

December 2, 2024

BY EMAIL

Dave Cortese, Chair
California Senate Transportation Committee
melissa.white@sen.ca.gov

Re: Notice of Dangerous Condition – LED Flashing Lights

Dear Dave Cortese,

California Vehicle Code 25250 states, “Flashing lights are prohibited on vehicles except as otherwise permitted.” This is an important statute by the California Legislature for protecting public health and safety. However, this law is not being enforced by the California Highway Patrol, Sheriff’s departments, or police departments, and now hazardous, dangerous, and unlawful Light Emitting Diode (“LED”) flashing lights have appeared on police cars, fire trucks, ambulances, and utility vehicles.

Wired Magazine published an article on November 26, 2024, about new research showing that LED flashing lights cause AI seizures in autonomous vehicles.¹ The Epilepsy Foundation of America published a review study showing that flashing lights exceeding a luminance of 20 candela per square meter put individuals with epilepsy at risk of seizure.² A news story discussed how LED flashing lights on police vehicles caused a crash that injured a police officer.³



Emergency lights flash along County Road 491 in Lecanto in May 2023 at the scene where Deputy Andy Lahera was struck by a motorist.

¹ <https://www.wired.com/story/emergency-vehicle-lights-can-screw-up-a-cars-automated-driving-system/>

² <https://onlinelibrary.wiley.com/doi/10.1111/epi.17175>

³ <https://archive.ph/PF40l#selection-2839.0-2839.54>

The California Legislature has not vetted or authorized LED or laser flashing lights on vehicles. These hazardous, dangerous, and discriminatory LED flashing lights simply started appearing and now they are everywhere. This is an unacceptable safety risk for first responders and the public. LED flashing lights impair vision and cognitive functioning, cause eye injury, and for individuals with disabilities, the neurological impact can result in seizures, migraines, or thoughts of suicide.

The Soft Lights Foundation submitted a petition to the California Highway Patrol to explicitly regulate LED flashing lights, but the petition was ignored by the CHP.⁴ Therefore, the Soft Lights Foundation is requesting that the California Legislature pass the following legislation to explicitly prohibit the use of LED and laser flashing lights on vehicles unless otherwise permitted.

Amend: California Vehicle Code 25250. Flashing lights, including supplemental LED and laser flashing lights, are prohibited on vehicles except as otherwise permitted.

The rise of autonomous vehicles means that more vehicles will be on the road that are unable to “see” through the debilitating LED flashing lights. While industry engineers attempt to teach their AI systems to make sense of the world despite the LED flashing lights, the only real solution is regulation and/or elimination of LED and laser flashing lights that are so dangerous for both human and AI systems.

The Soft Lights Foundation respectfully requests that that California Legislature consider this proposal to protect first responder and public health, safety, and civil rights.

Sincerely,

/s/ Mark Baker
President

Soft Lights Foundation
mbaker@softlights.org

⁴ <https://www.softlights.org/wp-content/uploads/2024/12/CHP-Petition-to-Prohibit-Supplemental-LED-Vehicle-Flashing-Lights.pdf>

APPENDIX A – Flashing Light Research

November, 2024 – [Securing the Perception of Advanced Driving Assistance Systems Against Digital Epileptic Seizures Resulting from Emergency Vehicle Lighting](#) – LED flashing lights interfere with automated driving systems.

February, 2024 – [Good Practices and Current Research in Vehicle Lighting for Roadway Incidents](#) – Researcher John Bullough discusses LED flashing lights starting at 14:05 and ending at 37:50.

October 26, 2022 – [Team-driven Improvement in the Use of Lights and Sirens](#) – Discussion of the dangers of using lights and sirens.

April 22, 2022 – [Can behavioral interventions be too salient? Evidence from traffic safety messages.](#) – Electronic signs are distracting and lead to more crashes.

March 29, 2022 – [Flashing Emergency Lights: Influence of Intensity, Flash Rate and Synchronization on Driver Visibility, Comfort and Confidence](#) – Flashing lights can be too bright and flash too quickly.

