

# WORKFORCE WEBINAR SERIES

## Developing the Digital Water Workforce of the Future

Office of Wastewater Management

Office of Water

U.S. Environmental Protection Agency

March 2022

**We will start in a couple minutes.  
Thank you.**

# WORKFORCE WEBINAR SERIES

## Developing the Digital Water Workforce of the Future

Office of Wastewater Management

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U.S. Environmental Protection Agency

March 2022

This webinar is sponsored by EPA's Office of Wastewater Management. The opinions expressed in this webinar are those of the guest speaker(s). They do not reflect EPA policy, endorsement, or action, and EPA does not verify the accuracy or science of the contents of the presentation.

March 8, 2022

# Developing the Digital Water Workforce of the Future

Andrew Sawyers, Director, U.S. EPA  
Office of Wastewater Management

# Webinar Logistics

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- This webinar is being recorded
- Participants will be in listen-only mode
- To submit a question, use the Q&A function
- Presenters will monitor these questions and respond to as many as possible during the “Q&A” session at the end of the presentation.



- Webinar slides and recording information will be sent out to all participants following the webinar

# Having Audio Difficulties?

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- Call in to any of these phone numbers:

+1 669 254 5252

+1 669 216 1590

+1 646 828 7666

+1 551 285 1373

**Webinar ID: 160 437 6554**

# Opening Poll: Please indicate the sector that you work in:

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- Utility
- State or Local Government
- Federal Government
- Consultant
- Academia/Educator
- Other

If you do not see a poll window pop up, please use the **Chat function** to type in your answer.

# Water Sector Workforce at EPA

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- Reminders:
  - Check out our website for resources and updates:  
<https://www.epa.gov/sustainable-water-infrastructure/water-sector-workforce>
    - Workforce Initiative
    - Past Workforce Webinars
    - Workforce Case Studies
  - Stay tuned for information on our next webinar. If you are registered for this webinar you are automatically on the email list for future webinars!

March 8, 2022

# Developing the Digital Water Workforce of the Future

Jim Horne, Sustainable Utilities  
Program Manager, U.S. EPA Office of  
Wastewater Management



March 8, 2022

## Speakers:



**Catherine Curtis**, San Francisco Public Utilities Commission

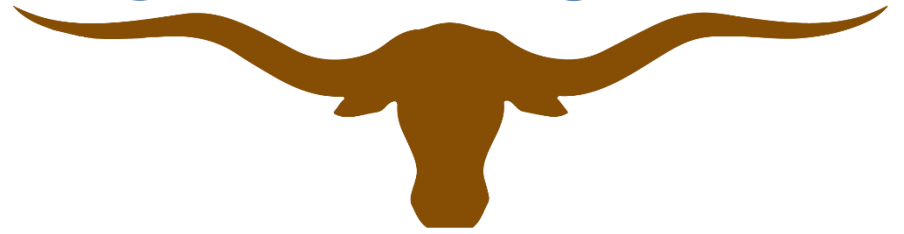


**Shane Zondor**, City of Fort Worth, Texas

**Webinar slides and recording will be sent to registrants within a week after the webinar.**



# FORT WORTH®



## Digital Transformation and the Workforce

Shane Zondor  
Workforce Initiatives Manager  
[Shane.zondor@fortworthtexas.gov](mailto:Shane.zondor@fortworthtexas.gov)  
(817) 392-7814

#workforwater

*Revitalizing the way we attract, develop, retain and manage our people.*



## Begin with the End...Vision!

Where are we going?  
Why do we need to go there?  
What will it do for me and the utility?



## Communicate

What's happening...when?  
Transparency, timeliness and multi-modal



## Make it Personal

What's in it for them?  
What do they need stop, start and keep doing?  
What conditions have to be met for this to happen?



## Evolve

Job design, knowledge, skills, abilities, qualifications,  
workflows and processes  
Co-create the future



## Empower

Easiest path towards acceptance  
Diversity in perception, approach and problem solving



## Normalize Digital Transformation

Recognize the impact...normalize the approach  
Encourage unconstrained BIG thinking  
Recognize, value and reward digital transformation

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## **Threat (Away State)**

- Anxious
- Distracted
- Stressed
- Angered
- Scared
- Skeptical

**Status**  
Our relative  
importance to others

**Certainty**  
Ability to predict  
outcomes

**Autonomy**  
Sense of control

**Relatedness**  
In-group or out-group

**Fairness**  
Perception of fair  
exchange

## **Reward (Toward State)**



- Positive
- Open
- Creative
- Innovative
- Resilient
- More focused

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# MOVING FROM AND MOVING TO WORKSHEET

Describe the change and write down specific results and actions that you are moving from and moving to.

		Describe the Change	
		Moving From	Moving To
Results			
	Actions		

# KEEP, STOP, START WORKSHEET

List all of the things you need to keep doing, stop doing, and start doing in your new role.

<u>Keep Doing</u>	<u>Start Doing</u>	<u>Stop Doing</u>

What needs to happen to make this change in your role? Identify who or what is going to happen to the tasks you stop doing and identify any needs you may have in order to start doing new things.

<p><u>What needs to occur to make this happen?</u></p>
--

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**C**urrent

**R**eality

ACKNOWLEDGE  
THE PAST

**E**xplore

**A**lternatives

TAKE  
ADVANTAGE  
OF TODAY

**T**ap

**E**nergy

CO-CREATE  
THE FUTURE

\* From the Neuro-Leadership Institute

# Program Strategy



Improve Customer



## Begin with the End...Vision!

Where are we going?  
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What will it do for me and the utility?

