
AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of receipt of petition for temporary exemption; request for public comment.

SUMMARY: Ford Motor Company (Ford) has petitioned NHTSA for a temporary exemption from certain requirements in seven Federal Motor Vehicle Safety Standards (FMVSS) for vehicles that will be equipped with automated driving systems (ADS). Ford is seeking an exemption from portions of FMVSS No. 101, Controls and Displays; No. 102, Transmission Shift Position Sequence, Starter Interlock, and Transmission Braking Effect; No. 108, Lamps, Reflective Devices, and Associated Equipment; No. 111, Rear Visibility; No. 126, Electronic Stability Control Systems; No. 135, Light Vehicle Brake Systems; and No. 138, Tire Pressure Monitoring Systems. NHTSA is publishing this document in accordance with statutory and administrative provisions and seeks comment on the merits of Ford’s exemption petition and on potential terms and conditions that should be applied to the temporary exemption if granted. After receiving and considering public comments, and any additional information provided by Ford, NHTSA will assess the merits of the petition and will publish a notice in the Federal notice setting forth NHTSA’s reasoning for either granting or denying Ford’s petition.

DATES: Comments must be received on or before [INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].
**ADDRESSES:** NHTSA invites you to submit comments on the petition described herein and the questions posed below. You may submit comments identified by docket number in the heading of this notice by any of the following methods:

- **Fax:** 202-493-2251.
- **Mail:** U.S. Department of Transportation, Docket Operations, M-30, Room W12-140, 1200 New Jersey Avenue, S.E., Washington, DC 20590.
- **Hand Delivery:** 1200 New Jersey Avenue, S.E., West Building Ground Floor, Room W12-140, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays.
- **Federal eRulemaking Portal:** Go to https://www.regulations.gov. Follow the online instructions for submitting comments.

**Instructions:** All submissions must include the agency name and docket number. Note that all comments received will be posted without change to https://www.regulations.gov, including any personal information provided. Please see the Privacy Act discussion below. NHTSA will consider all comments received before the close of business on the comment closing date indicated above. To the extent possible, NHTSA will also consider comments filed after the closing date.

**Docket:** For access to the docket to read background documents or comments received, go to https://www.regulations.gov at any time or to 1200 New Jersey Avenue, S.E., West Building Ground Floor, Room W12-140, Washington, D.C. 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal Holidays. Telephone: 202-366-9826.

**Privacy Act:** In accordance with 5 U.S.C. 553(c), DOT solicits comments from the public to better inform its rulemaking process. DOT posts these comments, without edit, to www.regulations.gov, as described in the system of records notice, DOT/ALL-14 FDMS, accessible through www.dot.gov/privacy. In order to facilitate comment tracking and response, we encourage commenters to provide their name, or the name of their organization; however,
submission of names is completely optional. Whether or not commenters identify themselves, all timely comments will be fully considered. If you wish to provide comments containing proprietary or confidential information, please contact the agency for alternate submission instructions.

Confidential Business Information: If you wish to submit any information under a claim of confidentiality, you must submit your request directly to NHTSA’s Office of the Chief Counsel. Requests for confidentiality are governed by part 512. NHTSA is currently treating electronic submission as an acceptable method for submitting confidential business information to the agency under part 512. If you would like to submit a request for confidential treatment, you may email your submission to Dan Rabinovitz in the Office of the Chief Counsel at Daniel.Rabinovitz@dot.gov or you may contact Dan for a secure file transfer link. At this time, you should not send a duplicate hardcopy of your electronic CBI submissions to DOT headquarters. If you claim that any of the information or documents provided to the agency constitute confidential business information within the meaning of 5 U.S.C. 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. 1905, you must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with part 512, to the Office of the Chief Counsel. Your request must include a cover letter setting forth the information specified in our confidential business information regulation (49 CFR 512.8) and a certificate, pursuant to § 512.4(b) and part 512, appendix A. In addition, you should submit a copy, from which you have deleted the claimed confidential business information, to the Docket at the address given above.


SUPPLEMENTARY INFORMATION:
I. Background

NHTSA is responsible for promulgating and enforcing FMVSS designed to improve motor vehicle safety. Generally, a manufacturer may not manufacture for sale, sell, offer for sale, or introduce or deliver for introduction into interstate commerce a vehicle that does not comply with all applicable FMVSS. There are limited exceptions to this general prohibition. One of these
exceptions allows manufacturers to petition NHTSA for a temporary exemption for noncompliant vehicles that have an overall safety level at least equal to the overall safety level of nonexempt vehicles.\(^1\)

In July 2021, Ford submitted an exemption petition under 49 CFR part 555 for a vehicle equipped with a Society of Automotive Engineers (SAE) International Level 4 ADS\(^2\) that can be operated in either a human-driven mode (Manual Mode), or in an ADS-driven mode (AV Mode).\(^3\) Ford states that it is seeking an exemption from portions of seven FMVSS to allow for the controlled deployment and usage of the vehicle “on tested, proven roadways during appropriate weather conditions.”\(^4\) Ford states that, given that human occupants are not intended to participate in the driving task while the vehicle is being operated in AV Mode, Ford believes having active driving controls and communications would introduce an unacceptable risk to safety.\(^5\) Ford further states that, if granted, it does not intend to sell the vehicles to individual customers.\(^6\) Instead, Ford states that the vehicles will be fleet owned and operated for their full service life.\(^7\) Ford also states that no more than 2,500 exempted vehicles will be produced and introduced into interstate commerce within a 12-month period during the 2-year exemption.\(^8\)

This notice accomplishes two things: (1) it serves as a notice of receipt of Ford's petition and (2) it requests comments on the petition and on conditions that could be applied if NHTSA decides to grant the petition.

