Transmission Main Study	$ 25,000	$ 100,000	$ -	$ -	$ -	**$ 125,000**
270-new	Near Term Funding for Water Facility Assets	$ 100,000	$ 100,000	$ 125,000	$ -	$ -	**$ 325,000**
272-10	Long Term Funding for Water Facility Assets	$ -	$ -	$ -	$ 2,939,000	$ 2,514,000	**$ 5,453,000**
272-37	WTP Belt Filter Press Replacement	$ 300,000	$ 2,451,000	$ -	$ -	$ -	**$ 2,751,000**
272-38	WTP Sedimentation Basin Rehabilitation	$ 1,313,000	$ -	$ -	$ -	$ -	**$ 1,313,000**
272-39	Concrete Condition Assessment	$ 75,000	$ 75,000	$ -	$ -	$ -	**$ 150,000**
272-42	WTP Finished Water Pump Improvements	$ 904,000	$ 400,000	$ -	$ -	$ -	**$ 1,304,000**
272-46	WTP Chemical Facility Improvements	$ 517,000	$ 3,704,000	$ -	$ -	$ -	**$ 4,221,000**
272-49	WTP and WWTP Supervisory Control and Data Acquisition (SCADA) Master Plan	$ 100,000	$ 100,000	$ -	$ -	$ -	**$ 200,000**
272-51	HVAC Replacement Program	$ 100,000	$ 50,000	$ 180,000	$ -	$ -	**$ 330,000**
272-new	Repair/Rehabilitation of WTP Front Entry	$ 50,000	$ -	$ 350,000	$ -	$ -	**$ 400,000**
272-new	WTP Electrical Distribution Improvements	$ 75,000	$ 150,000	$ 3,500,000	$ -	$ -	**$ 3,725,000**
273-09	Barbee Chapel Road Booster Pump Station	$ 60,000	$ -	$ -	$ -	$ -	**$ 60,000**
274-14	Storage Tank Water Quality Monitors	$ -	$ -	$ 100,000	$ -	$ -	**$ 100,000**
275-15	Reimbursement for Distribution System Improvements	$ 50,000	$ 150,000	$ 150,000	$ -	$ -	**$ 350,000**
275-20	Fordham Service Road Water Main Replacement	$ 1,143,000	$ -	$ -	$ -	$ -	**$ 1,143,000**
275-20	Long Term Funding for Water Distribution System Assets	$ -	$ -	$ -	$ 4,990,000	$ 5,240,000	**$ 10,230,000**
275-21	High Priority Water Main Replacement Program	$ 2,745,000	$ 2,509,000	$ 1,034,000	$ 3,000,000	$ 3,247,000	**$ 12,535,000**
275-46	Dobbins Drive Water Main Replacement	$ 1,460,000	$ 600,000	$ -	$ -	$ -	**$ 2,060,000**
275-52	West Cameron Avenue Water Main Replacement	$ 298,000	$ 2,777,000	$ -	$ -	$ -	**$ 3,075,000**
275-53	Distribution System Hydraulic Model	$ 100,000	$ 250,000	$ 30,000	$ 30,000	$ 30,000	**$ 440,000**
275-77	Galvanized Water Main Replacement Program	$ 100,000	$ 200,000	$ 200,000	$ 200,000	$ 200,000	**$ 900,000**
275-88	Kensington Drive Water Main Replacement	$ 1,270,000	$ -	$ -	$ -	$ -	**$ 1,270,000**
275-89	Distribution System Prioritization Model	$ 345,000	$ -	$ -	$ -	$ -	**$ 345,000**
275-90	Distribution System Sampling Stations	$ 60,000	$ -	$ -	$ -	$ -	**$ 60,000**
275-91	MLK Boulevard Water Main Abandonment	$ -	$ -	$ 100,000	$ 1,000,000	$ -	**$ 1,100,000**
275-92	Jones Ferry Road Water Main Replacement	$ 580,000	$ 570,000	$ -	$ -	$ -	**$ 1,150,000**
275-new	Bolinwood Bridge Water Main Replacement	$ 100,000	$ 200,000	$ -	$ -	$ -	**$ 300,000**
275-new	Westwood Neighborhood Water and Sewer Rehabilitation	$ 50,000	$ 50,000	$ -	$ -	$ -	**$ 100,000**
275-new	Near Term Funding for Water Distribution System Assets	$ 750,000	$ 500,000	$ 250,000	$ -	$ -	**$ 1,500,000**
276-17	Gravity Sewer Condition Evaluation	$ -	$ 400,000	$ 400,000	$ -	$ 490,000	**$ 1,290,000**
276-18	Gravity Sewer Rehabilitation Program	$ 2,200,000	$ 2,730,000	$ 2,290,000	$ -	$ -	**$ 7,220,000**
276-18	Long Term Funding for Wastewater Collection System Assets	$ -	$ -	$ -	$ 808,000	$ 1,386,000	**$ 2,194,000**
276-45	Bolinwood Drive Interceptor Replacement	$ 205,000	$ 700,000	$ -	$ -	$ -	**$ 905,000**
