

BEFORE THE CALIFORNIA HIGHWAY PATROL

PETITION TO PROHIBIT SUPPLEMENTAL LED FLASHING
LIGHTS ON MOTOR VEHICLES

SUBMITTED BY
SOFT LIGHTS FOUNDATION
ON
AUGUST 12, 2024

A. CITIZEN PETITION

The undersigned submits this petition under Title 2, Division 3, Part 1, Chapter 3.5, Section 11340.6 of the California Government Code¹, to request that the Commissioner of the California Highway Patrol issue regulations to explicitly prohibit the use of supplemental Light Emitting Diode (“LED”) flashing lights on motor vehicles to ensure the comfort, health, safety, and civil rights of all individuals, as authorized by California Vehicle Code Section 2402.²

B. STATEMENT OF GROUNDS

I. Introduction and Summary

California Vehicle Code (“CVC”) Section 25250 states, “Flashing lights are prohibited on vehicles except as otherwise permitted.” There is no California statute that authorizes the use of LED flashing lights, and thus all LED flashing lights are prohibited by CVC Section 25250. However, since there has been no enforcement of this section by any state agency, including the CHP, DMV, or any local government agency, this petition requests that the CHP publish regulations that explicitly prohibits the use of LED flashing lights on vehicles.

The US Department of Energy states that LEDs are a “radically new technology” that emit a “directional” light with “unique characteristics”.³ It is the directional nature of LEDs and their unique characteristics which cause individuals with disabilities to suffer non-epileptic and epileptic seizures, migraines, vomiting, panic attacks, impaired cognitive functioning, loss of vision, and suicidal ideations when exposed to LED flashing lights such as on police cars, ambulances, fire trucks, utility trucks, garbage trucks, and tow trucks.

A vehicle is manufactured by the Original Equipment Manufacturer (“OEM”). An OEM vehicle may come with flashing turn signals or hazard lights and these lights are regulated by the National Highway Traffic Safety Administration in FMVSS-108. This petition does not address OEM flashing lights. This petition addresses supplemental LED flashing lights which are an alteration to the OEM vehicle and includes the amber and white LED flashing lights on garbage trucks, utility trucks, and tow trucks, and the red, blue, and white LED flashing lights on emergency vehicles. These supplemental LED flashing lights are installed on a vehicle as part of a process to supposedly enhance the conspicuity of the vehicle when parked on the side of the road or in emergency travel situations, but which cause severe and life-threatening adverse neurological reactions for individuals with disabilities.

¹ <https://law.justia.com/codes/california/2022/code-gov/title-2/division-3/part-1/chapter-3-5/article-1/section-11340-6/>

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https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=VEH&division=2.&title=&part=&chapter=2.&article=3.

³ https://www1.eere.energy.gov/buildings/publications/pdfs/ssl/ssl_lessons-learned_2014.pdf

LEDs can be used to pulse intense, flashing, directed energy visible radiation using electronics that can create synchronous and asynchronous flash patterns with a digital on/off characteristic. Prior to the invention of LEDs, emergency and utility vehicles typically used a tungsten filament bulb as the source of the light and a rotating disc that would create a flashing pattern. The intensity of this type of light source is measured by the metric luminous intensity in candela. These are the types of flashing lights that are permitted in California Vehicle Code Section 25251.

LEDs are a radically new technology which emits light in a directed energy beam which can be turned on and off nearly instantly to generate a digital pulsing pattern. The intensity of an LED source is measured by the metric radiance in Watts per steradian per square meter, which is the same metric used to measure the intensity of lasers. These types of directional flashing lights (e.g. LEDs and lasers) have never been approved for use on vehicles and are thus prohibited by California Vehicle Code Section 25250.

Due to their directional nature, high radiance, digital pulsing, and lack of regulation on intensity, spectral power distribution, and digital flashing characteristics, LED flashing lights have been documented to cause life-threatening non-epileptic and epileptic seizures, multi-day migraines, anxiety, panic attacks, severely decreased cognitive functioning, impaired vision, and suicidal ideations for individuals with disabilities such as epilepsy, autism, PTSD, migraines, photophobia, and other neurological disabilities.