II. Authority and Procedures for Temporary Exemptions

The National Traffic and Motor Vehicle Safety Act (Safety Act), codified at 49 U.S.C. chapter 301, authorizes the Secretary of Transportation to exempt motor vehicles, on a temporary

\(^{2}\) SAE International J3016_202104 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles.
\(^{3}\) Ford Petition at page 1.
\(^{4}\) Id. at page 3.
\(^{5}\) Id. at pages 8 and 25.
\(^{6}\) Id.
\(^{7}\) Id.
\(^{8}\) Id.
basis and under specified circumstances, and on terms the Secretary considers appropriate, from a FMVSS or bumper standard. This authority is set forth at 49 U.S.C. 30113. The Secretary has delegated the authority for implementing this section to NHTSA.⁹

The Safety Act authorizes the Secretary to grant, in whole or in part, a temporary exemption to a vehicle manufacturer if the Secretary makes one of four specified findings.¹⁰ The Secretary must also look comprehensively at the request for exemption and find that the exemption is consistent with the public interest and the objectives of the Safety Act.¹¹

One of the bases on which an exemption may be granted allows NHTSA to grant an exemption if “compliance with the standard would prevent the manufacturer from selling a motor vehicle with an overall safety level at least equal to the overall safety level of nonexempt vehicles.”¹² This is the basis on which Ford is seeking its exemption.

NHTSA established 49 CFR part 555, Temporary Exemption from Motor Vehicle Safety and Bumper Standards, to implement the statutory provisions concerning temporary exemptions. The requirements in 49 CFR 555.5 state that the petitioner must set forth the basis of the petition by providing the information required under 49 CFR 555.6, and the reasons why the exemption would be in the public interest and consistent with the objectives of the Safety Act.

Ford’s petition was submitted under 49 CFR 555.6(d), on the basis that Ford is otherwise unable to sell a vehicle whose overall level of safety or impact protection¹³ is at least equal to that of a nonexempt vehicle. Petitions submitted under 49 CFR 555.6(d) must include the following information:

(1) A detailed analysis of how the vehicle provides the overall level of safety or impact protection at least equal to that of nonexempt vehicles, including -

   (i) A detailed description of how the motor vehicle, if exempted, differs from one that conforms to the standard;

---

⁹ 49 CFR 1.94.
¹⁰ 49 U.S.C. 30113(b)(3).
¹³ Ford is not seeking exemptions from any standards providing performance requirements for impact protection.
(ii) A detailed description of any safety or impact protection features that the vehicle offers as standard equipment that are not required by the Federal motor vehicle safety or bumper standards;

(iii) The results of any tests conducted on the vehicle demonstrating that it fails to meet the standard, expressed as comparative performance levels;

(iv) The results of any tests conducted on the vehicle demonstrating that its overall level of safety or impact protection exceeds that which is achieved by conformity to the standards.

(v) Other arguments that the overall level of safety or impact protection of the vehicle is at least equal to that of nonexempt vehicles.

(2) Substantiation that compliance would prevent the sale of the vehicle.

(3) A statement whether, at the end of the exemption period, the manufacturer intends to comply with the standard.

(4) A statement that not more than 2,500 exempted vehicles will be sold in the United States in any 12-month period for which an exemption may be granted pursuant to this paragraph. An application for renewal of any exemption shall also include the total number of exempted vehicles sold in the United States under the existing exemption.

III. Ford’s Petition


The exemption, if granted, would allow Ford to produce and deploy vehicles that lack certain vehicle controls, telltales, and indicators. Ford states that the subject vehicles would be fleet owned and operated to allow for a controlled deployment and usage on tested, proven
roadways in appropriate weather.\textsuperscript{15} Ford states that this will allow it to further develop and evaluate its SAE Level 4 ADS feature.\textsuperscript{16} When engaged, Ford states the ADS assumes the driving role and performs the entire Dynamic Driving Task (DDT) as defined in SAE J3016.\textsuperscript{17}

Because Ford has sought confidential treatment of some aspects of its petition, a redacted version of Ford’s petition is included in the docket referenced at the beginning of this notice.

\textit{i. Overview of the Vehicles}

Ford states that the subject vehicles use a hybrid-electric vehicle (HEV) platform that has been specifically designed and tailored to support mobility services such as ride sharing, ride hailing and package delivery.\textsuperscript{18} Ford states that each vehicle will be modified with the components that make up the ADS and are responsible for the core capabilities of motion, planning and execution, which, Ford states, enable the vehicle to drive itself.\textsuperscript{19}

Ford states that the vehicle will be designed to operate in both AV Mode and human-driven mode Manual Mode.\textsuperscript{20} The vehicle will be equipped with non-traditional driving controls that will only be available in Manual Mode for use by trained operators.\textsuperscript{21} Ford states that transitioning between AV Mode and Manual Mode can only be performed by a trained operator while the vehicle is stationary.\textsuperscript{22} Ford also states that when the ADS is active, it performs the entire DDT, and removes the need for a human driver.\textsuperscript{23}

Ford explains in its petition that the Operational Design Domain (ODD) describes where, when, and under what conditions an ADS-equipped vehicle will be operated.\textsuperscript{24} Ford states the vehicle’s intended ODD represents a convergence of the vehicle’s expected capabilities and

\textsuperscript{15} Id. at page 3.
\textsuperscript{16} Id.
\textsuperscript{17} SAE International J3016_202104 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles.
\textsuperscript{18} Ford Petition at 5.
\textsuperscript{19} Id.
\textsuperscript{20} Id.
\textsuperscript{21} Id. at page 8.
\textsuperscript{22} Id. at page 5.
\textsuperscript{23} Id.
\textsuperscript{24} Id.
projected business model, which includes ride-hailing and goods delivery on urban streets.  

Ford also states that it expects the vehicles to operate day and night, and from clear conditions up to light rain.

