

the goals of AV STEP will be better served by other initiatives the Agency anticipates will advance safety and promote the innovation of ADS technologies. NHTSA appreciates the input of the public and stakeholders. To the extent technical aspects of the proposal overlap with separate ADS initiatives in the future, the Agency will remain mindful of the input. In particular, feedback on the proposed exemptions in AV STEP may help inform certain aspects of how NHTSA implements its other exemption programs, such as those under 49 U.S.C. 30114 and 30113.

As noted, several important aims of the proposal, such as expanding and improving exemption processes for noncompliant ADS-equipped vehicles, have already been addressed in furtherance of the AV Framework announced in April 2025.² This framework aims to unleash American ingenuity and maintain key safety standards using three principles:

- Prioritizing the safety of ongoing AV operations on public roads
- Unleashing innovation by removing unnecessary regulatory barriers that do not promote safety
- Enabling commercial deployment of AVs to enhance safety and mobility for the American public.

Among other activities, NHTSA has expanded the Automated Vehicle Exemption Program to include vehicles built in the United States, streamlined the process for General Exemptions issued under 49 U.S.C. 30113, and streamlined its Standing General Order on crash reporting for vehicles equipped with ADS and certain advanced driver assistance systems to sharpen the focus on critical safety information while removing unnecessary and duplicative requirements. In addition, NHTSA is in the process of developing guidance for General Exemptions, to expedite those exemptions and promote the commercial deployment of noncompliant ADS-equipped vehicles.³

The NPRM contained in docket number NHTSA–2024–0100, as published in the **Federal Register** on

January 15, 2025, at 90 FR 4130, is hereby withdrawn. This action is considered a deregulatory action under Executive Order (E.O.) 14192, Unleashing Prosperity Through Deregulation (90 FR 9065, Feb. 6, 2025), as it withdraws an NPRM that was issued before January 20, 2025 that was determined to be “significant” under E.O. 12866.

Issued under authority delegated in 49 CFR 1.95 and 501.4.

Jonathan Morrison,
Administrator.

[FR Doc. 2026–12980 Filed 6–25–26; 8:45 am]

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DEPARTMENT OF TRANSPORTATION

Federal Transit Administration

49 CFR Part 665

[Docket No. FTA–2024–0012]

RIN 2132–AB40

Bus Testing: Updates to Bus Testing Program Procedures and Policies, Clarifications, Technical Adjustments, and Other Program Updates

AGENCY: Federal Transit Administration (FTA), Department of Transportation (Department or DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: The Federal Transit Administration (FTA) is proposing amendments to its bus testing regulation. The proposed changes will improve the efficiency of the testing program for stakeholders, enhance the value of bus testing reports for consumers, and assist in removing outdated test reports.

DATES: Comments on this proposed rule must be received on or before August 25, 2026. FTA will consider comments received after that date to the extent practicable.

ADDRESSES: Please submit your comments (identified by the agency name and DOT Docket ID Number FTA–2024–0012) by any of the following methods:

Federal eRulemaking Portal: <https://www.regulations.gov>. Follow the online instructions for submitting comments.

Mail: Docket Management Facility: U.S. Department of Transportation, 1200 New Jersey Avenue, SE, West Building Ground Floor, Room W12–140, Washington, DC 20590–0001.

Hand Delivery or Courier: West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, between 9

a.m. and 5 p.m. ET, Monday through Friday, except Federal holidays.

Fax: 202–493–2251.

Additional Instructions: You must include the agency name (Federal Transit Administration) and Docket number (FTA–2024–0012) for this notice at the beginning of your comments. If you mail your submission and wish to receive confirmation that FTA received it, please include a self-addressed stamped postcard. Note that all comments received will be posted without change to <https://www.regulations.gov>. Note that any personal information provided will be available to internet users.

Privacy Act: You may review DOT’s complete Privacy Act Statement in the **Federal Register** published on April 11, 2000 (65 FR 19477), or you may visit <https://docketsinfo.dot.gov>.

Docket Access: For internet access to the docket to read background documents and comments received, go to <https://www.regulations.gov>. Background documents and comments received may also be viewed at the U.S. Department of Transportation Docket Operations, 1200 New Jersey Avenue SE, West Building Ground Floor, Room W12–140, Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. **FOR FURTHER INFORMATION CONTACT:** For technical information, Marcel Belanger, Bus Testing Program Manager, Office of Research, Demonstration, and Innovation (TRI), (202) 366–0259, marcel.belanger@dot.gov. For legal information, Richard Wong, Attorney Advisor, Office of the Chief Counsel (TCC), (202) 366–0675, richard.wong@dot.gov.

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I. Executive Summary

A. Purpose and Summary of Regulatory Action

The Federal Transit Administration (FTA) provides financial assistance to State and local agencies operating public transportation systems, covering eighty or eighty-five percent (80–85%) of a vehicle’s capital cost, while the State or local government provides a fifteen or twenty percent (15–20%) matching share. As part of its

² See U.S. Dept. of Transp., Trump’s Transportation Secretary Sean P. Duffy Unveils New Automated Vehicle Framework as Part of Innovation Agenda (Apr. 24, 2025), available at <https://www.transportation.gov/briefing-room/trumps-transportation-secretary-sean-p-duffy-unveils-new-automated-vehicle-framework>.

³ See Open Letter from Peter Simshauser, NHTSA Chief Counsel (Apr. 24, 2025), available at <https://www.nhtsa.gov/sites/nhtsa.gov/files/2025-04/automated-vehicle-exemption-program-domestic-exemptions-2025.pdf>; Open Letter from Peter Simshauser, NHTSA Chief Counsel (June 13, 2025), available at <https://www.nhtsa.gov/sites/nhtsa.gov/files/2025-06/part-555-letter-june-2025.pdf>.

stewardship of those funds, Congress directed FTA in 1987 to establish a bus testing program whereby new model buses would first be tested to ensure their ability to withstand the rigors of regular transit service before FTA funds would be spent on those vehicles. The FTA Bus Testing Program has evolved over more than three decades, during which it has been defined and shaped by a series of proposed and final rules, **Federal Register** notices, “Dear Colleague” letters, policy statements on FTA’s Bus Testing website, and a few thousand responses to specific questions from transit vehicle manufacturers (TVMs). Additional details of current and historical policies and events are available on FTA’s website at <https://www.transit.dot.gov/research-innovation/bus-testing>.

FTA and other stakeholders have gained experience since the most recent Bus Testing Program final rule, which was published in 2016 (81 FR 50367). That final rule initiated the assignment of scores and pass/fail ratings to tested buses, as required by the Moving Ahead for Progress in the 21st Century Act (MAP-21; Pub. L. 121-141), as well as administrative changes. Today’s NPRM proposes to build on this experience by modifying certain existing FTA Bus Testing Program procedures and policies to make them more effective, efficient, and clear. Some of the changes that FTA is proposing would increase the rigor of testing to address gaps, while others would relax certain program requirements to reduce the regulatory burden without weakening the overall effectiveness of the FTA Bus Testing Program. FTA is also seeking to increase flexibility within the Bus Testing Program to accommodate changes in bus technology that could require modification of some testing protocols.

This NPRM is not a comprehensive re-statement of all FTA policies, procedures, and interpretations under the Bus Testing Program. Therefore, as a general guideline, policies, procedures, and guidelines that are impacted by any Final Rule that may result from this NPRM will be updated, while policies, procedures, and guidelines that are not impacted will carry forward with little or no change.

Prior to publishing this NPRM, FTA engaged in a stakeholder listening session on September 8, 2022, about FTA’s Bus Testing Program. In

accordance with the Department’s Guidance on Communication with Parties outside of the Federal Executive Branch (Ex Parte Communications),¹ FTA has added a memorandum summarizing the listening session to the docket for this rulemaking. Where FTA has incorporated stakeholder suggestions into its regulatory proposals, FTA discusses such suggestions in the corresponding sections below.

