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Summer The TJCAA Quarterly

2020
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Message from the President

Employment Opportunities

PMP Certification

TJCAA's Business Certifications

- Alameda County Small, Local Emerging Business
- Bay Area Green Business Program
- California DGS SBE
- City of Colton SBE
- City of Los Angeles SBE
- City of Oakland LBE
- Eastern Municipal Utilities District SBE
- Inland Empire Utilities Agency SBE
- Metropolitan Water District of Southern California SBE
- Sacramento Municipal Utilities District (SMUD) SEED Vendor
- San Diego County Water Authority SBE
- Port of Long Beach SBE
- Port of Oakland LIABE/SBE/VSBE
- PWC Registration—Dept of Industrial Relations (DIR)
- West Basin Municipal Water District SBE

Message from the President, Gianna Zappettini

Working remotely has become the norm due to shelter-in-place restrictions. Interaction has been through web meetings, and the phone call has had a resurgence in popularity. The time has also created the backyard lunch hour. My bird watching has increased because of constant visits to our birdfeeder and pool. I have not gone stir crazy yet, but I did start naming the feathered visitors for fun. There are the finches, Atticus and Boo Redley (see pic), a wild turkey, Gabby (because Gobble-Gobble was too long), and the mallard couple—Mac and the Mrs. All of us at TJCAA hope that you are staying healthy and positive, and that you have found a new, or old, activity to entertain you. When we are not engaging in new activities, TJCAA is working hard and continuing to provide you with excellent engineering services.



Employment Opportunities



TJCAA is looking for qualified engineers to work on great projects with great people. To view and apply for open career positions, visit our website at www.tjcaa.com.

Jacqueline Arama, P.E. is PMP Certified



We are pleased to announce that Jacqueline Arama, P.E., an Electrical Engineer in our Instrumentation, Controls, and Electrical Group has earned her certification as a Project Management Professional (PMP)®.

This certification by the Project Management Institute recognizes a professional's competence as a leader and director of projects and teams. Project management experience of 3 to 5 years, amounting to 4,500 hours, is required.

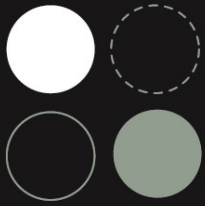
Jacqui's certification application documented in detail her experience leading and directing cross-functional teams to deliver projects on schedule and within budget, meeting project requirements and delivering quality work products, and being responsible for all aspects of projects. The PMP certification also requires applicants to have 35 hours of formal project management education and pass a rigorous exam covering project initiation, planning, execution, monitoring and controlling, and closing. Congratulations, Jacqui!

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Did you know?—Not All Backup Power is the Same

While having a reliable power supply is always critical for public utilities, the 2019 Public Safety Power Shutoff events conducted by Pacific Gas & Electric Company, Southern California Edison, and San Diego Gas & Electric highlighted the need for reliable backup power sources. PSPS events were intended to prevent wildfires from starting as a result of electrical equipment damage during high wind periods. The 2019 shutoffs affected over 2 million people in over 30 California counties. For some people, a lack of power is a mere inconvenience, and for others, it can be life-threatening. For TJCAA clients in the public sector, having a reliable power supply is a critical public health and safety concern, and we have seen an uptick in the requests for backup power installations.

The Environmental Protection Agency, in its *Power Resilience Guide for Water and Wastewater Utilities*, explains why having a backup power source is so important for water and wastewater facilities.

Power loss can have devastating impacts on drinking water and wastewater utilities and the communities they serve. Inoperable pumps at a drinking water utility can make firefighting difficult and cause local healthcare facilities and restaurants to close. Pressure loss can allow contaminants to enter the drinking water distribution system from surrounding soil and groundwater. For wastewater

utilities, pump failure may lead to direct discharge of untreated sewage to rivers and streams or sewage backup into homes and businesses. (epa.gov)

Interruptions to utility power can occur in many ways besides planned outages. Earthquakes and storms can cause damage resulting in outages. A temporary shutoff may occur for planned maintenance. Acts of terrorism could cause an outage, as could damage caused by wildlife. Treatment facilities need to have a backup that can start providing electricity quickly.

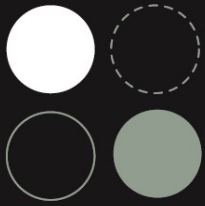


Backup power systems are generally designed for short-term use. Depending on demand and how "short-term" the use may be, a UPS (uninterruptible power supply) or generator may be desirable.

Manan Bhatt, an Electrical Designer in TJCAA's Instrumentation, Controls, and Electrical Group explains, "Batteries are a great source for energy storage where power is needed for limited periods of time, and are typically used in conjunction with a UPS."