Because of the severe adverse reactions suffered by individuals with disabilities when exposed to LED flashing lights, the use of LED flashing lights creates a discriminatory barrier, interfering with path-of-travel. Because individuals with disabilities require government protection from the harms of LED flashing lights, the decision by the California Highway Patrol (“CHP”) to not explicitly prohibit the use of LED flashing lights on vehicles is a violation of the 14th Amendment of the U.S. Constitution’s Equal Protection Clause.

This petition requests that the California Highway Patrol publish regulations in the California Code of Regulations (“CCR”), Title 13, Division 2, Chapter 2 prohibiting the use of supplemental LED flashing lights on vehicles, to ensure equal protection for individuals with disabilities who cannot neurologically tolerate such intense, digitally pulsing LED flashing lights.

II. Statement of Facts

A. NHTSA Does Not Regulate Supplemental Flashing Lights

The National Highway Traffic Safety Administration does not regulate supplemental flashing lights and defers to the States for such regulation.⁴

⁴ <https://www.nhtsa.gov/interpretations/nht87-233>

B. CHP Has Authority to Regulate Flashing Lights on Vehicles

CVC Section 25250 states, “Flashing lights are prohibited on vehicles except as otherwise permitted.” California Vehicle Code Section 2402 states, “The commissioner may make and enforce such rules and regulations as may be necessary to carry out the duties of the department.” CHP has previously published rules in California Code of Regulations, Title 13, Division 2, Chapter 2 – Lighting Equipment. Thus, the publication of a new regulation by the CHP which explicitly prohibits LED flashing lights simply clarifies an existing California statute as an explicit CCR rule.

C. 14TH Amendment Equal Protection Clause

The Equal Protection Clause of the 14th Amendment of the U.S. Constitution states:

*All persons born or naturalized in the United States, and subject to the jurisdiction thereof, are citizens of the United States and of the state wherein they reside. No state shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any state deprive any person of life, liberty, or property, without due process of law; nor deny to any person within its jurisdiction the equal protection of the laws.*⁵

The use of supplemental LED flashing lights on vehicles segregates members of the public into two classes: those without disabilities who are provided the purported safety benefits of using supplemental LED flashing lights, and those with disabilities for whom those very same supplemental LED flashing lights cause acute neurological and psychological trauma and an obstruction to path-of-travel. The Equal Protection Clause of the 14th Amendment requires the CHP to provide equal protection to both non-disabled and disabled individuals. While non-disabled individuals may not suffer acute adverse reactions to LED flashing lights and thus may not need CHP regulations, individuals with disabilities are dependent on CHP regulations to protect them from harm. Because no safe level of LED flashing lights (e.g. radiance, spectral power distribution, digital pulsing, number of devices, asynchronous and synchronous flashing), has been established for all individuals with disabilities, the CHP must issue regulations which prohibit LED flashing lights to comply with 14th Amendment Equal Protection requirements to protect individuals with disabilities from harm and discrimination.

D. Americans with Disabilities Act

The Americans with Disabilities Act was passed in 1990 to protect individuals with disabilities from discrimination. The ADA was further strengthened by the Americans with Disabilities Act Amendments Act of 2008 to ensure that the ADA is broadly interpreted. The US Department of Justice states on its ADA website, “**Title II requires that State and local governments give people with disabilities an equal opportunity** to benefit from all of their programs, services, and activities (e.g. public education, employment, transportation,

⁵ https://www.law.cornell.edu/wex/equal_protection

recreation, health care, social services, courts, voting, and town meetings).” (emphasis added). Supplemental LED flashing lights on vehicles deny individuals with disabilities this equal opportunity and it is thus incumbent on the California CHP, as an ADA Title II entity, to publish regulations that protect individuals with disabilities from the harms and discriminatory barriers created using LED flashing lights.

Title II regulation 28 C.F.R. § 35.151(b)(1) states:

Each facility or part of a facility altered by, on behalf of, or for the use of a public entity in a manner that affects or could affect the usability of the facility or part of the facility shall, to the maximum extent feasible, be altered in such manner that the altered portion of the facility is readily accessible to and usable by individuals with disabilities, if the alteration was commenced after January 26, 1992.

