

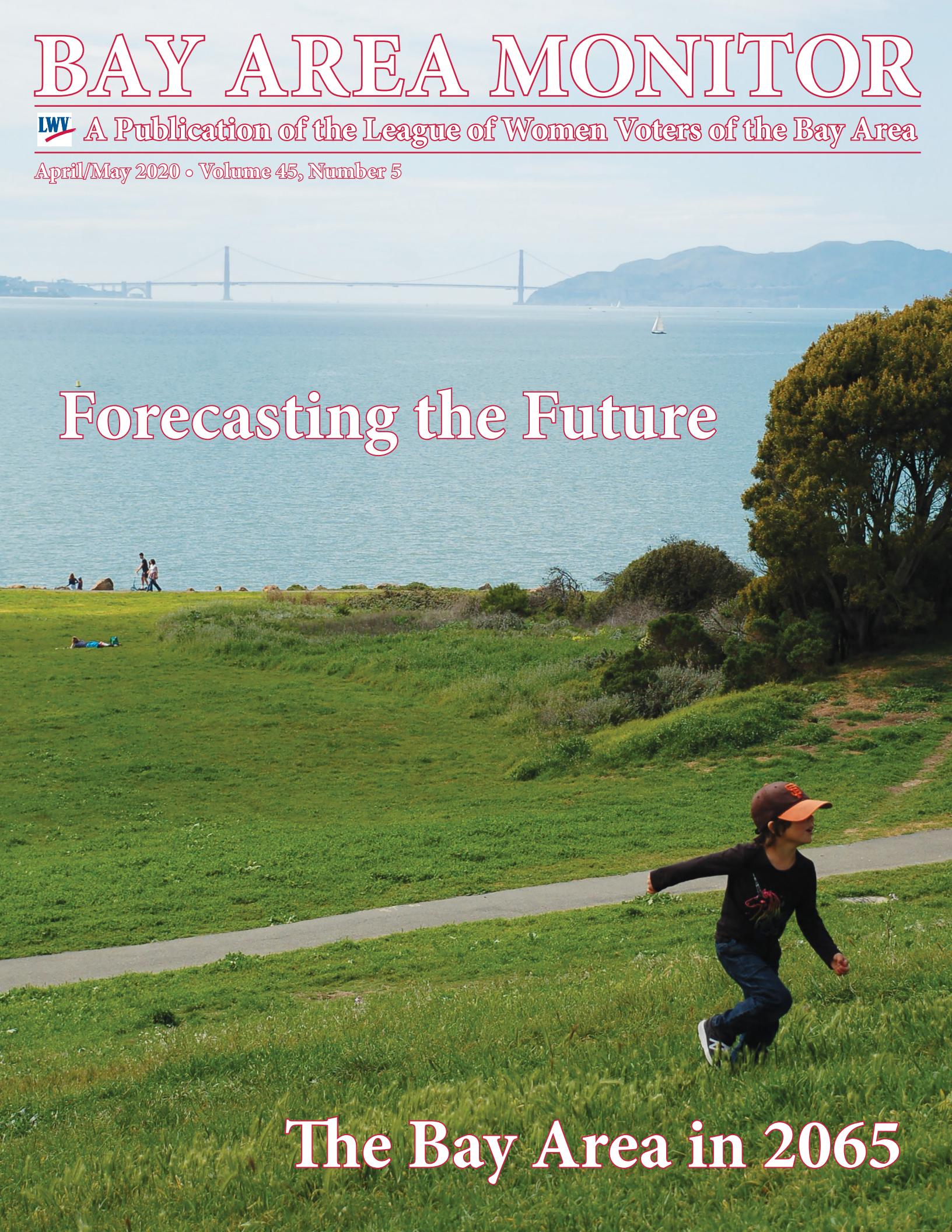
BAY AREA MONITOR

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Forecasting the Future

The Bay Area in 2065



Tough Times Ahead: *Bay Area Monitor* Facing Potential Shutdown

In 1975, the year it launched, the *Bay Area Monitor* was produced on a mimeograph machine. In case you're wondering, a mimeograph is basically a high-volume stencil, a way to reproduce printed pages by pushing ink onto paper through letter-shaped holes. These days, you're more likely to find one in a museum than in an office.

The members of the League of Women Voters of the Bay Area who mimeographed the *Monitor* into life couldn't have predicted how the publication would change over the long haul. They probably didn't expect it to last 45 years. If they did, they would have had trouble imagining the technology used to publish it today — or the world it now covers.

In its infancy, the *Monitor* focused on specific government plans, and continued to have a narrow planning focus in the ensuing decades. As the *Monitor* editor for the past 13 years, I've opened things up in hopes of reaching a more general audience. In part, this has meant taking advantage of emerging publishing advancements and technologies — namely, more affordable full-color printing and internet-powered digital tools. But more significantly, I've sought to bring a broader perspective to the field of regional government.