276-46	Willow Drive Interceptor Replacement	$ -	$ -	$ 125,000	$ -	$ -	**$ 125,000**
276-48	Dobbins Drive Interceptor Replacement	$ 1,400,000	$ 800,000	$ -	$ -	$ -	**$ 2,200,000**
276-52	Rocky Branch Interceptor Replacement	$ -	$ 62,000	$ 706,000	$ -	$ -	**$ 768,000**
276-53	Creek Crossing Access Improvements	$ 50,000	$ 563,000	$ 263,000	$ -	$ -	**$ 876,000**
276-57	Gravity Sewer Hydraulic Model	$ 460,000	$ -	$ -	$ -	$ -	**$ 460,000**
276-58	Prince Street Service Replacement	$ 40,000	$ -	$ -	$ -	$ -	**$ 40,000**
276-59	High Priority Manhole Installations	$ 15,000	$ 35,000	$ 80,000	$ -	$ -	**$ 130,000**
276-new	Bolin Creek Interceptor - Estes to Pathway	$ -	$ -	$ 390,000	$ 2,200,000	$ 2,000,000	**$ 4,590,000**
276-new	Bolin Creek Interceptor - Pathway to Homestead	$ -	$ -	$ -	$ -	$ 664,000	**$ 664,000**
277-21	Force Main Condition Evaluation	$ -	$ 50,000	$ -	$ 300,000	$ -	**$ 350,000**
277-29	Rogerson Drive Force Main - Northern Routing Study	$ 40,000	$ -	$ -	$ -	$ -	**$ 40,000**
277-31	Rogerson Drive Pump Station Rehabilitation Phase 2	$ 553,000	$ -	$ -	$ -	$ -	**$ 553,000**
277-37	Knolls Pump Station Rehabilitation/Relocation	$ -	$ 25,000	$ -	$ -	$ -	**$ 25,000**
277-40	Pump Station Operational and Needs Assessments	$ 25,000	$ 60,000	$ -	$ -	$ -	**$ 85,000**
277-41	Rogerson Drive Force Main Gravity Interconnect	$ -	$ -	$ -	$ 25,000	$ -	**$ 25,000**
278-11	Near Term Funding for Wastewater Facility Assets	$ 428,000	$ 150,000	$ -	$ -	$ -	**$ 578,000**
278-11	Long Term Funding for Wastewater Facility Assets	$ -	$ -	$ -	$ 3,666,000	$ 4,436,000	**$ 8,102,000**
278-46	Comprehensive Coatings Program	$ 50,000	$ -	$ -	$ -	$ -	**$ 50,000**
278-50	WWTP Warehouse	$ 50,000	$ 75,000	$ 600,000	$ -	$ -	**$ 725,000**
278-51	WWTP Solids Thickening Improvements	$ 5,176,000	$ 90,000	$ -	$ -	$ -	**$ 5,266,000**
278-54	WWTP Intermediate Pump Station Rehabilitation	$ 113,000	$ -	$ -	$ -	$ -	**$ 113,000**
278-61	WWTP Pavement Improvements	$ -	$ -	$ -	$ 25,000	$ -	**$ 25,000**
278-68	Water and Wastewater Facilities Building Envelope Rehabilitation	$ 100,000	$ 400,000	$ 400,000	$ 400,000	$ -	**$ 1,300,000**
278-72	WWTP Secondary Clarifier Rehabilitation	$ 651,000	$ -	$ -	$ -	$ -	**$ 651,000**
278-75	WWTP Facilities Planning	$ -	$ 150,000	$ 150,000	$ -	$ -	**$ 300,000**
278-78	WWTP Fermenter Improvements	$ 391,000	$ 365,000	$ -	$ -	$ -	**$ 756,000**
278-78	WWTP Digester #3 and #4 Condition Assessment	$ 50,000	$ -	$ -	$ -	$ -	**$ 50,000**
278-80	WWTP Chemical Building, Chemical Storage, and Spray Water Improvements	$ 570,000	$ -	$ -	$ -	$ -	**$ 570,000**
278-80	WWTP Scum Pump Station Rehabilitation	$ -	$ -	$ 53,000	$ 177,000	$ -	**$ 230,000**
278-82	WWTP Headworks Rehabilitation	$ 1,132,000	$ -	$ -	$ -	$ -	**$ 1,132,000**
278-84	WWTP Security Improvements	$ 50,000	$ 50,000	$ -	$ -	$ -	**$ 100,000**
278-85	WWTP Gas Monitoring Systems	$ 90,000	$ -	$ -	$ -	$ -	**$ 90,000**
278-86	WWTP Primary Clarifier Rehabilitation	$ -	$ 50,000	$ 387,000	$ 1,490,000	$ -	**$ 1,927,000**
278-87	WWTP Flow Monitoring	$ -	$ -	$ -	$ 25,000	$ 125,000	**$ 150,000**
278-new	Offsite Biosolids Storage Improvements	$ 80,000	$ -	$ -	$ -	$ -	**$ 80,000**
278-new	WWTP RAS Pumping Improvements	$ -	$ 150,000	$ 660,000	$ -	$ -	**$ 810,000**
	Recommended FY 2020-2024 CIP	**$ 28,857,000**	**$ 23,965,000**	**$ 14,188,000**	**$ 22,645,000**	**$ 20,502,000**	**$ 110,157,000**