A facility is broadly construed to mean any government operation; thus, the term facility includes vehicles. The alteration of adding a supplemental LED flashing light on a government motor vehicle creates an obstruction to path-of-travel for individuals with disabilities because the individual may suffer a non-epileptic or epileptic seizure, migraine, panic attack, or other acute adverse reaction. Therefore, the California CHP is required to publish regulations that prohibit the use of supplemental LED flashing lights on police cars, fire trucks, ambulances, and other government-controlled vehicles.

Title III regulation 28 C.F.R. § 36.402(a)(1) states:

Any alteration to a place of public accommodation or a commercial facility, after January 26, 1992, shall be made so as to ensure that, to the maximum extent feasible, the altered portions of the facility are readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs.

A facility is broadly construed to mean any business operation; thus, the term facility includes vehicles. The alteration of adding a supplemental LED flashing light on a motor vehicle owned or operated by a place of public accommodation creates an obstruction to path-of-travel for individuals with disabilities, because the individual may suffer a non-epileptic or epileptic seizure, migraine, panic attack, or other acute adverse reaction. Therefore, the California CHP is required to publish regulations that prohibit the use of supplemental LED flashing lights on tow trucks, garbage trucks, company utility trucks and all commercial vehicles.

A decision by the California CHP to not publish regulations explicitly prohibiting the use of supplemental LED flashing on vehicles is a violation of CHP’s requirements under the 14th Amendment Equal Protection Clause.

E. California Government Code

California Government Code Section 835 states:

Except as provided by statute, a public entity is liable for injury caused by a dangerous condition of its property if the plaintiff establishes that the property was in a dangerous condition at the time of the injury, that the injury was proximately caused by the dangerous condition, that the dangerous condition created a reasonably foreseeable risk of the kind of injury which was incurred, and that either:

- (a) A negligent or wrongful act or omission of an employee of the public entity within the scope of his employment created the dangerous condition; or*
- (b) The public entity had actual or constructive notice of the dangerous condition under Section 835.2 a sufficient time prior to the injury to have taken measures to protect against the dangerous condition.*

Local government agencies that receive constructive notice that LED flashing lights on government motor vehicles create a dangerous condition for individuals with disabilities are liable if the agency takes no steps to remove the supplemental LED flashing lights. The Soft Lights Foundation has already submitted a Constructive Notice of Dangerous and Discriminatory Condition to a substantial number of cities in California. (EXHIBIT B). A decision by the California CHP to not publish regulations explicitly prohibiting the use of supplemental LED flashing lights on motor vehicles will lead to unnecessary, expensive, and time-consuming litigation for each California city, county, and state agency. To protect all individuals and to establish uniform standards, the CHP must publish state-wide regulations that prohibit the use of supplemental LED flashing lights on all vehicles.

F. Seizure Reactions to LED Flashing Lights

Below are three videos showing LED flashing lights. Each video is labeled with a seizure warning.

1. My LED Lights (epilepsy/seizure warning):
(<https://www.youtube.com/shorts/qvtmhHbPeMU>)
2. LED Strobe Lights - Blue **Warning May Cause Seizure**:
(https://youtu.be/K_oIWfOMKel)
3. How to Have a Seizure 101 (Warning Flashing Lights)
(<https://www.youtube.com/shorts/1fGBrt2D9s4>)

The next four videos demonstrate the use of supplemental LED flashing lights on vehicles. No seizure warning is provided either on the video, or by the government agency or company operating the vehicles.

4. 2015 Dodge Charger Police Car LED Police Lights outfitted by HG2 Emergency Lighting: (https://youtu.be/KJ_1CiNVtTo)
5. Ambulances with Flashing Lights: (<https://youtu.be/amoR1QSiBHw>)
6. Fire Trucks: (<https://youtu.be/r8VdWLIazr0>)
7. Utility Truck: (<https://youtu.be/ma0hGwHivO4>)

8. Tow Truck: (<https://youtu.be/cJKgMtXJ-IE>)

Seizure reactions are primarily a function of radiance, flash rate, and cycle depth. The higher the radiance, the more risk. The faster the rate, the more risk. The closer to digital pulsing, the more risk. All three factors play a role. A very high radiance LED can cause a seizure with zero flashing. A low radiance light can cause a seizure if the rate is high. A digital on/off has a higher risk of seizure than sine wave.