How? I've tried to infuse the *Monitor* with an inviting narrative style while minimizing jargon, acronyms, and other forms of planner-speak. I've looked for opportunities to make human beings (not documents) the characters in our stories. I've pushed for analysis of trends, showing how projects contribute to societal shifts, instead of simply touting individual successes. Overall, I've attempted to apply the techniques of longform journalism toward the ultimate goal of improving community quality of life.

Why? I believe that this approach supports the League's mission: to encourage informed and active participation in government. I've been optimistic that our coverage could help fuel a dynamic and productive conversation, one that helps many different stakeholders influence policy development.

As it turns out, democracy can be a rather specialized industry, at least in places like public works departments or government board rooms. Getting the general public to engage with — or just pay attention to — government planning is no easy task, no matter how you write about it. The *Monitor*'s reach hasn't expanded much outside of its niche — and now it may be nearing the end of its run.

Regardless of changes in focus and format, the publication's dire future is easily attributable to external circumstances. The financial crisis of 2007 resulted in a significant and permanent decrease in our budget, which comes almost entirely from agencies and individual donations (and not from League

membership dues, to clear up that misconception). After operating in this weakened state for more than a decade, we are in no shape to weather the massive financial turmoil wrought by the coronavirus pandemic, and so the *Monitor* now faces the sobering reality that we are unlikely to make it to the election this November.

That is, at least not in our current print form. As League leaders conduct fundraising outreach in the months ahead to determine if the *Monitor* can still be published as a magazine in the coming fiscal year, we will continue sending out our weekly *Monitor Notes* email newsletter every Wednesday. It's your best way to stay connected with the issues we cover during this uncertain time, so if you're not already receiving it, please email me at editor@bayareamonitor.org and I'll sign you up.

Or, email me just to express your thoughts. The League needs input to figure out what steps should be next for the *Monitor*. To borrow the language of policy development, consider the following weeks to be your public comment period.

That period closes on Memorial Day, when we go to press on the next and possibly last-ever *Bay Area Monitor*, set for publication June 1. In the meantime, enjoy this current themed edition, in which our reporters explore what the Bay Area might look like after another 45 years. And you never know — maybe in 2065, some future editor will be musing about how her iteration of the *Monitor* compares to that quaint version from back in 2020. We can only hope.

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Taking a Clear Look at 2065

By Leslie Stewart

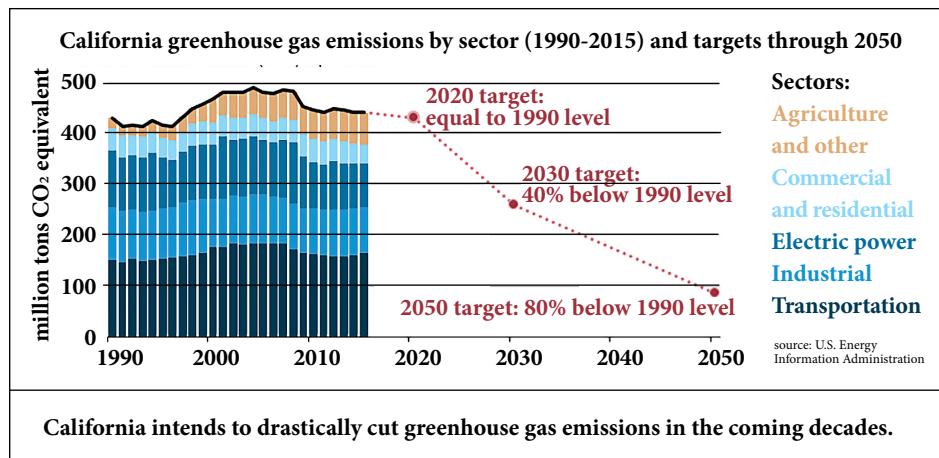
Illustrations and comic strips from 1975, the year the *Bay Area Monitor* was first published, often depicted automobiles with little puffs of gray exhaust coming from their tailpipes. Refineries and factories were shown with tall chimneys emitting plumes of dark smoke. In the Bay Area today, these portrayals seem as dated as 1970s fashions and hairstyles. Few vehicles have visible exhaust, and industrial “smokestacks” normally emit only steam clouds.

Those changes are the result of policies and strategies designed and implemented over the past 45 years. As politicians, agency bureaucrats, and concerned residents worked incrementally toward changing air quality, it's unlikely that they also foresaw just how different life would be in 2020 as a result. Electric vehicles, with charging stations in many locations? A stroll in a wildlife refuge next to a refinery, without watery eyes from pollution? Homes, schools, and public facilities generating their own energy from solar panels?

What might be different about the Bay Area in 45 years, if today's plans continue to move forward? The results may not be so easy to notice — screens don't become brighter when TVs run on solar power, and flowers don't grow six times bigger in cleaner air. How will people see tangible results as current programs reach their goals? Figuring this out can't be done with any scientific certainty, but many groups around the region have plans that can suggest trends. From agencies to researchers to concerned residents, there is agreement that work needs to be done if 2065 is to be better than 2020.

In 2017, when the Bay Area Air Quality Management District adopted its current Clean Air Plan, the region was not fully compliant with state and federal standards for ozone, a key component in smog. Some communities were still experiencing localized impacts of particulate matter and toxic air contaminants. Since 2017, the region has faced two major smoke events from climate-change-enhanced wildfires.

