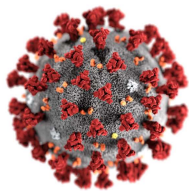


# Partnerships to Reduce the Impacts from COVID-19 on the Water Sector

WEBINAR SERIES: PART 3



The National Association of Clean Water Agencies

July 28, 2020 | 2:00 PM - 3:30 PM EST

50 | NACWA 



## Adam Krantz

CEO  
NACWA  
Washington, DC





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## Clean Water Champions

**AECOM**



**GREELEY AND HANSEN**



**RAFTELIS**

**xylem**  
Let's Solve Water

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## Clean Water Stewards



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## Clean Water Protectors

AQUALAW

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HDR

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## Clean Water Allies





## Yvonne Forrest

Director  
Houston Water  
Houston, TX



## Today's Featured Speakers



**Yvonne Forrest**

Director  
Houston Water  
Houston, TX



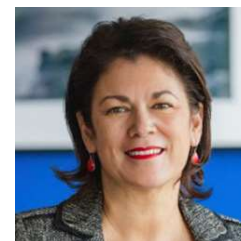
**Steve Straus**

President  
Glumac, A Tetra Tech Company  
Portland, OR



**Jeff Theerman**

Vice President/Senior Utility  
Performance Consultant  
Brown and Caldwell  
St. Louis, MO  
*Former NACWA President 2010-2011*



**Cindy Wallis Lage**

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Taylor, MI



**George Hawkins**

Founder & Chief  
Executive Officer  
Moonshot LLC  
Bethesda, MD





## Yvonne Forrest

Director  
Houston Water  
Houston, TX





# **HOUSTON WATER PANDEMIC RESPONSE**

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**YVONNE W. FORREST**  
DIRECTOR, HOUSTON WATER



# HOUSTON WATER




**>1,600**  
TEAM MEMBERS

**3**   
SURFACE WATER  
PURIFICATION PLANTS



**49**  
GROUNDWATER  
PLANTS

**7,764**   
MILES OF  
UNDERGROUND  
WATER LINES

**39**   
WASTEWATER  
TREATMENT PLANTS

**382**   
LIFT STATIONS

**6,800**   
MILES OF SANITARY  
SEWER LINES

# POLICIES AND PROCEDURES

## IN PLACE

- **PANDEMIC POLICY**
  - <https://www.houstontx.gov/adminpolicies/2-8.pdf>
- **CONTINUITY OF OPERATIONS PLAN**
  - Annually reviewed and updated
- **FAMILY AND MEDICAL LEAVE POLICY**
  - <https://www.houstontx.gov/adminpolicies/3-2.html>

## DEVELOPED

- **TELEWORK POLICY**
  - <https://www.houstontx.gov/adminpolicies/3-36.pdf>
- **WORKPLACE / BUILDING ACCESS PROCEDURES**
  - <https://www.houstontx.gov/adminpolicies/3-39.pdf>
- **ESSENTIAL EMPLOYEE LETTER**
- **COMMUNICATIONS**

## SAFE WORKPLACE TEMPERATURE CHECK



If you have COVID-19 like symptoms (a temperature greater than 100.4°F, dry cough, shortness of breath), **DO NOT COME TO WORK.**

Please call your doctor. If you do not have a doctor, call the **Houston Health Department** | 832.393.4220  
Monday – Friday, 9AM – 7PM  
Saturday & Sunday, 9AM – 3PM



## GREASE & WIPES CLOG PIPES! LA GRASA Y LAS TOALLITAS BLOQUEAN LAS TUBERÍAS!

The main cause of sanitary sewer overflows in Houston is clogged pipes from fats, oils and grease poured down kitchen sinks and wipes flushed down toilets. Put grease and wipes in their place – the trash, never down the drain!

Las grasas que se tiran por el lavabo de la cocina y las toallitas que se desechan en el inodoro son la causa principal de los bloqueos que provocan desbordamientos de aguas residuales en Houston. Ponga la grasa y las toallitas en su lugar: ¡La basura, nunca por el drenaje!



CorralTheGrease.org  
832.395.3790



## COVID-19 NOTICE

### Social — Distancing: Breakrooms / Elevators

6ft apart



no more than  
3 people



### Did You...

- push the elevator button?
- hold onto a handrail?
- touch a doorknob?