February 7, 2022 – [Visually sensitive seizures: An updated review by the Epilepsy Foundation](#) – The abstract states that visually-induced seizures remain significant public health hazards so they warrant ongoing scientific and regulatory efforts and public education and that images with flashes brighter than 20 candelas/m² at 3-60 (particularly 15-20) Hz occupying at least 10 to 25% of the visual field are a risk. This confirms that LED flashing lights will trigger epileptic seizures.

January 27, 2022 – [Video of Dodge Charger Driver Dead](#) – Police vehicles with high-intensity LED flashing lights.

December, 2021 – [Effects of Emergency Vehicle Lighting Characteristics on Driver Perception and Behavior](#) – This study concludes that high intensity flashing lights put lives at risk.

August, 2021 – [Risk of Fire Alarm Strobe Lights](#) – An article by a risk management expert on LED strobe lights used in buildings.

June 30, 2021 – [Study of Heart Rate and Blood Pressure Subject to Pulsed LED Lighting](#) – The findings indicate that pulsed light will cause a deviation of heart rate and blood pressure from that under stable light. Results showed that after a short lighting period (20 min), heart rate and blood pressure were significantly higher under 40 Hz pulsed than that under stable light.

January 28, 2021 – [How Do Flashing Lights Trigger Epileptic Seizures?](#) – This overview article mentions that contrast is a trigger, as is flash rate.

January 9, 2021– [California Highway Patrol](#) – Video of CHP vehicle on roadway with high luminance LED strobe lights.

June 11, 2019 – [Stroboscopic light effects during electronic dance music festivals and photosensitive epilepsy: a cohort study and case report](#) The connection between strobe lights and seizures.

April 2, 2019 – [Impacts of Flashing Emergency Lights](#) This study concludes that strobing LED lights are dangerous.

February 9, 2019 – [Massachusetts State Police](#) – Compilation video showing high luminance strobe lights on MSP vehicles.

January 12, 2019 – [Is Use of Warning Lights and Sirens Associated With Increased Risk of Ambulance Crashes? A Contemporary Analysis Using National EMS Information System \(NEMSIS\) Data](#) – Ambulance use of lights and sirens is associated with increased risk of ambulance crashes.

January, 2018 – [Police Warning Signals](#) – This article in Police Chief Magazine discusses the dangers of overly intense strobing lights.

May 2, 2017 – [Flashing Lights Induce Prolonged Distortions in Visual Cortical Responses and Visual Perception](#) – A flashing light induces an anomalously delayed response in the primary visual cortex of mice, rats, and humans.

June 5, 2016 – [Why Running Lights and Sirens is Dangerous](#) – Flashing Lights and Sirens may save a few minutes, but does not change the outcome of the event. There is no value to using them, but there is harm.

June 1, 2016 – [National Institutes of Health – Psychological Factors in Exceptional, Extreme and Torturous Environments](#) This scientific research shows that strobing LED lights are instruments of torture.

April 18, 2014 – [Hazardous Effects of Light Stimulation in the Central Nervous System](#) – High-temporal-frequency visual stimuli can yield hazardous responses in the central nervous system.

October, 2010 – [Ambulance Lights](#) – Article on ambulance lights. “Fewer lights, flashing slower & less brightly are more effective.”

2005 – [Photic- and Pattern-induced Seizures: Expert Consensus of the Epilepsy Foundation of America Working Group](#) – A pre-LED study of how flashing lights cause seizures.

August 5, 2001 – [Rear Lighting Configurations for Winter Maintenance Vehicles](#) Strobing lights are less effective than static lights for safety.

March 22, 1971 – [Failure of Visual Estimation of Motion Under Strobe](#) – The author shows how difficult it is to catch a bean bag tossed under strobing lights.

December 27, 1955 – [Siren, Light Removal Makes Police Unhappy](#) – “Removal of the sirens and red lights has materially reduced accidents involving police cars rushing to other smashups or speeding to the scene of a crime.”

APPENDIX B – News Involving Vehicle Flashing Lights

August 13, 2024 – [A year later, report says Lahera crash was an accident](#) – LED flashing lights on police vehicles caused a serious injury crash.

July 20, 2024 – [Maine trooper in cruiser rear-ended, injured at traffic stop, strikes vehicle he pulled over](#) – Flashing lights were in use.

January 24, 2024 – [MSP Trooper Hit By Vehicle, Killed on East Side of Michigan](#) – Trooper hit by vehicle and killed during traffic stop at night.