Projects underway as of March 21, 2019

Projects not underway, but included in the FY19-23 CIP

New project; not identified in FY 2019-2023 CIP

Agenda Item

- Review Human Resources Committee Recommendation on Retiree Health Insurance Benefit

Background

- Based on a 2014 analysis that indicated our retiree health benefit is more generous than OWASA's peers in the employment market, the Board wants to consider optional approaches to helping employees pay for health care costs in retirement.

- The Board tasked the Human Resources Committee with analyzing optional approaches and making a recommendation to the Board.

- Having met to discuss and review analyses, the Committee recommends that OWASA, at a to-be-determined future date, discontinue offering the current retiree health benefit to employees hired after the to-be-determined date.

- New employees would be eligible to participate in a medical savings account. This type of plan is in-line with plans offered by our employment-market peers.

- Existing employees would continue to be eligible for the current benefit.

- While costs are projected to increase during the initial years after implementation, costs will decrease over the long-term.

Action Needed

- Review information and provide guidance to the Human Resources Committee and staff.

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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

MEMORANDUM

TO: Board of Directors

THROUGH: Ed Kerwin

FROM: Stephanie Glasgow and Stephen Winters, CPA

DATE: March 22, 2019

SUBJECT: Review Human Resources Committee Recommendation on Retiree Health Insurance Benefit

Purpose and background

In 2014, consultants analyzing OWASA's compensation and benefits programs determined that two of our benefit plans are not in sync with the employment market. In summary: our deferred compensation (457) plan benefit plan is below market, whereas our retiree health benefit plan is above market. Based on recommendations in the report, the Board considered changes to our retiree health benefit and deferred compensation (457) plans. The Board ultimately decided to defer action and directed the Human Resources Committee to work with staff to consider options, and to make a recommendation to the Board of Directors.

The Human Resources Committee met on February 5 and March 18 of 2019 to discuss these subjects and develop a recommendation for the Board of Directors. This memo covers the Committee's recommendation regarding OWASA's retiree health insurance benefit.

OWASA's Current Retiree Health Benefit

In the current retiree health insurance plan, OWASA pays a percentage of the health insurance premiums for pre-65-year-old retirees and provides a Medicare Supplement for post-65-year-old retirees. An employee's age and years of service determine the percentage of premium paid by OWASA.

Years of Service	Age	Percentage of Premium (Pre-65) or Supplement (Post-65) Paid by OWASA
10 years	60	50%
15 years	60	75%
20 years	60	100%
30 years	Any age	100%

Pre-65-year-old retirees stay on OWASA's group health plan. Post-65-year-old retirees receive a Medicare Supplement where costs vary based on the plan chosen by the retiree (OWASA is not involved in the employee's decision).

Human Resources Recommendation

As shown in Appendix A, most of OWASA peer organizations have terminated retiree health insurance benefit plans like the one we currently offer employees. Such plans can be expensive and they create a long-term liability. In place of plans like ours, many of our peers have implemented a retiree health savings plan to help provide employees with funds for healthcare upon retirement.

A retirement medical savings account is trust account established exclusively to receive after tax contributions on behalf of employees to be used for retiree health care expenses. Earnings on the amounts contributed accumulate on a tax-free basis and are not subject to tax if they are used to pay for eligible medical expenses for employees after the employee retires. Eligible expenses include health insurance plan premiums, Medicare premiums, long-term care insurance premiums and out-of-pocket health expenses after retirement. Funds in these plans are portable; if an employee leaves employment at OWASA, the plan goes with the employee (similar to a 401(k) or 457 retirement plan).

The Human Resources Committee recommends continuing the current retiree health insurance benefit for current employees and, as of a to-be-determined date, provide new employees with a retiree medical savings account. The plan would include an employer and employee contribution. Employees hired after the established date would not be eligible for the current benefit: only the medical savings account. Existing employees would not be eligible for the new, medical savings account plan.

The Committee suggests a plan similar to those offered by our nearby peers:

- Mandatory employee participation
- Employees contribute 2% each pay period up to $1,000 per plan year
- Employer contributes $35 per pay period (26 periods per year) with a maximum of $910 per year
- Total annual RMSA contribution not to exceed $1,910

At OWASA's discretion, the plan may include a vesting schedule for employer contributions. Contribution percentages, fixed amounts and annual limits are determined by OWASA.

The Committee and staff recommend that we present the proposed plan changes to employees, and obtain their input and feedback, prior to the Board making a final decision.

Plan Costs

By continuing to offer the current retiree health benefit to existing employees and offering a new plan to employees hired in the future, long-term costs will decrease but costs in the short-term will rise.