Make sure you wash your hands for **20 seconds!**

### STAY UPDATED

[houstonemergency.org/COVID19](https://houstonemergency.org/COVID19)

[f](#) [t](#) @HouPublicWorks



# OPERATIONAL IMPACTS

## Operations and Maintenance Team

- **Shifts altered or split**
- **Tailgates/Team meetings outside**
- **Redistribution of vehicles for crew social distancing**
- **One facility team sequestered**

## Office Team

- **Telework**
  - Only 10% of the staff is eligible
  - IT issues – equipment, security and connectivity
  - Productivity tracking
- **Office renovations**
  - Plan for open concept changed
  - Plexiglass barriers
  - No touch light switches / bathroom fixtures

# thank you!



[houstonpublicworks.org](http://houstonpublicworks.org)

  @houpublicworks



## Steve Straus

President  
Glumac, A Tetra Tech Company  
Portland, OR







# STRATEGIES FOR RETURNING TO WORK IN A COVID-19 ENVIRONMENT

---

Presented By



**TETRA TECH**  
High Performance Buildings Group

# HVAC RECOMENDATIONS

---



**TETRA TECH**  
High Performance Buildings Group



Because it is sufficiently likely that SARS-CoV-2 can be transmitted through the air, **airborne exposure to the virus should be controlled.** Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.

**ASHRAE's** statement on airborne transmission of SARS-CoV-2/COVID-19

# ENHANCED HVAC SYSTEMS



## Air Quality



- Increase outdoor air ventilation
- Disable demand-controlled ventilation
- Extend hours of operation
- Under floor air distribution

## Filtration



- HEPA Filters
- Bi-Polar Ionization
- UV Light Sanitization
- Carbon Filters
- O-Zone Generators

## Air Exchange



- Reduce air recirculation
- Increase bathroom exhaust
- Open outdoor air dampers up to 100%

## Humidification



Control humidification\*

*\*Source: N van Doremalen, et al.  
Aerosol and surface stability of  
HCoV-19 (SARS-CoV-2) compared  
to SARS-CoV-1. The New England  
Journal of Medicine.*

# AIR FILTRATION SYSTEMS



Passive System



Active System



UV Light Sanitizers



Carbon Filters



Due to the nature of the SARS-CoV2 virus, **HVAC solutions are not effective in preventing the spread of contamination person to person**, however the following technologies are presented because they provide benefit in bacterial and virus reduction within their path of effect. The highest performance treatment systems can remove up to 99.99% of viruses.



# AIR FILTRATION – BI-POLAR IONIZATION



Installation is most often in supply ducts, but can also be rack-mounted in plenums, in air handling units, or smaller units can be installed within fan coil unit plenums.

## Bi-Polar Ionization



The unit has negligible air pressure drop, and can be easily retrofitted to an existing HVAC system.