## GOAL AREAS

PROCESS

TRANSPARENCY

Increase transparency of policy  
Improve compliance  
Enable early intervention  
Enable customer self-service

Executive Team identified need for a concerted effort to better utilize data across all aspects of utility.

Data Management Working Group formed with key stakeholders to chart path forward

Strategic Planning

Working Group

Solidify the Why

Vision Setting

Assessment enabled working group to create a compelling reason for change

Working Group assessed data usage across utility to identify gap and establish vision

MyH2O Integrated Systems

Benefits (AMI)

Advanced Metering Infrastructure

Meter Data Management

Portal

EAM

Customer

Operations

Financial

reduces and apparent water loss through leak identification

Enhanced knowledge and timely accurate usage data and alerts

hydraulic modeling

costs

# Three Phases of Change

## Phase I Plan



It's all about the planning...from the strategic down to the tactical level.

- Creating the need for change
- Change vision & objectives
- Change Management Team
- Change Management Plan
- Communication Plan

## Phase II Prepare



Set the team up for success. Once plans are complete focus on empowerment and inclusion.

- Initiate Communication Plan
- Moving from & Moving to
- Stop, Keep, Start
- Measures

## Phase III Execute



Implement the plans...achieve the vision & objectives

- Make the change
- Implement and monitor the measures
- Be accountable
- Celebrate successes

## Communicate

What's happening...when?  
Transparency, timeliness and multi-modal



## Water's App

Is Ready to download

SHARE YOUR PHOTOS, IDEAS, VIDEOS AND SHOUT-OUTS!

### • TO DOWNLOAD APP

**iPhone:** From the home screen, tap App Store. Using the search tab, type Yapp App. Then tap GET on the right of the app. Tap INSTALL using your passcode or using Touch ID. Once done installing, the app will appear on your phone's home screen.

**Android:** From the home screen, tap the Play Store. Using the search tab type Yapp App. Select Yapp Inc. and tap INSTALL. Once done installing, tap open. The app will appear on your phone's home screen.

### • TO CREATE YAPP ACCOUNT

Once the app is downloaded, use your city email to create an account with Yapp. When asked for the Yapp ID, enter 98VYKS. And done! Customer engagement will then approve your access.

## Aplicación interna

¡lista para Descargarse!

COMPARTE TUS FOTOS, IDEAS, VIDEOS Y ENVÍA SALUDOS

### • PARA DESCARGAR

**iPhone:** En la pantalla de inicio, selecciona App Store. En el buscador, escribe Yapp App. Luego de ubicarla selecciona OBTENER. Selecciona INSTALAR y utiliza tu palabra clave o el Identificador de Huella. Al terminar la instalación, la aplicación aparecerá en la pantalla de inicio de tu iPhone.

**Android:** En la pantalla de inicio, selecciona Play Store. En el buscador, escribe Yapp App. Luego de ubicarla selecciona Yapp Inc. y luego INSTALAR. Al terminar la instalación, selecciona ABRIR y la aplicación aparecerá en la pantalla de inicio de tu teléfono.

### • CREA CUENTA CON YAPP

Luego de descargar la aplicación a tu teléfono, utiliza tu correo electrónico (nombre.apellido@FortWorthTexas.gov) para crear una cuenta con Yapp. Cuando te pida el Yapp ID, escribe 98VYKS. ¡Y listo! Customer engagement luego aprobará tu acceso.

Communicate the approach  
as well as the impact

Diversify the way you  
communicate

Communicate often

Celebrate small wins and  
recognize participants

## Daybreak Dialogue

Sign up for breakfast with  
Director Chris Harder

<https://www.surveymonkey.com/r/DaybreakDialogue>

No computer access? Complete a paper form & give it to your supervisor.

- Second Friday of each month
- 8—9 a.m.
- Employees selected (& supervisors) notified the prior Monday

ask \* suggest \* get to know him

**MyH<sub>2</sub>O PRONTO REPORT** SPECIAL EDITION FORT WORTH.

@FWAgua @Fort Worth Agua  
Twitter: @FWWater Facebook: @Fort Worth Water Instagram: @saveFWwater

October 8, 2021

### Water IT gearing up for deep dives into MyH<sub>2</sub>O data

By Sandra Baker@FortWorthTexas.gov  
Communications specialist, MyH<sub>2</sub>O

The benefits of remotely read water meters are vast and members of Water's IT section are delving into unlocking a treasure trove of information.

When the utility began exploring exchanging the meters years ago, discussions also focused on what information we'd possibly glean from the meter readings and how would we use that information, said Homer Garza, water IT solutions manager.

At that time, figuring out how to go through collected data and find trends posed a bit of a quandary. Technology, though, is a rapidly changing field and demand for data has produced software programs that run without the need for data engineers on staff.

In addition, water IT is working with Tenon Intersystems, to find ways to make the customer experience seamless when they call the utility with an issue. For example, how do we go from recording that phone call to getting the issue addressed that brings all the divisions involved together?



Agnes Bonsu, water IT data administrator, and Homer Garza, water IT solutions manager, have started running queries through a new software called Looker. Looker is a data exploration and business intelligence platform to give greater context to information gleaned from our databases. Photo: Sandra Baker.