- Costs to provide health insurance generally increase annually.
- The number of employees eligible for the current benefit will decline over time with employee turnover.
- The number of retired employees collecting the benefit of the current plan will decline as fewer will be alive to receive it.
- As the number of employees and retirees participating in the new benefit plan increase, costs, as compared to continuing with the current plan, will decline.

See Appendix B for further details about projected costs of implementing the Committee's recommendation.

Action Requested

Review information and provide guidance to the Human Resources Committee and staff.

The following motion is provided below for the Board's consideration.

Motion

The Board of Directors authorizes staff to present the changes to OWASA's retiree health benefit described in the March 28, 2019 Board meeting agenda item 9 to employees for their input and feedback in anticipation of the Board making a final decision no later than June 2019.

Stephen Winters, CPA
Director of Finance and Customer Service

Stephanie Glasgow
Director of Human Resources and Safety

Attachments

Appendix A
Retiree Health Benefit Plan Comparative Information

<table>
<tr><th>Entity</th><th>Retiree Benefits</th></tr>
<tr><td>Cape Fear Public Utility Authority</td><td>Cape Fear Public Utility Authority formed in July 2008 from a merger of the City of Wilmington and New Hanover County. Existing employees hired prior to July 2008 are eligible for individual health polices until age 65. If hired after July 2008, no retiree benefits available.</td></tr>
<tr><td>City of Durham</td><td>Employees hired prior to July 1, 2008 are eligible to participate in the medical benefits up to age 65. Those hired after July 1, 2008 must participate in a Retirement Health Savings (RHS) plan by contributing 2% each pay period up to $1,000 per plan year. The City of Durham contributes $35.00 per pay period with a maximum of $910 per year. The total annual RHS contribution will not exceed $1,910 for the plan year. The plan includes a vesting schedule for employer contributions.
<table>
<tr><th>Hire Date</th><th>10 Years of Service</th><th>15 Years of Service</th><th>20+ Years of Service</th></tr>
<tr><td>Prior July 2008</td><td>Active Employee Cost + 50% of City Cost</td><td>Active Employee Cost + 25% of City Cost</td><td>Pays Active Employee Cost</td></tr>
<tr><td>After July 2008</td><td>50% Vested</td><td>75% Vested</td><td>100% Vested</td></tr>
</table></td></tr>
<tr><td>Greenville Utilities Commission</td><td>Retirees remain on the group plan until age 65 and may participate in Medicare Supplemental Plan and Medicare Part-D at the same percentage based on the eligibility schedule below.
<table>
<tr><th>Years of Service</th><th>Base Plan Contribution Percentage Age 55 - 59</th><th>Base Plan Contribution Percentage Age 60 - 64</th></tr>
<tr><td>20 – 24 Years</td><td>50% for retiree</td><td>65% for retiree</td></tr>
<tr><td>25 Years or more</td><td>75% for retiree</td><td>95% for retiree</td></tr>
</table></td></tr>
</table>

<table>
<tr><th>Entity</th><th>Retiree Benefits</th></tr>
<tr><td>Orange County</td><td>If hired on or before June 30, 2012 retirees must have worked 10 years as permanent employees for Orange County. If hired after, retirees must have worked 20 years as permanent employees. After age 65, Orange County pays for Medicare Supplement Plan and Part D at same percentage.