# AIR FILTRATION – O-ZONE GENERATORS

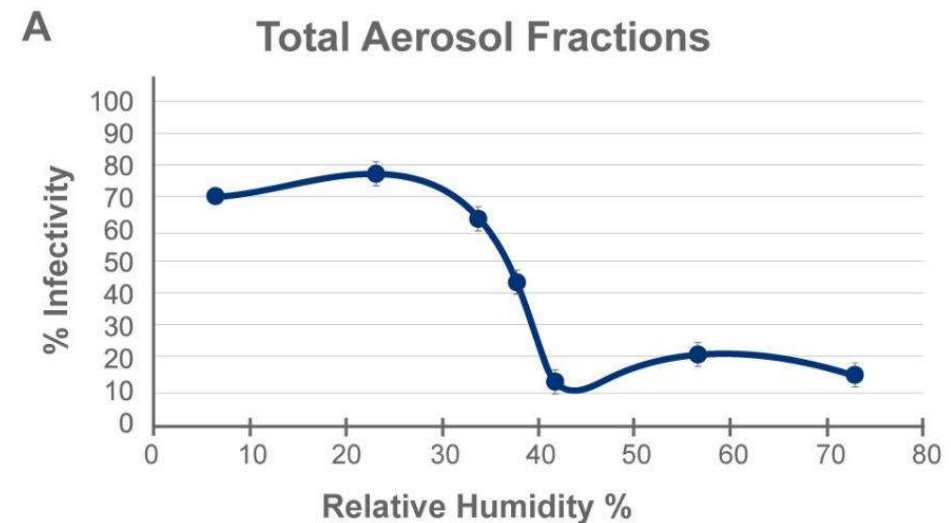
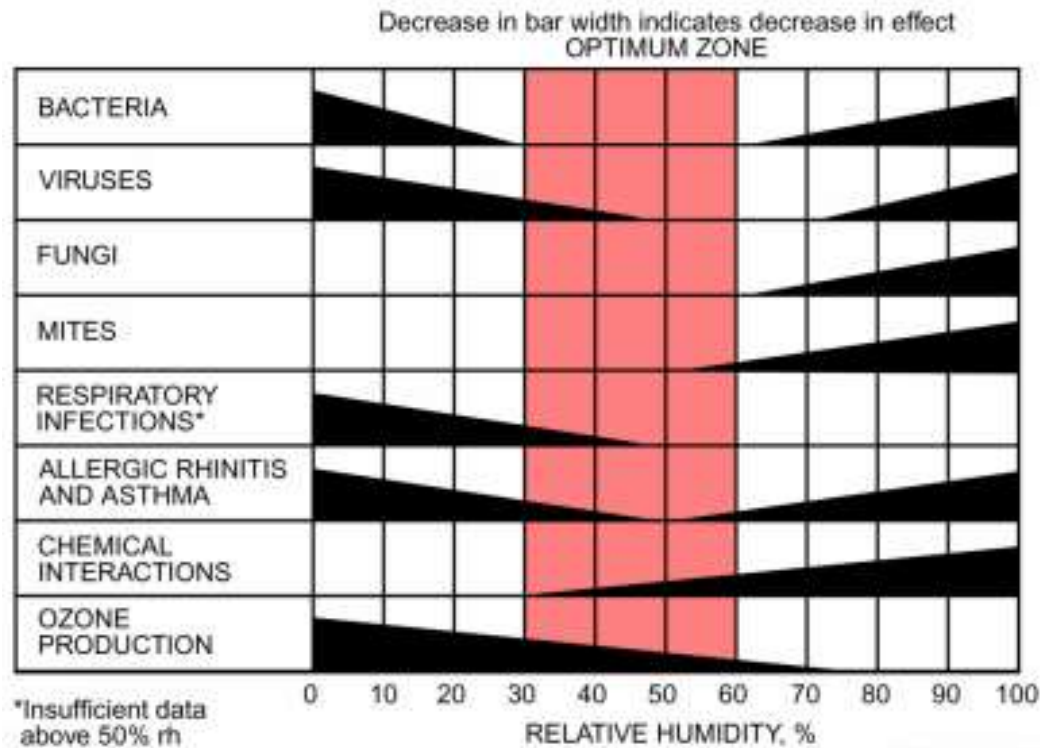


Commercial Grade Ozone Generators produce very high concentrations of Ozone that oxidizes the viruses and bacteria, effectively disinfecting it. Ozone is unstable, potentially toxic, and a carcinogenic gas and should never be used in a room with a person present.

**USE OF O-ZONE  
GENERATORS IS NOT  
RECOMMENDED BY  
TETRA TECH**



# HUMIDITY CONTROL



1. John Noti, et al, Humidity Leads to Loss of Infectious Influenza Virus from Simulated Coughs (February 27, 2013)
2. J.P. Guggenbichler, R. Huster and S. Geiger, Luftfeuchtigkeit und Immunabwehr Die Rolle der Schleimhaut und Auswirkungen auf die Klimatechnik (2007) Tab Technik AM, Vol. 38 No. 9
3. ASHRAE Guideline 10-2016, Interactions Affecting the Achievement of Acceptable Indoor Environments