By focusing on a “post-carbon year 2050,” the 2017 plan is addressing these concerns. It incorporates state air quality goals of reducing greenhouse gas emissions 40 percent below 1990 levels by 2030, and 80 percent below 1990 levels by 2050 (see graph above). Strategies target ozone precursors, particulate matter, and toxic air contaminants as well as greenhouse gases.



As in the past, much of the plan involves incremental progress, using regulations and some incentive funding to decrease fossil fuel dependency, increase transit use, and control pollutants. New strategies involve green buildings, urban tree-planting, carbon sequestration in rangelands and wetlands, agricultural practices, and food waste disposal.

Jakub Zielkiewicz, advanced projects advisor with the Air District's Climate Team, noted that some of the new strategies are aimed at creating behavior changes in the region.

“We looked at carbon emissions generated by Bay Area residents,” Zielkiewicz explained, “and we noticed that more than half of all emissions are driven by consumer choice and lifestyle. This includes emissions from the way we travel, and the food we eat — how are the goods we consume produced and processed? Where do they come from? For dairy and meat, for example, it's not only the emissions associated with the processing and transportation of the final product, but also the methane emitted by the animals.”

As a trend toward the future, Zielkiewicz cited the Restore California Renewable Restaurants project, which adds a voluntary one percent surcharge to restaurant bills to supplement public funding for carbon sequestration programs such as carbon farming and compost application in agricultural operations and rangelands. Plan strategies and recent state legislation mean that all Bay Area residents will have food composting as part of waste management services within a few years.

For travel, together with a move to greater transit use, the increase in zero-emission vehicles will greatly improve air quality, although Zielkiewicz cautioned that tire and brake dust could still be problematic. Today, a big question is how to design vehicle charging infrastructure. In a glimpse of

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the future, Zielkiewicz mentioned that the Air District has funded chargers that are being installed on school properties. These could be made available to the public after school hours, which would benefit dense neighborhoods with multi-family buildings that may not have sufficient charging locations for everyone.

For a grassroots perspective, the *Monitor* also checked with two climate activists on how 2065 will be different. "What a question!" wrote Marti Roach, a member of Citizens Climate Lobby and 350 Contra Costa. "If we cannot dream about the positive results of a transition to a clean energy world, our efforts to mobilize toward it are much harder," she added.

Berkeley energy-activist Eric Arens predicted that "the amount of fossil fuel burned will be low because it will be more expensive than solar and wind-generated energy." This forecast is supported by multiple energy industry reports.

Along with renewables, Arens thinks vehicles and buildings will use hydrogen as fuel, writing, "Hydrogen will be made by electricity, which will be produced by solar panels and wind turbines. Many houses will have batteries or hydrogen-powered generators for use during high-rate time-of-use periods and during blackouts. The reason for using hydrogen is that it is much lighter than a battery that stores as much energy."

Arens predicted that "small areas such as neighborhoods and towns will each be in a microgrid, that can be isolated from the large electric transmission lines. Each microgrid will have solar cells and batteries and hydrogen-powered generators that can provide at least some electricity to the microgrid. Utility outages will not cause total blackouts."

Going even further, a recent article in *Forbes* predicted that energy from renewables will be efficiently managed throughout the day through remote adjustments to "smart" appliances such as heat pumps and refrigerators in thousands of buildings.

By 2065, residents will see the effects of bans on natural gas connections in new construction. Roach wrote, "Our electricity, which will be from renewable and clean energy sources, will power our buildings, making indoor air quality much higher. Recent studies have shown that leaking methane from gas in the home and workplace can contribute significantly to health problems like asthma." Buildings without natural gas lines will also be safer in earthquakes.

Shifting from natural gas will have an additional side effect. Heat pumps provide air-conditioning as well as heat, and they don't bring outside air into indoor spaces. In 2065, residents will be able to have cool filtered air, either in their own homes or in many public spaces, during excessive heat days caused by climate change, or smoke events resulting from wildland fires.

Arens had a question for the *Monitor*: "Will there be a typical Bay Area resident, or will there be more wealth inequality so that there will be wealthy residents and poor residents?" It's an important consideration, since the region's income disparity continues to grow. Some residents may still be living in spaces with obsolete natural-gas-powered appliances in neighborhoods endangered by old gas pipelines. They may use dirty fossil-fueled back-up generators if they are not connected to a reliable grid. Their homes may be inadequately protected from outdoor pollution, and they may lack access to adequate transit. Their neighborhoods may still have gas stations instead of clean vehicle charging facilities.

Zielkiewicz agreed that "the potential equity impacts could be significant" for some of the changes that are on the way. "We know that zero-emission vehicles are currently more expensive than gasoline-fueled cars, making their purchase more challenging from a financial perspective for lower-income communities," he said, adding that the Air District is responding to the issue with programs such as Clean Cars for All, which assists with the cost of zero-emission vehicles. By 2065, there will be a substantially larger pool of used clean-air vehicles available as well.