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Electrical Designer McKenzie Campagna, also in our ICE Group, adds that for longer periods of backup power, a generator makes sense. She says, "Backup time and electrical load are selection factors with energy sources. Smaller electrical loads and run times mean that we can use a UPS. When larger loads and longer run times are needed, a generator is more cost efficient. When required run times are greater than 24 hours, we typically specify a generator over a UPS."

McKenzie observes that "Many agencies are particularly interested in portable generators because they're easier to install and can be transported to multiple locations so they don't become stranded assets." A trailer-mounted mobile generator, for example, could be transported to different facilities within a treatment system to power pump stations in different zones during a local power outage.

Generator fuels include diesel fuel, natural gas, propane, and gasoline. TJCAA typically specifies diesel systems, which are the most common and generally offer the largest selection, availability, and power range. On the other hand, smaller utilities may find that one or more small, gasoline-powered generators offer flexibility and cost savings compared to large, dedicated units.

Using diesel fuel, gasoline, or propane requires deliveries and on-site fuel storage. Among these three fuel types, propane can be stored the longest (it does not expire). Diesel has a longer storage life than gasoline, but both have limited storage time. Natural gas, in contrast, does not require on-site storage or deliveries, and natural gas generators usually run more quietly, with fewer air quality concerns, than diesel generators.

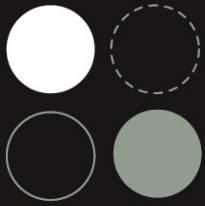
Safety concerns for the various fuel types include spills (diesel and gasoline) and explosions (propane and natural gas). A "backup for the backup" also must be considered. While diesel and gasoline are readily available, propane sources in an area may be limited to a few providers. As for natural gas, should an interruption to supply occur (perhaps as a result of an earthquake) backup options could be extremely limited. Having a bi-fuel generator, which can switch between two different fuel types such as natural gas and diesel, could increase fuel options during an emergency.

Even with a generator on-site, McKenzie notes, "Parts of the plant may need a UPS. Batteries can be used as part of a UPS to power a plant or portion of a plant in the time it takes for the generator to kick in. Typically the SCADA system must have some kind of UPS because we don't want the plant control system to shut down." Manan adds, "It can take anywhere from 10 seconds to 10 minutes for a generator to start providing backup power depending on the generator capacity, its type, its controller, and the load connected to it. While a unit can be tuned to have faster response, a generator rotor is a moving part and it takes a while to get generator voltage stabilized after it starts rotating."

Stay tuned for more information on backup power considerations, such as sizing, siting, noise, air quality permitting, installation, starters, performance, efficiency, selection of backup fuel, and ramp-up time in a future edition of our newsletter. In the meantime, if you would like to discuss your facility's backup power needs, please give us a call.

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What did you do during your first pandemic?

What did you do during your first pandemic?

Other global outbreaks have occurred during our lifetimes, but this is the first one that put our whole company under orders to stay at home. We all found ourselves in situations that were drastically different than usual, and we thought it would be fun to share some of the ways we dealt with the constraints of shelter-in-place restrictions.

Amber, who normally works as an administrative professional in TJCAA's Walnut Creek Office keeping our cast of Electrical, Control Systems, and Structural Engineers in line, found herself working at home with the kids. "There were lots of tailgate meals with my girls," she tells us. "Even when we are stuck home we still like our adventures! These will be the most wonderful memories for me."



That's certainly a silver lining, and Amber's family also did some projects that spread the smiles to their community. "We have been painting fun messages for our neighbors. We have done things like painting pieces of fruit, rocks, mini chalkboards, and basically anything that can hang in a tree or withstand heat. We seal our rocks and ornaments with rust-oleum and paint them with chalk markers."

Bee Vue, our CADD Specialist, reports that once restrictions were lifted for visiting hair professionals, he was eager to support his stylist, a one-person shop owner who has been cutting his hair for 20 years. He stood in line for 3 hours waiting to get his hair cut. While the older ladies ahead of him were getting time-consuming perms and such, his "buzz cut" took a grand total of 5 minutes. That's loyalty!

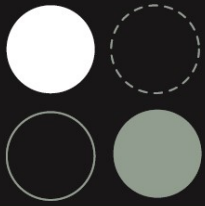
Structural Engineer Daisy Yu attended a baby shower on Zoom. "It worked well," Daisy said. "The hostess sent out 'party packages' ahead of time to those attending. They included materials for the baby shower activities as well as a party favor—materials to make your own no-sewing-required face mask."

Daisy adds, "Up until now, our family has held off on signing up for Netflix. But with two young kids at home with nothing to do between schoolwork, we finally broke down and subscribed. One of their favorite shows is *StoryBots*, which fortunately is educational. There is even one episode that describes what happens (to the water) when you flush the toilet. The kids were excited to tell me that the water goes to a 'tube under the house' which then joins another 'bigger' tube."

