

# BAY AREA MONITOR



A Publication of the League of Women Voters of the Bay Area

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## Drones!

Coal Shipping and Dust Regulation  
Redwoods and Climate Change  
EV Charging at the Workplace



## The Season for Giving

The front and back covers for this edition of the *Monitor* embody the classic naughty-or-nice verdict that kids face at Christmastime: a fancy new toy or a lump of coal. Granted, the drone on our front cover (being piloted by Santa Clara Valley Water District staff above Coyote Creek) is much more than a toy — this kind of sophisticated unmanned aerial vehicle has great potential to help water agencies plan, build, and maintain their infrastructure, as Robin Meadows explains in her article on page 10. And as evident from our back cover image of coal stockpiles at Levin-Richmond Terminal (photographed on a San Francisco Baykeeper pollution patrol in 2011), as well as in Leslie Stewart's article on page 3, children should worry less about coal in their stockings and more about coal dust in their lungs.

Lest we be accused of favoring December 25 during a holiday season full of many diverse traditions, we'll let you draw your own associations regarding Aleta George's page 5 article about coast redwoods and giant sequoias — but it might make you second-guess any plans to install a chopped-down tree in your living room later this month. And we'll skip metaphors entirely in calling attention to Cecily O'Connor's page 8 article about electric vehicle charging stations at the workplace — all you need to know is that it's an excellent read, and we encourage you to check it out.

We also encourage you to consider the *Monitor* for an end-



Attendees enjoying Bay Area League Day 2018 last February.

photo by Alec MacDonald

of-year donation, which you can send by using the donation envelope inside this edition or by visiting our website ([bayareamonitor.org/donate](http://bayareamonitor.org/donate)). As you have no doubt been reminded, now is the season of giving, and regardless which holidays you happen to celebrate, this is your last chance to make tax-deductible donations for 2018.

Before you know it, 2019 will be here — and with it, LWVBA's next Bay Area League Day, on Saturday, February 9. Our popular annual forum focuses on equity issues this time around. Drop us a line to learn more, or visit [lwbayarea.org](http://lwbayarea.org) for further information.

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### Thank You for Your Support

The *Monitor* would like to acknowledge recent donations from Tamra Hege in memory of Joyce Roy (pictured below), and from Elaine Hahn. Such generous financial contributions are greatly appreciated, and help this publication continue to fulfill its mission. Donations to the League of Women Voters of the Bay Area, a nonprofit organization, are tax deductible.

From 1996 to 2006, Joyce Roy served multiple terms on LWVBA's board as transportation director and in other roles. An architect by training, she became a transportation activist later in life. In addition to her work with the League, she supported transportation causes by authoring frequent editorials and by twice running for AC Transit's board. She passed away on July 11, 2018.



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## Dust in the Wind: Regulating Coal and Petcoke Particulate Matter

By Leslie Stewart

For decades, residents of the Bay Area who live near industrial areas and transportation corridors have battled particulate matter, the microscopic grains of dust and soot that can lodge deep in the body and trigger asthma and other ailments. In this fight, regulators have primarily focused on reducing residents' exposure to particulate matter from diesel engines, especially in areas like ports, where trucks, trains, and ships can all burn diesel fuel. More recently, however, attention has turned to another port-related form of particulate air pollution: dust from storing and shipping coal and petroleum coke at terminals in the East Bay.

As the country switches away from coal-fired power, coal producers in states such as Utah and Wyoming have found markets in Asia, but they need larger terminals at West Coast ports to transfer their coal from trains to ships. They've looked to the Bay Area to meet this need, but have encountered resistance, and not just because of the impact on local air quality — environmental activists argue that exporting such a carbon-intensive fuel undermines efforts to reduce climate change. Communities have rallied to protest a proposed terminal in Oakland, coal and petroleum coke shipping in Richmond, and a possible terminal in Vallejo.