# ULTRAVIOLET (UV) SYSTEMS

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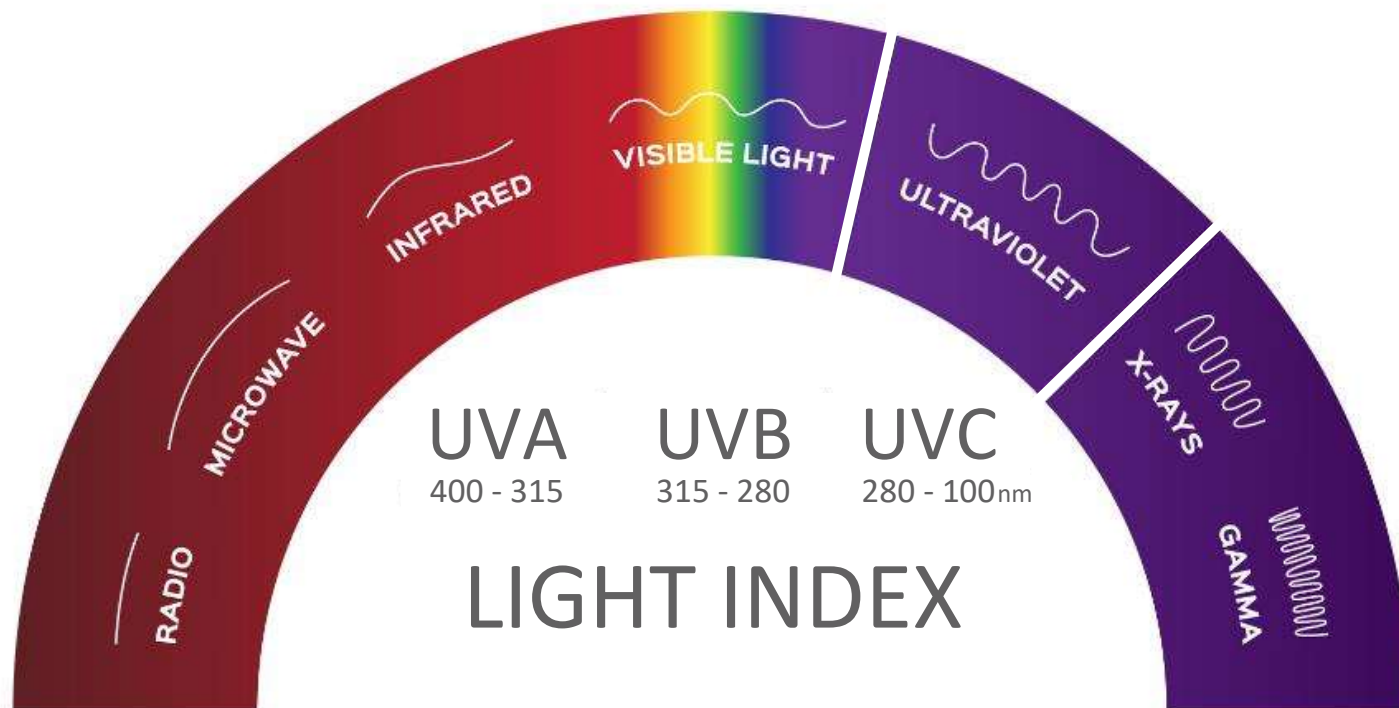


**TETRA TECH**  
High Performance Buildings Group

# THREE TYPES OF ULTRAVIOLET LIGHT (UV)



**UV-A** – Least harmful ◀ **UV-B** – Causes sunburns & can lead to skin cancers ◀ **UV-C** – Germicidal disinfection ◀



# AIR TREATMENT – UV LIGHT SANITIZERS



Installation can be in-duct or on AHUs. Lamps installed inside HVAC generally focus on cooling coils & drain pans.

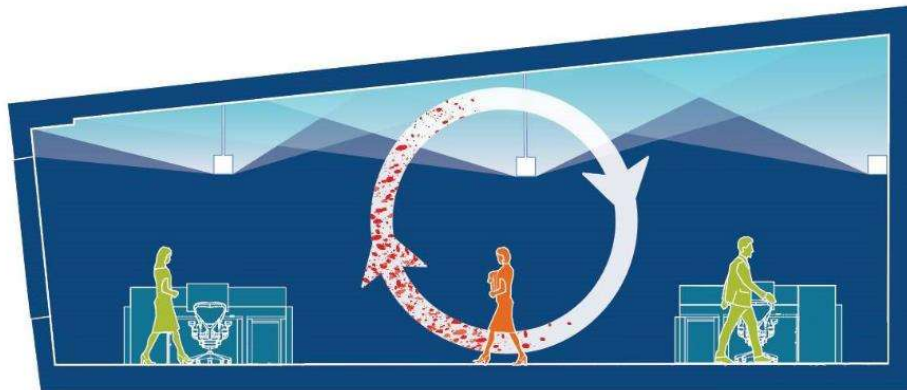


- The majority of modern UVGI lamps create UV-C energy at a near optimum 254 nm wavelength
- Install banks of UV-Lamps inside HVAC or associated ductwork. Consider adding to return air plenums.
- Requires high UV doses to inactivate microorganisms on-the-fly as they pass through the irradiated zone due to limited exposure time.
- Systems typically designed for 500 fpm moving airstream.
- Minimum irradiance zone of two feet. Additional contact time/length is recommended
- Studies indicate UV exposure time of 6-10 seconds for maximum effectiveness
- Should always be coupled with mechanical filtration.

