



Florida Department of Transportation

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GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBAUT, P.E.
SECRETARY

October 27, 2020

RE: Low Speed Vehicles and Information Request

Dear Stakeholders:

FDOT encourages publicly-funded transportation providers throughout the state to consider innovative options to provide enhanced mobility to decrease traffic congestion, provide cost-effective service, and meet consumer demand. As always, public safety is at the forefront of FDOT's mission. As such, we are providing the attached document to serve as a resource for transportation providers as they consider the safety risks of operating or contracting with providers to offer service with low speed vehicles.

The attached document applies strictly to low speed vehicles as defined by the National Highway Traffic Safety Administration (NHTSA). According to this definition, low speed vehicles are 4-wheeled motor vehicles with a top speed greater than 20 miles per hour, but not greater than 25 miles per hour and a gross vehicle weight rating (GVWR) of less than 3,000 pounds. We request that if you are a publicly funded transportation provider who operates or contracts with a provider to provide a different type of vehicle that operates at low-speeds, such as three-wheeled vehicles, to please contact Tony Brandin, Transit Operations Manager, at 850-414-4736 or Tony.Brandin@dot.state.fl.us.

We developed the attached information in response to the increasing popularity of low speed vehicles as an option for enhancing public transportation. We are grateful for the input of our partners at the University of South Florida Center for Urban Transportation Research and the Florida State University-Florida Agricultural and Mechanical University College of Engineering for their input and support.

We look forward to continued coordination on enhanced and safe mobility.

Sincerely,

Ashley Porter

Ashley Porter
Transit Safety Programs Manager

Tony Brandin

Tony Brandin
Transit Operations Manager



**Guidance for Publicly Funded Transportation Providers
Considering Low Speed Vehicles Operations
October 27, 2020**

1.0 Introduction

The FDOT Transit Office offers transportation providers information to assist with effectively navigating the decision to operate or contract with operators to utilize low speed vehicles to transport the public or clients.

Low-speed vehicles (LSV) are small powered (usually electric) vehicles designed for use in controlled low-speed environments. The LSV vehicle type was established in June 1998 by the National Highway Traffic Safety Administration (NHTSA), which defines them as 4-wheeled motor vehicles with a top speed greater than 20 miles per hour, but not greater than 25 miles per hour and a gross vehicle weight rating (GVWR) of less than 3,000 pounds.

FDOT recognizes that some transportation providers are currently using these vehicles. These vehicles can be operated safely, however, they present unique hazards that transportation providers must fully understand and address before offering them as a transportation alternative to the public or clients.

FDOT also recognizes that other types of vehicles that travel at low speeds, such as three-wheeled vehicles, may be marketed to transportation providers. This guidance is not intended to address vehicles that do not meet the above definition. FDOT will issue future guidance on the operation of these vehicles by public transportation providers. In the meantime, please contact FDOT if you are currently contracting with a low-speed vehicle that does not meet the NHTSA definition.

2.0 Requirements

2.1 Federal Requirements

The NHTSA defines a "Low-speed vehicle" in 49 Code of Federal Regulations (CFR) 571.3 as any 4-wheeled motor vehicle with a top speed greater than 20 miles per hour, but not greater than 25 miles per hour with a gross vehicle weight rating (GVWR) of less than 3000 lbs.

[FMVSS 500](#) specifies requirements for low-speed vehicles and is intended to ensure that low-speed vehicles operated on the public streets, roads, and highways are equipped with the minimum motor vehicle equipment appropriate for motor vehicle safety. It requires the following safety equipment:

- (1) Headlamps
- (2) Front and rear turn signal lamps
- (3) Tail lamps
- (4) Stop lamps
- (5) Reflex reflectors – red on sides and red rear



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- (6) Driver side exterior mirror and passenger side or interior mirror
- (7) Parking Brake
- (8) Windshield AS1/AS4 (FMVSS 205)
- (9) VIN/Certification Label
- (10) Type 1 or Type 2 Seat Belt (FMVSS 209) at each designated seating position
- (11) Low-speed vehicles shall comply with the rear visibility requirements specified in paragraphs S6.2 of FMVSS No. 111.
- (12) An alert sound as required by §571.141.

If used for public transit, LSVs are subject to all applicable Americans with Disabilities Act (ADA) regulations.

2.2 State of Florida Requirements

States establish where LSVs can operate and can adopt their own performance requirements for LSV equipment not preempted by federal regulations, such as lighting, mirrors, and parking brakes.

The State of Florida defines a low-speed vehicle in [Section 320.01\(41\), Florida Statutes](#) as:

320.01 (41) "Low-speed vehicle" means any four-wheeled vehicle whose top speed is greater than 20 miles per hour but not greater than 25 miles per hour, including, but not limited to, neighborhood electric vehicles. Low-speed vehicles must comply with the safety standards in 49 C.F.R. s. 571.500 and s. 316.2122.

This requires compliance with the NHTSA regulation and Florida Statue 316.2122:

[316.2122](#) Operation of a low-speed vehicle or mini truck on certain roadways. The operation of a low-speed vehicle as defined in s. [320.01](#) or a mini truck as defined in s. 320.01 on any road is authorized with the following restrictions:

- (1) A low-speed vehicle or mini truck may be operated only on streets where the posted speed limit is 35 miles per hour or less. This does not prohibit a low-speed vehicle or mini truck from crossing a road or street at an intersection where the road or street has a posted speed limit of more than 35 miles per hour.
- (2) A low-speed vehicle must be equipped with headlamps, stop lamps, turn signal lamps, taillamps, reflex reflectors, parking brakes, rearview mirrors, windshields, seat belts, and vehicle identification numbers.