In 2013, the City of Oakland signed an agreement granting a developer the right to build a bulk commodity terminal near the foot of the Bay Bridge. After learning of the developer's plans to ship coal — a commodity not mentioned in the agreement — the city banned coal shipments in 2016, claiming they endangered public health and safety. But this past May, a district court judge ruled that the city had broken its agreement with the developer by applying the ban to the terminal without adequately proving the hazards. The city appealed the case, and has now declared that the development agreement has been terminated, with more court battles ahead.



Stockpiles of coal and petroleum coke await loading onto vessels at Levin-Richmond Terminal, as photographed by a San Francisco Baykeeper pollution patrol in 2013.

photo courtesy San Francisco Baykeeper

Meanwhile, the privately-owned Levin-Richmond Terminal substantially increased shipments of coal between 2016, when the Oakland ban was passed, and 2017. Last May, local CBS television news affiliate KPIX 5 reported compelling evidence that coal is being diverted to Levin that would otherwise have gone to Oakland.

Levin-Richmond Terminal also handles other bulk commodities, one of which is petroleum coke, or petcoke. Petcoke is created by burning off residual hydrocarbons and other impurities from the tar-like material left after refining petroleum into other usable products. Like coal, petcoke is stored outdoors in piles, and can give off dust particles with the potential to impact surrounding neighborhoods. A recent literature review by the National Institutes of Health concluded that “the main threat to urban populations in the vicinity of petcoke piles is most likely fugitive dust emissions in the form of fine particulate matter.”

In addition to air pollution, coal and petcoke dust can affect waterways around terminals. That's been a problem here — in 2014, the environmental advocacy nonprofit San Francisco Baykeeper successfully sued Levin-Richmond Terminal to impose greater controls on dust blown into the

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## Dust in the Wind (from page 3)

water and carried in stormwater discharged to the Bay.

Dust produced while storing and handling coal and petcoke can be controlled, but regulatory approaches vary. In August, the Bay Area Air Quality Management District amended its particulate matter regulations to address fugitive dust from sources that include bulk storage. With adjustments to Rule 6-1, the agency set specific standards requiring facility operators to prevent dust from going offsite. Many of the rule's recommended measures are already in use at Levin-Richmond Terminal: wind barriers, covers for conveyors, spray misting or watering piles of material, and suspending operations during periods of high winds.

Rule 6-1 is a "performance-based" regulation; its success is measured by whether the facility successfully meets the standards for limiting dust emissions. Guy Gimlen, principal air quality engineer at the Air District, explained in an email that "most facilities behave responsibly if they know what the requirements are ... we tried to make these performance-based requirements clear and practical — something the average worker could relate to: i.e. no visible dust across the property boundary; and no dust with greater than 10 percent opacity (barely visible) greater than 5 feet wide, tall, or deep for more than 3 minutes in any hour. For the worker, if they can see any dust, they should take notice. If the dust forms a cloud (plume) larger than 5 feet they should take corrective action." The new rule will take effect in July 2019.

The Air District also requires that any new facilities include "best available control technology." Gimlen cited the Carbon

Inc. facility at the Koch Marine Terminal in Pittsburg, which handles petcoke from two refineries. Gimlen said the facility uses "enclosures around storage and handling operations, [and] induced draft fans drawing air through the enclosures and then filtering the discharge of the fans through a baghouse."

Frank Gordon was on the Pittsburg Planning Commission when the terminal was proposed, and recalled, "The project proponent at the time was told that if they expected to get approved they needed to show the public that they were willing to be a good neighbor and present a state-of-the-art facility." Gordon reported that in addition to facility enclosures, the covered trucks bringing petcoke to the facility travel at night; by avoiding highway congestion, the trucks spend less time on the road, reducing diesel exhaust pollution.

Best available control technology specifications based on regulations in Southern California were incorporated into a proposed amendment of Richmond's Nuisance Ordinance aimed at dust from bulk storage such as that at Levin-Richmond Terminal. In May, Richmond Mayor Tom Butt wrote on his personal website that "it is clear that coal dust is escaping from the property into at least 4th Street, because Levin machine and hand sweeps it constantly to keep it under control." Members of the group No Coal in Richmond note that it's impossible to enforce opacity standards if loading is done at night.