B. Statutory Authority

Section 317 of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (STURAA, Pub. L. 100-17) provided that no funds appropriated or made available under the Urban Mass Transportation Act of 1964, as amended, were to be obligated or expended for the acquisition of a new model bus after September 30, 1989, unless a bus of such model had been tested to ensure that the vehicle “will be able to withstand the rigors of transit service” (H. Rept. 100-27, p. 230). In subsection 317(b), Congress mandated seven specific test categories—maintainability, reliability, safety, performance, structural integrity, fuel economy, and noise—augmenting those tests with the addition of braking performance and emissions testing through section 6021 of the Intermodal Surface Transportation Efficiency Act of 1991 (Pub. L. 102-240). These requirements were subsequently codified at 49 U.S.C. 5318.

Section 5318 has been amended several times throughout the years. Significantly, in 2012, Section 20014 of MAP-21 added new requirements to subsection 5318(e), Acquiring New Bus Models, including a bus model scoring system and a pass/fail standard based on the weighted aggregate score for each of the existing performance standards. Section 20014 retained the existing Bus Testing categories of maintainability, reliability, safety, performance, structural integrity, fuel economy, emissions, and noise in the existing 49 U.S.C. 5318(a). In response to MAP-21, FTA updated 49 CFR part 665 by issuing a new pass/fail standard and new aggregated scoring system. In addition, FTA made other revisions to the regulation, including requiring bus manufacturers to provide country-of-origin information for test unit bus components.

Since then, FTA has had two reauthorizations that continued the Bus Testing Program, the Fixing America’s Surface Transportation Act (FAST Act) (Pub. L. 114-94) and the Infrastructure Investment and Jobs Act (IIJA) (Pub. L. 117-58). While the FAST Act did not amend 49 U.S.C. 5318, Section 30008 of the IIJA amended 49 U.S.C. 5318 by adding subsection (f) Capital Equipment. This subsection adds that the bus testing facilities operated and maintained under 49 U.S.C. 5318 may use funds made available under this section for the acquisition of equipment and capital projects related to testing new bus models.

Today’s proposed rule does not address the minimum safety performance standards for public transportation vehicles authorized under 49 U.S.C. 5329(b)(2)(C) as referenced in 49 U.S.C. 5318(e)(1)(B)(ii). At this time, the safety performance standards in the National Public Transportation Safety Plan are voluntary standards.

Additional details of the key steps in the creation and evolution of the Bus Testing Program are available at <https://www.transit.dot.gov/research-innovation/program-history>.

C. Summary of Benefits and Costs

The primary benefit of the proposed rule is that Bus Testing Reports less than 10 years old would more accurately reflect the safety, reliability, and other characteristics of today’s bus models than older reports. Some bus manufacturers are using Bus Testing Reports from over 20 years ago to sell buses to FTA recipients while still complying with the current regulation. By requiring retesting, FTA can help ensure that Bus Testing Reports accurately represent bus models in production. In addition, FTA has improved testing requirements over the years, including testing related to safety; setting expiration dates would allow for bus testing that incorporates the improvements. For example, buses tested before 2010 were not subject to FTA’s emissions and braking performance tests, which were added to the full testing requirements in that year.

The primary cost of the proposed rule is the additional bus testing required after setting expiration dates for the reports. Figure 1 summarizes the economic effects of the proposed rule

¹ Available at: <https://www.transportation.gov/regulations/memorandum-secretarial-officers-and-heads-operating-administrations>.

over the first ten years (from 2027 to 2036) in 2024 dollars. The proposed

rule would have annualized costs of \$2 million at a three percent rate

discounted to 2024, and \$1.7 million at a seven percent rate discounted to 2024.

FIGURE 1—SUMMARY OF ECONOMIC EFFECTS, 2027–2036

[\$2024, discounted to 2024]

Item	Total (undiscounted)	Annualized (3%)	Annualized (7%)
Benefits	Unquantified	.....	.....
Costs .....	.....	.....	.....
Testing recertification requirements	\$20,667,705	\$1,968,313	\$1,618,569
Lowered threshold for USM	824,467	73,800	56,307
Total costs	21,492,172	2,042,113	1,674,876
Net benefits	Unquantified	.....	.....

II. Section by Section Analysis of Proposed Program Changes

Section 665.1 Purpose

FTA is proposing non-substantive changes to this section.

Section 665.3 Scope

FTA is not proposing any changes to this section.

Section 665.5 Definitions

FTA is proposing to add and modify several definitions in this section.

FTA seeks comments on proposed new definitions for failure, failure mode, and uncorrected failure. These terms are referenced in the description of certain tests in § 665.27(h), including the Reliability test and Safety test. For example, the Reliability test records all failures and breakdowns during testing. These terms are, therefore, very important in making pass/fail ratings of buses under test, but they are not defined clearly in the current regulation. FTA is therefore adding these definitions for clarity and to codify FTA's existing practice.

FTA also seeks comments on whether a definition for corrected failure should be provided in the regulation. That term is not used in the regulatory text but is often used in Bus Testing determinations and Bus Testing Reports. FTA is considering defining corrected failure as:

“Corrected failure means a failure mode that occurred during testing that was resolved through design, manufacturing process, quality control, or other improvement(s) by the manufacturer and successfully validated by sufficient subsequent testing. FTA may announce general guidelines for how it will validate that certain types of failures have been addressed, however each determination of whether a failure mode has been corrected will be made by FTA.”

FTA is proposing definitions for four failure classes assigned during testing (“Class 1” through “Class 4”). It has

been the Bus Testing Program’s longstanding practice to utilize failure classes to describe the severity of a failure that occurs during testing. However, the four failure classes were not previously defined in the definitions section of the regulation. FTA is proposing to codify these failure classes to communicate the interpretations that have been used for testing for many years more clearly.

FTA seeks comment on its proposed definition for recurring failure. Through experience administering the Bus Testing Program, FTA has observed that some bus models have repeated failures that, while they may or may not be individually serious, may cumulatively have an adverse effect on bus availability or life-cycle costs. This new definition would provide a way to call attention to repeated occurrences of the same failure mode.

FTA proposes new definitions for baseline (bus) model and baseline report, and clarifying adjustments to the definitions for bus testing report and partial testing report. For example, FTA proposes amending the definition of bus testing report to clarify that a full testing report for a zero-emission vehicle includes all test procedures except for the Emissions test. These proposed definitions are added to clarify existing requirements and practice. However, FTA notes that these definitions would allow for the possibility that the Operator could create a complete “composite” test report by combining report “modules” corresponding to each test result (e.g., performance, safety, durability) individually. FTA seeks comment on the potential advantages and drawbacks of combining the results of individual tests on related bus models to create a complete “composite” report on a bus configuration, compared to the current practice of expecting readers to consult the appropriate sections of baseline and partial test reports.

FTA proposes to modify the definition of curb weight to clarify that curb weight does not include the weight of a driver for the Check-in test procedure described in § 665.27(a), because the Check-in procedure is performed on an empty bus. However, curb weight includes the driver’s actual weight for the Structural Durability test and any other test that is performed with a driver. This is a clarifying change that would not result in a change to FTA’s existing practice.

FTA proposes clarifications to the definitions of major change in design, major change in components, and major change in configuration to bring them into consistency with longstanding practice. The updated definitions would better reflect FTA’s established policy that additional testing of a modified bus model is required when the changes could result in obtaining significantly different test data compared to the baseline bus model. The updated definitions also would clarify that the changes described in the definitions are examples, rather than a complete list. These clarifications would not result in changes in practice.