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- (3) A low-speed vehicle or mini truck must be registered and insured in accordance with s. [320.02](#) and titled pursuant to chapter 319.
- (4) Any person operating a low-speed vehicle or mini truck must have in his or her possession a valid driver license.
- (5) A county or municipality may prohibit the operation of low-speed vehicles or mini trucks on any road under its jurisdiction if the governing body of the county or municipality determines that such prohibition is necessary in the interest of safety.
- (6) The Department of Transportation may prohibit the operation of low-speed vehicles or mini trucks on any road under its jurisdiction if it determines that such prohibition is necessary in the interest of safety.

3.0 Assessing Safety Risk

The use of LSVs present different safety risks from the vehicles typically operated by transportation providers, primarily the relatively low mass and speed/acceleration capacity compared to conventional passenger vehicles

Designed for low risk, controlled low-speed traffic environments, the further outside these conditions they are operated the more vulnerable they become. For example, in the 49 CFR 571.3 final rule "response to comments" LSV section the NHTSA presents the following concerns:

"A LSV does not have the occupant protection capability of other four-wheeled motor vehicles. Its lightness makes its occupants vulnerable in any collision with a non-LSV vehicle. The force involved in such a collision increases proportional to the square of the velocity of travel. For example, the result of a vehicle collision at 35 miles per hour (mph) is twice as severe as the same collision at 25 mph."

"Because LSVs are much lighter than conventional vehicles and are not subject to the same Federal motor vehicle safety standards, they are less crashworthy than conventional vehicles. Thus, LSV drivers, especially those unused to the limited acceleration capabilities of LSVs, and passengers will be exposed to a greater risk of injury or death when operating an LSV on roadways with a posted speed limit of 35 mph, or when attempting to cross a roadway with a posted speed limit greater than 35 mph."

3.1 Safety Considerations

At a minimum, a transportation provider should evaluate the safety risk, and if appropriate, implement mitigations to address the following prior to operating these vehicles:



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- Ejection (partial or full) of passengers during a crash or rapid vehicle movement because even though seatbelts are required, LSVs commonly have either minimal (such as vinyl) or no windows or doors. Additionally, there is no known specific safety testing or requirements for LSV wheelchair securements.
- Crashworthiness. No crash protection features, such as airbags, crush zones, or roll cages. The limited crash testing that has been conducted indicated that the tested LSVs would not meet passenger car crashworthiness requirements.
- Conflicts with pedestrians or cyclists. LSV operation on multiuse pathways can present hazards to other users unless the pathway has been designed specifically to accommodate them.

The above issues are exacerbated in LSVs built only to meet the minimum required standards or especially in converted golf carts (in which the required safety equipment is added after purchase and the motor modified to allow speeds greater than 20mph).

4.0 Recommendations

Based on the safety risks detailed in section 3.0, FDOT identifies the following mitigations transportation providers should consider:

- Drivers should be aware of the different dynamic capabilities and safety limitations of LSVs.
- Transportation providers should ensure that overloading the 3,000-pound GVWR is prevented. This can be more likely to occur with high passenger capacity LSVs.
- Transportation providers should avoid converted or minimal equipment LSVs. LSVs that exceed the requirements of FMVSS 500 should be prioritized when purchasing. For example, LSV safety options can include the following: high seats, 4-wheel hydraulic brakes, rigid safety cage, doors, more powerful motor, etc.
- The use of Type 2 (3-point) seatbelts should be required by all passengers.
- The operation of LSVs should be limited to roads with a speed limit of 25 mph or lower. Research has shown vehicles traveling more than 10 mph slower than the general traffic flow can present a hazard to all drivers.
- Transportation providers should consider the general environment in which the LSVs will operate when deciding travel routes.
- Marked 7-8 ft. LSV specific travel lanes are safer, especially on roads with speed limits of 30 to 35 mph.
- Coordinate with local jurisdictions to post signs on LSV routes alerting drivers to watch out for LSVs.



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- LSVs should only cross major roads at signalized intersections and ensure the traffic light timings are sufficient to allow for the slower acceleration of LSVs.
- The majority of LSVs are battery electric vehicles (BEV) which use lead acid batteries, lithium batteries are an option on some models. Safe operation will require consideration of electrical safety equipment options before purchase, and establishment of inspection and maintenance procedures after. These procedures will vary depending on the manufacturer and battery type, but in general the following recommendations are suggested:
 - Driver emergency response training (how to evacuate the vehicle and fire extinguisher use).
 - Dedicated battery charging area and procedures.
 - Regular inspection of the electrical system.
 - Purchase LSVs equipped with an easily accessible and clearly marked battery disconnect switch.
 - Installation of an easily accessible class ABC fire extinguisher (on lead acid battery vehicles).

5.0 Safety Risk Acceptance

Once an agency has assessed the safety risk, the agency must make a methodical decision as to whether the risks are acceptable. If they are, the agency must prepare and maintain a written rationale which supports the decision. Any mitigations should be tracked to ensure that they are working as intended.