The draft ordinance is on hold while Levin works with the city and the Air District on a study to provide additional input to the city decision process. Air District officials reported that Levin has been cited only once since 2000, and suggested that street dust may be coming from the tires of trucks leaving the facility. This "track-out" is also regulated under the agency's new Rule 6-6, and street sweeping is an acceptable control for track-out dust. The terminal will be required to comply with the Air District's Rule 6-1 and 6-6 regardless of the outcome of the city ordinance.

Gimlen pointed out that "the concern that is left unaddressed is the coal dust that can get carried out of the top of rail cars." Dust from trains may have a greater impact than storage and shipping at terminals; while air quality regulations govern terminals, federally regulated railroads don't have the same restrictions.

The local short-line railroad that moves coal from the Richmond railyard to Levin is operated by the terminal. It travels at low speeds and uses new clean diesel engines. Beyond Richmond, both shippers and railroads have incentives



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## Redwoods and Climate Change: The Plots Thicken

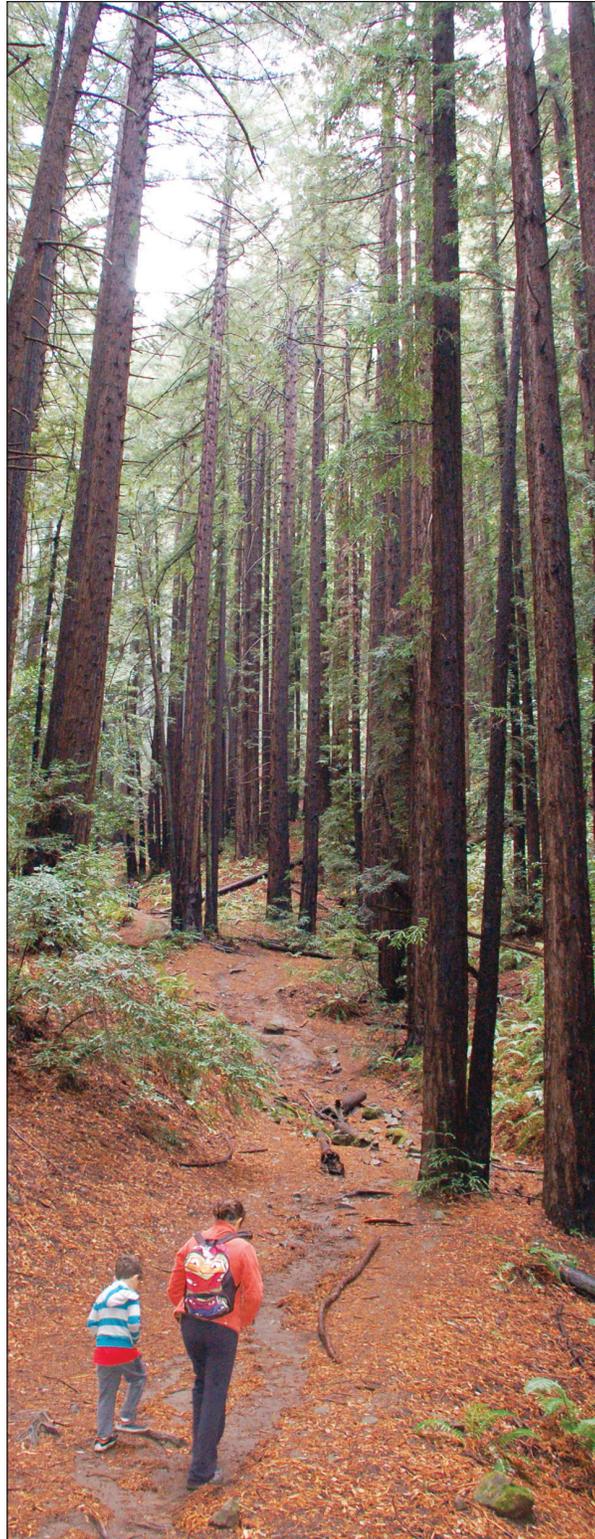
By Aleta George

to reduce the coal dust from trains. Burlington Northern Santa Fe Railroad studied the loss of dust from coal cars — because the dust disrupts the integrity of railbeds, leading to derailments — and then pressured shippers to take steps to reduce dust loss by shaping and sealing loads with surfactants. This has decreased dust by up to 85 percent according to some estimates, and most dust is lost close to the original loading point. The harder coal from Utah coming to the Bay Area creates less dust than other types, and car covers were proposed for the Oakland terminal as additional protection, although many experts maintain that coal cars cannot be covered because of potentially explosive dust buildup, and no covers have been commercially tested.

In any case, groups that oppose coal in their communities will continue to work on reducing local impacts from shipments. According to Margaret Rossoff, an activist with No Coal in Oakland, her group plans to begin monthly coordination meetings with No Coal in Richmond and No Coal in Vallejo beginning in December. Richmond is also one of the communities chosen to develop an air monitoring plan under 2017's Assembly Bill 617 (C. Garcia), and coal and petcoke dust monitoring may become part of that plan. 

*Leslie Stewart covers air quality and energy for the Monitor.*

In late October, a small group of researchers descended on a rectangular plot in



The Redwoods and Climate Change Initiative's newest plot is in Redwood Regional Park.

photo by Alec MacDonald

