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All-in-one version

Director's Corner

Artificial intelligence could have a real role in Caltrans' future



Tony Tavares

Recent dramatic advances in artificial intelligence, which include but are by no means limited to content-generators such as ChatGPT, are raising hope and questions throughout the world.

Will AI improve our everyday life? How can we anticipate the implications and make the most of such technology?

In September, Gov. Gavin Newsom signed an [executive order](#) to study the development, use and risks of AI throughout the state and to develop a

deliberate and responsible process for evaluation and deployment of AI within state government.

Here at Caltrans, we are exploring potential ways that it could improve our transportation system. Specifically, our department is looking at how AI might positively impact two foundational principles: Safety and Climate Action.

Thanks to our vast network of sensors, roadside cameras, transportation management centers (TMCs) and other transportation-monitoring tools, Caltrans routinely collects an enormous amount of data. We are exploring how all that data can be crystallized by AI to help identify and solve safety and traffic issues on our roadways.

The idea is that AI can point us toward a safer, more-efficient transportation system as it digests and processes crash data, roadway geometry, traffic patterns, traffic counts, speed profiles, lighting conditions and bicyclist and pedestrian behaviors. AI could help Caltrans proactively identify potential conflicts before safety issues occur, rather than just react to them after the fact.

It could be a key to our goal of zero transportation-related deaths and serious injuries by 2050.

AI may also help us make better real-time decisions to ease bottlenecks during critical times and optimize infrastructure investment during the Caltrans project development process.

On a more granular level, our Division of Traffic Operations is researching and piloting connected and automated vehicles (CAV) technology and other emerging trends in vehicle automation. CAV technology has the potential to save lives, provide greater mobility for all people, improve roadway efficiency, increase California's economic competitiveness and make our environment and people healthier.

We cannot know the future, but AI can anticipate what the future holds and help us make it better for all of us. Stay tuned.

Mile Marker

Grant energizes California's move toward ZEV future



The future of transportation will rely in part on the easy availability of charging ports for zero-emission vehicles, known as ZEVs.

Caltrans graphic

With 43,000 (and counting!) public charging points, the state continues to lead the nation in a greener direction

Drivers in California are starting to see the outlines of a more-resilient charging network that will power the next generation of vehicles.

California leads the country with more than [43,000 public charging ports](#) .

That is the most of any state in the country but won't be nearly enough for coming patterns of vehicle adoption.

[Twenty-five](#) percent of new passenger vehicles sold in California last year through September were zero-emission vehicles. As California moves to phase out new gas-powered vehicles by 2035, that percentage will continue to rise, so the state is moving to invest in infrastructure that supports these vehicles and the climate benefits they bring.

In January, California won a major grant from the U.S. Department of Transportation (USDOT) to fix and install more than 1,000 chargers at more than 300 sites statewide. The

[Electric Vehicle Charger Reliability and Accessibility Accelerator \(EVC RAA\)](#) program is the latest in a series of recent efforts to plan, install and maintain California's chargers.

Let's dive deeper into the EVC RAA program and the additional grants and programs that are funding our new network of chargers for zero-emission vehicles.



California's share of the \$5 billion National Electric Vehicle Charging Infrastructure For
Caltrans graphic

[Electric Vehicle Charger Reliability and Accessibility Accelerator \(EVC RAA\) program](#)

: The \$63.7 million from the federal EVC RAA grant program – part of the Infrastructure Investment and Jobs Act, also known as the Bipartisan Infrastructure Law – will replace broken charging stations and install additional chargers to meet new federal standards for public charging infrastructure.

The grant has a pre-determined list of eligible chargers maintained by the Department of Energy's Alternative Fuels Data Center. For the statewide application, Caltrans worked with EV charging providers to develop a list of chargers that are feasible to fix and upgrade to national charging standards within the program timeline and budget. The funding will support the replacement of both Level 2 and DC fast chargers. Caltrans is partnering with the California Energy Commission to implement this funding, building on the agencies' partnership to deliver the NEVI Formula Program.

Thanks to the Bipartisan Infrastructure Law, California will receive nearly \$64 million to improve EV charging stations across the state," said Senator Alex Padilla. "Accelerating the adoption of an electric vehicle powered future requires a strong, reliable, accessible charging network across the state.

National Electric Vehicle Charging Infrastructure (NEVI) Formula Program

NEVI is a \$5 billion program under the Bipartisan Infrastructure Law that aims to install a nationwide, interconnected network of DC fast chargers along the federally designated Alternative Fuel Corridors, which will cover

both state and federal highways.

California's share is approximately \$384 million, which will be deployed across five years and overseen by Caltrans in partnership with the California Energy Commission, which leads the program's implementation. NEVI funding in California will double the number of fast-charging sites along designated corridors today.

California's first investment of \$40.5 million in NEVI funding aims to install 270 electric vehicle (EV) fast chargers at 26 sites across the state. Applications for this funding opened last October and proposed awards were announced this spring.

Each NEVI-funded fast charging station will have a minimum of four 150 kW ports with Combined Charging System (CCS) connectors and a minimum total station power of 600 kW. Stations will be located no more than 50 miles apart along freeways and highways and no more than 1 mile from a freeway exit or highway roadway. Chargers funded under the NEVI and EVC RAA programs must achieve 97 percent uptime over the first five years of operation.

Sources: Jimmy O'Dea, assistant deputy director of transportation electrification in the Director's Office of Sustainability; Shum Preston, Headquarters Public Affairs information officer

Mile Marker

Asphalt, concrete slabs in midst of upgrades



Maintenance crew members conduct an individual slab replacement, part of a pilot project that seeks to reduce roadways' propensity to crack.
Division of Maintenance photo

Emissions cut by use of reclaimed material for pavement work; pilot programs bear down on cracking

Caltrans is incorporating the use of reclaimed asphalt pavement in more of its projects statewide. Reclaimed asphalt pavement (RAP) is removed or reprocessed pavement materials that when used in asphalt pavements are known to reduce planet-warming pollution associated with the mining and transportation of aggregate, crude oil extraction and the refining and transportation of asphalt binders.