According to Ford, the ADS consists of computing hardware, software, sensors, and map data. Ford states that the vehicles use a 360-degree multi-modal sensing strategy, which includes:

- Near field and far field cameras – high-resolution video image captures for detection, tracking, and classification of static and dynamic objects
- Mid- and long-range radars – sensors that transmit radio waves to detect objects and help determine their range and velocity
- Short- and long range lidars – high-precision sensors that measure the distances to objects using pulses of laser light to visualize the space around it with 360-degree coverage
- Inertial Measurement Unit (IMU) and wheel speed sensors – sensors for determination of orientation and position of the vehicle over time

Ford also states that the ADS uses a high-definition map of the road network and surrounding environment. Ford states that this map, when combined with real-time sensing, allows the vehicle to determine its location within a lane, dynamically route to a destination, and interpret local rules of the road, such as speed limits and traffic controls. Ford states that software analyzes the sensor data to locate vehicles, pedestrians, and other obstacles, predict their future motion, and plan an appropriate vehicle path through the environment. Once a path is determined, motion commands are calculated and then communicated to the vehicle’s actuators, such as the engine, transmission, steering, braking, and exterior lighting.

### ii. Planned Usage of the subject vehicles

Ford states that if it is granted an exemption, it does not plan to sell the vehicles to individual customers. Instead, Ford states that the subject vehicles will be fleet owned and
operated.\textsuperscript{32} Ford states that this will allow for controlled deployment and usage on tested, proven roadways in appropriate weather.\textsuperscript{33} At the end of daily operation, the vehicles will be fueled, cleaned and serviced at a central service depot, and this will also allow for any data downloads or necessary software updates.\textsuperscript{34} This approach will, Ford says, ensures the vehicles are adequately maintained and serviced.\textsuperscript{35}

\textit{iii. Fallback Measures}

Ford states that when the ADS detects a malfunction affecting the system’s ability to perform the DDT, it will perform a fallback maneuver.\textsuperscript{36} These maneuvers are categorized by Ford into three levels: Level 1, vehicle completes trip and is scheduled for service; Level 2, vehicle finds a suitable parking location or pulls over to the shoulder and activates hazard warning signal; and Level 3, vehicle activates hazard signal and comes to a controlled stop in the path.\textsuperscript{37} Ford states that ADS subsystems conduct their own respective onboard diagnostics, and that safety critical subsystems also monitor the status of other subsystems with which they interface.\textsuperscript{38} Ford states that, depending on the severity of a detected malfunction, the vehicle will transition to an appropriate minimal risk condition and the fallback level can be escalated if other faults occur, driving conditions warrant it, or if time thresholds to complete the vehicle response are not met.\textsuperscript{39}

\textbf{A. Safety Showing}

In support of the statutory basis cited in its petition for a temporary exemption, Ford asserts that it believes that the requirements from which it is seeking an exemption “exist due to a human driver’s need to operate regulated controls and receive regulated information.”\textsuperscript{40} Ford

\begin{itemize}
  \item \textsuperscript{32} Id.
  \item \textsuperscript{33} Id. at page 8.
  \item \textsuperscript{34} Id. at page 9.
  \item \textsuperscript{35} Id.
  \item \textsuperscript{36} Id. at page 7.
  \item \textsuperscript{37} Id. at page 8.
  \item \textsuperscript{38} Id. at pages 7-8.
  \item \textsuperscript{39} Id. at page 8.
  \item \textsuperscript{40} Id. at page 10.
\end{itemize}
further asserts that these requirements do not support the safety purpose when the ADS is performing the DDT.\textsuperscript{41} This exemption would allow Ford to deploy a vehicle in which most traditional controls and information are not available during the vehicle’s AV mode, which Ford asserts, prevents occupants from interfering with the driving task when being executed by the ADS.\textsuperscript{42}

Ford seeks exemptions from the following requirements:

\begin{enumerate}[i.]
\item FMVSS No. 101, \textit{Controls and Displays}: S5.1-S5.4, and S5.6\textsuperscript{43}
\item FMVSS No. 102, \textit{Transmission Shift Position Sequence, Starter Interlock, and Transmission Braking Effect}: S3.1.4.1\textsuperscript{44}
\item FMVSS No. 108, \textit{Lamps, Reflective Devices and Associated Equipment}: S6.61, S6.6.2, S9.1.1, S9.3-S9.8\textsuperscript{45}
\item FMVSS No. 111, \textit{Rear Visibility}: S6.2.3-S6.2.5\textsuperscript{46}
\item FMVSS No. 126, \textit{Electronic Stability Controls}: S5.3\textsuperscript{47}
\item FMVSS No. 135, \textit{Light Vehicle Brake Systems}: S5.5, S5.3.1\textsuperscript{48}
\item FMVSS No. 138, \textit{Tire Pressure Monitoring}: S4.3, S4.4\textsuperscript{49}
\end{enumerate}

For each of the seven FMVSS from which Ford is seeking an exemption, Ford first describes the purpose of the standard and the safety need the requirements meet. Ford then discusses its approach to meeting the safety need. A short description of the rationale Ford provides in its petition to support its assertion that the subject vehicles offer an equivalent level of safety to nonexempt vehicle follows. In the Manual Mode, available to trained operators only, Ford states that the vehicle will comply with all applicable FMVSS. Therefore, the descriptions provided

\begin{itemize}
\item \textsuperscript{41} \textit{Id.}
\item \textsuperscript{42} \textit{Id.}
\item \textsuperscript{43} \textit{Id.} at pages 10-15.
\item \textsuperscript{44} \textit{Id.} at page 16.
\item \textsuperscript{45} \textit{Id.} at pages 17-18.
\item \textsuperscript{46} \textit{Id.} at pages 18-20.
\item \textsuperscript{47} \textit{Id.} at pages 20-21.
\item \textsuperscript{48} \textit{Id.} at pages 21-22.
\item \textsuperscript{49} \textit{Id.} at pages 22-24.
\end{itemize}
below focus on the description of Ford’s safety approach for when the vehicles are operated in AV Mode.

Ford seeks an exemption from the requirements in FMVSS No. 101 that specify the location, identification (symbol, words, etc.), illumination, color, and evaluation conditions of regulated controls, telltales, and indictors. In AV Mode, a few select telltales, indicators, and controls will be presented to occupants, including those related to restraints and occupant protection. Ford states that modules within the vehicle communicate with each other and broadcast the regulated information over the vehicle communication network (e.g., controller area network buses, or CAN), the driver display module receives the information and displays telltales and indicators when triggered. Ford states that by utilizing the vehicle communication network, the ADS directly receives the information the regulated features were meant to communicate to human drivers, and often in greater detail. Ford asserts that the ADS is immediately capable of responding to that information, which may include an appropriate fallback maneuver. Additionally, Ford states that fault information may be communicated to the fleet management system to schedule the vehicle for return to the AV terminal for service or servicing on road. Ford provided a chart in its petition that details Ford’s approach for each of the required telltales, indicators, and controls.