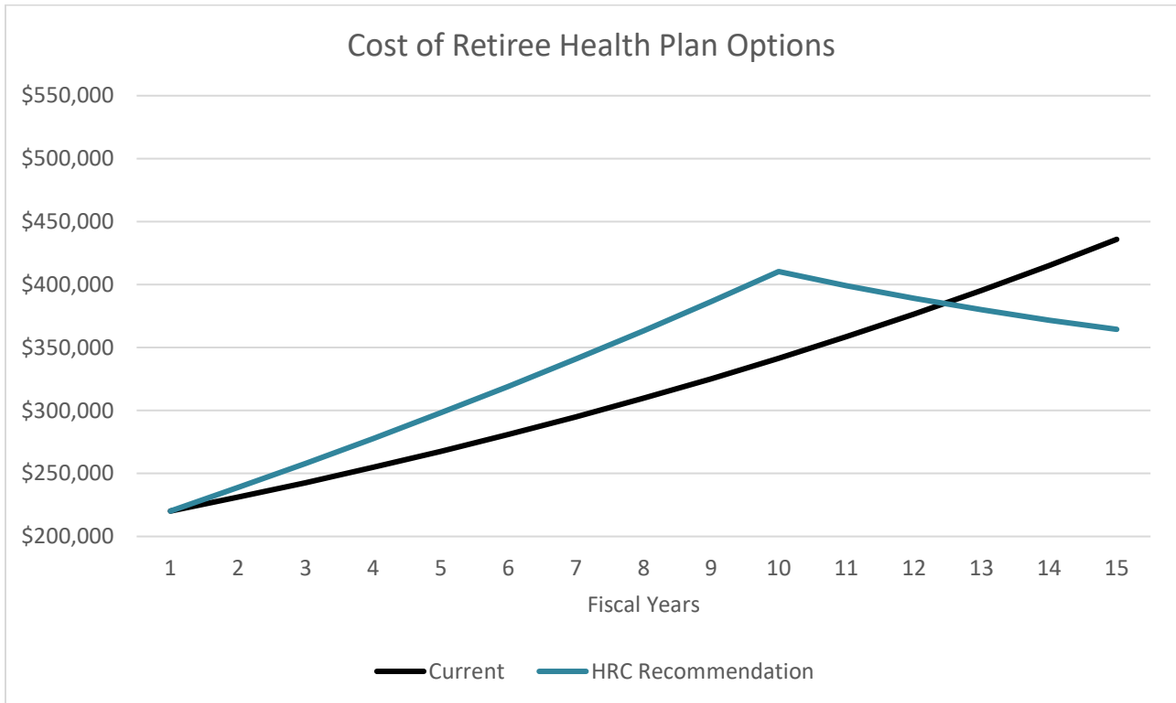
<table>
<tr><th>Hire Date</th><th colspan="2">Before* - 6/30/2012</th><th colspan="2">7/1/2012 and later</th></tr>
<tr><td>Age</td><td>Under age 65</td><td>65 or older</td><td>Under age 65</td><td>65 or older</td></tr>
<tr><td>Years of Service (Minimum)</td><td>10</td><td>10</td><td>20</td><td>20</td></tr>
<tr><td>Retiree Coverage</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Age</td><td>Under age 65</td><td>65 or older</td><td>Under age 65</td><td>65 or older</td></tr>
<tr><td>Years of Service (Minimum)</td><td>n/a</td><td>5</td><td>n/a</td><td>10</td></tr>
<tr><td>Retiree Coverage</td><td>n/a</td><td>50%</td><td>n/a</td><td>50%</td></tr>
</table>

*Prior to 7/1/2008, County subsidized the cost of retiree dependent health premiums.</td></tr>
<tr><td>Town of Carrboro</td><td>If hired before July 1, 2007 the retiree may remain on the group health plan until age 65 at which time they participate in a Medicare Supplement Plan based on the same eligibility schedule. If hired after July 1, 2007 the same schedule applies but retiree receives a monetary stipend for their own plan. The stipend amount is based on the current active employee individual premium rate.

<table>
<tr><th>Years of Service</th><th>Percentage
Insurance Premium or Stipend Amount</th></tr>
<tr><td>10 – 14 Years</td><td>50%</td></tr>
<tr><td>15 – 19 Years</td><td>75%</td></tr>
<tr><td>20 or more Years</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Town of Cary</td><td>Retirees with 15 years of service are eligible for the Town to subsidize 50% of the individual rate. Each additional year of service beyond 15 years increases the percentage of the subsidy by 5%, with a maximum subsidy of 100% for 25 years of service. When the retiree is no longer covered by the group health insurance plan due to coverage under Medicare or some other form of a Federal Government-sponsored health insurance program, the Town will continue to provide a subsidy to the retiree to be applied to the cost of the retiree's Medicare supplemental plan, Part D prescription drug plan, Town-sponsored group vision plan, and Town sponsored group dental plan, or any other applicable health-related supplemental plan. The amount of the subsidy applied toward these plans shall not exceed 100% of the amount due each month to keep these plans in force, will not change more than once each fiscal year, and will never exceed the amount of the subsidy provided to the retiree still active on the Town's group health insurance plan. The retiree is responsible for paying any balance due after the Town's subsidy (if applicable) has been applied. Current, monthly subsidy amount is $718.</td></tr>
</table>

<table>
<tr><th>Entity</th><th>Retiree Benefits</th></tr>
<tr><td>Town of Chapel Hill</td><td>Retirees hired prior to July 1, 2010 receive health insurance or Medicare Supplement premiums paid by employer on a vested schedule based on their time in service. If hired after July 2010, enrollment is mandatory in a Retirement Health Savings (RHS) plan with employee contributions of 1% of compensation, and the Town contributes $35 each pay date (26 pay periods). The plan includes a vesting schedule for employer contributions.
<table>
<tr><th>Hire Date</th><th>5 Years of Service</th><th>10 Years of Service</th><th>15 Years of Service</th><th>20+ Years of Service</th></tr>
<tr><td>Prior July 2010</td><td>25% of Premiums Paid by Town</td><td>50% of Premiums Paid by Town</td><td>75% of Premiums Paid by Town</td><td>100% of Premiums Paid by Town</td></tr>
<tr><td>After July 2010</td><td>25% Vested</td><td>50% Vested</td><td>75% Vested</td><td>100% Vested</td></tr>
</table></td></tr>
<tr><td>Town of Hillsborough</td><td>The retiree may continue to receive health insurance coverage comparable to that being provided for regular employees without cost either for the life of the retiree or until eligible for Medicare. No post-65 benefits available.
<table>
<tr><th>Hire Date</th><th>Minimum Age</th><th>Continuous service with Town</th></tr>
<tr><td>Before Feb. 2009</td><td>55</td><td>20</td></tr>
<tr><td>After Feb. 2009</td><td>60</td><td>30</td></tr>
</table></td></tr>
</table>