The department started including recycled pavements in its projects in 2009 when 15 percent RAP was allowed as part of the conventional asphalt mixes. Caltrans has built thousands of lane miles of good-performing asphalt pavement using RAP and in 2013, increased the percentage used to 25 percent.

In 2021 Caltrans, along with the industry, developed non-standard specification procedures (NSSP) to increase the maximum RAP content to 40 percent in conventional asphalt mixes. Since existing mix design procedures were deemed inadequate in designing mixes with 40 percent RAP, the specifications outline innovative mix design procedures that utilize performance-related tests.



Reclaimed asphalt is in the mix, along with various evolving pavement-preparation techniques, to improve repaired roadways' durability and sustainability.
Division of Maintenance photos

The NSSP has been included in six pilot projects statewide to evaluate the performance of asphalt pavement containing up to 40 percent RAP designed using the new procedures. Three of the projects, located in Districts 2, 8 and 10, have been constructed, with the remaining projects, in Districts 2, 4 and 7, expected to be completed this year.

Caltrans, in partnership with the University of California Pavement Research Center, is collecting and analyzing the data from these pilot projects. If the new procedures and resulting asphalt pavements perform well, the NSSP can be used statewide.

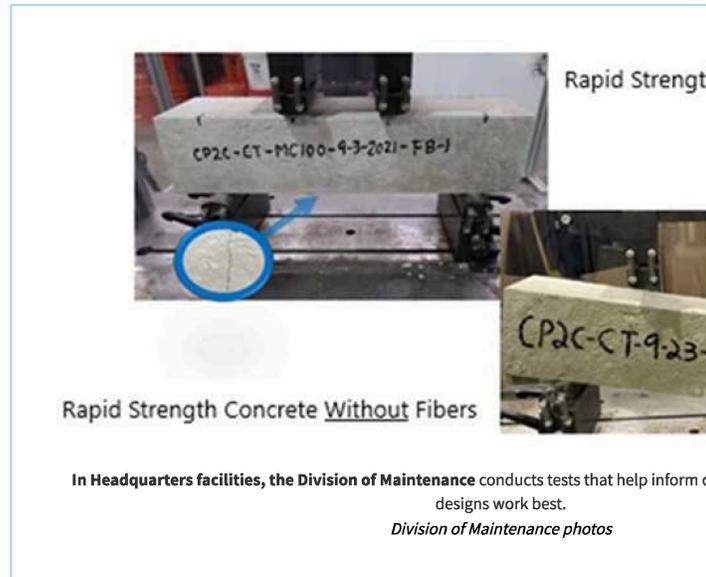
Slab replacement breakthrough?

Meanwhile, the Division of Maintenance has embarked upon a series of new pilot projects to test a new solution that could be the key to cutting down on cracking in Rapid Strength Concrete (RSC) slab pavement. Caltrans uses RSC in slab replacement projects to minimize traffic closures by addressing only the damaged areas of the state highway system, instead of replacing the entire stretch. Think of it as fixing a few broken tiles in your bathroom instead of redoing the whole floor.

RSC is a type of concrete that gains strength high enough for Caltrans to open a road to traffic only a few hours after installing it without losing necessary durability and longevity, making it a cost-effective option of the department. RSC is generally considered a limited-term fix because it only has a service life of five to 10 years, however, cracking sometimes shows up in the early stages of service life due to improper mix proportioning, insufficient strength development, or a high rate of shrinkage.

To fix this problem, Caltrans conducted a laboratory study to investigate the potential benefits of using synthetic fibers in RSC to mitigate early cracking failures. The study showed that, when properly proportioned and mixed, the use of fibers in RSC improved the cracking resistance. According to the study,

fiber-reinforced RSC (F-RSC) had high residual strength even after initial cracking as the fibers prevented the crack from opening and spreading, while plain RSC had no residual strength once cracked.



Three pilot projects are currently underway in Los Angeles, Yolo and Ventura Counties to investigate the field applicability of F-RSC in slab replacement projects. If the pilots are successful, the use of fibers in RSC will expectantly reduce the chance of premature failures, ensuring that the RSC slabs will remain in good condition during the intended design life and improve the overall performance of the concrete pavement.

Sources: Kee Foo, Office of Asphalt Pavements; Reimond Garcia and S. David Lim, Office of Concrete Pavements; and Kerstin Tomlinson, Office of Strategic Management – all Division of Maintenance

Mile Marker

Project Spotlight: Marin-Sonoma Narrows



The Marin-Sonoma Narrows Project, which began in the autumn of 2011, is on track for full completion – including landscaping establishment – in winter 2026-27.

District 4 photo

16-mile stretch of U.S. Highway 101 is getting a makeover that brings HOV lanes, enhanced safety

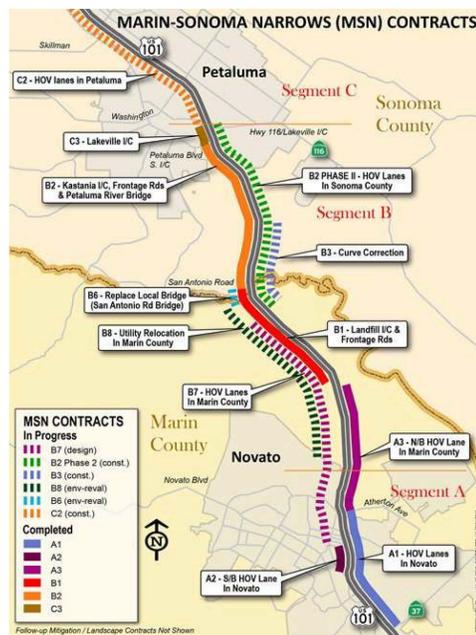
In baseball terms, Caltrans District 4's \$135 million Marin-Sonoma Narrows Project is in the later innings, but there's still plenty of game left.