Ford’s petition seeks an exemption from the requirement in FMVSS No. 102 for identification of shift positions, including the positions in relation to each other and the position selected to be displayed in view of the driver. Ford asserts that the subject vehicle provides an equivalent level of safety to a nonexempt vehicle, stating that in AV Mode, the subject vehicle will be provided with the same information about the transmission shift position as the driver in a

---

50 Id.
51 Id at page 11.
52 Id. at pages 10-11.
53 Id.
54 Id.
55 Id.
56 Id. at pages 11-15.
57 Id. at page 16.
nonexempted vehicle.\textsuperscript{58} In AV Mode, Ford states that the ADS requests a gear shift via redundant controller area network (CAN) messages to the powertrain control module (PCM).\textsuperscript{59} Ford states that it also continually receives two separate CAN messages from the PCM regarding gear state, from which it can determine the actual gear position.\textsuperscript{60}

Ford is seeking an exemption from requirements in FMVSS No. 108 because the subject vehicle does not comply with requirements for certain lighting-related controls, indicators, and performance elements when the vehicle is in AV Mode.\textsuperscript{61} Ford states that meeting these requirements is not necessary to support the driving task in the absence of a human driver.\textsuperscript{62} Further, Ford states that should controls remain accessible to riders, the occupants may select a lighting setting that could adversely affect the ADS’s driving action, causing confusion and reducing safety for other road users and/or the ADS-equipped vehicle.\textsuperscript{63} Ford asserts that the vehicle provides an equivalent level of safety to a nonexempt vehicle because the ADS system design addresses the driver control and communication requirements by allowing the vehicle’s ADS to communicate electronically over the vehicle communication network.\textsuperscript{64} Also, according to Ford, the system design meets the regulatory purpose in communicating important safety information to the ADS and it allows the ADS to react immediately to provide safe lighting performance.\textsuperscript{65} In addition, should any error or loss of communication be detected, Ford states that the appropriate actions are taken by the vehicle to minimize risks to safety.\textsuperscript{66}

Ford is seeking an exemption from the requirements in FMVSS No. 111 that provide response time, linger time, and deactivation requirements for the rearview image performance.\textsuperscript{67} Ford states that the rearview image will not be displayed to human occupants, as the ADS is

\textsuperscript{58} Id.
\textsuperscript{59} Id.
\textsuperscript{60} Id.
\textsuperscript{61} Id. at page 17.
\textsuperscript{62} Id.
\textsuperscript{63} Id.
\textsuperscript{64} Id.
\textsuperscript{65} Id.
\textsuperscript{66} Id.
\textsuperscript{67} Id. at page 19.
solely responsible for the DDT and the occupants have no responsibility to perform any driving actions.\textsuperscript{68} Ford states that in lieu of a traditional review image, while in AV Mode, the ADS utilizes a collection of sensors that meet the intended visibility requirements in FMVSS No. 111, and allow the vehicle to detect the environment during operation at all times.\textsuperscript{69} Ford states that while human drivers can potentially be distracted if a rearview ‘image’ lingers beyond the length of time it takes for a backing maneuver, the ADS will not be distracted.\textsuperscript{70} Ford asserts that requiring the ADS to disable its rear sensing outside of backing events would decrease its ability to sense the environment around the vehicle.\textsuperscript{71} Ford further asserts that, as a result, the safety intent of the response time and linger time requirements and the deactivation requirement are no longer necessary.\textsuperscript{72}

Ford seeks an exemption from the requirement in FMVSS No. 126 that requires an ESC malfunction telltale that must be in front of, and in clear view of the driver.\textsuperscript{73} Ford asserts that its approach to use the CAN bus to communicate regulated telltales and indicators and control the applicable regulated features enables the ADS to recognize and respond to information typically provided to a human driver, thereby providing equivalent safety to that of a nonexempted vehicle.\textsuperscript{74}

Ford seeks an exemption from the requirements in FMVSS No. 135 that require a foot control for actuating the service brakes and a parking brake that is actuated by either a hand or foot.\textsuperscript{75} Ford is also requesting exemption from the requirement for a warning indicator that must be in front of and in clear view of the driver.\textsuperscript{76} Ford states that the brake system of the vehicle will continue to meet the braking performance requirements of the standard.\textsuperscript{77} Ford further states

\textsuperscript{68} Id.  
\textsuperscript{69} Id.  
\textsuperscript{70} Id.  
\textsuperscript{71} Id.  
\textsuperscript{72} Id.  
\textsuperscript{73} Id. at page 21.  
\textsuperscript{74} Id.  
\textsuperscript{75} Id.  
\textsuperscript{76} Id.  
\textsuperscript{77} Id. at page 22.
that its approach to use the CAN bus to communicate regulated telltales and indicators and to control the applicable regulated features enables the ADS to recognize and respond to information typically provided to a human driver. 78 Ford asserts that this approach provides a level of safety equivalent to that of a nonexempted vehicle. 79

Ford is also seeking an exemption from the requirements in FMVSS No. 138 which require telltales that are “mounted inside the occupant compartment in front of, and in clear view of, the driver.” 80 While the ADS is operational, Ford states that the ADS performs the DDT and receives TPMS information electronically through the vehicle communication network. 81 Ford states that it does not intend to provide a telltale to warn vehicle occupants of low pressure or TPMS malfunction because such a warning would not accomplish the stated purpose of FMVSS 138, which is “to warn drivers of significant under-inflation of tires and the resulting safety problems.”