Appendix B



Cost of Retiree Health Plan Options															
Year >>	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Current	220,000	231,000	243,000	255,000	268,000	281,000	295,000	310,000	325,000	342,000	359,000	377,000	395,000	415,000	436,000
HRC Rec	220,000	239,000	258,000	278,000	298,000	319,000	341,000	363,000	386,000	410,000	399,000	389,000	380,000	372,000	364,000

Agenda Item

- Review Human Resources Committee Recommendation on Deferred Compensation (457) Plan Benefit

Background

- Based on a 2014 analysis that indicated our deferred compensation (457) plan benefit plan is below market, the Board wants to consider options for improving the competitiveness of our 457 plan.

- The Board tasked the Human Resources Committee with analyzing optional approaches and making a recommendation to the Board.

- Having met to discuss and review analyses, the Committee recommends that OWASA, at a to-be-determined future date, discontinue offering the current 457 plan benefit and instead, offer a plan that includes a percentage-of-salary based contribution.

- The attached memo includes information the Committee analyzed included projected costs.

Action Needed

- Review information and provide guidance to the Human Resources Committee and staff.

March 28, 2019

ORANGE WATER AND SEWER AUTHORITY

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

MEMORANDUM

TO: Board of Directors

THROUGH: Ed Kerwin

FROM: Stephanie Glasgow and Stephen Winters, CPA

DATE: March 22, 2019

SUBJECT: Review Human Resources Committee Recommendation on Deferred Compensation (457) Plan Benefit

Purpose and background

In 2014, consultants analyzing OWASA's compensation and benefits programs determined that two of our benefit plans are not in sync with the employment market. In summary: our deferred compensation (457) plan benefit plan is below market, whereas our retiree health benefit plan is above market. Based on recommendations in the consultants' report, the Board considered changes to our retiree health benefit and deferred compensation (457) plans. The Board ultimately decided to defer action and directed the Human Resources Committee to work with staff to consider options, and to make a recommendation to the Board of Directors.

The Human Resources Committee met on February 5 and March 18 of 2019 to discuss these subjects and develop a recommendation for the Board of Directors. This memo covers the Committee's recommendation regarding OWASA's deferred compensation (457) plan benefit.

Analysis of 457 Plan Options

One of the goals of the Committee is to improve the competitiveness of OWASA's 457 plan while ensuring that no current employees will have a reduction in their current benefit. The following analysis compares the benefit offering and cost of five optional approaches to OWASA's deferred compensation benefit. Information about the benefit offered by other local entities is presented in Appendix A.

OWASA's Current Deferred Compensation (457) Plan

The benefit provided by OWASA's current 457 plan is shown below. Contributions have not been adjusted in almost 20 years.

OWASA's Annual Contribution to Employees' 457 Accounts (amount)					
	Employee's Tenure				
	0 to < 4 Years	4 to 9 Years	10-14 years	15-19 Years	20+ Years
Bi-weekly	$0	$40	$60	$80	$100
Annual	$0	$1,040	$1,560	$2,080	$2,600

Options

The majority of local organizations considered peers to OWASA offer deferred compensation benefit plans that provide a percentage-of-salary based employer contribution (See Appendix A). The Committee considered options that ensure the benefit provides meaningful savings for all employees' retirements needs. Features of each option are shown in Chart 1 below. Estimated costs are shown in Chart 2.