The project's final component, categorized as B7 among 13 sub-projects, began in July 2022. During construction, U.S. Highway 101 will be renovated between northern Novato and the Sonoma County/Marin County line.

The sub-projects were assigned letter-number combinations based on their location. Segment A work, completed between 2011 and 2014, was done in Novato from south of State Route 37 to Atherton Avenue. Segment B work, begun in 2013, has been from Atherton Avenue in Novato to State Route 116 in Petaluma. Segment C sub-projects, done between 2011 and 2022, were in Petaluma from State Route 116 to Corona Road.

Ongoing sub-project B7 will complete and allow continuous HOV lanes on the roadway from Sausalito in Marin County to Windsor in Sonoma County. HOV lanes are scheduled to be open to use in the winter of 2025-26.

The Marin-Sonoma Narrows Project, which began in the autumn of 2011, is on track for full completion – including landscaping establishment – in winter 2026-27. It includes \$43.6 million in funding from Senate Bill 1, The Road Repair and Accountability Act of 2017.



In addition to what is being done for sub-project B7, two smaller

Completed parts of the project include a modified interchange at Redwood Landfill and frontage roads, and a new pedestrian and bicycle facility.

District 4 graphic

components need to be completed:

B6 will renovate the San Antonio Creek Bridge to prevent it from flooding. This bridge is located on a nearby county road and will not affect the freeway widening.

B8 is a utility relocation project that covers that same stretch of highway as B7. Typically, utility relocation must be done before the work begins, but in this case the utilities are not in the work area and can be moved after the B7 project is completed.

Construction activity during B7 on U.S. Highway 101 includes installing HOV lanes for 3.5 miles along the northbound lanes from North Novato to the Marin, Sonoma line, and for 6.3 miles along the southbound lanes from De Long Avenue to the county line.

On June 10, 2023, Caltrans diverted southbound Highway 101 traffic onto new elevated lanes spanning San Antonio Creek to just north of Atherton Avenue in Novato. This was a major milestone for the project.

Since then, crews have worked to reconstruct approximately four miles of the old southbound lanes. The contractor has repurposed roadway materials of the old Highway 101 to incorporate as base material for the new highway, saving time, money and environmental resources.

To improve sight distance, the new road is as much as 10 feet higher than the old Highway 101 in some areas. Construction is ongoing in this stage to construct seven new retaining walls, widen the existing Franklin Avenue overhead bridge, and complete the approximately 93,000 cubic yards of earthwork in this stage.

A few challenges have been working through weather-related impacts, both this winter and last year. Including the slide and road closure of Redwood Boulevard in Novato parallel to the project, in which the same contractor and construction team had to address not only the reopening of Redwood but also structural changes to the project's retaining walls in the area. Another obstacle overcome was the continued work through a high water-table during the roadway reconstruction.

Marin-Sonoma Narrows Project portions that have been completed include a modification of the Redwood Landfill interchange and frontage roads, plus the installment of a new pedestrian and bicycle facility (finished in spring 2016); modification of the Petaluma Boulevard South interchange and frontage roads, plus replacement of the Petaluma River Bridge (winter 2016); and construction of northbound and southbound HOV lanes through Petaluma, plus replacement of the Petaluma Bridge and installation of sound walls.

Learn more about the Marin-Sonoma Narrows Project on [this Caltrans webpage](#) .

Source: Matt O'Donnell, District 4 public information officer

Mile Marker

Caltrans helps after tragedy strikes distant shores



Caltrans sent a team of experts to help Maui cope with its wildfires. From left are Brandon Miller, Shahe Terjumanian, Seree Yenjai, Charles Leong, Glen Wheeler, David Romero, Charles Hutchinson, Talitha Hodgson and Chad Lim.

Photo courtesy of Talitha Hodgson

District 1 official leads a team of safety-assessment experts to gauge the damage on Maui

In early August 2023, a series of wildfires broke out in Hawaii, predominantly on the island of Maui. The wind-driven fires prompted evacuations, caused widespread damage, and tragically claimed the lives of at least 100 people. The proliferation of the wildfires was attributed to dry, gusty conditions created by a strong high-pressure area north of Hawaii and Hurricane Dora to the south.

In the wake of these fires, Caltrans employees played a crucial role in aiding Maui County's recovery efforts. Among them was District 1's chief of advance planning and local assistance, Talitha Hodgson.

All told, the state of California deployed more than 100 employees to aid in the recovery efforts. The commitment showed solidarity and collaboration across state lines in times of crisis.

Ten dedicated Safety Assessment Program (SAP) certified personnel were called upon to evaluate approximately 2,000 structures within the fire-ravaged city of Lahaina. This deployment presented a unique challenge as assembling enough SAP-certified volunteers is often a daunting task due to demanding schedules and the timing of emergencies. Nevertheless, Hodgson, along with a group of dedicated Caltrans employees, rose to the occasion.

As the team mobilized, Hodgson found herself on standby, ready to step in if needed. Ultimately, she became an integral part of the final nine-member team, a diverse group of supervisors and engineers, all possessing a wealth of experience in structures, construction, safety and emergency response.

For the majority of the team, this deployment spanned two weeks. However, two Caltrans engineers extended their stay an additional week to lead a small group of volunteer architects and county personnel in completing



The fire's reach was extensive and scarily destructive.

assessments. Amid limited available accommodations due to displaced residents, the team was stationed in west Maui, about a half-hour drive from the disaster site and Disaster Recovery Center.

The workdays were demanding, commencing at 6:30 a.m. and concluding at 5:30 p.m. Hodgson emphasized that SAP deployments leave no room for breaks or weekends off, a testament to the urgency of getting residents back into their homes.