January 18, 2024 – [Police Officer, 2 Firefighters Struck by Vehicle While On Scene of Accident](#) –

January 1, 2024 – [Tow-Truck Driver Killed on New Year’s Eve was Dale Alan Pumphrey, 63, of El Cajon.](#) – Not stated if the tow truck was using LED lights.

December 22, 2023 – [Patient Killed, Gretna Firefighters Injured in Ambulance Crash](#) – Lights and sirens involved in crash.

December 8, 2023 – [Colorado Firefighter Remains In Hospital After Suspected DUI Driver Crashed Into First Responders](#) – Video shows intense LED flashing lights.

December 7, 2023 – [Waltham Police Officer, National Grid Worker Killed After Hit-and-Run Driver Barrels Into Worksite](#) – Flashing lights were in use. The video shows intense, rapidly flashing LED lights.

March 18, 2023 – [4 Scottsdale Police Cars Hit by DUI Driver](#) – Scottsdale police were using LED strobe lights.

October 22, 2022 – [EMS: Lights and Sirens: “We Always Did It this Way”](#) – Lights-and-sirens response increases the chance of an EMS vehicle crash by 50 percent and almost triples the chance of crash during patient transport

June 9, 2022 – [Death Investigation in Goulds](#) – Many LED flashing lights and emergency vehicle flashing lights.

May 2, 2022 – [Are Louisiana Police Emergency Lights Too Bright?](#) – A news story about people saying that LED flashing lights are too bright.

April 11, 2022 – [Patrol Officer, 2 People Injured](#) – Police siren and flashing lights were on, likely triggering the crash.

March 25, 2022 – [Crash in Hartford Split Car in Two](#) – Police and tow trucks with LED flashing lights.

March 17, 2022 – [LED Taillight Flicker](#) – Video of flickering LED taillights.

March 15, 2022 – [LED Study: To Protect First Responders, Brighter Isn’t Better](#) – Media report on ERSI study of flashing lights.

February 19, 2022 – [Houston Police Officer Hit by Driver While Blocking Traffic](#) – The video shows multiple rapidly flashing LED lights, which likely caused the driver to lose vision.

February 1, 2022 – [Woman Killed by Tractor Trailer](#) – Incident occurred at 8pm. The video shows first responder vehicles with LED flashing lights.

January 24, 2022 – [Lake Worth Police Run Over Man](#) – Lake Worth PD initiate an incident by assaulting a man with LED flashing lights. – [Letter to Lake Worth, TX Police Department](#)

January 23, 2022 – [Austin, TX removed flashing lights in the 1950s](#) – Austin, Texas had improved safety by prohibiting flashing lights and sirens. Later, the Texas legislature mandated the flashing lights, and deaths went up.

January 21, 2022 – [2 NYPD Officers Shot](#) – Incredible assault of LED flashing lights by New York City police.

January 21, 2022 – [Arnold Schwarzenegger Accident](#) – The former California Governor was involved in an accident. The response by the emergency crews and their LED flashing lights makes the incident even more dangerous.

January 20, 2022 – [Reporter Hit by Car](#) – A reporter standing in front of LED flashing lights on a tow truck is struck by a car.

January 19, 2022 – [Compilation of New York City Ambulances](#) – Horrific LED flashing lights and noise. It's hard to imagine a dumber system.

January 16, 2022 – [2022 Dodge Charger Pursuit Police Car](#) – LED flashing lights at 3:45

January 7, 2022 – [Belt Parkway Mayhem](#) – Cops agitated by their own LED flashing lights.

January 4, 2022 – [North Carolina Trooper Killed at Traffic Stop](#) – This incident occurred at 9pm, but the article did not indicate if LED flashing lights were being used.

November 12, 2021 – [Police Chase in New Jersey](#) – The use of LED flashing lights by the police are violating civil rights.

August 18, 2021 – [Semi Truck Road Rage](#) – This nearly one hour video perfectly capture the catastrophe of LED streetlights, LED headlights, LED taillights and LED flashing lights on an freeway in Oklahoma.