Ford asserts that the TPMS functions the same in both modes, with the only differences being that telltales are not displayed in AV Mode. 82 Ford asserts that its AV’s TPMS design satisfies the purposes of FMVSS 138 S4.3 and S4.4 by communicating the required information directly to the ADS system. 83 Ford further notes that the ADS has additional capabilities to react to the information about tire pressure to help prevent the vehicle from being driven for extended periods on significantly under-inflated tires and describes the vehicle’s response to signals indicating that a tire is significantly under-inflated (i.e., more than 25% below the placard pressure, as defined in S4.2(a)) or there is a fault in the TPMS system. 84 Ford asserts that since the ADS-equipped vehicle has the same information as the nonexempted vehicle, and the

---

78 Id.
79 Id.
80 Id. at pages 22-23.
81 Id. at page 23.
82 Id.
83 Id.
84 Id.
response to low tire pressure is the same in both vehicles, the level of safety of the two vehicles is equivalent.\textsuperscript{85}

**B. Public Interest Argument**

Ford asserts that granting this petition will allow a progressive deployment to realize the potential of self-driving technology.\textsuperscript{86} Ford cites self-driving vehicles as one of the solutions to help enable a new mobility future and states that as they reach scale, self-driving vehicles “have the potential to transform society through enhanced safety, improved congestion and improved mobility for everyone (including underserved populations such as the elderly and people with disabilities).”\textsuperscript{87}

**C. Meetings with Ford**

After submitting its petition on July 28, 2021, Ford contacted NHTSA to request a meeting to discuss its petition. NHTSA met with Ford on August 26, September 15, and October 25, 2021. A redacted version of Ford’s presentation slides from those meetings is included in the docket referenced at the beginning of this notice.

**IV. Agency’s Review of Ford’s Petition**

The agency has not yet made any judgment on the merits of Ford’s petition nor on the adequacy of the information submitted. NHTSA will assess the merits of Ford’s petition after receiving and considering the public comments to this notice, the petition, and any additional information that the agency receives from Ford.

**V. Public Interest Considerations**

Section 30113 authorizes NHTSA to grant exemptions that are consistent with the public interest and the Safety Act and authorizes NHTSA to apply appropriate terms to any such grant. Whether granting the exemption is consistent with the public interest and the objectives of the Safety Act are required findings that are no less critical than a discussion of the particular

\textsuperscript{85 Id.}
\textsuperscript{86 Id. at page 4.}
\textsuperscript{87 Id.}
statutory basis on which the exemption is sought (e.g., whether the subject vehicle provides an equivalent level of safety to a nonexempt vehicle). Although NHTSA’s mission is primarily a safety mission, NHTSA’s authority under section 30113 requires the agency to extend its consideration to issues beyond traffic safety. NHTSA is seeking comment on the agency’s consideration of specific matters of public interest in both deciding whether granting the exemption is consistent with the public interest and in developing terms and conditions with which the petitioner must comply if its petition is granted.

As the expert agency in automotive safety and the interpretation of its existing standards, NHTSA has significant discretion in making the safety findings required under these provisions. Further, the broad authority to determine whether the public interest and general goals of the Safety Act will be served by granting the exemption allows the agency to consider many diverse effects of the exemption, including: the overall safety of the transportation system beyond the analysis required in the safety determination; how an exemption will further technological innovation; economic impacts, such as consumer benefits; and environmental effects.

ADS vehicles have the potential to benefit our transportation system significantly beyond the analysis required in the safety determination. As NHTSA considers the potentially transformative impact of ADS technology, it is also considering its role in encouraging the use of ADS vehicles in ways that maximize their benefit to society. Specifically, NHTSA is exploring its role and responsibility in considering environmental impacts, accessibility, and equity when an exemption is sought for an ADS-equipped vehicle. Climate, accessibility, and equity, in addition to road safety, are important public interest goals of the Department and NHTSA. NHTSA will also continue to consider how exemptions affect the development of advanced vehicle technologies.

---

88 NHTSA stated, in the February 11, 2020 Federal Register notice granting an exemption for the first ADS-equipped vehicle to Nuro, that the broad authority to determine whether the public interest and general goals of the Vehicle Safety Act will be served by granting the exemption allows the Secretary to consider many diverse effects of the exemption, including: The overall safety of the transportation system beyond the analysis required in the safety determination; how an exemption will further technological innovation; economic impacts, such as consumer benefits; and environmental effects. (85 Fed. Reg. 7826, 7828).
With regard to environmental impacts, NHTSA seeks to learn about the interplay between fuel efficiency and ADS technologies. NHTSA seeks public comment on whether it should adopt reporting requirements when granting part 555 petitions for vehicles with ADS that would allow the agency to better understand the energy use of the vehicles throughout their service life and, possibly, to better assess, and quantify, the environmental impacts of ADS-equipped vehicles. NHTSA is also seeking comment regarding the weight it should give to the environmental impacts of internal combustion engine (ICE) vehicles when deciding whether to grant an exemption to an ICE vehicle moving forward. Finally, NHTSA is seeking comment about whether to seek from entities that receive a grant of a petition information about how, exactly, their vehicles would promote environmental justice.

NHTSA seeks comment on the extent to which accessibility and equity might be considered in either determining whether an exemption is in the public interest or applying appropriate conditions to an exemption as it is granted. Proponents of ADS technology often claim that ADS-equipped vehicles would help advance greater transportation accessibility for persons with disabilities. Ford’s petition discusses this potential benefit and specifically references improved mobility for underserved populations, such as elderly persons and persons with disabilities. NHTSA appreciates this potential and appreciates that manufacturers are considering the benefits to underserved populations.

NHTSA is interested in learning more about specific actions that manufacturers and operators of ADS-equipped exempted vehicles are taking to ensure that accessibility and equity goals will be met. For example, we are considering seeking information from entities that receive a grant of a petition about how they ensure that their ride-hailing services comply with any applicable Americans with Disabilities Act (ADA) requirements. NHTSA is also considering seeking information about how many vehicles under a part 555 exemption would be wheelchair accessible. Additionally, NHTSA is interested in what, specifically, the manufacturer would do.