There is a disconnect between the well-known fact that intense and/or rapidly flashing lights can trigger seizure life-threatening seizure reactions, and the use of those same intense rapidly flashing lights on vehicles that operate in public spaces. While the online videos may post seizure warning labels to alert the viewer, there is no similar warning label for police cars, ambulances, fire trucks, utility trucks, garbage trucks, or tow trucks. There has been a systemic failure by government agencies at all levels which has allowed intense, digitally pulsing LED lights to appear on vehicles, when it has already been well known for decades that such flashing lights are unsafe for individuals with disabilities.

Due to the directionality of LED light, there is no known safe level of pulsed LED light. While it is already known that LED flashing lights create life threatening hazards for individuals with disabilities such as autism, epilepsy, PTSD, and migraines, there is no known level at which the LED flashing light becomes safe. Therefore, to ensure the safety and equal protection of individuals with disabilities, the CHP must explicitly prohibit the use of supplemental LED flashing lights on motor vehicles.

G. LED Flashing Lights Reports of Harm

Reports of harm due to exposure to LED flashing lights have been documented.

- Minnesota Department of Human Rights – LED RRFB – (<https://www.softlights.org/wp-content/uploads/2023/06/74059-6-15-2023-ECP-Memorandum-.pdf>)
- LED RRFB – Seizure / Concussion - (<https://www.softlights.org/wp-content/uploads/2022/09/MA-Incident-Report.pdf>).
- Emergency Vehicle – Seizure Reaction / Panic Attack - (<https://www.softlights.org/wp-content/uploads/2021/09/Encounter-with-Emergency-Vehicle.pdf>)
- LED Incident Reports – Soft Lights Foundation – (<https://www.softlights.org/led-incident-reports/>)
- Petition to Ban Blinding Headlights – (<https://www.change.org/p/u-s-dot-ban-blinding-headlights-and-save-lives>)

- New York State Public Service Commission Case 23-E-0727 – (<https://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterCaseNo=23-E-0727>)
- Food and Drug Administration – Accidental Radiation Occurrence Reports (EXHIBIT C)

H. US Food and Drug Administration

On May 24, 2024, the US Food and Drug Administration issued a decision to not publish performance standards for any LED product, despite the requirements of 21 U.S.C. 360ii.⁶ In issuing this ruling, the FDA made conclusory statements and failed to show evidence of reasoned decision making, and therefore the FDA’s decision does not comply with the Administrative Procedure Act of 1946 and is subject to litigation. Nevertheless, the FDA’s decision to not regulate LED flashing lights is further proof that regulation of LED flashing lights falls to state agencies such as the California CHP.

Given the numerous reports of harm and discrimination caused by LED flashing lights and the lack of regulation from the FDA, the CHP must explicitly prohibit the use of supplemental LED flashing lights to comply with its 14th Amendment Equal Protection Clause requirements for individuals with disabilities, including, but not limited to, individuals with epilepsy, migraines, autism, electromagnetic sensitivity, photophobia, and PTSD.

I. Administrative Procedure Act

The California Administrative Procedure Act (“APA”), codified as California Government Code Section 11350 et seq., requires that the CHP render its decision on this petition using reasoned decision making. A decision to not explicitly prohibit the use of supplemental LED flashing lights may not be arbitrary or capricious and the CHP may not use conclusory statements that are not supported via evidence provided in the CHP’s response.

For example, to conclude that the CHP does not have a 14th Amendment requirement to provide equal protection to individuals with disabilities and is not required to publish regulations explicitly prohibiting the use of supplemental LED flashing lights on vehicles, the CHP would need to conclusively demonstrate that either that the use of LED flashing lights do not segregate the population into two groups, or that existing regulations provide equal protection for both groups (individuals without and with disabilities).

⁶ <https://www.softlights.org/wp-content/uploads/2024/05/Final-Response-Citizen-Petitions-FDA-2022-P-1151-FDA-2023-P-0233-FDA-2023-P-3828-FDA-2023-P-3879.pdf>

As another example, if the CHP were to conclude that this petition does not provide enough evidence of the harm to individuals with disabilities caused by supplemental LED flashing lights on motor vehicles, the CHP would need to provide strong evidence that LED flashing lights are safe for individuals with disabilities and that LED flashing lights do not cause seizures, do not cause panic attacks, and do not impair cognitive functioning in individuals with disabilities.