FTA proposes to delete the definitions for modified third party chassis or van and small bus manufacturer because those terms are not used in the regulatory text.

FTA proposes to amend the definition for unmodified mass-produced van to require FTA to determine which models meet this definition. FTA would do so by developing and maintaining a list of which vehicle models are eligible for “unmodified mass-produced vehicle/van/chassis” designations. FTA believes that this would reduce uncertainty for recipients and TVMs regarding which vehicles are eligible for this designation. FTA seeks comments on the advantages and disadvantages of this proposal. FTA also proposes to clarify that such vehicles must be in the 4-year/100,000-mile useful life category, which is

consistent with FTA's current practice and would not be a substantive change.

FTA proposes to change the definition of unmodified third-party chassis to reflect the fact that original equipment manufacturers (OEMs) no longer publish official chassis modification guidelines. Under this proposal, buses built on chassis modified by the final stage manufacturer would generally require testing going forward.

Some vehicle manufacturers have invested significant non-recurring engineering hours during testing of a bus model that have resulted in changes to the bus model that were validated through subsequent testing to have addressed the root cause of a failure mode. Due to this practice, FTA is proposing a new definition for non-recurring engineering hours and proposes that such hours should not be counted toward unscheduled maintenance hours, which also has a newly-proposed definition in § 665.5. FTA's rationale for this is that the riding public, recipients, and taxpayers are better served by a manufacturer taking time to resolve a design flaw than by FTA's regulation incentivizing the manufacturer to make a quick repair to be able to finish Bus Testing without exceeding the allowable number of unscheduled maintenance hours. This proposal relates to a stakeholder comment that FTA received during its 2022 Bus Testing listening session. This stakeholder stated that FTA's unscheduled maintenance hours standard should account for product improvements, noting that a manufacturer should not be penalized for making such changes. FTA seeks comments on the advantages of this proposed approach, as well as the potential risks up to and including whether manufacturers should be barred from making any modifications at all to a bus model during a test.

FTA notes that the data obtained during testing of a bus model generally are not affected by the cosmetic condition of the bus. Therefore, FTA generally has allowed test buses to be submitted unpainted, with non-matching upholstery, etc., because these do not affect the data obtained. Similarly, FTA also has not counted as unscheduled maintenance hours any time needed to prepare and paint repaired components to restore their original appearance. However, FTA recognizes that transit operators typically will have to invest labor hours to restore the cosmetics of a bus that has experienced damage and repairs to body panels, doors, window frames, and similar components. FTA seeks comment, particularly from transit

operators, on whether the definition of unscheduled maintenance hours should include time needed to restore the appearance of repaired bus components, and if it should, whether the unscheduled maintenance hour performance standards should stay the same or be adjusted to accommodate cosmetic repair time.

The useful life category of a bus model is an essential concept in Bus Testing and FTA-funded vehicle procurements. FTA proposes to add a definition for useful life category that references the useful life categories defined in the current version of FTA Circular 5010. This term is synonymous with "service life category," the term that had traditionally been used by the Bus Testing Program. FTA notes that "useful life category" is now the preferred term. Accordingly, FTA proposes replacing "service life category" with "useful life category" throughout part 665. In certain contexts where only the expected life of the bus is being discussed rather than the useful life classification, the word "category" may be omitted. None of these clarifications of terminology would represent a change in FTA's practice.

FTA also proposes a minor clarification to the definition for final acceptance to specify that the vehicle has met its key bid specifications and the recipient has released FTA funding to the vehicle manufacturer. This change would codify FTA's longstanding interpretation of this term.

FTA also proposes minor clarifications to other definitions, including automotive, gross weight, hybrid, new bus model, and regenerative braking system.

Section 665.7 Certification of compliance

FTA proposes adding a sentence in § 665.7(a) stating that a recipient may only certify compliance under § 665.7 based on a bus testing report that has not expired pursuant to § 665.13(g) at the time of initial contract award. If the base contract is awarded before the applicable bus testing report (or both the applicable baseline full bus testing report and partial testing report) expires, the recipient may exercise options on that contract, even after the report(s) expire.

Since the original Bus Testing Regulation was published in 1989, § 665.7(b) has said that the recipient is responsible for determining whether a vehicle to be acquired requires full testing or partial testing or has already satisfied the requirements of part 665. However, since the earliest days of the Bus Testing Program, bus

manufacturers, not recipients, have contacted FTA for determinations of testing requirements. This is now the way that all parties understand the program to work, and this approach makes sense for several reasons. First, the bus manufacturers know their vehicle in much greater detail than the typical recipient. Second, parties may view FTA as an impartial participant in the determination process. Third, having FTA make a single determination is more efficient than having potentially dozens of recipients coming to different conclusions about testing requirements at different times.

To bring the regulatory text into consistency with the way that determinations of Bus Testing requirements have been made over the life of the Program, FTA proposes clarifying changes to § 665.7(b) and the addition of a new § 665.7(c). This new paragraph would convey that when a bus manufacturer or recipient is uncertain about whether testing is required, the bus manufacturer should be the party requesting FTA's review and determination of testing requirements for the bus model. Procedures for requesting a determination of Bus Testing requirements and a checklist of the information about the bus model that is required to make a determination are posted on FTA's Bus Testing website. FTA seeks comments on these proposed changes.

Section 665.11 Testing requirements

FTA is proposing to simplify the language in § 665.11(a)(5) to state that a test article bus must be substantially representative of subsequent production buses of that model. The existing part 665 language includes a short list of features of a bus that must be the same ("techniques, tooling, and materials"), but listing some features suggests that unlisted features (e.g., "design") are less important, and making a comprehensive list would be exceedingly long and would still miss potentially significant features. The proposed simplified language still would require that a test article bus must be representative of subsequent production buses of that model in all significant ways, including but not limited to the designs, key components, techniques, tooling, and materials. This proposed language would also allow FTA to make reasonable interpretations of this requirement in unforeseen circumstances, such as when a manufacturer implausibly claimed that a stack of multiple add-on structural patches to a test bus would be implemented in future production units.

This proposed language would not be a change in policy, but rather a clarification of the policy that has been in effect since the program started.

FTA proposes moving the existing requirement to identify the manufacturing point of origin of key components of a test bus out of § 665.11(a)(5) into a new § 665.11(a)(6), which also would use simplified language. For purposes of this requirement, key components of the bus still would include, but are not limited to, axles, braking systems, propulsion power systems, auxiliary power systems, primary energy storage and delivery systems, and any other components essential to the function of the bus model. This proposal would be a simplification of the regulatory text, not a change in policy.

FTA is not proposing changes to § 665.11(c). However, FTA still encourages manufacturers to seek a full testing report as a baseline for future variants of a bus model built on a third-party chassis. FTA also notes that new bus models built on previously tested third-party chassis, even if eligible for partial testing, will usually require at least the Structural Durability test. The Structural Durability test alone represents 57 percent of the cost and 83 percent of the time required for a full test in the 7-year/200,000-mile useful life category.

FTA notes that third-party chassis manufacturers typically make evolutionary updates to their chassis every few years. This has caused disruptions in the transit bus industry in the past, when every manufacturer building on a chassis with significant changes had to re-test their bus model(s) built on that chassis. Considering this, FTA is proposing to re-number existing § 665.11(d) as § 665.11(d)(1) and add a new § 665.11(d)(2). This new paragraph states that a bus model that has previously satisfied Bus Testing requirements would not require additional testing solely due to model year updates to an unmodified third-party chassis made by a third-party chassis manufacturer. This new paragraph also would keep open the possibility that FTA could issue an industry-wide determination requiring additional testing of affected bus models if major changes are made to a chassis.

FTA proposes minor, non-substantive edits to § 665.11(e) for clarity.