Redwood Regional Park, a popular hiking spot in the East Bay Regional Park District just a few miles from downtown Oakland. The park has the largest remaining natural stand of coast redwoods in the East Bay, and is the closest coast redwood forest to an urban center in the region.

The one-hectare plot is the first of 30 locations in a planned expansion of the Redwoods and Climate Change Initiative (RCCI), a research program designed to learn about the effects of climate change on redwoods. The expansion will allow scientists to study younger forests and how they respond to climate change. Save the Redwoods League leads the endeavor in partnership with researchers from Humboldt State University and the University of Washington.

During the first phase of the program, RCCI established 16 research plots in old-growth coast redwood and giant sequoia forests between 2009 and 2012. Five years after each plot was established, the researchers remeasured and inventoried trees and all vegetation to check mortality and growth, said Emily Burns, director of science at Save the Redwoods League. All 16 plots are permanent and will be monitored regularly, including two in the San Francisco Bay Area. One plot is in Big Basin Redwoods State Park and the

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## Redwoods and Climate Change: The Plots Thicken (from page 5)

other in Samuel P. Taylor State Park, which has the tallest coast redwood trees in the northern Bay Area. The other 14 plots are throughout California in the coast redwood and giant sequoia ranges.

Giant sequoias and coast redwoods are related, but have several notable differences. Redwoods are the tallest trees in the world and grow in a coastal belt 15 miles wide and 450 miles long from the Oregon border in the north to Big Sur in the south. Giant sequoias are the largest tree in the world by volume, and are restricted to a small range in Central California on the western slope of the Sierras between 4,000 and 8,000 feet. Both species grow only in California.

One of the things that researchers learned during the first phase of the project was that old-growth redwood forests store at least three times more carbon above ground than any other forest on earth. “It is high-quality carbon stored in heartwood that doesn’t decay even after the trees die,” said Burns. “We want to help [second-growth] forests be on a path to recover and regain the ecological functions of an old-growth forest.”

A healthy old-growth forest is better at filtering water, providing habitat, and storing carbon, she explained. Old-growth forests are those that reach a mature age without disturbance and with biological diversity and ecological functions intact. How old is old for these trees? Coast redwoods can live up to 2,000 years, and the oldest known specimen of a giant sequoia survived 3,266 years. Second- and third-growth coast redwood trees are those that sprout from cut trees after a timber harvest.