Their assessment process involved a meticulous inspection of more than 2,000 structures, each receiving a placard indicating its status: green (inspected), yellow (restricted use), or red (unsafe). Alongside these placards, detailed documentation and photographs were logged into a GIS database for agencies, including the California Governor's Office of Emergency Services (Cal OES), to access and review.

George Rixey, a local architect in Maui, was among the local Hawaiian SAP volunteers whom Hodgson's team trained and worked with. In early March, Rixey reflected on his partnering with Caltrans.

"My experience – this sounds kind of paradoxical – was a wonderful experience, to feel that I could be a contributing part of a team that embraced us from life. Usually we're the embracers. That was really significant for us.

"The fact that you guys came over, and the stage of the work that we were doing, was really helpful in connecting directly with the roots of the county, because some of the government working mechanisms were not in touch or connected directly with actions that were on the ground. When Caltrans came out and started working with the county, the (Division of Environmental Analysis) and things like that, it really tied it all together."

During their time in Maui, the Caltrans staffers worked with the Maui County Historic Preservation program, providing it with detailed drone footage of damaged historic properties. That marked the first time Caltrans had used drones during a SAP response, which allowed for more-detailed assessments without exposing staff to dangerous conditions.

Among the other groups that Caltrans coordinated with in Maui were the U.S. Army Corps of Engineers, the Hawaii Emergency Management Agency (HIEMA), the Federal Emergency Management Agency (FEMA), the U.S. Environmental Protection Agency (EPA) and the National Guard.

By the end of Caltrans' deployment in Maui, 2,486 buildings were assessed, with 1,694 marked as unsafe and 23 under restricted use. The team's efforts culminated in 769 dwellings being approved for residents to return home, a significant milestone in the recovery process.



Caltrans SAP team members Talitha Hodgson and Seree Yenjai consult during their post-fire mission.

Responding to the crisis in Hawaii, multiple GoFundMe fundraising efforts were initiated to support those affected by the fires. By Aug. 18, 2023, these efforts had amassed over \$30 million in donations, demonstrating the outpouring of support from communities near and far.

Despite the challenges and immense task at hand, Hodgson and her team forged connections with local responders, including the Maui Humane Society, extending their support beyond the structural assessments. Many were touched by their efforts to reunite families with their missing pets. The Maui Humane Society estimated that around 3,000 animals from Lahaina were missing after the fires, highlighting the immense impact on both human and animal lives.

Reflecting on the experience, Hodgson affirmed her readiness to deploy again, highlighting the critical importance of swiftly restoring people to their homes. She praised the exceptional dedication of SAP volunteers, emphasizing their genuine care for the communities they serve.

In August 2023, President Joe Biden issued a federal major disaster declaration, acknowledging the severity of the situation. The Lahaina fire alone damaged or destroyed more than 2,200 buildings, overwhelmingly residential, including many historic landmarks. In September 2023, the Department of Commerce published the official damage total of the wildfires as \$5.5 billion, underlining the immense scale of destruction.

Hawaii Gov. Josh Green, referred to the Lahaina wildfires as the "worst natural disaster" in the state's history. It stands as the fifth-deadliest wildfire in United States history.

In addition to the wildfire response in Maui, Hodgson was also deployed to Rio Dell following a major earthquake in December 2022, underscoring her commitment to helping communities in need. Her presence brought not only technical expertise but also a reassuring presence for those still reeling from the shock of the disaster.

Looking to assist the public in California and across state lines, Caltrans stands as a beacon of help, exemplified by leaders like Hodgson, whose unwavering commitment to service leaves an indelible mark on the communities we serve. We salute her and her team for their outstanding contributions in the face of adversity.

Source: Talitha Hodgson, chief, District 1 advance planning and local assistance; Myles Cochrane, District 1 public information officer

Mile Marker

Division Spotlight: Environmental Analysis



The Division of Environmental Analysis has the hugely consequential task of administering Caltrans' responsibilities under federal and state environmental laws.
Division of Environmental Analysis graphic

Air quality and climate change, water quality, and fish and wildlife are just a few of DEA's many focuses

Welcome to the second story in a Mile Marker series that will examine, in a nuts-and-bolts way, a specific Caltrans program. In this issue we look at the Division of Environmental Analysis.

Air, water, life ... the Division of Environmental Analysis' purview extends beyond the structure of our state's transportation system to also incorporate the very foundations of our existence.

Overstatement? Yes, but DEA does have the hugely consequential task of administering Caltrans' responsibilities under federal and state environmental laws. The division develops and maintains Caltrans' environmental standards, policies, procedures and practices that are implemented by Caltrans' 12 district environmental branches. It identifies and assesses the effects of Caltrans projects on the state's natural and cultural environments, and identifies ways to avoid or mitigate those effects.

Caltrans' DEA creation was linked to enactment of the National Environmental Policy Act (NEPA) in 1969, and the California Environmental Quality Act (CEQA) in 1973, following which Caltrans formally initiated an environmental function. Subsequently, in response to the passage of a host of environmentally related laws and regulations and heightened public

support for the environment, the division has grown to become a substantive and inseparable part of Caltrans' planning, project delivery, construction, operation and maintenance efforts.

Today, district environmental staff and Headquarters DEA staff make up a statewide multi-disciplinary team of more than 1,000 environmental professionals knowledgeable in the environmental sciences and related specialty areas, including biology, archaeology, architectural history, community impacts, Native American consultation, paleontology, air quality and climate change, noise and vibration, water quality, stormwater and hazardous waste. Caltrans environmental professionals are experts in NEPA and CEQA compliance, natural and cultural resource management issues, environmental engineering, regulatory compliance and project permitting, community involvement, and mitigation planning and implementation.