Some bus models have multiple significant modes of operation. For example, hybrid-electric buses may have significant engine-off driving range. FTA proposes a new § 665.11(g) that, subject to feasibility and practicality, would require testing of

and reporting on all of a bus model's significant proposed modes of operation. FTA envisions that "significant" could include, but not be limited to, operational modes that the manufacturer touts in its advertising of that bus model's capabilities.

FTA seeks comments on these proposals.

Section 665.13 Test Report and Manufacturer Certification

FTA is proposing clarifying edits to § 665.13(d).

The data obtained in the course of Bus Testing often is valuable to transit research conducted or sponsored by FTA. FTA is proposing a modification to § 665.13(f) to allow FTA to use anonymized or aggregated Bus Testing data to support FTA-conducted or sponsored research. Data attributable to a particular bus model or manufacturer would still be limited to release in a bus testing report that the manufacturer has authorized for publication. FTA seeks comments on this proposal.

FTA is proposing a new § 665.13(g), which would provide that full and partial bus testing reports shall expire 10 years after the date of publication. Several bus models are being sold to FTA recipients based on bus testing reports that are decades old. FTA believes it is highly likely that most if not all bus models will have undergone significant changes over such a long time. Manufacturers often make improvements to designs, specifications, materials, and suppliers. Even if each of those changes is not significant enough to trigger partial testing by itself, the accumulation of many small changes over time results in a potentially significant overall change. In addition, bus technologies and components are continually evolving. Third-party chassis manufacturers implement minor changes regularly and may implement more significant changes every few years, and sometimes do not notify bus manufacturers of these changes. Manufacturers and suppliers may have changes in corporate priorities, management, and workers. Furthermore, FTA updates its testing and reporting procedures from time-to-time, such as with the introduction of the Emissions and Braking Performance tests, or the implementation of scoring and pass/fail ratings. Bus testing reports do not reflect changes in test procedures implemented after they were published. For each of these reasons, FTA believes that it is appropriate to propose that full and partial bus testing reports should expire after 10 years. Stakeholders that participated in the September 8, 2022, listening session did not express

concerns with having bus testing reports expire after 10 years. FTA proposes that the 10-year expiration provision would become effective three years after publication of the final rule to give manufacturers sufficient time to plan and implement their testing schedules.

FTA seeks comments on the advantages and disadvantages of implementing report expiration dates, whether the time until expiration should be the same or different for different types of buses, what the appropriate time(s) until expiration should be, and whether three years is an appropriate period to phase in expiration dates for Bus Testing Reports.

Section 665.21 Scheduling

Proposed § 665.21(a) no longer would direct manufacturers to submit test requests to the FTA Bus Testing Program Manager. Instead, it would direct test requests to be submitted in the manner and form prescribed by FTA. FTA has historically included applicable instructions and a checklist on FTA's Bus Testing website. Since April 2022, the Bus Testing website has directed submitters to use the FTA Bus Testing Portal to submit requests for determinations of Bus Testing requirements and requests for FTA authorization to begin testing a bus model. The Portal is a web-based system that provides greater structure, clarity, convenience, and consistency for manufacturers to submit their requests and for FTA to respond to them more efficiently. The intent of the revised § 665.21(a) is to require submitters to use the Portal, while allowing flexibility for FTA to enhance, migrate, or replace the Portal if that should be needed in the future. The website lists alternative ways to contact FTA for any unusual inquiries that are not suitable for submission using the Portal.

FTA has proposed minor edits to paragraphs (b) through (d) to increase clarity and for consistency with current practices. For example, the Operator is able to view authorizations in the FTA Bus Testing Portal, so manufacturers now only need to reference an FTA testing authorization when scheduling a bus for testing. In addition, FTA has removed an outdated URL for the Operator's website and stated that FTA will link the Operator's website from the FTA Bus Testing website.

Section 665.23 Fees

FTA proposes to amend § 665.23(c) to clarify that once the manufacturer's fee has been expended, the Operator must seek FTA approval to continue testing only in cases where the Operator has concerns about continuing the test. In

other cases, testing may continue using the Bus Testing Program's share of the testing fee without FTA approval. This proposed change would conform the regulation to FTA's existing practice.

Since FTA began issuing pass/fail ratings, a small number of bus models have started and been withdrawn from testing multiple times due to poor performance of the test bus. To prevent manufacturers from conducting multiple taxpayer-subsidized tests until a bus obtains a passing score, and to encourage manufacturers to ensure that their bus model is ready for the rigors of testing and transit service, FTA is

proposing a new § 665.23(d). This new provision would require a manufacturer to pay the total applicable full or partial testing fee up-front when resubmitting a bus model that had previously started and been withdrawn from testing. When, or if, that bus model obtains a passing score, the bus manufacturer will be reimbursed upon publication of the report for FTA's share of the testing fee for the test that resulted in a published passing report.

Under this proposal, manufacturers would continue to pay only the manufacturer's share of the testing fee the initial time a bus model is submitted

for testing. The Time and Fee Schedule for testing reflects the 20 percent manufacturer's share of the testing fee set forth by statute in 49 U.S.C. 5318.

Figure 2 illustrates the manufacturer's contribution to the testing fee under various scenarios applicable to the proposed new provision in § 665.23(d). Figure 2 reflects FTA's assumption and experience that a manufacturer will never approve publication of a Bus Testing Report with a failing score, since manufacturers have the option to withdraw a bus from testing at any point prior to publication of the report.

FIGURE 2—MANUFACTURER'S SHARE OF BUS TESTING FEE ON INITIAL AND REPEAT SUBMISSION(S)

	Initial submission	Second or later submission
Manufacturer's share of testing fee:		
Due at contract signing	20%	100%.
If bus is withdrawn	Already-incurred portion of manufacturer's share shown above.	Already-incurred portion of manufacturer's share shown above.
Net, upon publication of passing report.	20% *	Manufacturer's share from prior attempt(s), plus 20% of the total fee for the passing attempt.*

* Additional charges may be assessed to offset actual incremental costs such as for alternative fuels, non-routine maintenance, extraordinary repairs, Operator's observation of maintenance performed by the manufacturer, and extended testing required by FTA to validate bus modifications.

Section 665.25 Transportation of Vehicle

FTA is proposing minor changes to this section to clarify that manufacturers are responsible for transporting their vehicle to and from the Bus Testing Center as needed at any point in testing, including if a manufacturer withdraws, re-submits a vehicle, or both. This is a clarification, not a change. FTA anticipates that in most cases, transportation of a test vehicle will occur only prior to the start of testing, and at the completion of testing.

Section 665.27 Procedures During Testing

FTA proposes to clarify that inspections and checks that the Operator performs under § 665.27(a) may occur during testing, and not only "upon receipt" of a bus approved by FTA for testing. This is not a change, but rather a clarification of existing practice.

FTA is proposing a new § 665.27(a)(5) directing the Operator to identify any safety concerns as part of its pre-test inspection of a test bus. The Operator already does this informally, but this new provision would enable the Operator to increase the rigor and authority of its safety inspection.

Similarly, FTA is proposing a new § 665.27(a)(6) directing the Operator to identify any concerns with the fundamental suitability or fitness of the

bus for transit service. Examples could include, but are not limited to, a bus that is not equipped with a reasonable number of seats or has an impassable aisle.

Section 665.27(b) currently prevents the start of testing and requires FTA authorization to begin testing if a bus does not comply with the checks enumerated in § 665.27(a). Through experience administering the Bus Testing Program, FTA has found that the issues enumerated in paragraph (a) sometimes arise and require correction not only before testing starts, but also during testing. Accordingly, FTA is proposing to expand § 665.27(b) to pause testing and require FTA authorization to continue a test if a bus is found to be non-compliant with those requirements at any time during testing. This is not a change, but rather a proposed codification of existing practice. FTA would retain its existing practice that testing may begin again after five business days if FTA does not provide a response.