Prior to the Gold Rush and the population explosion in California, old-growth trees grew tall and strong in the area now known as Redwood Regional Park. Two of the tallest trees in what was then a roughly five-square-mile grove were used by captains to navigate hazards in the San Francisco Bay. First, many of the old-growth trees were felled to build Oakland and San Francisco. Then each time San Francisco burned to the ground in its early years, more lumber was taken from this grove to re-build. Just as the second-growth trees were acquiring some maturity, they were cut down to rebuild San Francisco after the 1906 earthquake and the fires it caused.

The researchers established their plot inside Redwood Regional Park, and then dangled from tree-climbing saddles to measure every branch of the tallest trees, mapped living and dead trees and other vegetation, and flew a drone to get imagery from above the treetops. As a result, they discovered something exciting that the East Bay Regional Park District hadn’t known, according to Kristen Van Dam, an ecologist with the agency. They found a patch of second-growth redwoods in a forest that had long been thought of as third-growth. “Any place loggers were able to reach easily, they logged more than once,” she said. “Humans did impact these forests before they were preserved, but now that the parks exist, they are preserved in perpetuity.”

The number of trees felled in the East Bay is just a small portion of the carnage that occurred throughout the coast redwood range. Prior to 1849, there were two million acres of old-growth redwoods in California. Today, only 5 percent of old-growth forests remain, and of the coast redwood forests that have endured, only 23 percent are protected, according to Save the Redwoods League.

But the logger’s axe is not the only threat facing redwoods today. These ancient trees must also survive air pollution, fragmented forests and habitat, invasive species, drought, and hotter fires.

The second phase of RCCI will establish 30 monitoring locations, some that will be one-hectare plots and others that will be individual trees. Other study sites in or near the Bay Area may include the Harold Richardson Redwoods Reserve in Sonoma County, the Archer Taylor Preserve in Napa County, and the Forest of Nisene Marks State Park in Santa Cruz County, said Burns.

The research gathered in younger forests with more extreme habitats, coupled with the ongoing monitoring of old-growth forests, will provide a wealth of information about the health of the trees and their forests. “We want



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to know which locations will be refuges for redwoods and where they are not doing as well, to make better stewardship decisions and help guide management,” said Burns.

There are many reasons to admire the coast redwood. Not only are they the tallest trees in the world, but they are also resilient, said Burns. They can survive being struck by lightning, hit by other trees, swept by fire, exposed to ongoing drought, and cut to the ground. “They really are sempervirens, or ever-living,” said Burns.

Most people think of coast redwoods as being only on the coast, she added. But the plots in the RCCI look at trees and forests in the north and south, and in coastal and inland areas. “Redwoods survive, and even thrive, in different temperature and water regimes, and that gives me hope that the species will be able to tolerate more changes in the future,” she said.

In fact, researchers found during the first phase that some of the old-growth trees have grown faster in the last 40 years

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than they ever have, perhaps due to longer growing seasons or less fog and more sunlight, both of which are conditions of a changing climate.

With only a small percentage of old-growth remaining, and their genetic diversity compromised as a result, California’s state tree needs our help to survive the changes that are coming. “We have to step up our game to ensure that these world-class forests are going to be around for generations to come,” said Burns. 

*Aleta George covers open space for the Monitor.*



The RCCI plot in Redwood Regional Park is at the nexus of the Madrone, Starflower, and French trails.

photo by Alec MacDonald

## Plugging Employers into Electric Vehicle Charging

By Cecily O'Connor

The state is driving toward a future in which five million zero-emission vehicles (ZEVs) will navigate California roads by 2030, a goal set nearly a year ago by outgoing Governor Jerry Brown as part of a fight against climate change. But this path to cleaner transportation requires a lot more charging infrastructure, and Bay Area employers are being called upon to continue jolting the workplace.

