
A BILL FOR AN ACT

RELATING TO AUDIBLE VEHICLE REVERSE WARNING SYSTEMS.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF HAWAII:

1 SECTION 1. The legislature finds that in order to reduce
2 urban noise pollution caused by reversing alarms of commercial
3 and construction vehicles and to ensure safer reversing, it is
4 necessary to transition to newer technology for audible reverse
5 warning systems. Commonly referred to as back-up beepers, most
6 audible reverse warning systems use a tonal sound over a single
7 frequency that humans hear as "beep-beep-beep." Broadband
8 alarms, on the other hand, use a pulsed acoustic signal that
9 comprises a range of frequencies producing a noise that is heard
10 as "pshh-pshh-pshh." Broadband alarms are sometimes called
11 quackers, croakers, and wooshers.

12 The legislature further finds that the federal Occupational
13 Safety and Health Administration (OSHA), requires the use of
14 reversing alarms on construction vehicles to protect people from
15 accidental injury and death, or alternatively the use of an
16 observer to signal to the vehicle driver when it is safe to
17 reverse. If using a reversing alarm, it must be "audible above



1 the surrounding noise level." For specific earthmoving or
2 compacting equipment, such as a bulldozer or grader, the alarm
3 must be "distinguishable from the surrounding noise level."
4 Title 29 C.F.R. sections 1926.601(b)(4) and 1926.602(a)(9).

5 Significantly, the legislature notes that OSHA regulations
6 do not specify a particular type or sound of alarm, which allows
7 for flexibility. In several OSHA interpretation letters, the
8 agency reaffirmed that its regulations do not specify that a
9 particular reversing alarm be used or that the sound be of the
10 single-tone type. Per OSHA, any alternatives to a conventional
11 back-up alarm may be used so long as they "provide adequate
12 warning to workers in the path of the vehicle, and to workers
13 walking towards the path of the vehicle in time to avoid
14 contact."

15 Various reports and studies have explored the deficiencies
16 of single-tone back-up beepers, including a 2017 study titled
17 "Perceptions of Key Stakeholders Regarding the Utilization of
18 Locatable Sound for the Prevention of Occupational Pedestrian
19 Injuries and Fatalities". This study compared the use of
20 broadband sound reversing alarms to traditional tonal sound
21 alarms across a range of criteria--audibility, propagation,



1 frequency content, and sound pressure maps--and concluded that
2 broadband sounds for reversing alarms are nearly two-thirds more
3 effective than their tonal equivalents. The broadband sound is
4 both better in preventing workplace fatalities and reducing
5 noise pollution in the surrounding area due to the broadband
6 sound system that allows for a variety of sounds and the
7 focusing of the alarm's sound. A New York State Fatality
8 Assessment and Control Evaluation investigation determined that
9 a traditional tonal back-up beeper had been inefficient in
10 alerting the deceased worker to a reversing vehicle, stating,
11 "Often people who work regularly near back-up beepers become
12 accustomed to their sound and become desensitized to them as
13 warning signals".

14 The purpose of this Act is to protect Hawaii's residents
15 from disruptive noise pollution and utilize safer vehicular
16 reversing practices by requiring the use of broadband reversing
17 alarms instead of tonal alarms, by January 1, 2025.

18 SECTION 2. Chapter 291 Hawaii Revised Statutes, is amended
19 by adding a new section to part II to be appropriately
20 designated and to read as follows:



1 "§291- Audible reverse warning systems. No state or
2 county-owned vehicle purchased on or after January 1, 2025,
3 shall use an audible reverse warning system that emits a warning
4 sound other than one using broadband technology.

5 For purposes of this section, "vehicle" includes
6 earthmoving and compacting equipment such as scrapers, loaders,
7 crawler or wheel tractors, bulldozers, off-highway trucks,
8 graders, agricultural and industrial tractors, and similar
9 equipment."

10 SECTION 3. New statutory material is underscored.

11 SECTION 4. This Act shall take effect on January 1, 2050.



Report Title:

Audible Reverse Warning Systems; Broadband Sound

Description:

Requires the replacement of current audible reverse warning systems (back-up beepers) on state and county-owned vehicles purchased on or after 1/1/2025, with more effective broadband reversing alarms by 1/1/2025. Takes effect 7/1/2050. (SD2)

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