Continue on next page

VOLUME 3 NO. 4 \* December 2021

# The Tap

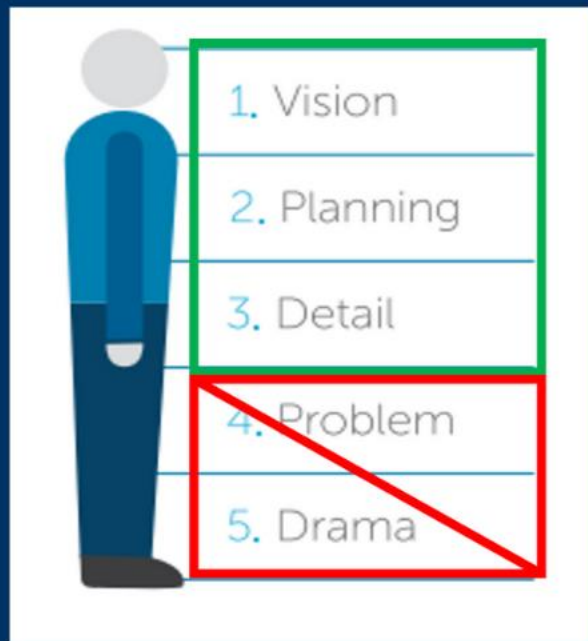
## INFRASTRUCTURE

### OUR FUTURE READINESS





# Shift the Focus



## Make it Personal

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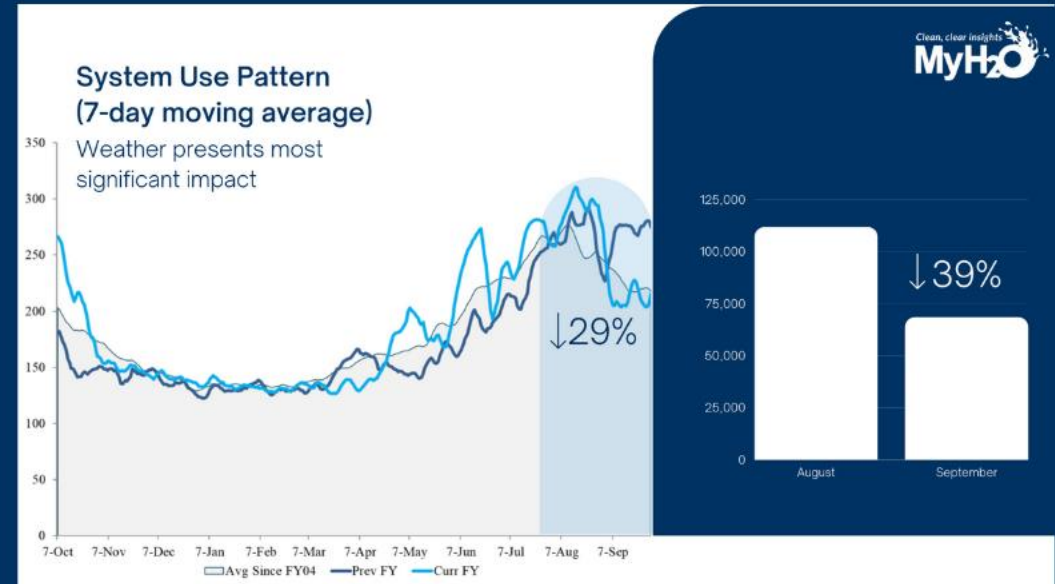
Easiest path towards acceptance  
Diversity in perception, approach and problem solving

# We must understand...

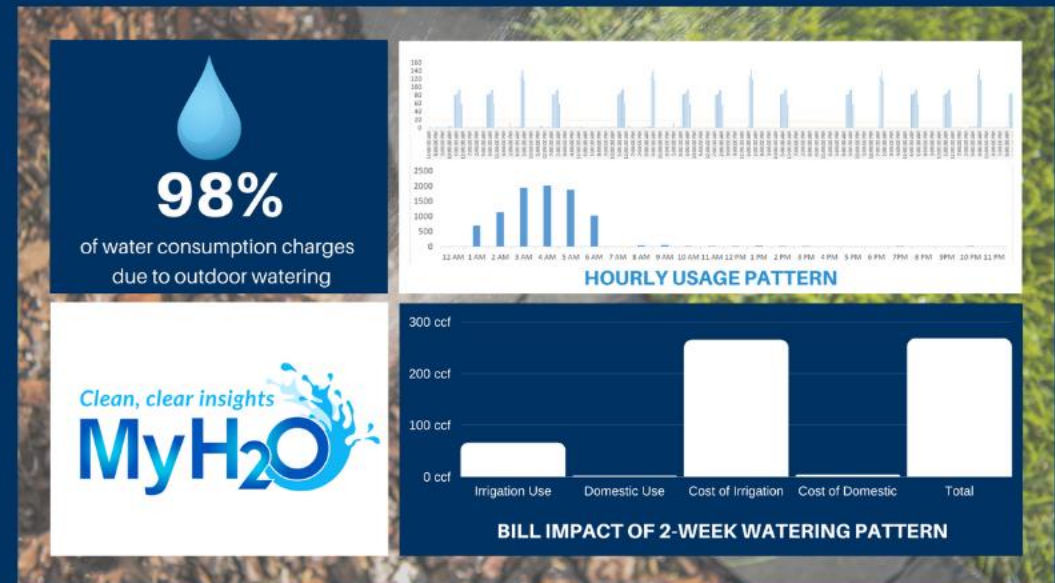
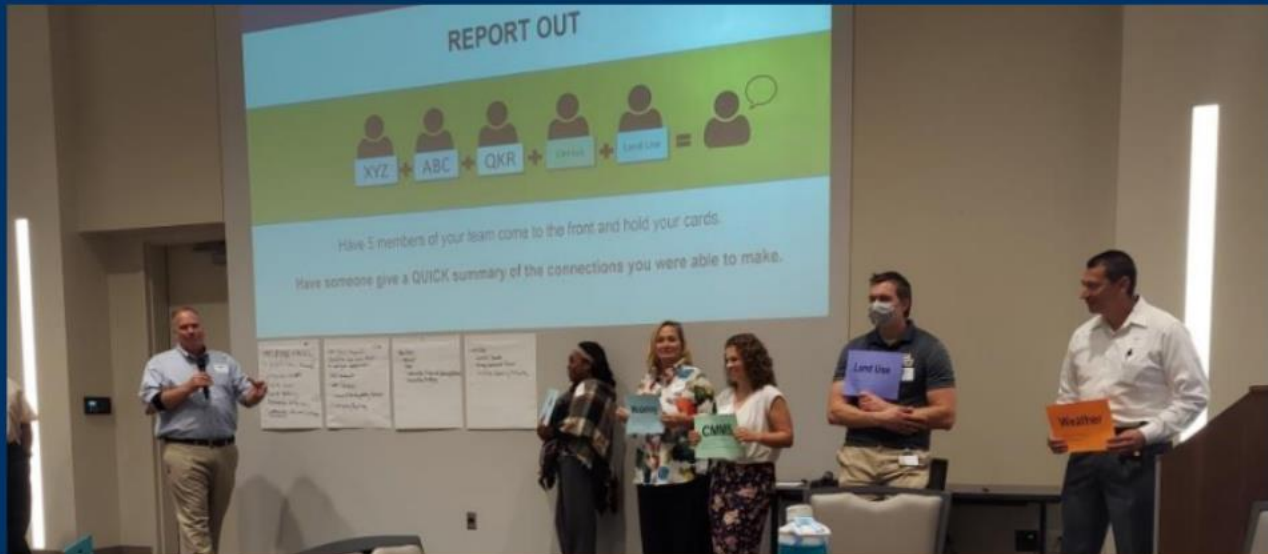