One important reason is that employees with access to workplace charging are six times more likely to drive a ZEV, according to Department of Energy data cited during a transportation panel discussion at the Marin Sustainable Enterprise (MSE) Conference in late October. Additional charging options will enable ZEVs to be pervasive as the market continues to grow and strengthen. Technology advancements are cutting vehicle cost and charge time, as well as increasing range and battery storage.

“The best thing you can do is install charging at your workplace,” said Doron Amiran, EV program manager for the Center for Climate Protection, during the MSE panel.

While home-charging is ideal, it's not always practical for ZEV owners who live in multi-unit dwellings or rental properties. But people who commute by car tend to follow a consistent route to work and spend several hours, if not more, parked in the company lot. These anecdotal perspectives are in line with data presented at the MSE Conference, which was focused on the North Bay, and spurred the *Monitor* to contact other experts for a broad view of regional activity.

“For some of us, home [charging] is not an option if we rent or live in a city and park on the street every day in a different location,” said Gil Tal, director of the Plug-in Hybrid & Electric Vehicle Research Center at UC Davis' Institute of Transportation Studies.

Public policies surrounding ZEVs at the state, regional, and local levels aim to reduce transportation-related emissions and ensure communities are prepared to address climate change. So raising awareness about the ways employers may further those goals is a logical step in the playbook. Now, workplace charging is touted as an amenity akin to cafeterias and gyms that aid employee retention.

“Workplace charging, for those that are not transit accessible, is popular, important, and seen as a necessity,” said Laura Tam, sustainable development policy director at the San Francisco nonprofit SPUR.

Certain grant programs from utilities and air quality regulators also help employers purchase and install stations, decisions that often flow from an organization's sustainability



**More charging stations are needed for California to accommodate the increase in electric vehicle use.**

photo by Alec MacDonald

commitment and preference for renewable energy options.

“As a maker of design software for auto manufacturers and civil engineers, we want to contribute to the transition to clean transportation infrastructure,” said Ben Thompson, senior manager of sustainability at Autodesk, which has 12 chargers on its San Rafael campus from Greenlots, an EV charging technology company.

“Employees apply for the program and reserve the spot when they need it,” Thompson said. “The cost is 50 cents per hour for 100 percent renewable energy.”

Yet for all these benefits, ZEVs could still pose challenges to traffic congestion, the reduction of which is a critical priority for Bay Area policymakers and transportation planners alike.

“Electric vehicles might get us to our greenhouse gas reduction goals but not to congestion reduction,” said Krute Singa, principal regional planner for the Metropolitan Transportation Commission. “We’re looking at a multi-pronged approach now and in the future.”

The intention is that as the transportation landscape evolves, the ZEVs will converge alongside public transportation and other mobility options like shared vehicle trips and automated vehicles that eliminate the need for a driver.

In the meantime, state goals are firmly fixed on stepping up charging infrastructure to encourage ZEV adoption. For example, Governor Brown's administration also proposed a \$2.5 billion initiative to install 250,000 charging stations by 2025. That goal feels a long way off: According to a recent check of the Department of Energy's Alternative Fuels Data

Center website, California has 5,429 charging stations.

Nonetheless, charging infrastructure currents are buzzing as future growth plans are identified. For example, City of San Jose officials are developing strategic plans that will look at ways to make more stations available so the public can reliably charge their cars, according to Laura Stuchinsky, San Jose's sustainable transportation manager.

ChargePoint, a Cupertino-based EV charging station network operator, will install 2.5 million charging spots across Europe and North America by 2025. That's up from 57,000, according to Mike DiNucci, senior vice president of sales.

"North of 1,000" spots are being added to that count each month, he said during an October 30 interview.

For many employers, the decision to add charging stations starts with employee feedback. BioMarin Pharmaceutical, also a ChargePoint customer, experienced "tremendous" employee demand for stations and installed them at its Novato site in early 2013. Others already were included in San Rafael when BioMarin began operations there the same year. Now it has more than 70 stations and will expand over time.