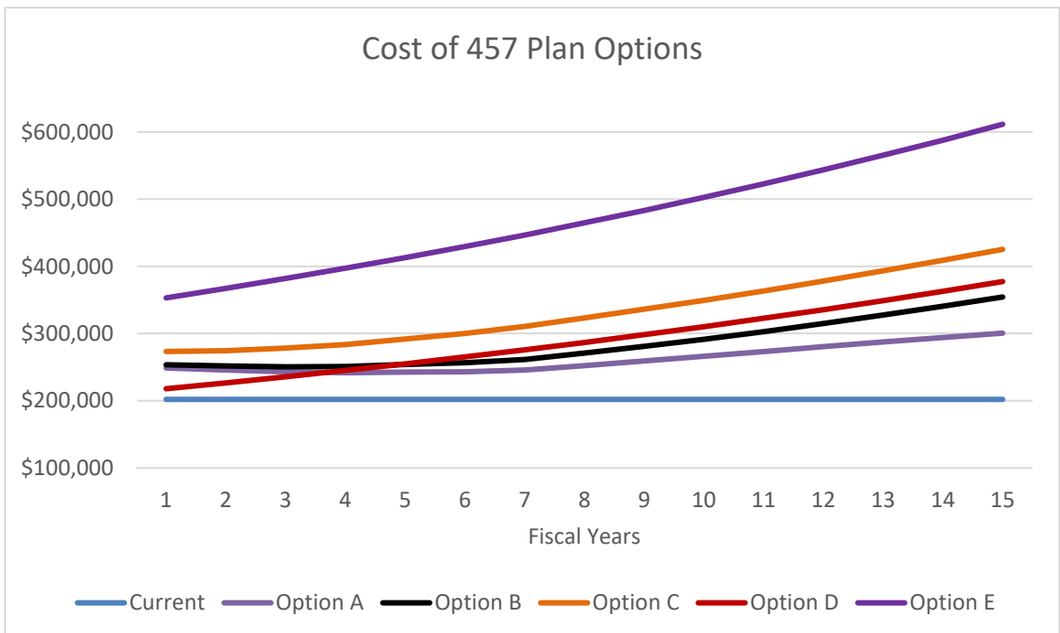
Comparison of Benefit Options						
	Current	**Option A**	**Option B**	**Option C**	**Option D**	**Option E**
Plan for existing employees	Current plan	May choose current or new plan	May choose current or new plan	May choose current or new plan	New plan	New plan
Plan for new employees	Current plan	New plan	New plan	New plan	New plan	New plan
Eligibility	Employees are eligible for an employer contribution after four years of service	Recommend employees eligible upon starting employment with OWASA				
Contribution percentage	N/A	2.5%	2.5%	3.0%	2.5%	2.5%
Annual contribution min/max amount	$0 – $2,600	$1,300 / $2,600	$1,300 / none	$1,300[1] / none	$1,300 / none	$2,600 / none
Benefit as percent of salary (year 1 of new approach)	0% - 6.5%	1.7% – 6.5%	2.5% - 6.5%	3.0% - 6.5%	2.5% - 3.7%	2.5% - 7.4%
Market competitive	Below market for many	Below market for some employees	Competitive at lower end of market (2% to 5%) benefit range	Competitive at lower end of market (2% to 5%) benefit range	Competitive at lower end of market (2% to 5%) benefit range	Competitive at lower end of market (2% to 5%) benefit range
Required employee contribution	None. Employees may make voluntary contributions.					
Number of **current** employees whose benefit will **decrease** in year one	N/A	None. Employees may choose the plan that benefits them most.	None. Employees may choose the plan that benefits them most.	None. Employees may choose the plan that benefits them most.	51	None. Minimum contribution ensures no loss of benefit.
Number of **current** employees whose benefit will **increase** in year one	N/A	79	83	92	83	110
Number of employees whose benefit will be less than 2.5% in year one	80	11	None	None	None	None

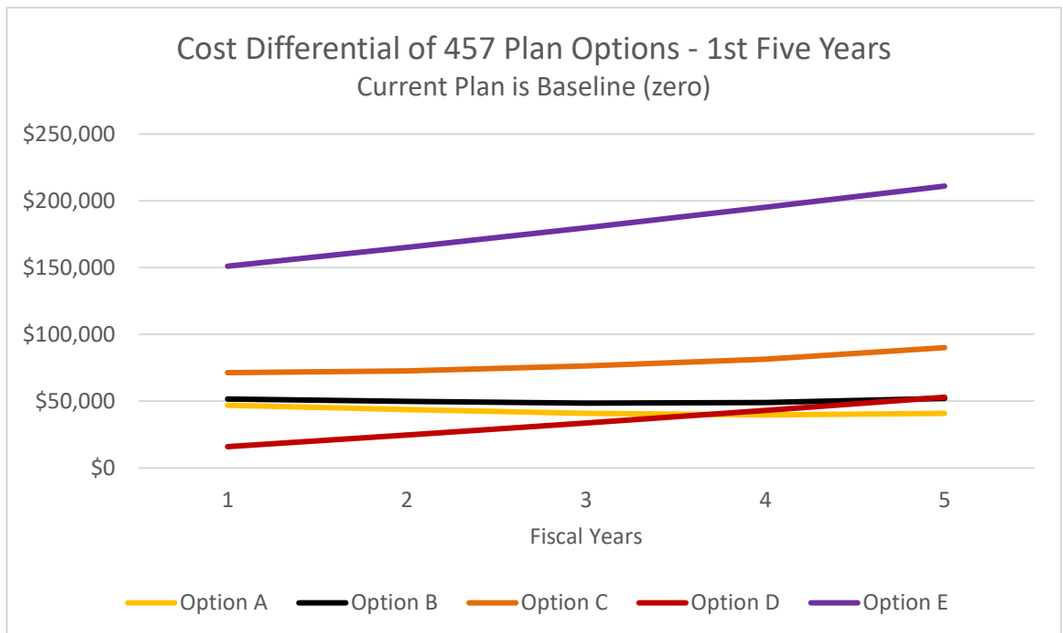
Chart 1

[1] The Committee recommends escalating the minimum contribution ($1,300) annually by the amount of the Board-approved cost of labor adjustment.