FTA proposes minor edits to § 665.27(e) for clarity and to state that the Operator shall investigate occurrences of unauthorized maintenance or repairs with FTA, if necessary. This is not a change to FTA's current practice.

Manufacturers sometimes request permission to make one or more modifications to a bus in testing to address problems that were uncovered

by testing. FTA historically has allowed reasonable modifications to test buses but has required that the modifications are validated with sufficient testing after the modification has been made, and that the modification is implemented in future production buses of that model and is documented in the Bus Testing Report. All of those requirements are necessary to ensure that Bus Testing Reports contain information that is representative of the buses that FTA recipients will obtain. Accordingly, FTA is proposing to incorporate these procedures into § 665.27(f), which pertains to when a manufacturer requests to make a modification to a bus already in testing to address a problem discovered during testing. These proposed edits are not new policies; rather they would clarify and standardize FTA's existing procedures. FTA notes that allowing manufacturers to correct a problem with a root-cause fix and validate that change during testing may benefit all stakeholders by resulting in better production buses. However, FTA alternatively requests comments on whether modifications to a test bus should be prohibited once a bus has begun testing.

FTA seeks comment on its proposed updates, enhancements, and modifications to the Bus Testing protocols and procedures in § 665.27(h), as discussed below.

FTA proposes edits to § 665.27(h) to clarify that the Operator must develop

detailed procedures for performing the tests described in this part, and that these test procedures must be approved by FTA and be publicly available. FTA may seek stakeholder input before approving significant changes to the test procedures. This is a proposed clarification of the longstanding practice of the Bus Testing Program, not a change. In addition, FTA proposes clarifications to § 665.27(h), which respond to circumstances that FTA has addressed on a case-by-case basis in previous unusual testing situations. These proposed changes would clarify that FTA and the Operator may modify details of test procedures and reporting on a case-by-case basis to the extent necessary to meet the intent of Bus Testing for a bus model with new technologies, features, capabilities, or limitations. Typically, the vehicle manufacturer would have an opportunity to decide whether to proceed with testing under the modified procedures and reporting proposed by FTA and the Operator in such cases. In these cases, which are expected to be rare, bus testing reports would clearly flag and discuss any such ad hoc modifications to the testing procedures, performance standards, or potential service limitations. As an example, a recipient might have a public transportation need that can be fulfilled by a vehicle that has a top speed of less than 45 mph. If that vehicle were submitted for FTA Bus Testing, it would not be able to meet the Safety test performance criteria of navigating the lane change maneuver at 45 mph, but if it could safely negotiate the lane change course at its top speed, its stability at the highest speed it could attain would be validated and there would be little concern with the vehicle rolling over in service. Therefore, FTA could determine

in that case that this vehicle passed the Safety test. The bus testing report would include an indication on the cover of the vehicle's limited top speed, and a discussion of that limitation within the report.

FTA is proposing several adjustments to the Maintainability test described in § 665.27(h)(1) to allow greater flexibility for buses that have non-standard designs, components, or capabilities. FTA proposes revising the language regarding removal and reinstallation of certain components to specify that this requirement applies to a representative sample of bus components that are likely to require removal and replacement during the useful life of the bus. Examples of components that would be removed and replaced could include the transmission, engine, propulsion motor, alternator, starter, high-voltage and low voltage battery, and windshield wiper motor. The proposed language would allow flexibility for bus models with novel technologies—for example, the Operator might remove and replace the fuel cell on a fuel cell powered bus, since that component is analogous to an engine on a conventional bus.

FTA is also proposing to specify that required repair actions must be reported in the Maintainability test during any type of partial testing, not just when the Structural Durability test is performed. This would be a change from prior practice. To date, repairs have only been reported when Structural Durability testing is performed. However, servicing and repairs may be required during any of the tests that are performed. FTA believes that information about these repair actions is necessary for recipients to have a complete understanding of the maintainability of a bus. Accordingly, FTA is proposing that servicing,

preventative maintenance, and repairs that are required at any point in a full or partial test of a bus model must be reported. For example, if a bus is submitted for the relatively brief Fuel Economy test and the transmission fails on the dynamometer while simulating normal operation, FTA believes that recipients would find that information valuable. Finally, FTA proposes to delete the sentence regarding the Operator seeking advice from the bus manufacturer because it is redundant with the following sentence regarding the Operator carrying out routine and corrective maintenance in accordance with the manufacturer's specifications and guidance.

FTA is proposing to change the performance standard for unscheduled maintenance (USM) hours in § 665.27(h)(1)(ii) to make the required maintainability more consistent across useful life categories. Under FTA's current regulation, the performance standard is 125 hours regardless of the useful life category of a bus. As depicted in Figure 3 below, FTA proposes to change this performance standard to a number that decreases as the useful life decreases. The proposed standards are "round" numbers that result in a maximum USM hours rate that is more consistent and increases only slightly as the useful life gets shorter. Under the current performance standard, the USM hours rate for the 12-year useful life category is 10.42, which is significantly lower than the rate of 31.25 for the 4-year useful life category. The rates under FTA's proposal are much more consistent and equitable across useful life categories. FTA believes that this proposal is appropriate, as it serves to mitigate the greater weight of a single failure on the overall number of USM hours during a shorter test.

FIGURE 3—EXISTING AND PROPOSED UNSCHEDULED MAINTENANCE HOUR LIMITS

Useful life category (years/miles)	2016 Final rule USM limit (hours)	2016 Final rule USM rate (hours/year)	Proposed USM limit performance standard (hours)	Proposed USM rate (hours/year)
12/500,000	125	10.42	125	10.42
10/350,000	125	12.50	110	11.00
7/200,000	125	17.86	80	11.43
5/150,000	125	25.00	60	12.00
4/100,000	125	31.25	50	12.50

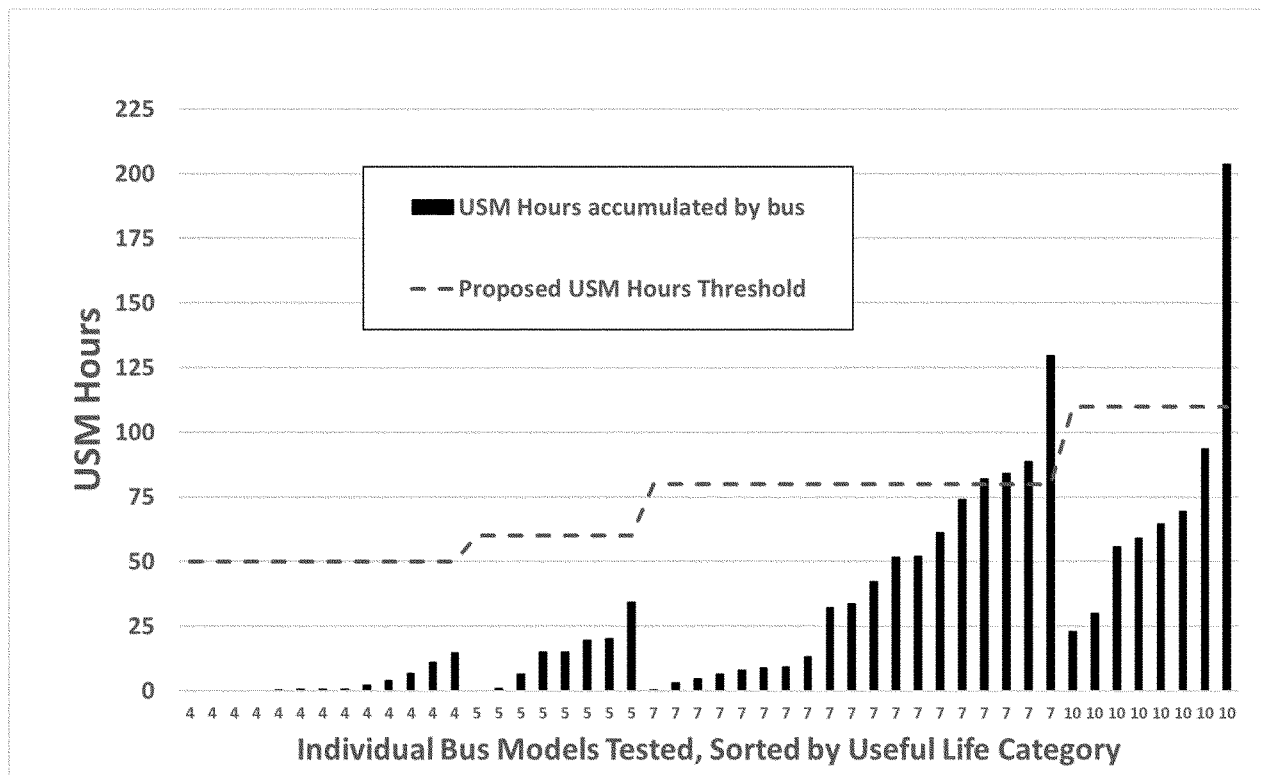
FTA analyzed historical data about the performance of buses on the Maintainability test and has determined that the proposed changes would not result in a significant impact to the passing rate of buses on the