In 2012, DEA also established a Coastal Program to strengthen coordination with the California Coastal Commission on project development, permit applications and key focus areas, such as sea-level rise and the California Coastal Trail. In 2023, a ribbon-cutting ceremony celebrated the completion of the State Route 1 Gleason Beach Roadway Realignment Project, the first Caltrans project built with the primary purpose of addressing sea-level rise.

Notably, Caltrans was the first state transportation department in the nation to take on "NEPA Assignment" (then known as "NEPA Delegation"), first as a pilot program in 2007 under authorities granted by the 2005 Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users Act (SAFETEA-LU), and then as a permanent project delivery program with the passage of the Moving Ahead for Progress in the 21st Century Act (MAP-21). Under both programs, the Federal Highway Administration assigned, and Caltrans assumed, all the U.S Department of Transportation Secretary's responsibilities under NEPA and most other federal environmental laws. More information on the benefits of this program can be found on [this webpage](#) .

Another important project delivery efficiency led by DEA was the development of the Caltrans National Historic Protection Act (NHPA) Section 106 Programmatic Agreement (106 PA). The 106 PA is an agreement among the Federal Highway Administration, the California State Historic Preservation Officer and the Advisory Council on Historic Preservation that delegates the majority of NHPA Section 106 decision-making responsibilities to Caltrans districts and the Cultural Studies Office in DEA.

The result has been a large reduction in the amount of time needed for cultural-resources compliance on the majority of Caltrans projects. It allows for this efficiency while still ensuring Caltrans can properly protect and manage cultural resources across the state in accordance with federal laws and regulations.

The division also provides a robust training program for Caltrans environmental staff and our partners. Offering more than 50 in-person and online classes, the Office of Staff Development and Strategic Director recently won awards from both the American Planning Association and the California Association of Environmental Professionals.

In recent years, the training program has incorporated extra opportunities to partner with jurisdictional partners and local agencies to improve their understanding of Caltrans' project delivery process. Agencies such as the California Department of Fish and Wildlife (CDFW), Toll Roads of Orange

County and the U.S. Forest Service have provided no-cost training locations to Caltrans, to train both the department's and agency partners' staff side by side, building stronger professional relationships.

The division also lays out its intentions for the future in its recently completed Strategic Plan, which covers the next five years. Among the stated goals: enhance hiring, recruitment and retention; increase diversity at all levels that reflect the communities Caltrans serves; increase work satisfaction and achieve pay equity; and be at the forefront of innovative solutions and environmental trends in transportation.

Here are a few specifics about what role DEA plays in improving our environment.



Air quality and climate change

The Federal Clean Air Act, the California Clean Air Act, NEPA and CEQA require Caltrans to consider air quality as a part of the environmental review process. Caltrans coordinates with federal, state and regional transportation planning agencies and local air districts to address transportation-related air-quality issues.

Particulate matter (PM) emitted from construction sites and roads contain microscopic solids or liquid droplets that can be inhalable and may cause health problems. The division, in cooperation with U.S. Environmental Protection Agency, studied the potential for noise barriers (or soundwalls) to mitigate the impacts from PM. Studies indicate that these noise barriers can reduce near-source pollutant concentrations by as much as 20 to 40 percent within a tenth of a mile from the road source.

Climate change, whose primary driver is greenhouse gases, is a substantial concern that DEA confronts in many ways. Greenhouse gas emissions from transportation, which include direct emissions from vehicle tailpipes, off-road transportation sources, interstate aviation and other transportation sources, accounted for 38.2 percent of statewide emissions in 2021, with passenger vehicles accounting for 27.3 percent of that total.

In 2020, Caltrans implemented Senate Bill 743, which changes the way Caltrans evaluates transportation projects, to reduce total driving, or vehicle miles traveled in California. Part of this effort included the implementation of changes to the CEQA statute and guidelines, in which DEA played a pivotal role. In 2020, Caltrans released the first edition of the "Transportation Analysis under CEQA" (TAC), which provides guidance to environmental staff statewide on the evaluation of transportation impacts under CEQA to reduce vehicle miles traveled, and consequently, greenhouse gas emissions.



Water quality

The division addresses water quality concerns through both its biological programs and offices and through its stormwater management program. Aquatic habitats such as wetlands, lakes, rivers and other waters are regulated to varying degrees by the Army Corps of Engineers (USACE), the state and regional waterboards, the Coastal Commission and CDFW. Caltrans biologists work closely with these agencies to comply with a variety of federal and state statutes, regulations and policies.

The division also leads the statewide coordination, development and implementation efforts for the 2023 Stormwater Management Plan (SWMP), to comply with the Caltrans National Pollutant Discharge Elimination System

(NPDES) Statewide Stormwater Permit and Waste Discharge Requirements adopted by the State Water Resources Control Board (SWRCB) in 2022, in accordance with California Water Code and pursuant to the federal Clean Water Act.

The SWMP integrates appropriate stormwater pollution control activities into planning, design, construction and maintenance and operations activities, thus making control of stormwater pollution a part of Caltrans normal business practices.

The NPDES Permit requires preparation and implementation of action plans to control pollutant discharges from Caltrans' rights of way by a specific timeline that include trash control in areas identified as significant trash-generation areas, reducing pollutant loads in specific watersheds that have impaired waterbodies, which are referred to as a total maximum daily load (TMDL), and control pollutant discharges in areas of special biological significance (ASBS) identified along the coastal watersheds.

Caltrans will be building stormwater treatment devices to comply with these mandates and when projects result in new, or changes to existing, impervious pollutant-generating surfaces. Treatment devices will be considered both on state right-of-way (on-system) where feasible and off-system in partnership with local municipalities.

The division's Stormwater Program development efforts includes conducting pilot studies to evaluate and develop new technologies that are effective in controlling pollutant discharges in stormwater runoff, and also evaluating emerging pollutants of concern and the technologies available to effectively control their discharges from Caltrans' right of way. Division staff led an effort that resulted in a newly patented trash-capture device that has the potential to significantly improve the efficiency of trash capture from highway drainage infrastructure. (Read more about this device in a recent [Mile Marker story](#) .)