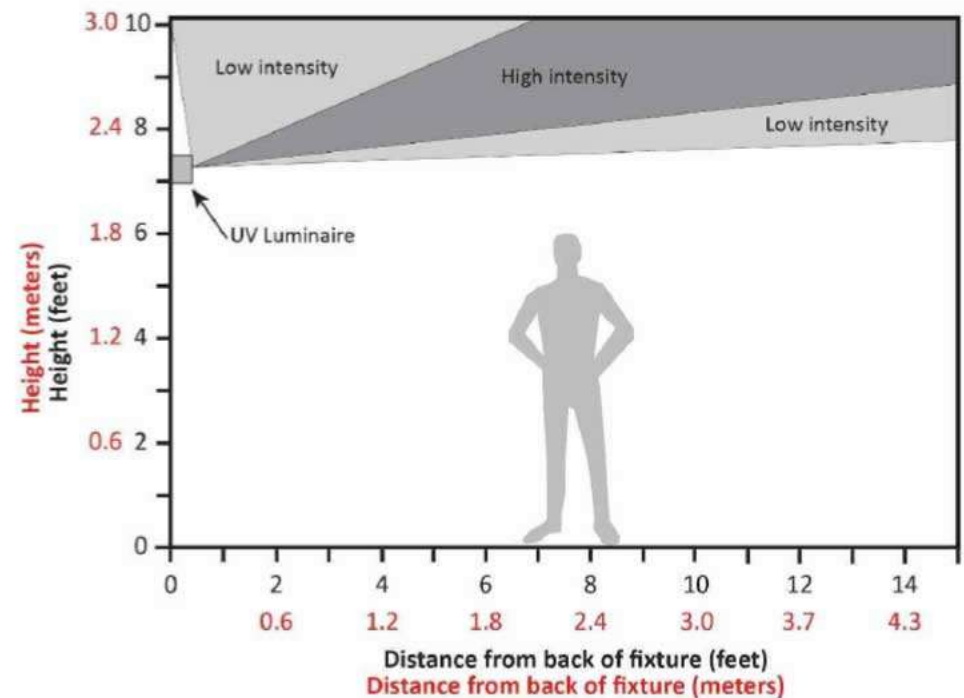
# AIR TREATMENT – UV LIGHT SANITIZERS



## In-duct and upper air UV



Upper Room Air UV Light Disinfection



# AIR FILTRATION – UV LIGHT SANITIZERS



Portable, fully automated units controlled remotely



Units have settings for specific pathogens such as MRSA, C. difficile, both of which are harder to inactivate than coronaviruses.

- >99.9% reduction of vegetative bacteria within 15 minutes<sup>1</sup>
- 99.8% for C. difficile spores within 50 minutes<sup>1</sup>

1. Weber DJ<sup>1</sup>, Rutala WA, Miller MB, Huslage K, Sickbert-Bennett E. Role of hospital surfaces in the transmission of emerging health care-associated pathogens: norovirus, Clostridium difficile, and Acinetobacter species. American Journal of Infection Control 2010..

Far UV-C lights (200-230 nm spectrum) may sanitize w/o harming occupants. Awaiting independent testing.



One cleanse per 800ft<sup>3</sup> achieves 4 air exchanges per hour (50cfm) and also includes a HEPA & Carbon filter



# COMPLEMENTS TO LEED AND WELL

---



WELL buildings require or encourage:

- UV germicidal irradiation (UVC) as an enhancement to the air filtration system
- Carbon filtration
- Antimicrobial surfaces
- Increased Outdoor Air
- Air quality monitoring
- Operable windows
- Adequate handwashing facilities
- Emergency preparedness
- Immunization offerings
- Health risk assessments
- On-demand health services
- Health awareness education/promotion



LEED encourages:

- Outdoor Air
- MERV 13 + filters
- Operable windows
- Air quality monitoring

# SUMMARY

---

- **Outside Air:** Increase outside air to provide dilution. Operate continuously.
- **Restrooms:** Increase exhaust in toilet rooms. Check trap primers. Consider UV sterilization lighting.
- **Humidity Control:** Add humidification to maintain 40% minimum to 60% maximum relative humidity in the winter.
- **Local Filtration:** Provide local HEPA or ionization filtration in dense locations like elevators and restrooms.
- **Touchless:** Utilize touchless technology.