"We continually assess our needs and develop programs accordingly," said Debra Charlesworth, vice president of corporate communications at BioMarin.

ChargePoint's DiNucci said that, at most companies, 10 percent is the "baseline" number of employees driving EVs. If you keep the ratio of drivers to charging ports at two-to-one, you see "almost no problems whatsoever," he said. A three-to-one ratio is "do-able," but four-to-one starts to cause "consternation."

It's up to individual companies to decide whether staff pay to use charging stations. Fees can help deter station misuse, or even help an employer pay down electricity expenses.

The price of a new charging station varies, but ChargePoint's level-two port starts at approximately \$3,000, DiNucci said. Then the cost of installation, handled by outside contractors, can be as little as \$500 or several thousand dollars more, depending on factors like how far the station is located from the building, if it's necessary to add transformers, or whether crews must dig through concrete to upgrade the current electrical system.

To counteract these costs and challenges, agencies like the Bay Area Air Quality Management District offer grant funding. Its Charge! Program has given out more than \$7.7 million to install publicly accessible charging stations at Bay Area workplaces, according to the Air District's Mark Tang.

The agency counts 6,600 publicly accessible charging stations at all types of facilities in the Bay Area, 36 percent of which were installed with the help of Air District funds. Its

overall goal is to transition at least 90 percent of the region's existing light-duty vehicles to ZEVs by 2050.

"To reach our EV adoption goals, we will continue to offer funding to support EV adoption programs around the Bay Area," Tang told the *Monitor* in an email.

At the start of 2018, Pacific Gas & Electric launched its "EV Charge Network," a three-year program to set up 7,500 level-two chargers at condos, apartments, and workplaces, including at sites in disadvantaged communities. The program is open to PG&E customers, but they must be willing to install at least 10 adjoining parking spaces, among other requirements.

Even with these conditions, the end game is about creating shared mobility options that serve a variety of needs. Outside the workplace, public charging infrastructure is emerging around transit hubs to provide a cleaner option for first-and-last-mile connections. For example, BART is piloting a program at the Warm Springs/South Fremont Station, with 20 charging ports in the EV parking area and another two in the ADA accessible lot, according to its website. And the Santa Clara Valley Transportation Authority also has public EV chargers at some of its park-and-ride lots, with plans to add more going forward, according to its website.

"It's important to install as many chargers as we can at [public transit] stations," said UC Davis' Tal. "Then you don't have the motivation to drive into traffic head on, and can get a charge when you head into the city." 

*Cecily O'Connor covers transportation for the Monitor.*



## Balancing the Public Benefits of Drones with Privacy Protection

By Robin Meadows



The construction team that has been working on the Santa Clara Valley Water District's retrofit of the Rinconada Water Treatment Plant demonstrated its progress on the project by providing the agency with this photo, which was taken with a drone.

photo courtesy Santa Clara Valley Water District

Drones may be coming to a public agency near you. The benefits are obvious: Unmanned aerial vehicles are faster and cheaper than manned flights or boots on the ground, and can also go places that are dangerous or out of reach. But drones also raise privacy concerns.

"This is a balancing question," said Charles Belle, founder of Startup Policy Lab, a San Francisco-based nonprofit dedicated to government open data initiatives and citizen privacy. "There are strengths and weaknesses to using drones."

Water districts make a good test case for drone use because privacy can be less of an issue. While law enforcement and emergency services are concentrated in urban areas, water infrastructure is often remote. For example, the Santa Clara Valley Water District (SCVWD) maintains 10 reservoirs for water storage, and manages about 275 miles of creeks for flood control and habitat protection.

Keeping tabs on all that is a big job, and SCVWD is developing a pilot program to use drones for surveying and mapping. The proposal is now open for public comment and

will go before the district's board in early 2019.