The Caltrans NPDES Permit encourages partnerships with local municipalities, and Caltrans has responded by participating in regional water-quality treatment facilities in severely impaired watersheds and in significant trash generation areas. This watershed-based environmental engineering approach is a fiscally responsible way to provide an equitable approach in response to community health and ecosystem restoration in Caltrans' shared commitment, alongside the SWRCB, to promote environmental stewardship. Municipal coordination offers benefits to Caltrans and its partners in the form of cost-savings and capitalizing on combined resources to deliver quality projects.

'Let's Change This to That'

The Stormwater Program's public education campaign "Let's Change This to That" just concluded its three-year campaign run and achieved significant results that made a lasting impact on the residents of the state of California.



The paid media campaign delivered well over 1 billion total impressions which was close to two and one half times the original projection.

The campaign utilized a variety of media tactics including, news articles, billboards, radio ads, digital displays, social media influencers and paid/organic social media educating Californians about

stormwater pollution prevention and the key pollutants of concern. Regular statewide cleanup activations and strong partner relationships helped the campaign collect over 123,000 pounds of litter, diverting harmful pollutants away from waterways at the source.

The campaign not only achieved remarkable results but also left an indelible mark on Californians inspiring meaningful behavior change as a trusted advocate and leader for environmental stewardship.



Fish and wildlife

Caltrans biologists are located statewide in the 12 districts and Headquarters and bring expertise to a broad range of transportation-related biological issues. As part of planning, project delivery, and program teams, they tackle complex studies and consultations as they provide support for planning, capital improvements, operations and maintenance, as well as oversight responsibilities for local assistance, special-funded and consultant projects.

DEA's Biology Offices of Biological Studies, Advance Mitigation, and Fish and Wildlife Connectivity provide leadership, direction, guidance and technical expertise in all areas of biological resource analysis, by developing and establishing policy, standards and procedures necessary to make wise transportation and natural-resource decisions.

The division also plays a leading role in establishing and/or improving fish passages and wildlife connectivity. State law mandates that Caltrans assess, prioritize, fund and remediate barriers on the state highway system for salmon and steelhead. DEA produces annual reports to the Legislature that report the status of Caltrans' progress.

Online, the division posts interactive maps that detail the progress made on removing barriers to [fish](#) passage connectivity. Since the enactment of Senate Bill 857 in 2005, Caltrans has remediated 65 priority barrier locations. Those locations account for an estimated 920.48 miles of improved access to salmon and steelhead habitat. The full-span bridge remediation solutions provide further access for all other aquatic and land species.

To date, Caltrans has also identified 49 priority [wildlife](#) connectivity barrier locations that are continually evaluated to identify funding opportunities to advance habitat connectivity and to reduce animal/vehicle collisions.

The work within DEA is continually evolving and the division continually seeks innovative approaches to environmental-related challenges. One recent innovative approach was recognized by the California Association of Environmental Professionals, which gave the State Route 37 PEL (Planning and Environmental Linkages) Study its "Outstanding Environmental Resource Document" award. Many additional efficiencies identified by DEA have resulted in substantial cost savings (see Caltrans [efficiencies report](#)) for the state.

Work within DEA is often driven by legislation. Assembly Bill 1282 in 2017 brought together transportation and permitting agencies to collaboratively address statewide transportation permitting challenges. In the past year, DEA is actively working in partnership with internal Caltrans stakeholders and state permitting agencies on implementing the recommendations in a [2019 report](#) to reduce permit processing time and provide greater certainty of permit requirements.

Senate Bill 1, the [Road Repair and Accountability Act of 2017](#) , authorized Caltrans to plan and implement advance mitigation solutions for its future transportation projects. This business practice allows Caltrans to reduce delays by proactively obtaining environmental mitigation in advance of – rather than during – transportation projects. DEA administers the mitigation program, whose primary goal is to address longer-term environmental mitigation needs resulting in improved environmental, economic and project delivery outcomes.

The program reached an important milestone last year with the first advance mitigation credits being secured and identified for use on a specific transportation project.

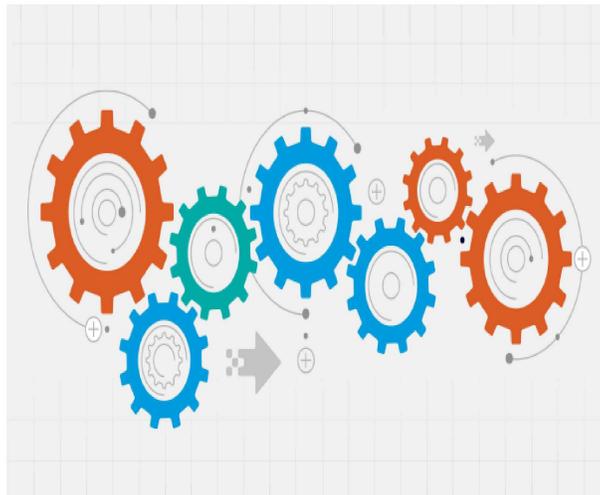
DEA is deeply committed to its core mission of advancing environmental and transportation outcomes to serve all people. The efforts highlighted above identify just some of the many activities occurring within DEA to meet this mission.

Learn more about the Caltrans Division of Environmental Analysis by visiting its [online homepage](#) .

Source: Jeremy Ketchum, Chief, Division of Environmental Analysis

Mile Marker

Change (order) is a fact of life in Construction



In Caltrans' Division of Construction, change orders occur routinely and are representative of how the department adapts when situations warrant and pursues efficiencies whenever they are possible.