**TETRA TECH**

High-Performance Buildings Group

BUILDING FOR A **RESILIENT FUTURE** WITH SUSTAINABLE DESIGN





## Jeff Theerman

Vice President/Senior Utility  
Performance Consultant  
Brown and Caldwell  
St. Louis, MO

*Former NACWA President 2010-2011*



Jeff Theerman, PE, National Utility Performance Leader

7.28.2020 | NACWA Webinar

# Utility Optimization to Reduce the Impacts of COVID-19



# Reacting: Taking Early Action with Tools and Assistance

**COVID-19 Response Guide //**  
**Contingency Compliance Drinking Water Quality Monitoring**

Water Quality Compliance

**O&M COVID-19 Response Guide //**  
**Strategies to Maintain Essential Operations**

Smart Utility Operations and Maintenance

**COVID-19 Response Guide //**  
**How to Succeed with your Virtual Workshop**

Virtual Delivery

**COVID-19 Response Guide //**  
**Rapid Response Utility Support**

Digital Solutions Operations and Maintenance Treatment Process Optimization

**Due to the COVID-19 pandemic and its resulting challenges, water utilities...**

What additional health and safety considerations are needed?\*

How do I maintain operations with fewer staff due to illness or quarantine?

Can I use a reduced operation?

Brown and Caldwell's (BC) digital technology and operations and maintenance (O&M) guide to provide strategies to maintain essential operations under these unprecedented address these critical challenges are highlighted below, with a more detailed list of suggestions following pages.

In response to an urgent need for social distancing and in many cases states we must explore new ways of interacting with internal staff, project teams, stakeholders, and the public at large. Many of our projects rely on interact to advance ideas, gather feedback, and gain consensus on a path forward engagements are ideally held in person; however, under these new circumstances compiled the following guidance that includes tools, best practices, and let help us transition to virtual workshops.

Planning for contingencies has never been more important for water and wastewater utilities as they continue to respond to COVID-19 impacts to their staff and operations. Even the most tested and thorough response plans may need expedited answers or urgent assistance to fully address the quickly shifting and unknown challenges during this time. To help, BC brings a wealth of knowledge in operations, maintenance, process, digital solutions, and control systems, and we can connect utility teams to the relevant expertise to deliver the answers that can't wait.

Download the guides at  
[brownandcaldwell.com](http://brownandcaldwell.com).