---

89 Id.
to ensure access to people with vision disabilities, or to ensure that persons with wheelchairs, walkers, or other mobilities devices, can safely transition from the vehicle to the sidewalk and vice versa. NHTSA seeks comment on these questions about accessibility.

NHTSA is also considering seeking information about how the exempted vehicles would be used to improve accessibility and equity in serving underserved communities. The agency seeks comments on whether an entity that receives a grant of a petition should be required to provide plans about how it intends to ensure that access to its services is equitable in terms of neighborhood, income levels, race and ethnicity, age (etc.), and/or should be required to provide reports of how it achieved those objectives through use of the exempted vehicles. Should the agency require manufacturers granted an exemption to report to NHTSA about how the exempted vehicles will be used to improve accessibility and equity in serving underserved communities? Data reported on these elements would help DOT and NHTSA assess if assumptions about the beneficial societal impacts of ADS-equipped vehicles are bearing out, and if not, why not.

NHTSA is also considering seeking information about the economic impacts of granting a petition. Many advocates of ADS technology argue that deploying ADS-equipped vehicles will increase U.S. jobs and innovation. For example, should the agency seek information about potential job creation and displacement of workers? Should NHTSA seek other information about how the grant would impact investment in the U.S. economy, such as through the generation of tax revenue or development of intellectual property?

Further, NHTSA seeks comments on whether the agency should consider additional matters of public interest in developing terms and conditions with which a part 555 petitioner must comply if its petition were granted. To the extent that you believe other areas should be considered, please tell us how we can best promote the public interest through the exercise of our discretion in granting exemptions and establishing terms and conditions to such exemptions.

VI. Statement on Terms
Section 30113 authorizes the Secretary, NHTSA by delegation, to condition the grant of a temporary exemption “on terms [NHTSA] considers appropriate.” The agency’s authority to set terms is broad. It is not limited solely to terms and conditions relevant to its specific determination. Instead, this provision allows the agency to set terms that would allow NHTSA to collect information about the exempted vehicles that would service the public interest, such as information concerning the performance of the ADS.

Once a manufacturer receives a temporary exemption from the prohibitions of 49 U.S.C. 30112(a)(1), NHTSA can affect the use of those vehicles produced pursuant to the exemption through the terms in partially or fully granting the exemption or as it exercises its enforcement authority (e.g., its safety defect authority). The agency's authority to set terms is broad. Since the terms would be the primary means of monitoring and affecting the operation of the exempted vehicles, the agency would carefully consider whether to establish terms and what types of terms to establish if it were to grant a petition. The manufacturer would need to agree to abide by the terms set for that exemption in order to begin and continue producing vehicles pursuant to that exemption.

Due to the novel nature of ADS technology and NHTSA’s interest in better understanding the safety and utility of ADS-equipped vehicles, if the petition were granted in whole or in part, the agency anticipates applying conditions to the grant.

NHTSA exercised its ability to apply a variety of terms when it granted Nuro’s petition for the first ADS-equipped vehicle exempted under part 555. The terms NHTSA chose were designed to enhance the public interest and included post-crash reporting, periodic reporting, terms concerning cybersecurity, and certain general requirements. NHTSA seeks comment on whether the agency should apply the same type of conditions, and others, to Ford if NHTSA decides to grant its petition.

91 85 FR 7826, 7840 (February 11, 2020).
92 Id.
NHTSA will carefully consider whether to establish terms and what types of terms to establish if it were to grant Ford’s petition. If Ford’s petition were granted, Ford would need to agree to abide by the terms set for that exemption in order to begin and continue producing vehicles pursuant to that exemption. Nothing in either the statute or implementing regulations limits the application of these terms to the period during which the exempted vehicles are produced. NHTSA could set terms that continue to apply to the vehicles throughout their normal service life if it deems that such application is necessary to be consistent with the Safety Act.

Thus, if NHTSA were to grant an exemption, in whole or in part, it could establish, for example, reporting terms to ensure a continuing flow of information to the agency throughout the normal service life of the exempted vehicles, not just during the two-year period of exemption. When NHTSA granted Nuro’s exemption, NHTSA stated that the terms would apply throughout the useful life of the vehicles. Beyond the two-year exemption period, Ford could be subject to civil penalties for failure to comply with the terms established as a condition for granting the part 555 exemption.

Given the uniqueness of Ford’s vehicles, its petition, and public safety concerns, extended reporting may be appropriate. Since only a portion of the total mileage that the vehicles, if exempted, could be expected to travel during their normal service life would have been driven by the end of the exemption period, the data would need to be reported over a longer period of time to enable the agency to make sufficiently reliable judgments. Such judgments might include those made in a retrospective review of the agency’s determination about the anticipated safety effects of the exemption.

NHTSA could also establish terms to specify what the consequences would be if the flow of information were to cease or become inadequate during or after the exemption period. Other potential terms could include limitations on vehicle operations (based upon speed, weather, identified Operational Design Domains, road types, ownership, and management, etc.). Conceivably, some conditions could be graduated, i.e., restrictions could be progressively
relaxed after a period of demonstrated driving performance. Further, as with data-sharing, it may be necessary to specify that these terms would apply to the exempted vehicles beyond the two-year exemption period.

NHTSA notes that its regulations at 49 CFR part 555 provide that the agency can revoke a part 555 exemption if a manufacturer fails to satisfy the terms of the exemption. NHTSA could also seek injunctive relief.93

NHTSA seeks comment on whether the agency should apply the same types of conditions that it applied to Nuro’s exemption for ADS-equipped occupantless vehicles. NHTSA seeks comment on not only whether these conditions are appropriate to apply to Ford’s exemption request, but also whether there are additional terms that NHTSA should apply. Ford’s exemption request differs significantly from Nuro’s in that the request is for a passenger vehicle and it is not limited to 25 mph, as in the case of the Nuro vehicle. As such, there are likely to be additional terms that would be appropriate to apply to Ford’s exemption, if granted.