Maintainability test. As shown in Figure 4, only a minimal number of buses (shown with columns) that performed poorly in the test exceeded the proposed new USM hour limits (shown with horizontal lines), and those were from

prior to the implementation of pass/fail testing in 2016. FTA notes that a small number of buses have been withdrawn from pass/fail testing because they were having extensive failures and were

likely to exceed the existing 125-hour limit.

Figure 4—Unscheduled Maintenance Hours on 4–10-Year Buses (2012-July, 2023)



FTA also proposes that the USM hours limit must apply to any test, not just a full test, because failures that occur and repairs that are required during short-duration and relatively low-stress tests are at least as concerning as those that occur during the high-stress Structural Durability test.

FTA proposes minor edits to the Reliability test in § 665.27(h)(2) to clarify that the test includes failures that occur during any test, including partial tests that do not include the Structural Durability test. FTA and the Operator would adjust their determinations of Bus Testing requirements and reporting, respectively, to include Reliability testing in all determinations and bus testing reports going forward. FTA also proposes to revise the Reliability test description to remove the definition of Class 1 and Class 2 failures. These failure classifications have been moved to the definitions section of the regulation, as FTA believes this is the most natural place for readers to find defined terms. FTA also proposes to revise the Reliability performance standard to remove the reference to Class 1 failures, as these failures are addressed in the Safety test.

FTA proposes expanding the Safety test in § 665.27(h)(3)(i) to require a

description in the bus testing report of any safety concerns on a bus model, and the actions taken to correct those concerns. There have been several cases where the Operator has refused to begin or resume testing a bus model until its manufacturer corrected safety deficiencies. FTA believes that it is necessary to include this information in the bus testing report for recipients to have a complete understanding of the safety of a bus.

FTA is proposing to simplify the language of the double lane change test in § 665.27(h)(3)(ii) to state that safe execution of the maneuver must be at 45 mph to pass. This would not be a substantive change from the current regulation, which requires that the maneuver must occur at “no less than 45 mph.” FTA notes that the Operator’s detailed Safety test procedure defines unsafe execution of the double lane change test as unstable vehicle handling or a wheel coming off the ground. FTA also notes that the top speed of certain limited-performance vehicles is under 45 mph. In such cases, the proposed new language in § 665.27(h) regarding new technologies, features, capabilities and limitations would enable FTA to adjust the performance standard for limited-performance vehicles to

negotiating the lane change course safely at the lesser of 45 mph or the vehicle’s top speed. FTA is also proposing to delete unnecessary detail regarding the dimensions of the lane change course, which are described in the test procedure document developed by the Operator. FTA is not proposing to change the procedure or dimensions of the lane change test.

In § 665.27(h)(3)(iii), FTA is proposing to clarify FTA’s current practice, which is that the performance standard for stopping distance is “based on” the requirements of FMVSS 105 or 121 due to the complexity of those regulatory requirements.

The descriptions of the Safety test in § 665.27(h)(3)(iv) formerly included definitions of failure classes and corrected failures. As explained in the discussion above, FTA proposes moving those definitions to § 665.5.

In § 665.27(h)(4), FTA proposes modifying the Performance test description regarding a vehicle’s maximum acceleration and speed because higher-performing vehicles may not need to be accelerated during this test to the top speed they can reach. FTA also proposes that the performance test may calculate a vehicle’s acceleration, speed, and gradeability

capability in situations in which direct measurement of such values is not feasible.

FTA proposes several changes to the Structural Integrity tests in § 665.27(h)(5). FTA proposes removing unnecessary and restrictive detail from the description of the Structural Integrity tests and adding clarifying details, and renumbering subparagraphs to conform to **Federal Register** standards. Names of the individual test procedures have been added to make the section easier to read.

FTA proposes to clarify the test description and the performance standards for the Structural Distortion test in § 665.27(h)(5)(i)(A). The language in the existing regulation saying “all four wheels” is not compatible with motorcoaches, articulated buses, or any vehicle with other than four wheels. The change to “each wheel” would make the regulatory text consistent with longstanding practice. FTA notes that the passenger escape mechanisms that must remain operable under § 665.27(h)(5)(i)(A)(2) include a wheelchair lift or ramp.

FTA also proposes a new safety performance standard for the water leak test: No uncorrected safety hazards during the test. Because of the wide range of potential hazards from water leaking into unintended places on a bus, neither FTA nor the Operator can anticipate all the possible hazards that may occur, so the performance standard proposed in the regulatory text is non-specific. FTA anticipates providing examples of potentially failing safety hazards in the test procedure documents, and on the FTA Bus Testing website. Examples could include, but are not limited to, water shorting out an electrical power or control circuit and causing a fire, smoke, or other improper functioning of safety-critical systems, or water making the bus aisle extremely slippery. FTA is only proposing to fail buses for significant water leakage that could impact the safety of occupants or the operation of the bus, and that is not successfully corrected and validated by successfully repeating the water leak test. Based on experience, FTA anticipates that this performance standard would rarely, if ever, be triggered. However, FTA believes that if an uncorrected safety hazard does occur, that situation should be serious enough to fail the bus.

FTA has proposed minor edits to the description of the Static Towing test in § 665.27(h)(5)(i)(B). FTA proposes to delete the modifier “permanent” from the description of the Static Towing test performance standard and replace it with the term “significant.” This is not

intended to be a substantive change in practice. FTA notes that “significant” includes damage or deformation that is permanent, while the proposed change would remove the implication that trivial permanent deformation could cause a bus to fail this performance standard.

Similarly, in proposed revisions to § 665.27(h)(5)(i)(C), the modifier “permanent” has been deleted from the description of the Dynamic Towing test and performance standard. FTA notes that the term “significant damage” in the performance standard includes damage that is permanent, while the proposed change would remove the implication that trivial permanent deformation could cause a bus to fail this performance standard. This is not intended to be a substantive change in practice. The phrases “heavy wrecker” and “standard commercial vehicle wrecker” have been replaced by “tow truck” for conciseness. FTA also proposes deleting the details about the length and speed of the Dynamic Towing test, as these are described in the detailed test procedure document developed by the Operator.