Change is personal and reactions are instinctive...IT'S NORMAL

## Use Cases / Exploration



## Management Retreat



# QUESTIONS?



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# baywork

Bay area water/wastewater workforce reliability

## **THE DIGITAL WORKER**

### **Using Digital Tools to Deliver Water Services**

**Presented by Catherine Curtis**  
**Workforce Reliability, SFPUC**  
**BAYWORK Board Member**

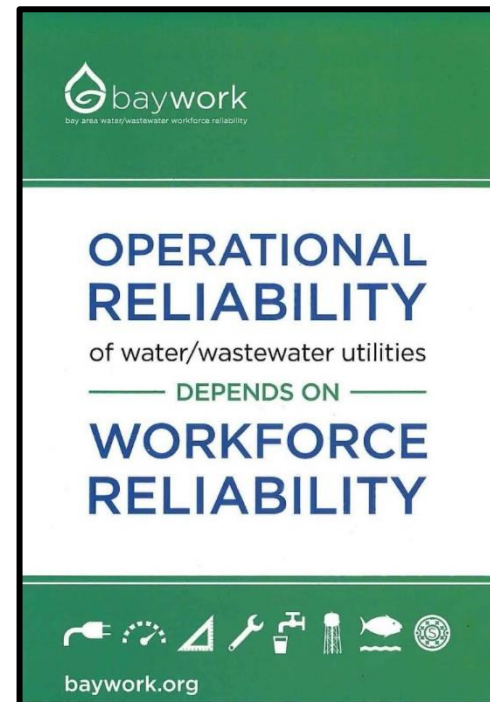
[BAYWORK White Paper](#)



# What is BAYWORK?

A consortium of water/wastewater agencies and stakeholders with a shared commitment to workforce reliability

Baywork.org



# BAYWORK Roadmap



**Develop qualified candidates for mission-critical jobs**

**Provide staff with the information they need to do quality work**

**Modify work to optimize use of staff available**

**Maximize investments through collaboration**

# Mission-Critical Job Categories



**Electrician**



**Wastewater Treatment Operator**



**Electronic Maintenance Technician/Instrument Technician**



**Water Distribution Operator**



**Engineer**



**Water Treatment Operator**



**Machinist/Mechanic**



**Wastewater Collections Operator**

# BAYWORK's Digital Worker Initiative

To help water/wastewater utilities everywhere make more effective use of digital tools



# BAYWORK's Digital Worker Initiative

## 2019

Research on utility use of digital tools

Workshop on Workforce Implications of Digital Tools – Workforce Convening

## 2020

Focus group meetings with utilities on challenges and lessons learned

Workshop on The Digital Worker – Utility Management Conference

Launched White Paper Initiative

## 2021

Published The Digital Worker: Effective Use of Digital Tools to Deliver Water Services

Webinar on The Digital Worker – BAYWORK Event

Presentations to World Bank, Training Buffet, SWIM Conference

# BAYWORK Project Advisory Group

**33** members from across the US and Canada

**14** representatives of water/wastewater utilities, including operations staff and information technology experts (including 6 representatives from BAYWORK Signatories)

**7** representatives of Professional Associations and Community Based Organizations

**12** consultants

# BAYWORK Project Advisory Group

**BAYWORK**

**WEF**

**AWWA**

**CWEA**

**Water Research Foundation**

**General Managers**

**Operations**

**Maintenance**

**IT Specialists**

**Consultants**

## **Role of Advisors:**

- Provide written input on experiences, questions, and lessons learned in relation to topic areas
- Contribute to a discussion of these topic areas in an Advisory Group videoconference
- Review and provide feedback on a Draft White Paper on The Digital Worker
- Participate in Possible Next Steps Discussions
- Option to attend the BAYWORK Digital Worker Workshop