While agency incentive programs will be extremely important to ensuring equity, Roach predicted more cohesive communities will address some needs. "The impacts of [weather] challenges on us will have stimulated greater community among folks as most people find themselves living

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in denser environments and there are many opportunities to help and be helped by others. Volunteers will help staff cooling centers or educate folks on growing food and ways to prepare for risks from heat, fires, and floods."

Clearly, Roach is looking on the bright side, because climate change will not be completely reversed by what we

are doing now. However, she concluded, "If we write the story the right way and stay the course on emissions reductions, with some help from sequestering more carbon from the air, we will be in a renaissance in 2065." 

Leslie Stewart covers air quality and energy for the Monitor.

The Future of Water: Onsite Desalination for Hyperlocal Reuse

By Robin Meadows

People have dreamed of turning salty water into drinking water since the early 1960s, when President John F. Kennedy famously said, "If we could produce fresh water from saltwater at a low cost, that would indeed be a great service to humanity, and would dwarf any other scientific accomplishment." Today this technology is routine worldwide, with about 120 countries operating desalination plants. Now, Peter Fiske wants to take desalination technology even further than Kennedy envisioned.

A decade of working in the water industry left Fiske "shocked and disappointed about how little research and development there was in the water world." So he decided to do something about that, founding the National Alliance for Water Innovation (NAWI) at Lawrence Berkeley National Laboratory. Current desalination relies on technology that dates to Kennedy's era and is suitable only for ocean or brackish water. Recently, NAWI was awarded a \$100 million Department of Energy (DOE) grant to expand desalination to nontraditional supplies, such as the water we send down the drain in our homes. This next-generation desalination will also purify water more broadly, removing complex contaminants in addition to salts.

While it may come as a surprise that DOE is taking a lead on innovation in the water sector, the answer is simple: using water also means using energy. "Water is heavy," Fiske explained. "It takes a lot of energy to move it around."

The basics of the relationship between water and energy are well known, but California's recent drought revealed something

surprising about this connection. When the state mandated a 25 percent drop in water use, the resulting energy savings turned out to be even higher than expected. "It translated to larger savings than all the energy conservation programs," Fiske said.

This prompted the DOE to find ways of making water more energy efficient. Fiske and his team asked themselves what they could do to help, and decided to focus on desalination. Energy consumption is particularly high for this technology, which purifies water by pushing it through tiny holes in membranes. Boosting the energy efficiency of this process would make it a more viable option in the future.

Extending desalination to nontraditional sources like wastewater would make it even more future friendly. "When you hear 'desalination,' you think oceans and drinking water," he said. "But there's lots of other salty water that we don't use — there's a wide range of salty municipal and industrial wastewater that we're throwing away."

Tapping new water supplies will be critical as the world warms. In California, climate change will likely

bring strings of intense dry years punctuated by intense wet years. "We're going to see more extremes and more uncertainty," said Heather Cooley, director of research at the Pacific Institute, an Oakland-based nonprofit dedicated to solving water problems. "We're going to have to be smarter about how we manage our water." Smarter management includes conservation and efficiency as well as alternate sources and new technology, and the latter is where Fiske's



SFPUC headquarters has implemented an innovative system for localized water treatment that could be more widely used in the future. After the building's blackwater is treated through engineered wetlands outside, it is sent down to the basement (pictured) for filtration and disinfection before being distributed to the toilets and urinals for flushing.

photo courtesy SFPUC

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vision for taking desalination to the next level comes in.

The San Francisco Public Utilities Commission (SFPUC) has already begun to explore reusing municipal wastewater. “We think a diverse water supply is the way to go, with the uncertainty of climate change and the potential for drought,” said SFPUC Director of Water Resources Paula Kehoe.

Since 2012, the city of San Francisco has required new multi-family and commercial buildings 250,000 square feet and up to install systems for collecting and treating the wastewater they produce. The treated water is then used to flush the buildings’ own toilets and irrigate their own landscaping.

SFPUC’s own headquarters is setting an example of this technology. The building collects water from drains, lets sludge settle, and then puts the resulting wastewater through a treatment that mimics a wetland, which is nature’s way of cleaning water. The treatment apparatus looks like a set of large planter boxes — which Kehoe calls engineered wetlands — outside the building. Like natural wetlands, these engineered wetlands are alive with microorganisms that break down the floating organic matter that’s too fine to settle. The final step is disinfection with UV light and chlorine. “We have to think differently, and take waste and create resources,” Kehoe said.

Based on input from water professionals like Kehoe, Fiske and his team homed in on key needs for making their desalination research relevant to the real world. This will entail new ways of looking at our water supply. Current systems are centralized, treating water in massive facilities and then transporting it to users. Like San Francisco’s wastewater reuse program, the desalination Fiske envisions

Belated Thank You for Your Support

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will be decentralized, treating water for reuse onsite.

Decentralization can save tremendous amounts of energy, benefitting our wallets and the environment. About 70 percent of the Bay Area’s urban water is imported from the Sierra Nevada and the Sacramento-San Joaquin Delta. “Eighty percent of the cost now is moving water,” Fiske said. “The water industry and municipalities have been begging for lower-cost systems.”