Please comment on whether NHTSA should apply the following terms and conditions to a potential grant of Ford’s exemption request:

1. Reporting within 24 hours of an exempt vehicle being involved in any crash, to include:94
   a. The data elements specified in 49 CFR part 563, Event Data Recorders.95
   b. If the ADS was in control of the vehicle during the event, a detailed timeline of the 30 seconds leading up to the crash, including a detailed read-out and interpretation of all sensors in operation during that time period, the ADS's object detection and classification output, and the vehicle actions taken (i.e., commands for braking, throttle, steering, etc.).

93 49 U.S.C. 30163(a).
94 Ford is currently required to submit reports to NHTSA for crashes involving ADS pursuant to NHTSA Standing General Order (2021-01). More information about the General Order is available on NHTSA’s website at https://www.nhtsa.gov/laws-regulations/standing-general-order-crash-reporting-levels-driving-automation-2-5.
95 See Table I-Reported Data Elements and Table II-Reported Data Element Format. 85 FR 78426, 7841 (February 11, 2020).
c. If a human operator took over control of the vehicle prior to the event, a detailed timeline of the 30 seconds leading up to the human operator taking over control, including a detailed read-out and interpretation of all ADS sensors in operation during that time period, the ADS’s object detection and classification output, and the vehicle actions taken (i.e., commands for braking, throttle, steering, etc.).

d. If a human operator was in control of the vehicle at any point during or up to 30 seconds before the event, a detailed timeline of any actions the human operator took that affected the crash event, as well as any technical problems that could have contributed to the crash (signal latency, poor field of view, etc.).

e. Any additional information about the event that NHTSA deems pertinent for determining either crash or injury causation, including additional information related to the ADS or remote operator system.

2. Beginning 90 days after the date of the exemption grant, and at an interval of every 90 days thereafter, a report detailing the operation of each exempted vehicle in operation during that time period. This report may provide this information either in aggregate or on a per-vehicle basis, but it must include the following:

a. A calculation of the total miles the vehicle has traveled using the ADS during the report period, and heat maps of the geofenced area in which the vehicle operates to illustrate travel density.

b. Detailed descriptions of any material changes made to the subject vehicle’s Operational Design Domain (ODD) or ADS software during the reporting period.
c. Detailed descriptions of any incidents in which any exempted vehicle violated any local or State traffic law, whether operating using the ADS or under human control.

d. Detailed descriptions of any incidents in which the exempt vehicles experienced a sustained acceleration of at least 0.7g on any axis for at least 150 ms, or of any incidents in which the vehicle had an unexpected interaction with humans or other objects (other than crashes that require immediate reporting).

e. Detailed descriptions of all instances in which a public safety official, including law enforcement, attempted to interact with an exempted vehicle, such as to pull it over, or contacted Ford regarding an attempted interaction with an exempted vehicle.

f. Detailed descriptions of any “minimal risk condition fallback” events that occurred, even if no crash has occurred. If the event has occurred because the vehicle self-diagnosed a malfunction of a vehicle system, the report must include a detailed description of the cause and nature of the malfunction, and what remedial steps were taken. If the event was caused by the vehicle encountering a complex or unexpected driving situation, the report must include a detailed timeline of the ADS's decision-making process that led to the event, including any difficulties the ADS had in detecting and classifying objects.

g. In addition, Ford must make necessary staff available to meet with NHTSA staff quarterly to discuss the status of its deployment program.

3. Ford must have a documented cybersecurity incident response plan that includes its risk mitigation strategies and the incident notification requirements listed below.
a. Ford must cease operations of all exempt vehicles immediately upon becoming aware of any cybersecurity incident involving the exempt vehicles and any systems connected to the exempt vehicles that has the potential to impact the safety of the exempt vehicles.

b. No later than 24 hours after being made aware of a cybersecurity incident, Ford must inform NHTSA's Office of Defects Investigations (ODI) of the incident. Ford must also respond to any additional requests for information from NHTSA on the cybersecurity incident.

c. Prior to resuming its operation of any exempt vehicles following the discovery of a cybersecurity incident, Ford must inform NHTSA of the steps it has taken to patch the vulnerability and mitigate the risks associated with the incident, and receive NHTSA approval to resume operation.

4. Ford must be capable of issuing a “stop order” that causes all deployed exempted vehicles to, as quickly as possible, cease operations in a safe manner, in the event that NHTSA or Ford determines that the exempted vehicles present an unreasonable or unforeseen risk to safety.

5. Ford must coordinate any planned deployment of the exempted vehicles or change to the ADS/ODD with State and local authorities with jurisdiction over the operation of the vehicle as required by the laws or regulations of that jurisdiction.

6. The exempted vehicles must comply with all State and local laws and requirements at all times while in operation. Each vehicle must be duly permitted, if applicable, and authorized to operate within all properties and upon all roadways traversed.

7. Ford must maintain ownership and operational control over the exempted vehicle that are built pursuant to this exemption for the life of those vehicles.
8. Ford must create and maintain a hotline or other method of communication for the public and Ford employees to directly communicate feedback or potential safety concerns about the exempted vehicles to the company.

9. If there are other categories of data that should be considered, please identify them and the purposes for which they would be useful to the agency in carrying out its responsibilities under the Safety Act.

10. If the agency were to require the reporting of data, for what period should the agency require it to be reported--the two-year exemption period or the vehicles’ entire normal service life?

11. Given estimates that vehicles with ADS would generate terabytes of data per vehicle per day, how should the need for data be appropriately balanced with the burden on manufacturers of providing and maintaining it and the ability of the agency to absorb and use it effectively?

12. As explained in the section above, NHTSA has broad authority to determine whether the public interest and general goals of the Safety Act will be served by granting an exemption. NHTSA seeks to understand the many diverse effects of the exemption, including: the overall safety of the transportation system beyond the analysis required in the safety determination; how an exemption will further technological innovation; whether the exemption will address transportation accessibility and equity; economic impacts, such as consumer benefits; and environmental effects.