# The Digital Worker White Paper Topics

## **Selection of Digital Tools**

## **Organizational Culture**

Coordination with Existing Workflows and Systems

Information Technology Support

Human Resource Services

## **Initial and Ongoing Staff Training**

## **Developing Qualified Candidates for Digital Jobs**

Artificial Intelligence

Cybersecurity



# Selection of Digital Tools

## Significant Challenges for the Water Industry

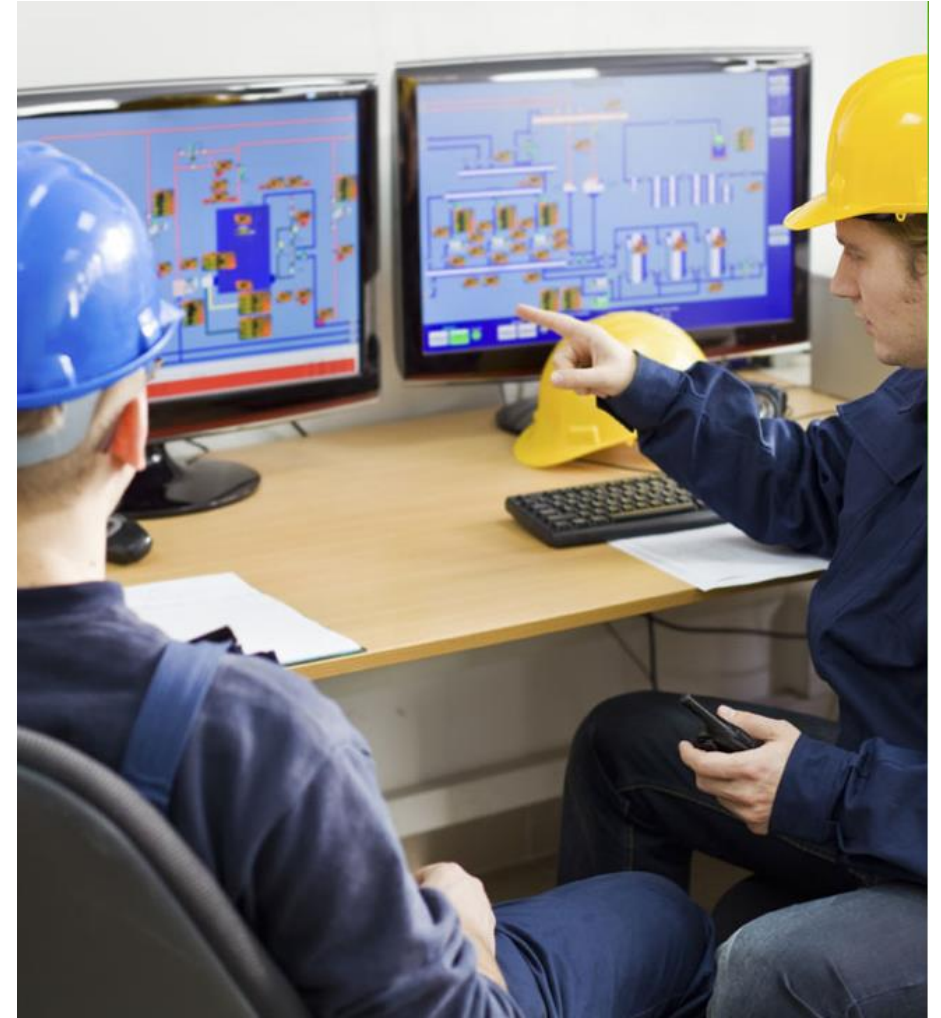


- Specialized market
- High consequences of failure
- Details matter
- Many failed implementations

# Selection of Digital Tools

## Planning Challenges

- Does the utility have a clear idea of the problem it is trying to solve?
- Will the utility invest the time and resources to obtain sufficient input from staff?
- Will the utility analyze the capabilities of its organization as carefully as the capabilities of the tool?

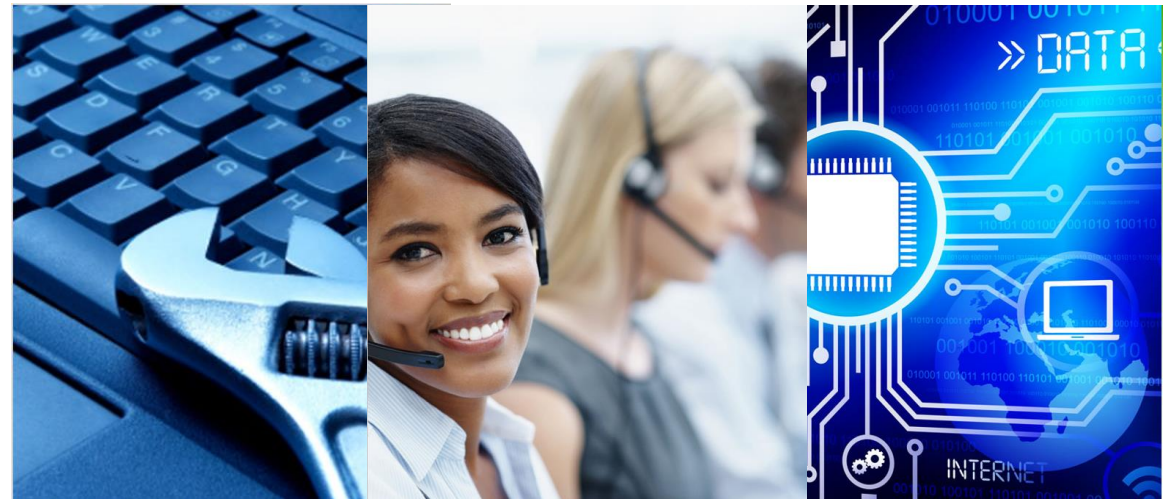


# Selection of Digital Tools

## Planning Challenges

- Will the utility map the impacts and effects of implementing the new tools?
- Will the utility identify and commit to providing the resources required for the organization to make effective use of the new tools?