Moreover, traditional systems produce only one kind of water: it’s all purified to the highest standards for drinking. But most of the time we use water for something else, like showering, running dishwashers and washing machines, and watering our yards. Landscape irrigation alone accounts for about half of municipal water use statewide. Water used for purposes other than drinking doesn’t have to meet the highest standards, and onsite desalination will allow tailoring the treatment to the use. Fiske calls this “fit for purpose.”

This approach aligns with California’s vision for the future of water. The state 2020 Water Resilience Portfolio calls for developing desalination technologies that “treat a variety of water types for various uses,” at a lower cost and with less environmental impact than traditional water sources. Fiske’s vision checks all these boxes.

Ultimately, Fiske wants to develop what he describes as desalination appliances, in that they can be plugged in and operated as easily as a washing machine. He envisions modular systems that are customized to treat a particular wastewater stream and bring it back to the appropriate standard for reuse. These desalination appliances would operate at the scale of a neighborhood or factory for hyperlocal reuse.

It’s too early to say when such desalination appliances might be available for everyday use, but Kehoe would welcome them any time. “That’s the moonshot, to develop technology for plug-and-play onsite water treatment,” she said. “We’re excited they’re working on this.” 



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Robin Meadows covers water for the Monitor.

Looking to the Horizon of Regional Transportation

By Cecily O'Connor

Futuristic hyperloop pods that whisk commuters around the region are a flashy idea, but not one that Bay Area transportation planners are betting on today.

Looking at key proposed projects — like a new San Francisco/East Bay rail connection — it's clear that planners are doubling down on public transit to provide fair, sustainable, and accessible transportation in the region 45 years from now and beyond. Staff at the Metropolitan Transportation Commission and Association of Bay Area Governments will determine this fall if a new Transbay rail crossing and roughly two dozen other recommended draft blueprint strategies will be included in Plan Bay Area (PBA) 2050, the long-range plan updated every four years.

"Most of these strategies have not been considered or included in previous iterations of Plan Bay Area," said Dave Vautin, assistant director of major plans at MTC.

This time around, MTC and ABAG staff took a new approach. Their Horizon planning initiative explored "what-if" scenarios to make sure the region is better prepared to address varying degrees of unpredictability. That includes a future in which an economic downturn would threaten transportation funding, now materializing as a significant concern. The global outbreak of COVID-19 and related transit ridership disruptions show why planning exercises are necessary to combat the unforeseen.

"While we didn't study a pandemic, we have explored what it means for our region to experience economic shock and that's research that's helpful in the months ahead," Vautin said.

A collaboration of San Francisco transportation planners also are working on ConnectSF, a 50-year vision to build an effective, equitable, and sustainable transportation system that helps take more cars off roads. The multi-agency effort is in a community feedback-gathering phase to produce two studies: one focused on streets and freeways and the other on transit corridors.

"People are excited about the future in terms of transportation innovation, but want projects and investments that work to improve their lives," said Bradley Dunn, public information officer at the San Francisco Municipal Transportation Agency.

Bay Area commuters often complain that getting around the region is costly and inefficient. The amount of time spent in highway congestion alone has risen 25 percent since the dot-com boom's peak. To address this problem, planners, advocates, and officials are tapping into ideas that are more rational than radical

to advance the region's transportation future.

"Emerging mobility is a combination of technological changes and behavior changes, both influenced by decisions we make as individuals, as well as government agencies setting policy," said Terra Curtis, a principal at the San Francisco-based transportation planning firm Nelson\Nygaard.

Emerging mobility options — car, ride, and scooter shares; e-bikes; and autonomous cars and shuttles — will continue to evolve and support public transit, Curtis said. These options will help fill first-and-last-mile connections to more densely housed transit hubs where residents can travel around the Bay Area and eventually to new destinations.

It's actually an experience that's "fairly common in other parts of the world," said Sebastian Petty, director of policy development at Caltrain, which is working toward the rollout of its electrified fleet and more frequent, faster, and expanded lines under its 2040 service vision.

In the future, automated shuttles are expected to connect riders to transit hubs amid growing importance of regional service. In preparation for that future, driverless technology company EasyMile has worked with Bay Area transportation agencies such as the Contra Costa Transportation Authority and the Livermore Amador Valley Transit Authority to test shuttles as part of pilot projects.

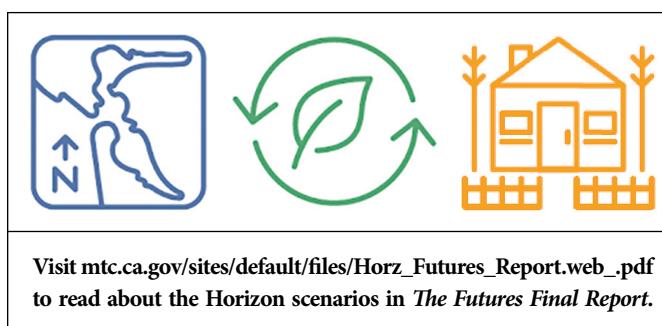
Sources interviewed by the *Monitor* also talked about the ways in which congestion pricing will reduce traffic while lower speed limits and more bike lanes will increase safety and improve access on complete streets. Furthermore, various systematic revamps are being proposed to reconcile all the disparate transit fare ticketing seen today.