Michael Erwin, our Control Systems Programming Lead, tells us that his grandkids finally got him to watch a Disney movie (*Aladdin*), and that he hadn't seen a Disney movie since the 1990s! He also binge-watched *Bosch* and *The Last Kingdom*, but explains that for him, that means "about three episodes in a week." He added that while the shows are pretty good, the books are better.

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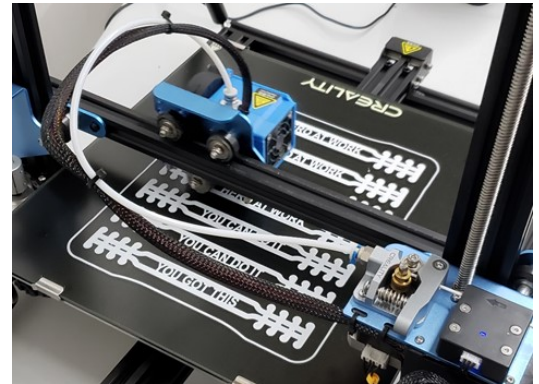
What did you do during your first pandemic?

Mike is also helping two of his grandkids learn to code their own games and applications in Scratch 3.0, which is a graphical programming language developed by MIT. Knowing how talented Mike is, programming SCADA systems and process controls are right around the corner for them.

Terry and Coral Cavanagh sewed dozens of cloth masks as part of a drive to provide 500 masks for a Tahoe nonprofit organization, Sierra Community House. SCH is distributing the masks to its volunteers and clients.



Electrical Designer Manan Bhatt 3D printed and donated about 50 "surgical mask ear savers," which help prevent ear fatigue for health care workers who wear masks for long periods of time. The ear savers can be sanitized and reused with no issues. Manan tells us, "When I found this cool idea online, I instantly reached out to my Kaiser Permanente primary care physician and asked her if they can accept such donations." She was appreciative and quickly said, "Yes!"



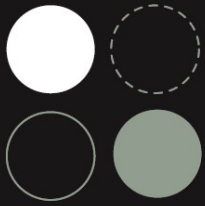
Manan used a [design by Terry Chu](#) that integrates motivational phrases onto the ear saver, such as "STAY STRONG," "YOU GOT THIS," "HERO AT WORK," and "YOU CAN DO IT." Manan printed a mixture of the phrases on the units that he donated to the Kaiser Permanente Union City location. The photos here show the ear savers being printed and an example of how they may be worn.



Thank you, health care workers and all of our essential workers!

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Equipment Obituaries

Dates to Note

Equipment Obituaries

If your control system was installed in the 1990s and early 2000s, it is most likely obsolete. Continuing to use such equipment—for which spare parts and support are no longer available—is risky. Call us if you have one of these ready-for-replacement units.

Manufacturer	Model or Series	Obsolete Status	Replacement
GE MDS	iNet Series Radio	March 30, 2020	MDS Orbit Series
GE MDS	iNetII Series Radio	March 30, 2020	MDS Orbit Series
Microsoft	SQL Server 2008 and 2008R2	July 9, 2019	SQL Server 2017
Microsoft	Windows Server 2008	January 14, 2020	Windows Server 2019
Microsoft	Windows 7	January 14, 2020	Windows 10
Rockwell	MicroLogix 1500 Series	May 18, 2017	CompactLogix 5370 Series
Rockwell	1768 CompactLogix Series	June 30, 2020	CompactLogix 5370 Series
Schneider Electric	Modicon Quantum PLCs	December 1, 2018	M580
Schneider Electric	Modicon Quantum I/O	December 1, 2021	X80 I/O Series
General Electric	90-30 Series PLCs	December 1, 2017	RX3i Series
General Electric	Genius Series I/O	June 1, 2017	RSTi Series or VersaMax Series
Hach	1720E Turbidimeter	July 27, 2018	TU5 Series

Dates to Note

Jun 20	The Summer Solstice	Aug 11-12	Perseids Meteor Shower
Jun 20	152nd Belmont Stakes (The first time in history this race will precede both the Kentucky Derby and the Preakness Stakes)	Aug 23	Indy 500
		Aug 24	Pluto Demoted Day
		Aug 24- Sep 13	U.S. Open Tennis Championship
Jun 28	Tau Day	Aug 29- Sep 20	107th Tour de France
Jul 5	71st Formula One Season Begins	Sep 5	146th Kentucky Derby
Jul 8	Math 2.0 Day	Sep 10	101st NFL Season Opener (Texans vs. Chiefs)
August	SpaceX's Crew Dragon spacecraft return to Earth (no definitive date yet)	Sep 17-20	120th U.S. Open Championship at Winged Foot, Mamaroneck, NY
Aug 3	Full Sturgeon Moon		

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