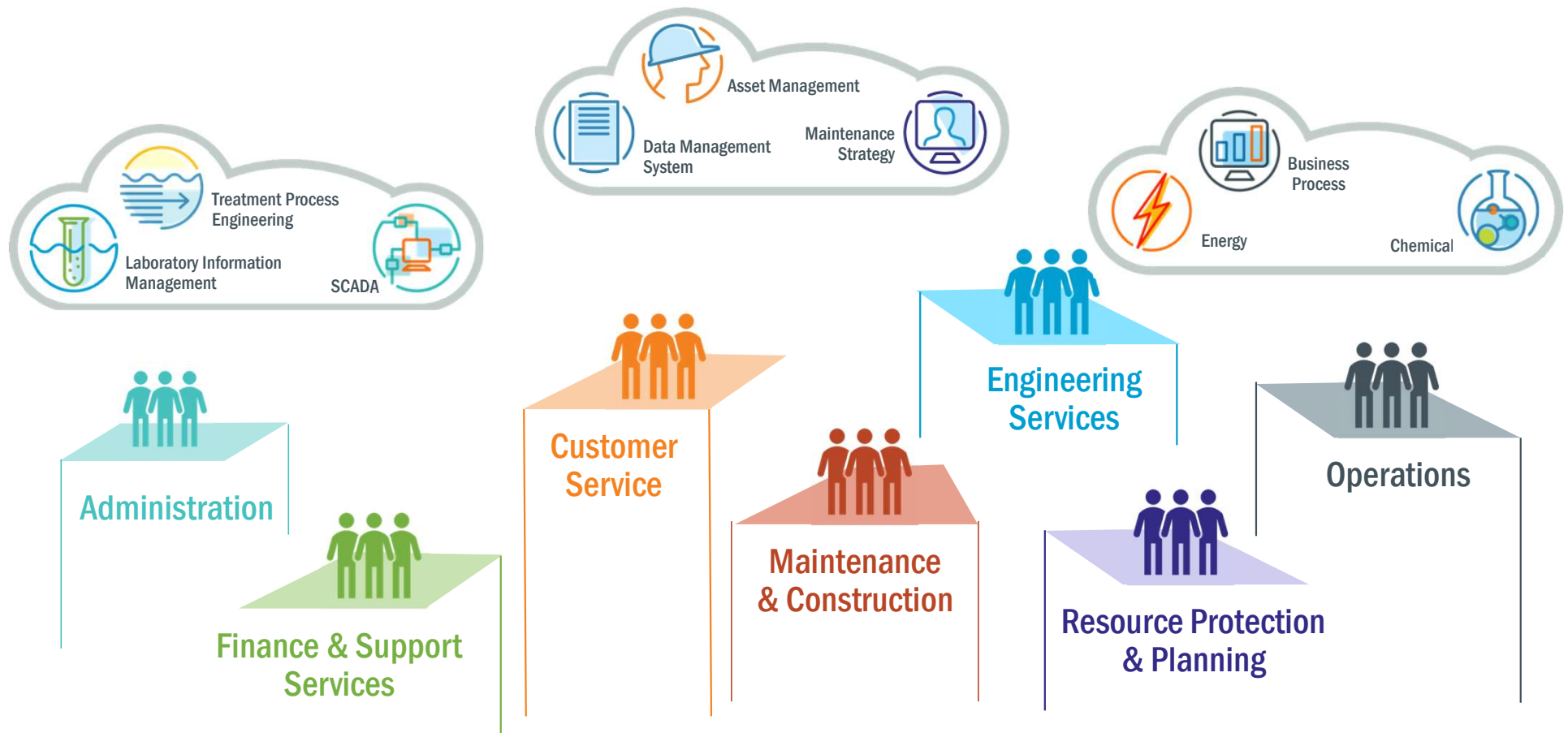




## **Enduring:** addressing current and growing challenges

- Revenue Loss – increased delinquencies
- Capital Program Impacts
- Alternative Funding
- Deferred Maintenance
- Reluctance to Return to the Office
- What does the future hold?

# Evolving: Optimizing and Working Differently





# Optimizing the City of Pueblo, CO facility

With Ntensify™ for nutrient removal, Pueblo's WRRF can treat more wastewater with less capital, energy, chemical, and disposal costs within the facility's current infrastructure—all while meeting nutrient regulations.