The two most likely responses from the CHP are that there is no essential difference between traditional flashing lights and LED flashing lights, or that LED flashing lights are necessary for safety. First, there is a drastic difference between traditional light sources which emit light that disperses gently, and LED and laser sources which are directional and do not disperse gently. Second, using LED flashing lights for “safety” violates the 14th Amendment Equal Protection requirement because the purported safety benefits are only available to individuals without disabilities who do not suffer acute adverse reactions such as seizures, vomiting, migraines, etc. when exposed to LED flashing lights.

This petition makes clear that when reasoned decision-making is applied, the CHP is required to act to protect individuals with disabilities from the harms and discriminatory barriers created by supplemental LED flashing lights on vehicles, and that, because these harms and discrimination are already occurring, the CHP must act promptly to implement regulations that explicitly prohibit the use of supplemental LED flashing lights to protect the lives of individuals with disabilities who are already suffering life-threatening non-epileptic and epileptic seizures, migraines, anxiety, panic attacks, impaired cognitive functioning, and suicidal ideations from LED flashing lights on police cars, ambulances, fire trucks, garbage trucks, tow trucks, and utility vehicles.

III. Conclusion

In this petition, we have shown the following:

1. California Vehicle Code Section 25250 already prohibits the use of LED flashing lights because LED flashing lights have not been permitted.
2. Supplemental LED flashing lights on motor vehicles must be regulated at the state level by the California CHP.
3. Supplemental LED flashing lights on motor vehicles have been shown to cause serious adverse reactions to individuals with disabilities, including non-epileptic and epileptic seizures, anxiety, panic attacks, vomiting, impaired cognitive functioning, and suicidal ideations.
4. The alteration of adding supplemental LED flashing lights to motor vehicles creates a discriminatory barrier to path-of-travel for individuals with disabilities, in violation of the Americans with Disabilities Act’s statutes and regulations.
5. The California CHP is required under the U.S. Constitution’s 14th Amendment Equal Protection Clause to ensure equal protection of individuals with disabilities and

therefore the CHP must explicitly prohibit the use of supplemental LED flashing lights on motor vehicles in the California Code of Regulations.

C. PROPOSED REGULATIONS

Petitioner requests that the CHP issue regulations which explicitly prohibits the use of supplemental LED flashing lights on vehicles in the California Code of Regulations, Title 13, Division 2, Chapter 2 – Lighting Equipment.

Respectfully Submitted By:

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APPENDIX A - Bibliography

1. Visually Sensitive Seizures: An Updated Review by the Epilepsy Foundation. - <https://onlinelibrary.wiley.com/doi/10.1111/epi.17175> - Flashes brighter than 20 candela per square meter create a risk of seizure.
2. IEEE Recommended Practices for Modulating Current in High-Brightness LEDs for Mitigating Health Risks to Viewers. - https://www.bio-licht.org/02_resources/info_ieee_2015_standards-1789.pdf - Flasher brighter than 20 nits and greater than 1 Hz is creates a high risk of seizure.
3. Flashing Lights Induce Prolonged Distortions in Visual Cortical Responses and Visual Perception. - [Flashing Lights Induce Prolonged Distortions in Visual Cortical Responses and Visual Perception - PMC \(nih.gov\)](#) - A flashing light induces an anomalously delayed response in the primary visual cortex of mice, rats, and humans.
4. Hazardous Effects of Light Stimulation in the Central Nervous System - <https://austinpublishinggroup.com/clinical-neurology/fulltext/ajcn-v1-id1010.php> - High-temporal-frequency visual stimuli can yield hazardous responses in the central nervous system.
5. Associations Between the Pupil Light Reflex and the Boarder Autism Phenotype in Children and Adults - <https://www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2022.1052604/full> – An individual with autism has a slower pupil light reflex, causing difficulty reacting to LED flashing lights.
6. Hyper-focus, sticky attention, and springy attention in young autistic children: Associations with sensory behaviors and cognitive ability - <https://onlinelibrary.wiley.com/doi/10.1002/aur.3174> - Individuals with autism may not be able to disengage from LED flashing lights.