“It is common for utilities to discover workflows that will be impacted when they are already in the middle of a software implementation project “



# Selection of Digital Tools

## Lessons Learned



- Define the problems you are trying to solve
- Seek input from across the organization
- Assess the preparedness of staff to use new tools
- Implement a structured process for mapping what already exists and consider the potential impact of any new digital tool
- Create a realistic business case that considers not only the cost of the tool, but the investments that will be needed for the organization to fully utilize the tool

# Selection of Tools: Possible Next Steps

Preparedness Checklist/How To Guide to help utilities evaluate their digital preparedness (e.g., ability to analyze current work processes and potential modifications, staff digital and maintenance skills, and organizational culture)

Mapping what digital tools already exists

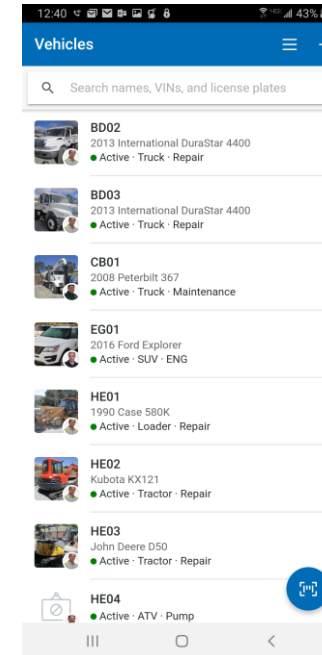
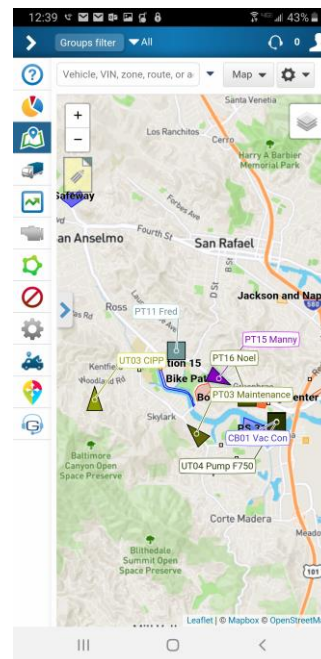
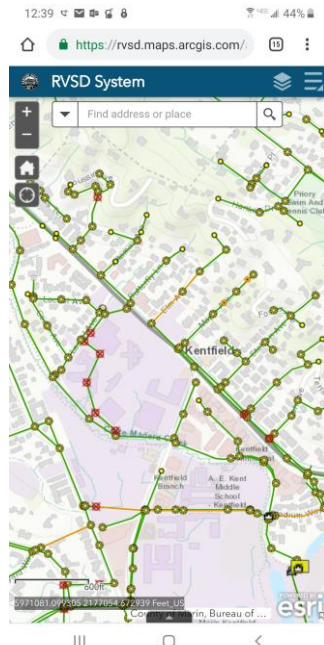


# Case Study – Ross Valley Sanitary District (RVSD)

**RVSD – 34 Employees**  
**196 Miles of Pipe**  
**19 Pump and Lift Stations**

## Mobile Apps for Operators

- Operators identified functionality needed
- Ops collaborated with Patrick – Business System Analyst
- Patrick researched options – brought back to operators
- Operators worked with Patrick to develop custom apps to use in field – tested apps in field – Manager oversight of project.
- Apps modified by Patrick – saved about 20 hours per week time.
- Operations skillset – data entry, analyzing functionality needed, learning apps, giving feedback, and being a team player.
- Total buy in as operators collaborated on solution. Very proud of result.



# Case Study – Ross Valley Sanitary District

**Creating Dashboards** – Integrating several systems on one platform

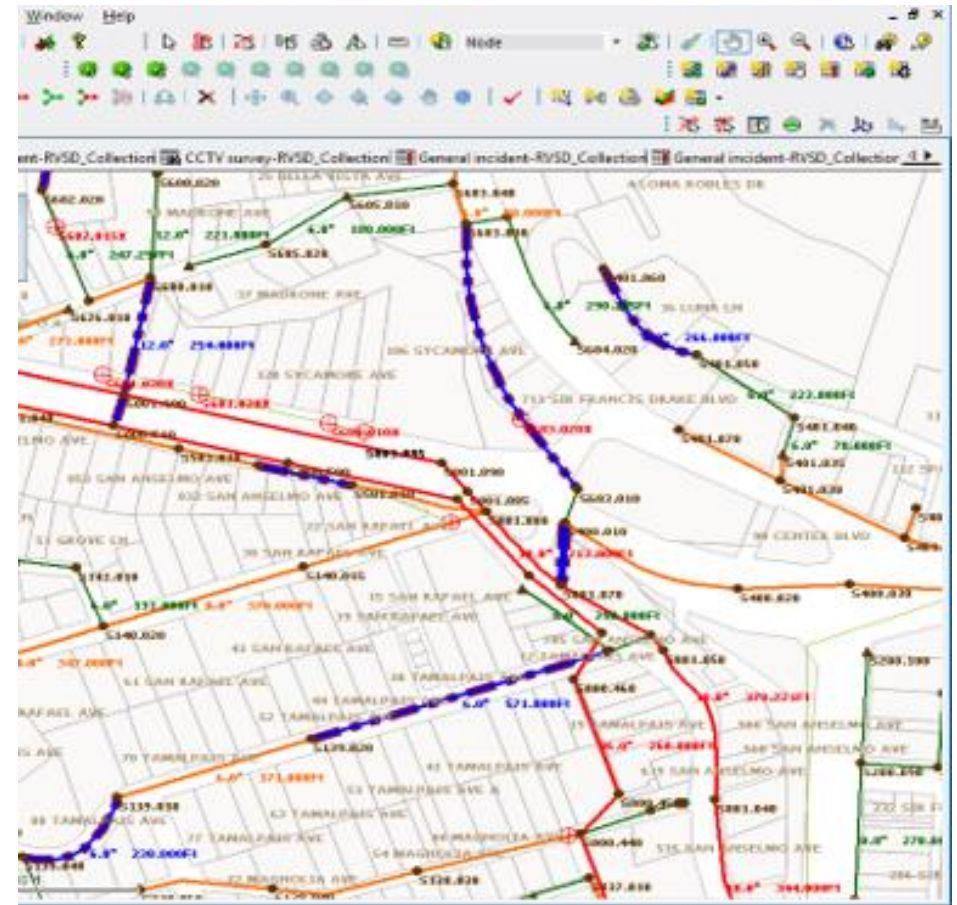
**Need:** right person, right skillset, understanding technology, coding and research, being a team player