Still, the biggest game-changer could be a new Transbay rail crossing.

A second crossing between San Francisco and the East Bay would help reduce delays, double BART's Transbay capacity, and allow passengers to ride a single train to destinations throughout Northern California. The proposed project includes BART and regional rail partners, and would connect existing rail services such as Capitol Corridor and Caltrain, serving stops in Sacramento, Stockton, the Peninsula, and Monterey, all of which are part of the broader megaregion.

"We think it's the biggest transformational project we

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Visit mtc.ca.gov/sites/default/files/Horz_Futures_Report.web_.pdf to read about the Horizon scenarios in *The Futures Final Report*.

Looking to the Horizon of Regional Transportation (from page 7)

could do for the region and hopefully the megaregion," said Sadie Graham, BART's acting director for the new Transbay rail crossing. "It will transform the way people travel and access destinations throughout Northern California."

The crossing is a strategy that would only be included in PBA's "blueprint plus" category when sufficient revenues are available. The full project is estimated to cost at least \$30 billion in today's dollars, according to MTC.

"The crossing could accommodate BART trains, standard gauge trains, or both on separate tracks. Consideration is also being given to both trains sharing dual-gauge tracks. But those are all technical considerations that would require further study," Graham said.

Integration opportunities also need a closer look to determine how a future regional rail network should or could be created to blend and balance service to multiple markets. Major infrastructure investments, including California High-Speed Rail and Caltrain electrification, could be leveraged to spur greater regional connection, transit officials said.

"Our long-term future is part of a tighter Bay Area transportation network," said Petty, adding that Caltrain's service vision directs it to continue planning for potential new regional and megaregional connections.

Currently, ideas about different transit providers eventually operating as one system are mostly related to fares and payments. One strategy being analyzed for potential inclusion in the final PBA 2050 calls for making trip planning and payment more seamless through a platform accessible via smartphone. Another recommends an integrated fare structure across all operators,

replacing each one's specific discounted fare programs.

However, there would be multiple operational complexities to sort through, including how the streamlining of fares hurts operators heavily dependent on fare-box revenue.

Advocates acknowledge revenue concerns but stress that riders will continue to suffer from lack of fare and schedule coordination in the future should the region's 27 transit operators operate in silos. Seamless Bay Area, a group campaigning for a unified regional transit network, has sponsored Assembly Bill 2057 (Chiu), which lays out ways to simplify transit riders' experience.

"We need to have an empowered regional transportation authority that can truly facilitate a transportation vision that makes sense, and results in a logical, competitive transportation network," said Ian Griffiths, Seamless Bay Area's co-founder and director.

Would a hyperloop ever be a part of the network? Staff working on PBA studied the possibility as part of "back to the future" planning when exploring high-speed rail alternatives. But they ruled it out because capacity would be low, it's not fully proven, and, at this point, no one knows if it will come to fruition, Vautin said.

Transportation planning is cyclical in nature, too. Consider BART, which is now transitioning to a new fleet, replacing cars that have been in use since the rail operator's inception in the early '70s. "We'll kind of be in the same situation 45 years from now, looking at the third generation," said Jim Allison, manager of media relations at BART. 

Cecily O'Connor covers transportation for the Monitor.





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Redwood Regional Park Renamed in Honor of Dr. Aurelia Henry Reinhardt – First Female Park District Board Member

Coinciding with the 100th anniversary of women's right to vote, the East Bay Regional Park District is renaming Redwood Regional Park – Reinhardt Redwood Regional Park – after Dr. Aurelia Reinhardt, a suffragist and one of the Park District's first board members – and only woman – elected to the newly-founded Park District in 1934.

Earth Day at 50: Mulling the Blue Marble's Next Half Century

By Aleta George

This year marks the 50th anniversary of Earth Day. What Wisconsin Senator Gaylord Nelson had initially envisioned as a national day of environmental education blossomed into a full-blown movement when on April 22, 1970, 10 percent of the United States population, 20 million people, took to America's streets to protest polluted rivers, smoggy cities, and oil spills in the ocean.

"Earth Day, for some, marks the beginning of the modern environmental movement," said U.S. Forest Service's Steve Dunskey. In the ensuing years, environmental activism was followed up with legislative action when President Richard Nixon signed the Clean Air, Clean Water, and National Environmental Policy acts. During the same period, the Endangered Species Act was strengthened and the EPA outlawed DDT as a pesticide.

These laws and policies brought about concrete change, but it was a singular event in 1972 that sparked the public's collective imagination. Apollo 17 was on its way to the moon when the crew snapped a photo of Earth as it was being seen from space for the first time. The "Blue Marble" went viral, and it became the Earth Day logo. "The Earth as the 'Blue Marble' sitting out there in the black vastness of space really caught people's attention and made them realize we are living in a finite system," said Dunskey, an organizer of Visions of the Wild, a film and arts festival in Vallejo that will celebrate Earth Day in September.