December 3, 2021 – [Pedestrian Killed by Police Vehicle](#) – After the first police vehicle struck the pedestrian, more police vehicles appeared with dangerous and discriminatory LED flashing lights.

December 6, 2021 – [CA Firefighter Struck on Interstate](#) – No mention of LED flashing lights, but their use is likely.

September 20, 2021 – [Miami Shooting shows Police Strobe Lights](#) – A shooting shows that excessively bright LED lights did not prevent the crime, and that the police response is to assault people with LED flashing lights.

August, 2021 – [Tesla Autopilot Crashes into Police Vehicle](#) – “The trooper whose cruiser was hit shortly before 5 a.m. Saturday had activated his emergency lights”

March, 2021 – [Tow Truck Driver Killed](#) – An already impaired driver's vision was further reduced by blinding LED strobe lights from a tow truck, and the the motorist struck and killed the tow truck driver.

March, 2021 – [Michigan State Trooper Vehicle Hit by Tesla](#) – A police vehicle with strobe lights on was struck by a Tesla on autopilot, most likely due to the glare from the LED strobe lights.

[Dallas Police Officer Killed by Driver](#) – Quote: “Officer Mitchell Penton was standing outside his squad car with his emergency lights on when another vehicle hit the squad car about 1:45 a.m. Saturday.”

[Miami-Dade Shooting, Feb. 2021](#) – Police respond to shooting scene with high luminance strobe lights.

[Winter Blast Feb. 2021](#) – Multiple strobe lights at 0:21 shining into the eyes of everyone.

August 26, 2020 – [Tesla on autopilot crashes into North Carolina Sheriff vehicle with LED flashing lights.](#)

[Painesville Police, July, 2019](#) – Police car flashing lights contributing to a vehicle crash.

[Epileptic Complaint About Police Lights](#) – 2007. The police pulled over a vehicle whose passenger had epilepsy. The police refused to accommodate her by turning off their strobe lights.

[1993 Ford Mustang Police Vehicle with Incandescent Flashing Lights](#) – Flashing lights without the pain and seizures.

APPENDIX C – LED Flashing Light Incident Reports

October 12, 2024 – Esparto, CA – Autism

I was driving behind a vehicle when it suddenly pulled to the side of the road. Coming towards us was an ambulance with LED flashing lights. I felt like I was electrocuted and was going to go unconscious. I instantly closed my eyes and stopped my car. After a few seconds, a car behind me honked, and when I opened my eyes, the ambulance was already gone. Now I'm suffering the psychological after-effects.

September 14, 2024 – Vacaville, CA – Autism

I was driving at dusk when a fire truck or ambulance suddenly appeared with LED lights flashing. I immediately threw both of my arms in front of my face and hit the brakes to stop the car. I thought that this might be the end of my life. The LED flashing lights are sheer terror and I can't function. After the fire truck/ambulance passed by, I felt like I was going to cry from the emotional trauma. My brain then feels like it's dead even hours later.

August 3, 2024 – Fountain Hills, AZ – None

Apparently the plan to get drivers off the road is working with the BLINDING LED vehicle headlights. The police LED flashing lights are SUPER BLINDING.

August 3, 2024 – Fort Collins, CO – Other

At 74 and having cataract replaced and it is nearly impossible to drive safely with the blinding blue white glaring LED lights. It is so distracting and frustrating I lose my concentration to drive properly. The lights seem to bounce up and down with a blinding flashing impact. Even police vehicles red and blue flashing on the side of the road are so blinding it is difficult and unsafe to go around them. I can't see what is in front of me. The contrast from dark to blinding flashing lights is too much to see what's in front of me.

August 1, 2024 – London, United Kingdom – Other

Council lawnmower with flashing LED lights drove past me while I was walking along the road. I felt immediate severe head pain, nausea and disoriented, and fell into the roadside ditch. I then vomited, climbed out with blurred vision and pounding head.

July 9, 2024 – Mangonui, New Zealand – Migraine

While traveling in the passenger seat along the state highway felt sudden thunderclap pain to the left occiput passing three flashing LED lights on three diggers repairing the road. My left eye began to stream, my speech became slurred, then dysaesthesia to the left side of my face and arm occurred. I felt as though I had a concussion. The symptoms of this hemiplegic migraine event resolved gradually over a three day period.