**Result** – Easy for manager to understand what is happening from dashboard instead of accessing separate systems.

Patrick – Business Systems Analyst – No IT Department

- **Prioritize Live Dashboards**

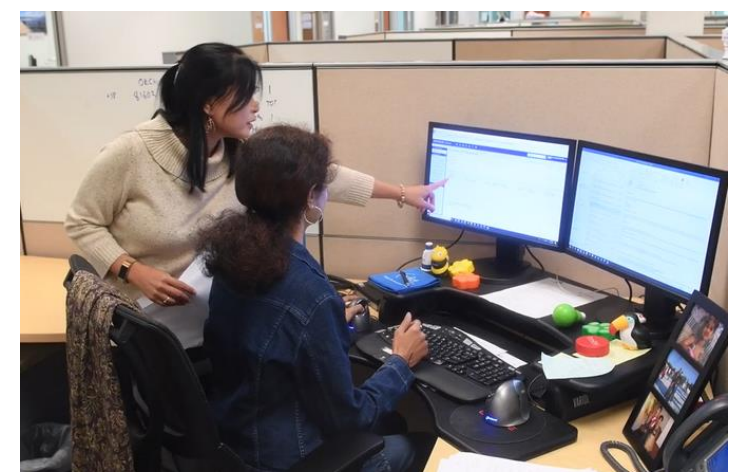
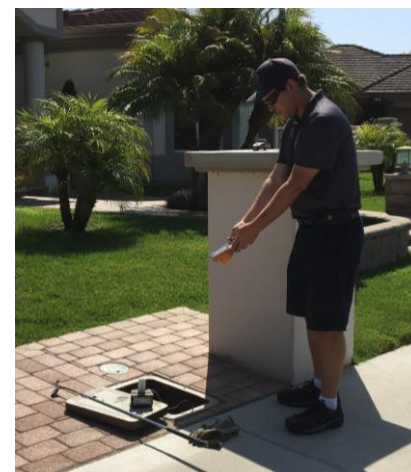
- CMMS/AMS
- KPI's
- Fleet Management
- SmartCovers
- SCADA
- Weather
- Vehicle GPS
- Tidal
- Creek Levels
- Social Media



# Organizational Culture

## Challenges

- In situations where organizational culture does not support innovation, continuous learning, or accountability, successful implementation of new digital tools can be difficult.
- Employees are often concerned that digital tools will replace them and/or radically modify the way they will need to perform their work.



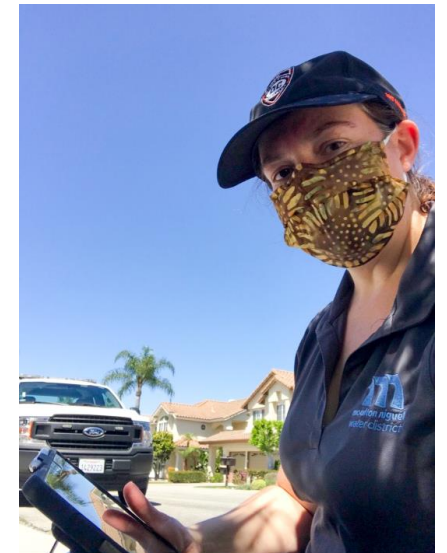


# Organizational Culture

## Lessons Learned

- Organizational cultures conducive to innovation have open communication, are supportive, respectful, and exhibit both a willingness to listen and a willingness to learn.
- Digital tools don't solve problems with organizational culture; only people can.

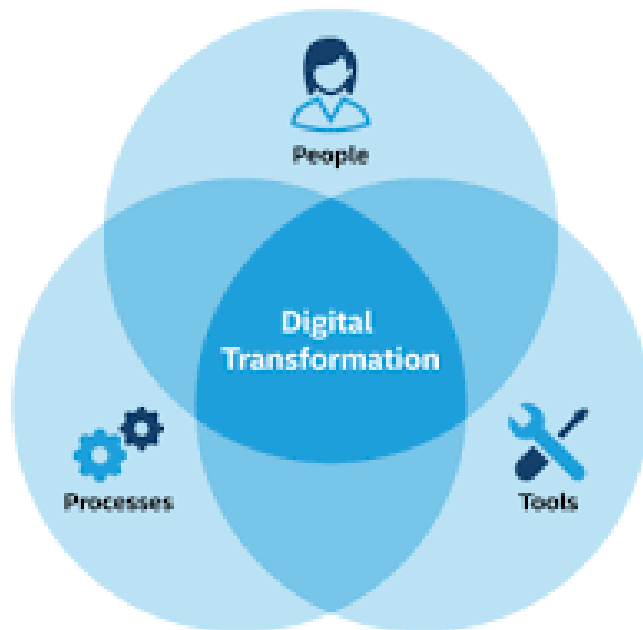
“The greatest factor is trust--of management, vendors, consultants, colleagues, and trust in their own abilities.”