After the inaugural event in 1970, Earth Day became an annual American secular holiday with trash cleanups, hikes, and festivals. In 1990 it went global, and today, one billion people worldwide use it as a day to celebrate Earth and take action to protect it. This year thousands of organizations had planned events for the 50th anniversary, but given the devastating effects of the coronavirus pandemic, it is unlikely that people will gather in person. And yet, the challenges for the next 50 years remain.

To mark this auspicious occasion, the *Bay Area Monitor* asked several noted environmentalists working in different fields — Dunskey, editor and urban farmer Jason Mark, author Mary Ellen Hannibal, and Ph.D. candidate C.N.E. Corbin — about the history and importance of Earth Day, and the role it might play in the next 50 years.



As Earth Day approaches its 50th anniversary, the *Monitor* interviewed Steve Dunskey, Mary Ellen Hannibal, Jason Mark, and C.N.E. Corbin about their thoughts on its legacy and what the next 50 years will bring in terms of environmental activism.

photo credits: Ann Dunskey, Richard Morgenstern, Micah Baird, C.N.E. Corbin

"Earth Day is a timeout to consider our fundamental reliance on earth and its natural systems, and then to consider what we can do individually, or ideally collectively, to safeguard those systems," said Jason Mark, editor of *Sierra* magazine.

There is good news and bad on the eve of this anniversary, according to Mark, who said, "In some ways we do have a cleaner, healthier environment than we had 50 years ago. But the world as a whole is facing two huge threats that are going to consume U.S. and global politics in the next 50 years. One is the climate crisis. The other danger — that unfortunately is often overlooked — is the biodiversity crisis, not only in individual species, but in the [reduced] abundance of species."

The climate and biodiversity crises are global, and local, problems. "We are reaching a lot of planetary boundaries," said Dunskey. "In 30 or 50 years from now the whole world could look very different in terms of climatic zones, coastlines, and productivity of soil and the oceans — the ability to sustain life, frankly. We're seeing the effects of climate change in the Bay Area right now, and God only knows what it will look like 50 years from now."

Mark said part of the solution is to be found in the earth itself. "One of the really exciting frontiers of the next 10 to 20 years is going to be biologists digging into, and understanding better, how healthy forests and healthy grasslands can work to pull carbon dioxide out of the atmosphere. It will be the work of a generation," he added, and will create jobs and boost the economy. "It's really exciting to think how climate restoration could actually give an entire generation a new sense of meaning and purpose."

Young activists are already in the trenches, but there are differences between activists today and those in the '70s. One popular, utopian idea was inspired by *Ecotopia*, a 1975 book

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by Berkeley author Ernest Callenbach. The book envisions a community that breaks off from the U.S. and forms its own eco-friendly society. It became a cult classic, and a blueprint for the future, but an evolving world has made the vision of *Ecotopia* untenable. “We can’t live in a bubble,” said Dunsky. “What happens in China affects us here. The carbon emitted in India, or the fracking in Oklahoma, affects us here in California.”

There are also limits to another popular idea in the ’60s, the back-to-the-land movement. “Some part of the solution of 21st century sustainability is actually urbanization, not going back to the land,” said Mark. “A resident of New York City has a smaller environmental footprint than a resident of say, suburban Phoenix. Environmentalism has become friendlier toward, and more open toward, the importance of the role of cities.”

Mark interviewed teenagers in the streets while covering the climate strikes last September. Climate activist Greta Thunberg inspired the 2019 strikes that took place in 150 countries and demanded action. “There is a new level of emotional intensity now that climate change has gone from a distant threat to a clear and present danger,” said Mark. “They’re pissed off — there’s no other way to characterize it. Young people feel like their very future, if not their current present, is on the line.”

Mark notes that young people are invested in the movement, but he is also slightly worried that the movement is increasingly characterized by “species narcissism,” or saving “us.” Older Sierra Club members have a sense of what Mark calls “deep ecology,” while younger environmentalists often have a viewpoint that is narrower.

That’s where citizen science comes in. “It sustains the ideal that we’re not just engaged in civic advocacy to save our own bacon from a crisis that we manufactured. We want to ensure that we are protecting wild landscapes and all of the other forms of life with whom we share this planet,” said Mark.

Earth Day Network, a driving force behind Earth Day and the environmental movement, is in April rolling out Earth Challenge 2020, a global citizen science initiative. Author Mary Ellen Hannibal, who wrote a book about citizen scientists,

uncovered an important link while working on her first books about evolution and wildlife conservation. She had noticed in her research and fieldwork that when critical habitats had been saved for an endangered species, there was usually a diverse group of people advocating for protection and an element of citizen science involved. Citizen science bridges political differences and the “baked-in defense mechanisms that people have about how they live their lives,” she said.