FTA proposes revising the performance standard for the Dynamic Towing test in § 665.27(h)(5)(i)(C) to state that the vehicle must be “safely” towable. This is a clarification of existing practice.

For clarity, FTA proposes replacing the phrase “standard commercial vehicle hydraulic jack” with “hydraulic floor jack” in the Jacking test in § 665.27(h)(5)(i)(D). The performance standard has been clarified to specify that a tire is fully deflated, and that the vehicle must be capable of being lifted “safely, securely, and without damage.” This is a clarification of existing practice.

In proposed revisions to § 665.27(h)(5)(i)(E), the Hoisting test has been updated to add the term “wheel lifts” because wheel lifts are now typically used rather than a two-post lift. The performance standard for Hoisting has been clarified to include explicitly the raising and lowering of the vehicle in addition to being supported on jack stands. This is not a substantive change, because a vehicle cannot safely be supported on jackstands unless it can also be safely raised and lowered.

FTA is proposing minor clarifying edits to the Structural Durability test in § 665.27(h)(5)(ii). FTA intends that these changes will have no substantive effect in practice.

FTA proposes that the Fuel Economy test description in § 665.27(h)(6) include energy efficiency and driving range in

addition to fuel economy, to accommodate the diverse range of vehicle propulsion systems now available, especially the increasingly common battery-electric buses. The Fuel Economy test procedure description also includes minor clarifying edits, including that the results be presented in metrics that are accepted by the transit community.

In § 665.27(h)(6)(i), the existing regulatory text states that the Fuel Economy test results “are not comparable” to data from other agencies, such as the U.S. Environmental Protection Agency (EPA). The intent of this was that the Bus Testing Program would not require testing with the same high degree of rigor as EPA and might not produce the same exact results, not that FTA’s testing would not be similar. Therefore, FTA proposes to clarify the description by changing this language to “intended to be independent of.” This is not a change in practice and would have no effect on the way that the Bus Testing Program tests fuel economy or energy efficiency and range.

The existing regulatory text in § 665.27(h)(6)(ii) states that the fuel economy performance standard “shall be” that of the National Highway Traffic Safety Administration (NHTSA) Medium and Heavy-Duty Fuel Efficiency Program in 49 CFR part 535. Due to the complexity of part 535, and the fact that any engine available for application in the U.S. transit bus market must comply with part 535 and is therefore considered by the Bus Testing Program to have satisfied the fuel economy performance standard, FTA proposes to change this language to state, “the vehicle is compliant with” part 535. This is consistent with how the performance standard is described in Table A of the existing appendix A to part 665, which says “Compliant with 49 CFR part 535 . . .” The proposed edit to § 665.27(h)(6)(ii) therefore is simply a clarifying change.

A proposed new § 665.27(h)(6)(iii) has been added to state that scoring for the Fuel Economy test will be pro-rated for vehicles powered by more than one fuel or energy type. This would better convey the fuel economy of dual-fuel vehicles.

FTA proposes revising the Noise test in § 665.27(h)(7) to clarify FTA’s existing practice, which includes the reporting of notable audible vibrations or rattles during operation on the roadway segments between the Altoona Bus Testing Center and the Test Track. FTA also proposes to clarify that the performance standards for the Noise test include acceleration, which is

consistent with current practice. FTA also proposes to expand the performance standards to include any other normal operating modes. For example, a loud HVAC system could cause a bus to fail the interior noise test, or a loud brake retarder could cause a bus to fail the exterior noise test. FTA intends that the test procedures would include the existing acceleration tests for all buses undergoing Noise testing and proposes that the Operator may also perform supplemental noise testing in other applicable operational modes of the bus if the Operator judges the bus to be at risk of failing either of the noise standards. Consistent with other provisions in part 665, if a bus model fails a noise performance standard, the manufacturer may make corrections to the bus and repeat the noise tests. If the changes are major changes to the bus model, the Operator may request that FTA make a determination on whether any of the completed tests need to be repeated. This section also includes minor edits for clarity.

FTA proposes to revise the Emissions test in § 665.27(h)(8) with clarifying edits to remove unnecessary specificity. The existing regulatory text says that the Emissions test results “are not directly comparable” to data from other agencies, such as the U.S. Environmental Protection Agency (EPA). The intent of this was that the Bus Testing Program would not require testing with the same high degree of rigor as EPA and might not produce the same exact results, not that FTA’s testing would not be similar. Therefore, FTA proposes to clarify the description to “need not be directly comparable.” Any engine available for application in the U.S. transit bus market must comply with 40 CFR part 86 and 40 CFR part 1037 and is therefore presumed by the Bus Testing Program to have satisfied the emissions performance standard. There have been buses with emission control systems that have not operated properly during testing. In such cases, emissions are typically much higher than the performance standard. This will be considered an emissions control system reliability failure, and the date, corrective actions taken, and the USM hours will be documented in the Bus Testing Report. Once repairs are completed, the Emissions test can be repeated. A proposed new paragraph (iii) has been added that states that zero-emission vehicles are exempt from emissions testing under part 665. These proposed edits to the Emissions test are all clarifications of existing practice,

and none of them will change the way that the Bus Testing Program tests emissions.

Appendix A to Part 665—Bus Model Scoring System and Pass/Fail Standard

FTA proposes edits to Appendix A that mirror the proposed changes discussed above. In addition, FTA proposes changes for clarity and accuracy. For example, FTA has added “normal operation of steering mechanism” to capture the complete Distortion performance standard in § 673.25(h)(5)(i)(1).

III. Request for Information

FTA is looking ahead to consider future steps to improve the accuracy, rigor, and relevance of testing. FTA is interested in hearing from stakeholders about the assumed passenger weight and the distribution of load factors used for Bus Testing. FTA is also seeking stakeholder comments regarding bus testing procedures that may be needed in the future to address new bus technologies and new testing methods. FTA is not proposing in this NPRM to change the passenger weight used in the Bus Testing Program or the distribution of load factors used for testing, nor is FTA proposing to implement any new tests or methods asked about in this request for information section of this NPRM. FTA will use this information to inform future action, including potential future regulatory updates. Respondents may respond to any question and do not need to respond to all questions.

FTA selected the 150-pound assumed passenger weight that it currently utilizes in the FTA Bus Testing Program in 1989 based on the number used by the NHTSA in its calculation of Gross Vehicle Weight Rating at 49 CFR 567.4(g)(3).

FTA is interested in hearing from stakeholders about whether it should continue to utilize the 150-pound assumed passenger weight, or a different assumed passenger weight. FTA also seeks information about the 600-pound passenger weight that FTA currently assumes for wheelchair positions during bus testing. This issue was discussed during FTA’s September 8, 2022 stakeholder listening session. A power wheelchair user who regularly rides transit commented during the listening session that 600 pounds can easily be exceeded by typical users plus their mobility devices, and suggested that all bus ramps/lifts/bus securement locations should be designed, built, and tested to accommodate up to 1,000

pounds. FTA seeks information about this issue as well.