# Organizational Culture

## Possible Next Steps

Workshops, webinars, and publications (with case studies showing strategies for change) could be provided on how organizational culture impacts the ability of organizations to make effective use of digital tools.



# Initial and Ongoing Training

## Challenges

- Training on use of digital tools is not a one-time or one-size-fits-all effort.
- Current training programs inadequate and out of date. Utilities under-estimate the training time and investment required.
- Internal training capacity is often limited.



# Initial and Ongoing Training

## Lessons Learned

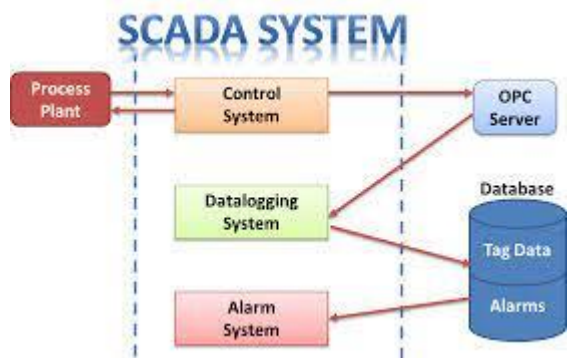


- Some staff members will pick up how to use the tool much more quickly than others. Utilities should define power users who can serve as trainers, guides, and mentors for their peers.
- Research is needed on how best-in-class utilities and other industries provide staff training more effectively (e.g., through on-line access to training materials, digital twins, video-game-like learning tools, and mentoring)
- Address training barriers (e.g., union agreements and organizational culture)

# Initial and Ongoing Staff Training

## Possible Next Steps

- Provide more guidance to utilities on the digital and maintenance skills required in order to use and maintain software, hardware, and data collection instruments associated with different digital tools
- Conduct competency analysis of mission-critical job to identify the digital tools staff must be able to use in order to perform their work effectively
- Provide more assistance to utilities in development of training programs required, partner with educational institutions



# Digital Competency Analysis Project (JVS)

- What type of digital tools do workers in different job categories need to be able to use?
- What core reading, math, science, and analytical skills do they need in order to use the tools?
- What kind of training does the utility need to be prepared to offer?
- What training is available in the community on both core skills and tool-specific information?



# Candidate Development

## Challenge

- Common perceptions of the knowledge and skills required by mission-critical workers are out-of-date and do not reflect the need for digital and technical maintenance skills.
- Educational resources in the community (unions, community colleges, and other training programs) may not provide training on the skills needed.



# Candidate Development

## Lesson Learned

Utilities should support technical training by providing on-site learning opportunities like internships and apprenticeships.





# Candidate Development - Regional Apprenticeship

- BAYWORK is developing regional apprenticeship programs for the water sector, beginning with an Instrument Tech apprenticeship in January 2022
- Combining classroom and on-the-job training ensures that new candidates have the opportunity to learn the full range of digital skills needed in their trade



# Candidate Development

## Possible Next Steps

- Provide support to utilities in upgrading job descriptions and salaries
- Strengthen ability of utilities to help educational Institutions prepare qualified candidates
- Install internship programs so people in community college water programs can see the digital tools and learn how utilities utilize them
- Identify utilities with apprenticeship programs to learn from each other



# Next Steps

## Next Steps for The Digital Worker Initiative

Advisory Members Participated in two sessions to discuss possible next steps that others could use as a resource.

The product of those discussions is an attachment that has a list of ideas:

- National Level Collaboration
- Regional Level Collaboration
- Agency Level Collaboration

Effective use of digital tools is a major challenge and responsibility of the water industry. BAYWORK hopes that the ideas offered by Advisory Group members will contribute to a broad expansion of the level of effort and attention that the water industry brings to this work.

Digital Connection Group – Sample of what Shane and I did as a next step.

# Contact and Questions

**Catherine Curtis**

BAYWORK Board

San Francisco Public Utilities,

Workforce Reliability

San Francisco, CA

[ccurtis@sfwater.org](mailto:ccurtis@sfwater.org)

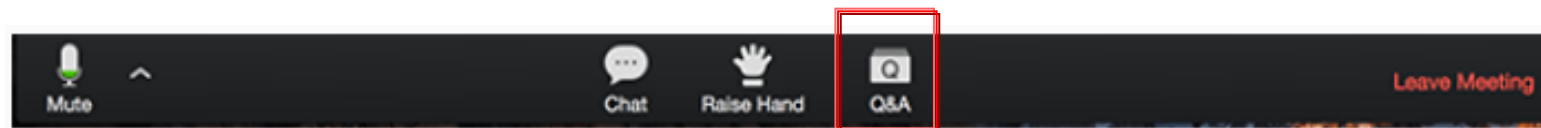


Services of the San Francisco  
Public Utilities Commission



# Q&A Session

**Webinar slides and recording will be sent to registrants within a week after the webinar.**



# Closing Poll #1

---

On a scale of 1-10, with 10 being the best score and 1 being the worst, how would you rate today's webinar?

If you do not see a poll window pop up, please use the **Chat function** to type in your answer.

Thank you!



# Closing Poll #2

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Finally, what other topics would you like to see covered in subsequent webinars?

*Please type a brief response in the chat box.*