"We can save vast amounts of money," said Kris Puthoff, manager of SCVWD's Land Surveying and Mapping Unit. He estimates that the cost of taking aerial photos with a drone would be about one third that of taking them conventionally from an aircraft. District engineers use survey data to guide efforts such as repairing eroded creek banks or widening channels. The latter would cost about \$10,000 per mile with a drone, compared to about \$35,000 per mile with conventional methods. Drones would also be useful for flying over pipelines to check for leaks, and mapping vegetation to monitor whether non-native plants are taking over a watershed.

Besides saving money, drones save time. Besides streamlining day-to-day projects, drones would speed the water district's response to natural disasters like flooding, earthquakes, and landslides. "Even if we have a helicopter company on standby, everyone else has them on retainer too," Puthoff said, explaining that waiting for their turn can delay emergency response. "With drones, we'll have our own

equipment and can get out right away to survey the damage.”

Drones are also more nimble than airplanes, providing photos that surveyors couldn't get otherwise. “You can't see debris under a bridge from an airplane because it flies straight above,” said Andrew Chafer, an SCVWD surveyor who previously piloted drones for a private engineering company. Another key benefit of drones is worker safety.

Expanding on the example of debris caught under a bridge, Chafer explained that without drones, someone has to go down in person to take a look. “It's not safe — water and debris are rushing underneath,” he said. “With drones, you're not putting anyone at risk. It's huge.”

The flexibility of drones is a red flag for privacy advocates, however. When the San Francisco Public Utilities Commission (SFPUC) launched a pilot drone program in 2017, “privacy concerns were paramount to the rollout,” said Josh Gale, who works in Emergency Planning and Security at SFPUC. The primary concern is personally identifiable information: “You have to scrub the data to block any faces or license plates.”

So far, personally identifiable information hasn't been a big issue for the SFPUC. The dozen drone flights they've done to date have been in remote watersheds in San Mateo County and the East Bay, focusing on environmental monitoring and infrastructure inspection. “We're in the very beginning stages of using this technology in our world and the benefits are huge,” Gale said. “We're lucky that our uses don't face the same privacy concerns as those by the fire department, which is primarily urban.”

Beginning with non-emergency services can help win buy-in from privacy advocates, said Startup Policy Lab's Belle. “I agree with the benefits but privacy risks are real,” he said. For example, drones can have unintended consequences that trip up non-emergency agencies, such as picking up collateral information from bordering properties with illegal activity. “All of a sudden you're sharing data with law enforcement,” he said, adding that many local police departments share information with the Federal Bureau of Investigations.

The Federal Aviation Administration projects “phenomenal growth” in the number of commercial drones nationwide over the next few years, estimating that they will quadruple from about 110,000 in 2017 to about 450,000 in 2022. The Electronic Frontier Foundation (EFF), a San Francisco-based nonprofit dedicated to digital privacy, states that “the technology that can be equipped to a drone is disconcerting, as they are capable of highly advanced and near-constant surveillance.”

This technology includes live-feed video cameras, thermal infrared video cameras, heat sensors, and radar — as well as cell-phone interception, license plate readers, face recognition, and GPS trackers. “Privacy law has not kept up with the rapid pace of drone technology,” according to the EFF. However, some cities, including San Francisco, do have policies that limit municipal drone use.

Belle helped set the San Francisco drone policy as a member of the city's Committee on Information Technology. Developing the policy took two years, and Belle draws several lessons from the process. One is that flight paths should be publicly accessible. Knowing when and where drones flew lets people check to make sure that agencies are sticking to their allowed uses, lessening privacy concerns.

In addition, data management should be transparent. “This is the big one where it gets really intense,” Belle said. “Where is the data going?” Considerations include exactly what information is collected, where it is collected, who stores it and for how long, and — perhaps most importantly — who can access it. Data could be held on an agency server or on a state server, for example, and the latter could have a policy of sharing information with the federal government.

A final lesson is the importance of a defined timeline for drone pilot programs. “The pilot program lets you run use cases,” he said. “Then you need an end point so you can assess the program — and refine the policy.” 

*Robin Meadows covers water for the Monitor.*



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