13. With regard to environmental impacts, how should NHTSA use the part 555 exemptions to learn about the interplay between fuel efficiency and ADS technologies? Should the agency adopt reporting requirements that would allow the agency to better understand the energy use of the vehicles throughout their service life and possibly better assess, and quantify, the environmental impacts of ADS-
equipped vehicles? Should NHTSA require an entity whose petition has been granted to provide data about, for example, how often and how far its vehicles are driving around unoccupied vs. occupied? Is there other information related to the environmental consequences and effects of the vehicles covered by the petition that NHTSA should require from entities granted an exemption?

14. Should NHTSA consider the environmental impacts of ICE vehicles when deciding whether granting an exemption to an ICE vehicle is in the public interest?

15. How should NHTSA consider accessibility in applying appropriate conditions to an exemption if it were granted? As noted above, many proponents of ADS technology often claim that ADS-equipped vehicles could help advance greater transportation accessibility for persons with disabilities. Should NHTSA impose conditions on grants of part 555 exemptions to learn more about specific actions that manufacturers and operators of ADS-equipped exempted vehicles are planning, or have taken, to further the attainment of accessibility goals? Should NHTSA seek information from manufacturers granted an exemption as to how they ensure that their ride-hailing services comply with any applicable Americans with Disabilities Act (ADA) requirements, how many vehicles would be wheelchair accessible, how they reach people with disabilities to offer access to ride sharing services, or whether the exempt vehicles provide other accommodations for individuals with disabilities, such as communication and/or human-machine interface (HMI) features designed for individuals with sensory disabilities (such as sight or hearing) or cognitive disabilities? Should NHTSA require grantees to report on efforts, such as research or community outreach, that the manufacturer is planning, or has taken, to increase the likelihood that accessibility goals will be met? Comments are requested on whether there is other information related to accessibility that NHTSA should require from an entity when granting its petition.
16. How should NHTSA consider equity in applying appropriate conditions to an exemption if it were granted? For example, should NHTSA require entities receiving a grant of their petition to report how the exempted vehicles were used to improve accessibility and equity in serving underserved communities? Should such an entity be required to provide plans about how it intends to ensure that access to its services is equitable in terms of neighborhood, income levels, race and ethnicity, age (etc.), and/or provide reports of how it achieved those objectives through use of the exempted vehicles? Should entities receiving a petition grant be required to report on barriers they encountered to deploying ADS-equipped vehicles in underserved communities and how those barriers could be overcome? Should such an entity be required to provide demographic data about its services, or report on efforts, such as research or community outreach, that the manufacturer is planning or has taken to ensure better that equity goals will be met? Comments are requested on whether there is other information related to equity that NHTSA should require when granting a petition.

17. How should NHTSA consider economic impacts when applying appropriate conditions to an exemption if it were granted?

VII. Public Participation

A. Request for Comment and Comment Period

The agency seeks comment from the public on the merits of Ford’s petition for a temporary exemption from portions of seven FMVSS. NHTSA is also seeking comment on the potential types of terms the agency should set if the agency decides to grant Ford’s petition.

NHTSA is providing a 30-day comment period. After considering public comments and other available information, NHTSA will publish a notice of final action on the petition in the Federal Register.

B. Instructions for Submitting Comments
**How long do I have to submit comments?**

Please see DATES section at the beginning of this document.

**How do I prepare and submit comments?**

- Your comments must be written in English.

- To ensure that your comments are correctly filed in the Docket, please include the Docket Number shown at the beginning of this document in your comments.

- If you are submitting comments electronically as a PDF (Adobe) File, NHTSA asks that the documents be submitted using the Optical Character Recognition (OCR) process, thus allowing NHTSA to search and copy certain portions of your submissions. Comments may be submitted to the docket electronically by logging onto the Docket Management System website at http://www.regulations.gov. Follow the online instructions for submitting comments.

- You may also submit two copies of your comments, including the attachments, to Docket Management at the address given above under ADDRESSES.

Please note that pursuant to the Data Quality Act, in order for substantive data to be relied upon and used by the agency, it must meet the information quality standards set forth in the OMB and DOT Data Quality Act guidelines. Accordingly, we encourage you to consult the guidelines in preparing your comments. OMB's guidelines may be accessed at http://www.whitehouse.gov/omb/fedreg/reproducible.html. DOT's guidelines may be accessed at http://www.bts.gov/programs/statistical_policy_and_research/data_quality_guidelines.

**How do I submit confidential business information?**

If you wish to submit any information under a claim of confidentiality, you must submit your request directly to NHTSA’s Office of the Chief Counsel. Requests for confidentiality are governed by part 512. NHTSA is currently treating electronic submission as an acceptable method for submitting confidential business information to the agency under part 512. If you would like to submit a request for confidential treatment, you may email your submission to Dan
Rabinovitz in the Office of the Chief Counsel at Daniel.Rabinovitz@dot.gov or you may contact Dan for a secure file transfer link. At this time, you should not send a duplicate hardcopy of your electronic CBI submissions to DOT headquarters. If you claim that any of the information or documents provided to the agency constitute confidential business information within the meaning of 5 U.S.C. § 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. § 1905, you must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with part 512, to the Office of the Chief Counsel. Your request must include a cover letter setting forth the information specified in our confidential business information regulation (49 CFR 512.8) and a certificate, pursuant to § 512.4(b) and part 512, appendix A. In addition, you should submit a copy, from which you have deleted the claimed confidential business information, to the Docket at the address given above.

**Will the Agency consider late comments?**

We will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under DATES. To the extent possible, we will also consider comments that Docket Management receives after that date.

**How can I read the comments submitted by other people?**

You may see the comments on the internet. To read the comments on the internet, go to https://www.regulations.gov. Follow the online instructions for accessing the dockets.

Please note that, even after the comment closing date, we will continue to file relevant information in the Docket as it becomes available. Further, some people may submit late comments. Accordingly, we recommend that you periodically check the Docket for new material.

**Authority:** 49 U.S.C. 30113 and 49 U.S.C. 30166; delegations of authority at 49 CFR 1.95.

Issued in Washington, D.C. under authority delegated pursuant to 49 CFR 1.95.

Steven S. Cliff,
Administrator.

BILLING CODE: 4910-59-P