



**STATE OF CALIFORNIA AIR RESOURCES BOARD**

**PROPOSED ZERO-EMISSION FORKLIFT REGULATION  
45-DAY COMMENTS DUE DECEMBER 26, 2023**

**INTRODUCTION**

Hyster-Yale Group, Inc. (“HYG”) hereby submits comments on the California Air Resources Board (“CARB”) Zero-Emission Forklift Regulation (“Proposed Regulation”). HYG designs, engineers, manufactures, and sells a comprehensive line of forklifts under the “Hyster” and “Yale” brand names. HYG manufactures electric forklifts, spark-ignition engine powered, and compression-ignition engine powered forklifts. HYG products are in the target core of the Proposed Regulation.

HYG is a member of the Industrial Truck Association (“ITA”) and hereby endorses and encourages CARB to consider and adjust the Proposed Regulation to the ITA comments. HYG provides these focused comments as HYG is a leading manufacturer of Large Spark-Ignition engine (“LSI”) powered Class 4 greater than 12,000 pound lift capacity (“Class 4 >12,000 lb.”) forklifts. HYG provides these comments in complement to the ITA comments, to emphasize the risks which the Proposed Regulation poses not only to the LSI Class 4 >12,000 lb. forklift market but also to the large operations (underpinning thousands of well-paying California jobs) which operate and require the unique LSI Class 4 >12,000 lb. forklift characteristics not possible in battery electric or fuel cell powered models, as mandated in the Proposed Regulation.

HYG provides these comments as a leading manufacturer of battery electric (“Zero-Emissions” under the Proposed Regulation) forklifts in all Classes and for all applications for which there is a technically feasible solution. Accordingly, HYG strives to





be the first to offer a Zero-Emissions variant to displace LSI Class 4 >12,000 lb. forklifts but current and imminent technologies cannot meet LSI Class 4 >12,000 lb. forklift use or form factor demands. These comments do not come from a company philosophically or fundamentally opposed to any CARB or California initiative.

### **LSI Class 4 >12,000 lb. Lift Capacity Forklifts Require Specialized Performance and Form Factor Characteristics not Considered in the Proposed Rule**

The Proposed Regulation abruptly, improperly and based on a deficient and flawed LSI Class 4 >12,000 lb. forklift technology, use, or market assessment, prohibits LSI Class 4 >12,000 lb. forklift acquisition after January 1, 2026. The Proposed Rule Regulatory Impact Analysis (“RIA”) and the current record do not address, analyze or support a sales restriction, much less prohibition, for LSI Class 4 >12,000 lb. forklifts. Rather, the RIA confirms that the scope of the Propose Regulation under consideration as of April 2023 had been limited below LSI Class 4 >12,000 lb. forklifts and lacks any LSI Class 4 >12,000 lb. specific consideration. RIA, p.110.

#### [LSI Class 4 >12,000 lb. Forklift Physical and Market Characteristics](#)

LSI Class 4 >12,000 lb. “... forklifts typically use smooth solid tires, called cushion tires, and are designed to be used on smooth, paved surfaces. . . [by contrast,] Class V forklifts typically use taller tires that can be pneumatic (air-filled, foamfilled, or solid), with a tread designed for use on uneven surfaces... typically used outdoors.” RIA, p. 5. However, as described below the electric forklifts which CARB references in the RIA and ISOR, with capacities greater than 12,000 pounds and **pneumatic** tires, are of Class 1, **not** Class 4 forklifts. While the wheel/tire type may seem a minor distinction, it is the overall forklift design as influenced by the wheel/tire specification, which makes electric





offerings unavailable for LSI Class 4 >12,000 lb. forklifts. The specialized LSI Class 4 >12,000 lb. forklift market is small, specialized and critical, accounting for only “...approximately 1.3 percent [1,235 forklifts annually] of the forklifts that would be impacted by the Proposed Regulation.” RIA, p. 127.

LSI Class 4 >12,000 lb. forklifts are burdened with the greatest load and use cycles in compact facilities. Facilities are often designed around and adapted to the LSI Class 4 >12,000 lb. forklift lift performance (battery electric forklift performance limitations are well presented in the ITA comments) **and** form factor. In particular, paper and steel manufacturing facilities maximize their facility operations (and minimize the facility carbon and emissions footprint) by sizing cargo transport lanes and stacking practices tightly to LSI Class 4 >12,000 lb. forklift characteristics; LSI Class 4 >12,000 lb. forklifts transport cargo from these optimized facilities into even further space constrained rail cars and over-the-road trailers. In other words, operators would have to build larger facilities which consume more energy and result in greater emissions not only in construction but also in ongoing operations if not for the LSI Class 4 >12,000 lb. forklift load transport capabilities in confined spaces.

#### [LSI Class 4 >12,000 lb. Forklift Specialized Use](#)

LSI Class 4 >12,000 lb. forklifts transport heavy loads, such as paper rolls or coils of steel, and maneuver in confined spaces, such as congested manufacturing plants or rail cars. Accordingly, HYG markets its LSI Class 4 >12,000 lb. forklifts as “A versatile cushion tire lift truck designed for indoor use... for applications such as [*lifting*] primary metals, stone, clay, glass and concrete products and industrial and commercial machinery.” LSI Class 4 >12,000 lb. forklift applications experience the most severe use cycle (hours per year) of any HYG product classes, operating nearly continuously, on three shifts per day.