## CAPACITY

Increased by 50%



## CHEMICAL SAVINGS

>\$200K/yr cost savings  
on chemical usage



## EFFLUENT QUALITY

Gained credits to extend  
compliance schedule  
for low-level nutrient limits



## ENERGY SAVINGS

>\$150k/yr cost savings  
on aeration energy



## Cindy Wallis Lage

President, Water Business  
Black & Veatch  
Kansas City, MO





# RESILIENCE

STRATEGIC | FINANCIAL | OPERATIONAL





## Thomas Brzezinski

Chief Business  
Development Officer  
Wade Trim  
Taylor, MI



# Observations On Client Interactions

Project and Funding Impacts  
on CIPs

Virtual Environments  
Acceptance and Use to  
Maintain Communications



# Project and Funding Impacts on CIPs

Today... projects and procurements are proceeding

Some clients are advancing projects quicker

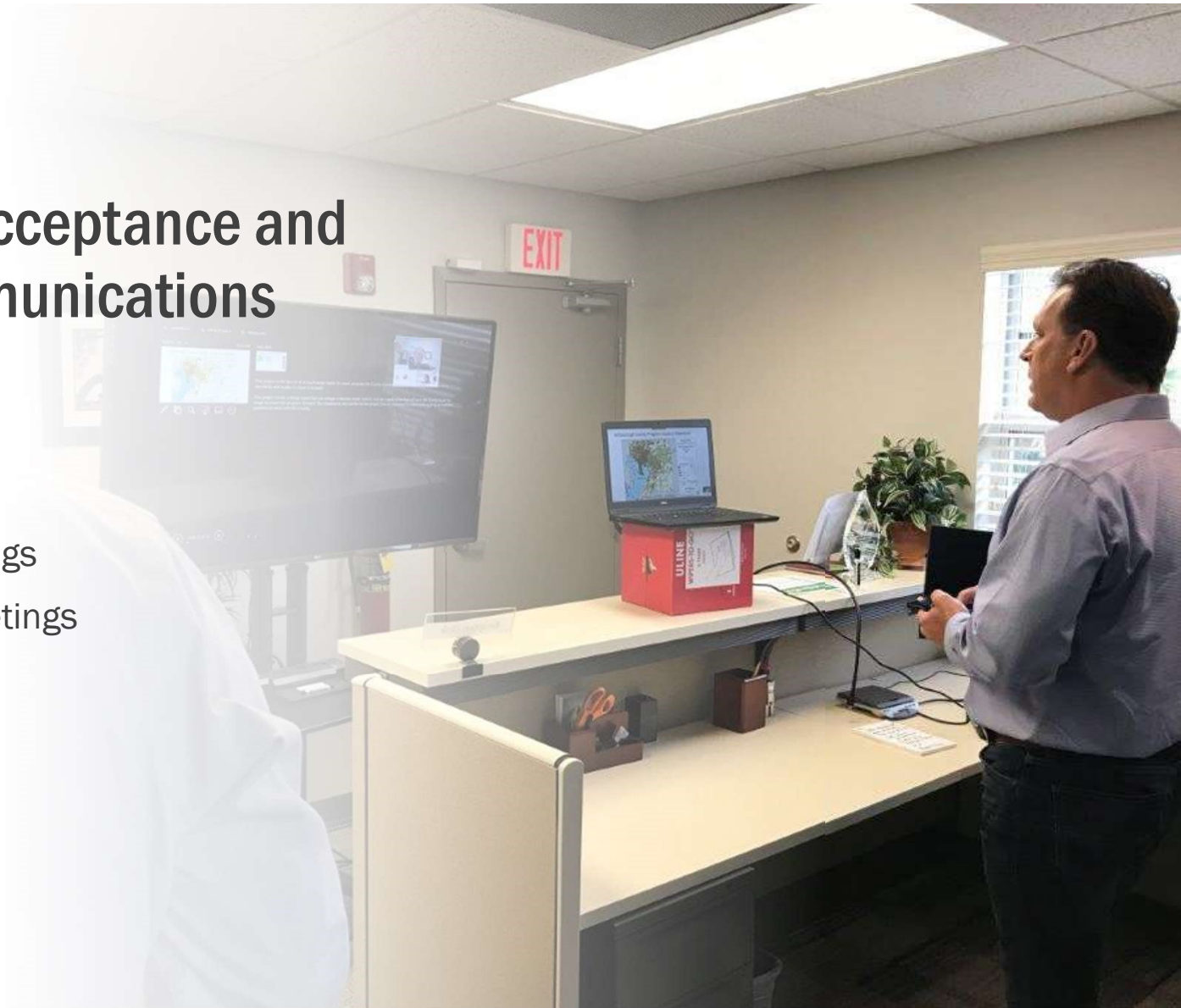
Funding appears unharmed,  
but for how long?

Client staffing is being impacted



# Virtual Environment Acceptance and Use to Maintain Communications

Learning the virtual world quickly  
Project and progress meetings  
Procurement and selection meetings  
Client development and sales meetings  
But the clients are fighting back...





## George Hawkins

Founder & Chief  
Executive Officer  
Moonshot LLC  
Bethesda, MD





# NACWA: Partnerships to Reduce the Impacts from COVID-19 on the Water Sector Webinar Series

July 28, 2020, 2:00 pm – 3:30 pm ET

**George S. Hawkins, Esq**  
Prior GM, DC Water  
Founder, Moonshot Missions (501c3)

@georgehawkinsdc  
202-770-7632

*Clean Water No Matter the Zip Code*  
*Your Trusted Advisor*

**Partners:**

Henderson Brown, Esq., Prior General Counsel, DC Water and WSSC  
Andy Kricun, P.E., Previous CEO, Camden MUA  
David St. Pierre, P.E., Previous CEO, Metropolitan Water Reclamation District of Greater Chicago





## Yvonne Forrest

Director  
Houston Water  
Houston, TX



# Q & A



UPCOMING 2020

# Conferences & Events

## Hot Topics in Clean Water Law Webinar: Part 3

September 16, 2020 | 2:00 PM – 3:30 PM EST

Learn More and Register at [www.nacwa.org/events](http://www.nacwa.org/events)



# NACWA's strength is in our members.

NACWA is the nation's recognized leader in clean water advocacy for public utilities, made possible through the collective voice of our members.

Experience the value in membership through...

- Legislative, regulatory, legal, and communications information and analysis.
- Peer-to-peer resources exchange and support.
- Interactive webinars and events.
- Recognition for your clean water utility's achievements through our national awards programs.

Learn more at [nacwa.org/join](https://nacwa.org/join).