Headquarters graphic

Contract additions, subtractions and other types of alterations are routinely analyzed, processed and recorded

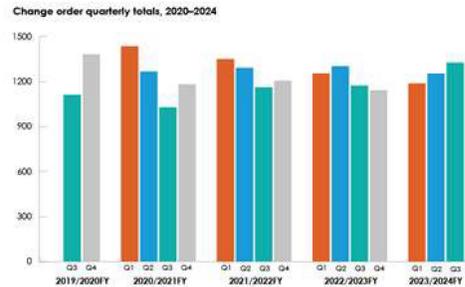
The times they are a-changin'. So, often, are contracts involving Caltrans' Division of Construction and those who are performing the work.

Change orders, shortened to COs or sometimes CCOs (contract change orders), occur routinely and are representative of how the department adapts when situations warrant and pursues efficiencies whenever possible.

Following each fiscal quarter, Construction posts a change-order report. In the period from October through December 2023, Caltrans' 12 districts issued a total of 1,253 COs with a value of \$346.9 million, including supplemental change orders.

In the previous quarter, July through September of 2023, the division reported 1,187 COs with a value of \$285.1 million. A year earlier, from October through December of 2022, there were 1,303 COs valued at \$151.7 million.

Either the contractor or Caltrans can initiate a CO. The resident engineer usually determines the need for a



change order, but the contractor, other Caltrans units, or outside agencies or individuals may request changes.

COs can increase, decrease or leave alone the cost outlined in the original contract, although cumulatively they tend to result in the state paying more.

Most change orders come about due to one or more of the following reasons:

- Method of payment
- Method of materials processing
- Type or quality of materials to be furnished
- Proprietary material
- Specifications
- Any change resulting in a significant time adjustment to the contract

Any CO that has a total absolute value exceeding \$200,000 (or \$500,000 for districts with an increased change order delegation, with District 4 being the only one to have attained that status at the time of Mile Marker publication) is subject to review by Caltrans Headquarters.

The “absolute” designation can be explained in this example:



A change order containing a \$50,000 decrease of items, a \$20,000 increase of items, and \$150,000 of extra work at force account has an absolute value of \$220,000 (50+20+150), not \$120,000 – the fact that the \$50,000 is a decrease in costs does not matter to the absolute value.

Out of the 1,253 COs recorded in the second quarter of the 2023-24 fiscal year, Headquarters reviewed 181 of them (which represented 14.5 percent of the total number of COs), with a value of \$53.8 million (15.5 percent of the total value of the change orders). Two were “authorized to proceed,” four were “revised not authorized” and the rest were issued and approved. None was rejected outright.

The Division of Construction's webpages include one that can generate a [change order's coding](#) , one that provides [examples of standard clauses](#) for specific situations found in various types of change orders, and another that contains [CO templates](#) .

For example, if the contractor's work hours required to fulfill a contract end up being less than was stipulated in the original contract, Caltrans suggests this standard clause be used in the change order: "For the work involved in this change order, you agree to credit Caltrans the lump sum \$ ____ . The credit reflects the savings in the resources and activities required to complete the work."

The templates webpage delves into minutiae, reflected in this entry, under "Maintain Traffic": The department "and the contractor will share the cost of furnishing flaggers to provide for passage of traffic through the work. The department determines the cost under Section 9-1.04, 'Force Account,' of the Standard Specifications, and pays the contractor one-half the cost."

Learn more about the Division of Construction by visiting its [homepage](#) .

Source: Randy Stellhorn, P.E., Office of Contract Administration, HQ Division of Construction

Mile Marker

Mileposts



Wider aisles, accessible restrooms and fully-automated doors .are among the modernized features of seven new Venture Passenger Rail Car trains unveiled during a Caltrans and San Joaquin Regional Rail Commission event this spring in Stockton.

Mile Marker graphic

Seven new rail cars feature ADA-accessible features

Train passengers traveling in Northern California and the Central Valley will be able to enjoy a more comfortable and modern ride with the launch of seven new Venture Passenger Rail Car trains unveiled during a Caltrans and San Joaquin Regional Rail Commission event at the Stockton Regional Maintenance Facility.

The single-story, fully ADA-accessible passenger cars provide wider aisles, accessible restrooms and fully-automated doors, continuing California's expansion of comfortable and convenient options for travelers and commuters.

The trains will be used on the Amtrak San Joaquin line, which runs five daily roundtrips between Oakland and Bakersfield, and two daily roundtrips between Sacramento and Bakersfield. The first six-car set is in operation on the Oakland-Bakersfield route and helps restore service to pre-pandemic levels and sets the course for future service improvements.

These new rail cars are the first upgrade to the passenger riding experience on the Amtrak San Joaquin's line in nearly three decades. They allow wheelchair users to move easily between cars.

Siemens Mobility, under contract to Sumitomo Corporation of Americas, built the rail cars at their facility in Sacramento, with finish work performed at the Stockton Regional Maintenance Facility, owned by the San Joaquin Regional Rail Commission. Caltrans purchased the new rail cars with \$132 million in federal and state funds.



Equity tool looks to ensure transportation system helps all

On March 4, Caltrans launched an equity [tool](#) designed to help all Californians benefit from transportation projects and identify communities most negatively impacted by the transportation system, those that experience excessive rates of traffic, crashes, and air pollution, as well as limited transit options.

The Caltrans Transportation Equity Index (EQI) tool will help inform project selection, program evaluation, and policy decisions, better align the transportation system to state environmental and equity goals and help address transportation-related inequities.

Data will be used to identify transportation-based priority populations to help alleviate traffic-related impacts. Caltrans aims to advance equitable outcomes during project planning, development, and design phases, for both the department and partner public agencies.

Caltrans began developing the EQI in 2021 as a commitment to the department's [equity statement](#) and to deliver on the

[Climate Action Plan for Transportation Infrastructure](#) (CAPTI).