Estimated Cost of 457 Plan Options															
Year >>	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Current	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000	202,000
Option A	249,000	246,000	243,000	242,000	243,000	243,000	245,000	252,000	259,000	266,000	273,000	280,000	287,000	294,000	301,000
Option B	254,000	252,000	250,000	251,000	254,000	256,000	261,000	271,000	281,000	292,000	303,000	315,000	328,000	341,000	354,000
Option C	273,000	275,000	278,000	283,000	292,000	300,000	311,000	323,000	336,000	350,000	364,000	378,000	393,000	409,000	425,000
Option D	218,000	227,000	236,000	245,000	255,000	265,000	276,000	287,000	298,000	310,000	323,000	335,000	349,000	363,000	377,000
Option E	353,000	367,000	382,000	397,000	413,000	430,000	447,000	465,000	483,000	502,000	523,000	543,000	565,000	588,000	611,000

Chart 2





Projected costs for the Current plan is based on the average of costs over the last five years.

The following are some of the assumptions used in estimating costs:

1	Total number of employees	134
2	Annual salary increase	4%
3	Annual average number of new hires (based on experience of last five years)	14
4	Annual number of employees dropping off of current 457 plan due to turnover (Options A, B and C). Assume longest tenured employees will be first to turnover.	8
5	Annual cost increase for current 457 plan (projected annual costs are based on last five years' average annual cost)	0%

Observations

Option A

1. To prohibit the loss of benefit by an existing employee, Option A would allow employees to choose the plan that provides the greater benefit. Existing employees would have a window of time (e.g. 30/60 days) to make this one-time decision.
2. While Option A results in no one realizing a benefit reduction, the benefit for 11 employees would be less than 2.5%. The average tenure of these 11 employees is 17 years; annual salaries are each over $100,000.

Options A, B and C

1. These options allow employees to choose the plan that makes the most sense for them. This results in no employees realizing a reduction in their 457 plan benefit.

Options D and E

1. These options eliminate the current 457 benefit. All employees would be covered under the new plans.

Option D

1. This is the only option that would result in a reduction of benefits for existing employees. Fifty-one employees would see a benefit reduction. The average tenure of these 51 employees is 21 years. Annual salaries range from $39,000 to $94,000; all but eight of the 51 have annual salaries of less than $70,000.

Option E

1. This option is the same as Option D but has a minimum annual employer contribution that would be sufficient to ensure no loss of benefit to existing employees. Currently, 28 employees receive the current 457 plan's maximum annual contribution of $2,600; therefore, the minimum contribution for this option is $2,600.

Human Resources Committee Recommendation

The Committee recommends implementing the plan described in Option C.

- Offering a 457 plan that includes employer contributions that are 3% of an employee's salary without requiring an employee matching contribution brings our 457 benefit in-line with peer organizations and provides a more valuable benefit to employees.
- Including a minimum employer contribution amount ensures a meaningful benefit for all employees.
- No employees would realize a reduction in the amount of their 457 benefit.
- A significant number of employees would realize an increase in the amount of their benefit. This assumes employees would be eligible for the benefit upon starting employment with OWASA.
- The Committee recommends escalating the minimum contribution ($1,300) annually by the amount of the Board-approved cost of labor adjustment.

The Committee and staff recommend that we present the proposed plan changes to employees, and obtain their input and feedback, prior to the Board making a final decision. Staff plans to provide the results of employee meetings and request the Board's decision no later than June 2019.

Action Requested

Review information and provide guidance to the Human Resources Committee and staff.

The following motion is provided below for the Board's consideration.

Motion

The Board of Directors authorizes staff to present the deferred compensation plan described as Option C of the March 28, 2019 Board meeting agenda item 10 to employees for their input and feedback in anticipation of the Board making a final decision no later than June 2019.

Stephen Winters, CPA
Director of Finance and Customer Service

Stephanie Glasgow
Director of Human Resources and Safety

Attachment

Appendix A
Deferred Compensation (457) Plan Comparative Information

Organization	Deferred Compensation	Effective	Employee Contribution	Last Update
Town of Chapel Hill	401K - employer 5% contribution	At hire	Not Required	Not sure of exact date but 18+ years ago
Town of Hillsborough	401K - employer 5% contribution	At hire	Not Required	Employer reported "Unknown"
Town of Carrboro	401K - employer 3% contribution	At hire	Not Required	July 1, 2013
Greenville Utilities Commission	401K - employer contributes flat amount $40 per pay period ($1,040 annually)	At hire	Not Required	Employer reported "Unknown"
Cape Fear Public Utility Authority	401K and 457 offered; employer 2% contribution, plus another 2% match if the employee contributes 2% or greater	First of the month following employment	Not Required to receive employer contribution; matching option available	January 1, 2018
Town of Cary	401K and 457/401a plan offered; employer will contribute 5% to employee's choice of 401K or 401a	At hire	Not Required	Not sure of exact date 17+ years ago
City of Durham	401K and 457 offered; employer contributes 5% to 401K	At hire	Not Required	Unknown
Orange County	401K and 457 offered; employer contributes $715 per year; if an employee contributes employer will matches up to $63 each pay period for a matching total of $1,512 per year; employee can choice either 401K or 457 for the employer contribution/matching option	At Hire	Not Required to receive employer contribution; matching option available	July 1, 2014