CARB’s suggestion (ISOR, p. 220) that operators could “choose not to replace [their forklifts] at all”—simply stop using forklifts in their businesses is false, full stop. Forklifts, especially LSI Class 4 >12,000 lb. forklifts are not and have never been recreational or elective equipment. Forklifts are integral to the logistics and production operations; every food product, consumer good, renewable energy equipment, etc. must at some point be transported laterally and vertically.

Accordingly, Governor Newsom’s Executive Order N-33-20 could hardly have defined “essential” more closely to LSI Class 4 >12,000 lb. forklift operations; Section 6 orders as “essential” those functions that “enable logistics operations for essential sectors, wholesale and retail sale, including warehousing, cooling, storing, packaging, and distributing products for wholesale or retail sale or use.” Contrary to the ISOR statements, forklift operators cannot “... choose not to replace [their forklifts] at all... ” in these essential functions even during a pandemic, much less in routine business settings as Proposed Regulation mandates despite lacking analysis of LSI Class 4 >12,000 lb. forklift operations.

### **Zero Emissions Powertrains are Unavailable for LSI Class 4 >12,000 lb. Forklifts**

LSI Class 4 >12,000 lb. forklifts must accommodate competing energy storage, power delivery, and counter weighting capacity demand.

#### Lead Acid Batteries Lack the Energy Storage and Charging Expedience

LSI Class 4 >12,000 lb. forklifts operate in near 24/7, three-shift modes and are not supported by lead acid batteries. As CARB recognizes in the RIA at pp. 28-29,

A flooded lead-acid battery pack. . . can typically be used for only one full work shift per day. . . multiple-shift operations have historically employed the use of two or three lead-acid battery packs per forklift . . . requir[ing] a dedicated area for charging and storing battery packs, which takes away from square footage the facility . . . and additional resources to manage,





maintain, and swap battery packs. . .  
Class 4 >12,000 lb. forklifts do not enjoy the duty and use cycles of lower capacity electric forklifts pervasive in many indoor facilities, having “duty cycles that are well-suited for its use.” RIA, p. 29.

[Lithium Ion and Advanced Battery Technologies Cannot Support the Footprint and Counterweight Requirements.](#)

Lead-acid batteries don’t offer the energy storage, quick charge capability or discharge power required for these applications. While lithium-ion batteries do offer quick charge capability, there is insufficient energy storage available in this size of truck to make that quick charge capability suitable to meet the application requirements.

These are not mere “perceptions about performance and other factors,” RIA, p. 29. LSI Class 4 >12,000 lb. forklifts operate nearly continuously, perform the most work, operate in constrained space facilities and must offer load capacity and maneuverability in their functions.

Lithium-Ion batteries sufficiently sized to support a use duration (energy storage) for a meaningful shift would necessarily displace (high-mass-density) counterweight volume in the forklift with a low-mass-density lithium-ion battery, thereby diminishing load capacity. In simpler terms, in order to fit the necessary energy storage into the restricted form factor of a Class 4 >12,000 lb serving these unique applications, counterweight space would have to be given up, meaning the truck would be incapable of performing its intended function as it could no longer lift >12,000 lb loads. HYG will be among the first, if not very first Class 4 >12,000 lb. forklift manufacturer to offer a Zero Emission configuration when the fundamental technology is resolved – but that technology is not in existence today.

### Requested Relief







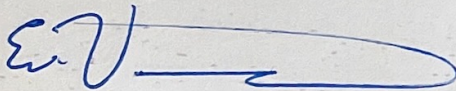
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Very simply, HYG requests that CARB revises the Proposed Regulation consistent to that contemplated and aligned among CARB and industry over the 3-year regulatory development period – omitting LSI Class 4 >12,000 lb. forklifts from the Proposed Regulation. The RIA confirms that the scope of the regulation under consideration as of April 2023 was limited to forklifts of lower capacity than LSI Class 4 >12,000 lb. forklifts. RIA, p. 110. There is no support for CARB’s scope expansion in the Proposed Regulation and near certainty of real and imminent harm to essential commerce functions. The Proposed Regulation’s last-minute scope expansion, is not technically, financially, or commercially viable and must be corrected. Risks to LSI Class 4 >12,000 lb. operators are exacerbated and disproportionate, as LSI Class 4 >12,000 lb. have a more frequent replacement cadence because LSI Class 4 >12,000 lb. forklifts accumulate so many hours, every year.

Importantly, omitting LSI Class 4 >12,000 lb. forklifts from the Proposed Regulation will not delay CARB’s energy transition goals. As CARB states, “As more fleets convert to ZEFs due to the Proposed Regulation, forklift manufacturers may invest in maintaining or even expanding their zero-emission product lines. Such investments could contribute to break-through technologies and lead to even broader acceptance of ZE technologies in other off-road vehicle applications.” RIA, p. 32. Such break-through technology advancement will enable Zero-Emissions Class 4 >12,000 lb. forklifts in the future, and HYG will remain at the technological forefront.

Respectfully,



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