Citizen science (which you don’t have to be a citizen to perform) is important in several ways, said Hannibal. It provides large amounts of data for scientists and land managers, and helps people form relationships with the natural world. “As people

participate in documenting nature, they begin to organically understand the problems confronting it,” she said.

Volunteer scientists collect data and send it to apps like eBird, Journey North, and iNaturalist, which then aggregate it. The data allows scientists to see movement patterns and population changes, which will be vital for land managers during the climate crisis.

“Citizen science data has been turbocharged by the smartphone,” said Hannibal, who explained that there’s an artificial intelligence (AI) component that helps to identify what you’re seeing. “It’s like a master class in nature, but remember, the more people observe and feed their observations into the machine learning, the more accurate the machine learning. It’s really a collaboration between individuals, gigantic computing power, and the ability to see.”

One Bay Area example is our knowledge of the huge decline in Western monarch butterflies, which Hannibal cites as an example of the insect apocalypse. “We know about [the monarchs] because of citizen science, because for a long time, people have been monitoring their populations.”

In the next 50 years, we will stand on the shoulders of those who came before us — much the way environmental activists in 1970 benefitted from earlier social change movements such as the Civil Rights Movement, the Free Speech Movement, and the Vietnam War protests.

Moving forward, we need to ensure that everybody has a place at the table, said C.N.E. Corbin, a Ph.D. candidate



Citizen science, exemplified in this species inventory on Marin County's Mount Tamalpais, may play an increasingly important role in protecting the planet.

photo by Alec MacDonald

in UC Berkeley's department of Environmental Science, Policy, and Management and the chair of Oakland's Parks and Recreation advisory commission. "There's definitely a very white understanding of environmentalism and what Earth Day means," she said. "My mom used to take us kids on walks in the D.C. area, but we never called them hikes. And there are a lot of folks of color out there who know their way around a garden, but they may not acknowledge it as being an avid environmentalist," said Corbin.

She also noted that the first Earth Day occurred in the lingering shadow of segregation in the National Parks. When Martin Luther King, Jr. was planning a vacation at Canada's Fundy National Park while on a speaking tour in 1960, the innkeeper denied his reservation because he thought a black couple's presence would upset U.S. tourists. And even though last century's *Negro Traveler's Green Book* listed the Ahwahnee Hotel and four other lodgings in Yosemite National Park as being safe for black recreationists, today's Yosemite visitations by African Americans hovers around just one percent. "I think this is a time when we sit around a table and really discuss what is possible and who it is possible for," said Corbin.

"I hope that this important anniversary offers a way to sort of reboot, as it were, this secular holiday," said Mark. "Somewhere along the line, some of the spirit has gotten lost. I'm hoping that, especially with the confluence of Earth Day and the climate strikes, the 50th anniversary gives a new sense of urgency and political relevance."

"With CO₂ ratcheting up, we're finally starting to do something about it," said Hannibal. "But is it going to be enough and in time? It's like that with biodiversity; is it going to be enough and in time? People are not focusing on biodiversity in the same way as CO₂, but I think we ought to. It's closer at hand, and we can get out there with our smartphones, or volunteer to restore functioning ecosystems, and really make a difference right now."

Corbin, who incorporates science fiction in her vision for the future and her advocacy work, considers herself an environmental JEDI, which means she works for environmental justice, equity, diversity, and inclusion. Quoting Yoda in *Star Wars*, she said, "Do or do not. There is no try." 

Aleta George covers open space for the Monitor.

MIDPEN OPEN SPACE - MEASURE AA UPDATE

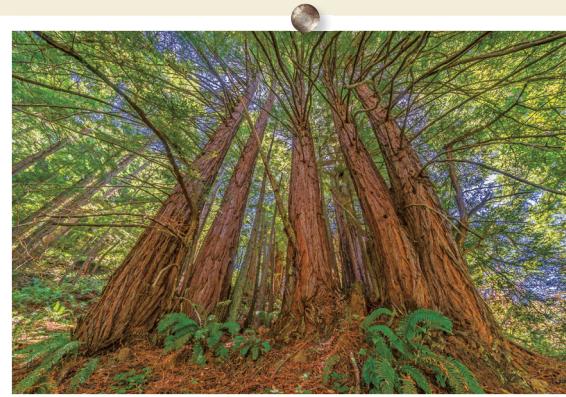
Celebrating 5 Years of Accomplishments

- Preserved 1,947 more acres
- Restored watersheds, forests & grasslands
- Opened Mt. Um Summit & Trail
- Opened Bear Creek Redwoods Preserve
- Opened La Honda Creek Preserve
- Closing gap in 80 miles of Bay Trail
- Opened Mindego Hill & Trail
- Expanded dog access

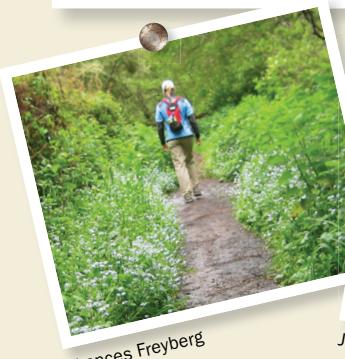


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