In a move toward a more-sustainable future, Caltrans is purchasing six more hydrogen-powered passenger trainsets that will help California adapt to climate change by strengthening the state's zero-emission passenger rail

Six more zero-emission, hydrogen-powered trainsets ordered

On Feb. 14, Caltrans announced a \$127 million agreement with Stadler Rail, Inc. for six more zero-emission, hydrogen-powered passenger trainsets, building upon

[an earlier order to deliver the first four hydrogen-powered intercity trainsets in North America](#)

, furthering California's standing as a world leader in clean transportation.

The trains will help California adapt to climate change by strengthening the state's zero-emission passenger rail capabilities. The first trains are expected to enter revenue service in 2027. The trainset design will make them more efficient, lighter weight and more affordable than traditional locomotive-hauled coaches.

The purchase is funded through Governor Gavin Newsom's historic multiyear zero-emission vehicle package, which included \$407 million for the California State Transportation Agency (CalSTA) to purchase or lease state-of-the-art clean bus and rail equipment and infrastructure.

The first trains will operate between Merced and Sacramento on the future Valley Rail service — an expansion of the existing Altamont Corridor Express (ACE) and Amtrak San Joaquins services that will eventually connect with the first section of California's high-speed rail service. The trains will also be demonstrated on corridors throughout the state in coordination with intercity and regional rail partners. Nineteen trainsets remain on the base contract that Caltrans signed with Stadler in October 2023.

Mile Marker

Mile Markers



Caltrans Strategic Plan Performance Objectives

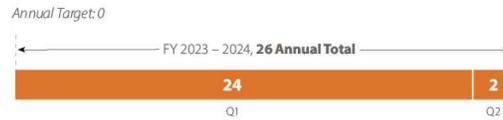
Caltrans 2020-2024 Strategic Plan has a series of performance objectives meant to gauge success at affecting the intended outcomes for each of the six goals. This dashboard represents those performance objectives that we are tracking and are able to report

on. Quarter 1 data is available below. Some quarter 2 data not yet available.



Goal: Safety First

Reduce the number of on-the-job serious injuries to zero, annually.



An on-the-job serious injury is any work-related injury or illness resulting in a fatality, inpatient hospitalization, amputation, or loss of an eye. Annual traffic safety targets are presented as not-to-exceed targets. Data is provisional and subject to change. The traffic collision data used for these performance objectives will not be final until the third quarter of calendar year 2024.



Goal: Cultivate Excellence

In alignment with Caltrans mission, vision, and goals, the Equal Employment Opportunity Program along with our partners at Cooperative Personnel Services Human Resources, are excited to provide online Implicit Bias training. This training is designed to raise awareness, improve decision-making, and help avoid unintended outcomes at Caltrans. The training will also offer steps to prevent implicit biases from negatively affecting workplace decisions and conduct.

Increase the percentage of employees who take Implicit Bias training for the year, to 90%.

*Contracting process experiencing significant delays.



Goal: Multimodal

Caltrans is in the process of establishing a baseline and to begin reporting on the number of Caltrans Active Transportation Plan's location-based needs planned and constructed by programmed projects. The location-based needs provides information related to bicycle, sidewalk, and crossing needs. Initially the projected due date for this effort was March 2022 however statewide data was not available which caused delays. The updated timeline is 2024.



Goal: Strengthen Stewardship and Drive Efficiency

The California Department of Transportation, Office of Civil Rights is dedicated to increasing the participation of Small Business (SB), Disadvantaged Business Enterprise (DBE), and Disabled Veteran Business Enterprise (DVBE) firms in both Federal and State contracting and procurement.

Increase the utilization of DBE-certified contractors, overall and across each Socially and Economically Disadvantaged group, to annually achieve our DBE goal of 22.2%.



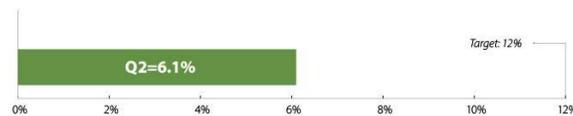
Increase the dollar value of small businesses, disabled veteran business enterprises, and disadvantaged business enterprises, by 100% by June 2024.



Goal: Lead Climate Action

Pursuant to the Governor’s [Executive Order \(EO\) B-16-12](#), state departments are required to increase the number of zero-emission vehicles (ZEVs) within their state fleet. As the steward of California’s state highway system, Caltrans serves an important and unique role in the state’s efforts to increase ZEVs on California’s roadways. In coordination with Caltrans Divisions and Districts, other state agencies, and external partners, the Department’s ZEV strategy includes transitioning the Caltrans vehicle fleet, including locomotives, to ZEVs.

Increase the percentage of Caltrans fleet that are Zero-Emission Vehicles, to 12% by June 2024.



Goal: Advance Equity and Livability in all Communities

Caltrans is in the process of developing several data tools that will help us gauge our success toward equity. An Accessibility Score and Engagement Tool are currently under development. Until they are developed and a baseline is established, there is no data to report. Once these tools are developed we will be reporting on those data

sets. Initially these tools had projected completion dates between March and June 2022 however pending agreements, vendor procurements, and resource issues caused delays. The updated timeline for these tools is July 2024.

Caltrans completed the Equity Index tool in March 2024. The tool is a spatial screening tool designed to identify transportation-based priority populations at the Census block level. The Equity Index tool integrates transportation and socioeconomic indicators into three screens. All screens reflect low-income status and Tribal land status.

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- › All-in-one version
- › [Change orders](#)
- › [Director's Message](#)
- › [Division Spotlight](#)
- › [Maui fires](#)
- › [Mileposts](#)
- › [Project Spotlight](#)
- › [Reclaimed asphalt](#)
- › [ZEV chargers](#)

Statewide Campaigns

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- › [Adopt-A-Highway](#)
- › [Amber Alert](#)
- › [Be Work Zone Alert](#)
- › [CAL FIRE](#)
- › [Cal OES: Power Outage and Fire Recovery Resources](#)
- › [California Climate Investments](#)
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