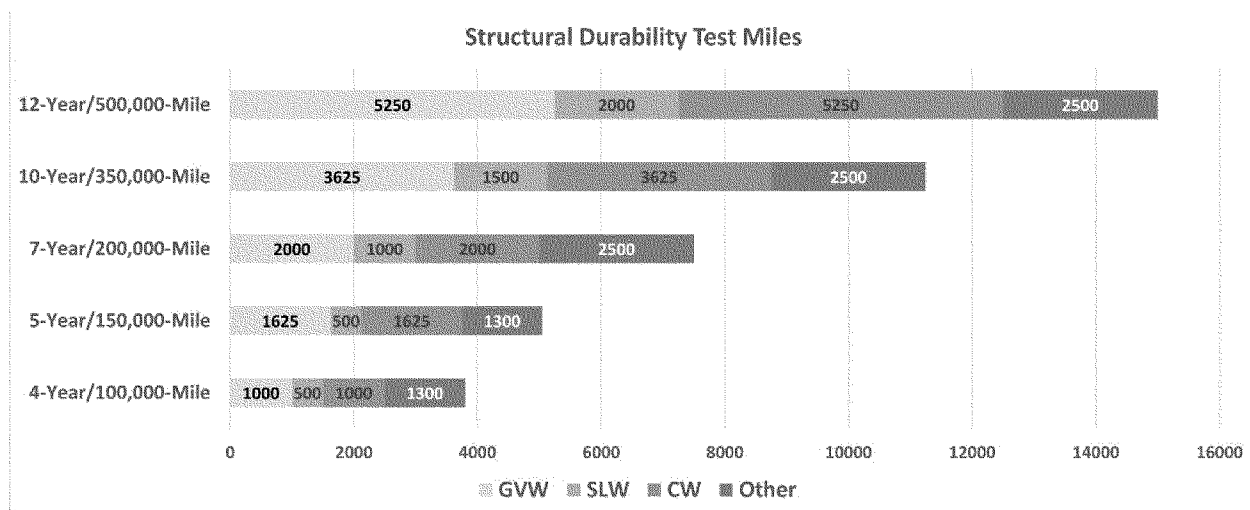
Accordingly, FTA seeks information about the following:

1. Should FTA change the assumed passenger weight used for Bus Testing? Why or why not?
2. If FTA were to change the assumed passenger weight used in testing, what value should FTA use? What assumed passenger weight should FTA use for riders using mobility devices?
3. What data or information should FTA consider when assessing whether to change the assumed passenger weight?
4. What costs to the transit industry would changing the assumed passenger weight impose? Please provide data and sources, if possible.
5. What benefits to the transit industry would result from changing the assumed passenger weight? Please provide data and sources, if possible.
6. If FTA changes the average passenger weight, should FTA also change the average floor space assumed to be occupied by each standee passenger? Why or why not?
7. If FTA changes the average assumed floor space occupied by each standee passenger, what value should it use, and what is the basis for that value?
8. What costs to the transit industry would changing the average assumed floor space impose? Please provide data and sources, if possible.
9. What benefits to the transit industry would result from changing the average assumed floor space impose? Please provide data and sources, if possible.
10. If FTA were to change the assumed passenger weight or free floor space per standee, what would be a reasonable time for bus manufacturers to implement corresponding design and production changes in their vehicles before FTA began testing at the new weight and floor space values?

In summary, FTA seeks information, especially with citations, and comments on whether a different passenger weight or floor-space value should be used in the Bus Testing Program, and if so, what that weight or footprint should be, and what costs and benefits this would cause. FTA also seeks comments on an appropriate phase-in schedule if such changes are implemented.

FTA also seeks information about the relative durations of Structural Durability testing at each of the loading conditions used for testing. The loading conditions and durations that are used in testing are as shown in Figure 5 below (as defined in part 665, GVW = gross vehicle weight, SLW = seated load weight, and CW = curb weight):

Figure 5—Structural Durability Test Miles at Each Loading Condition



While FTA believes that peak load factors in the real world often reach and may even exceed GVW, FTA understands that the experience of various transit agencies with regard to average passenger loads may be less in some cases. Therefore, FTA seeks data with citations, other information, and comments, on the following:

11. Should the number of miles run at each loading condition be kept as-is or should they be adjusted? Why or why not?

12. If FTA should adjust these values, what adjustments would be appropriate? For example, should fewer miles be run at GVW and more at SLW? Should some of the miles be run at an additional loading condition between SLW and CW? If so, what would the basis for those adjustments be, and what might appropriate values for the loading and distance be?

Table A in Appendix A to part 665 defines the bus model scoring system, which consists of base scores for meeting the minimum performance standards, and additional pro-rated points apportioned to some test procedures when a bus model exceeds the minimum performance standards. FTA notes that the additional points for some tests are not equivalent for all bus configurations. For example, a relatively inefficient small 12-passenger shuttle bus could earn more bonus points in the fuel economy test than a highly-efficient large 50-seat articulated bus under the current scoring system. FTA was aware of this scoring discrepancy when the current part 665 was promulgated. Our assumption at that time was that this is acceptable because transit operators were unlikely to be cross-shopping shuttle buses with articulated buses. However, it is not unlikely that transit agencies might be comparing acquiring a fleet of 40 sixty-foot buses rather than a fleet of 60 forty-foot buses. FTA seeks feedback on the benefits and costs of

normalizing the bus model scoring system so that the relative performance of different bus configurations may be more readily compared, and specific or general suggestions of what changes should be made to the bonus point formulas for any of the test procedures in the bus model scoring system.

FTA notes that 49 U.S.C. 5318 requires FTA to test a complete bus model as an integrated system, not a modified bus, and not bus components. With this in mind, FTA is interested in stakeholder views about new transit bus technologies that may need to be tested under the Bus Testing Program in the future. For example, whether and how to test vehicles that feature varying degrees of automated operation. FTA is also interested in stakeholder feedback about whether new or modified test procedures and methods may be needed or preferable in the future to test existing and new-technology bus models for maintainability, reliability, safety, performance (including braking performance), structural integrity, fuel economy, emissions, and noise. For example, testing the energy efficiency and range of buses under simulated climate variations by applying empirical adjustment factors to dynamometer data and/or performing dynamometer testing in a climate-controlled chamber (FTA does not have current plans or budget to build and equip a climate-controlled dynamometer lab).

Finally, FTA is interested in stakeholder feedback and comment regarding any other issues that may have a direct and significant impact on implementation of the Bus Testing Program.

FTA invites stakeholders to submit views and comments about these issues.

Overview and Need for Regulation

The proposed rule would revise testing requirements for transit buses submitted to the FTA Bus Testing Program. The proposed rule would assign a 10-year expiration date to full and partial bus testing reports, lower the threshold for allowable unscheduled maintenance (USM) hours for some useful life categories during a test, require manufacturers to pay testing fees up front if they resubmit a bus model that failed earlier testing, and update terms in the regulation to reflect current practice. The proposed rule would apply to all bus manufacturers that wish bus models to be eligible for procurement with FTA grant funds.

Currently, there is no expiration date for Bus Testing Reports or retesting requirement for bus models subject to the FTA Bus Testing Program. FTA has determined that bus models tested through its Bus Testing Program can be subject to design, specification, and manufacturing changes over time. While these changes may or may not be individually minor, they could over time or cumulatively result in significant changes to a model as well as to testing data and scores, leading to inaccurate information for transit agencies selecting bus models covered by outdated reports. Expiration dates are an efficient way of ensuring that Bus Testing Reports accurately reflect the bus models currently available. FTA does not have the authority or resources to perform regular detailed engineering audits of bus models and assess the changes that have been made to them since they were last tested, in order to determine whether a report still accurately describes its subject bus model.

The proposed rule would also revise payment requirements for testing by

requiring manufacturers to pay testing fees up front when resubmitting a bus model that had previously started and been withdrawn from testing. The program has reported multiple instances of manufacturers failing a test, withdrawing the model from testing to avoid payment, and immediately resubmitting it for retesting, sometimes submitting as multiple consecutive tests in an attempt to achieve a passing score. The consecutive tests do not afford manufacturers the time to make meaningful improvements to their bus designs and are expensive for the Bus Testing Center to conduct.

Baseline and Analytical Approach

In the baseline scenario, bus manufacturers submit new bus models for testing at the same rate they did over the past 20 years. The Altoona Bus Research and Testing Center would conduct an average of eleven full and five partial tests with passing results, as well as an estimated three tests with failed results, per year. USM hours allowed during testing would remain the same, and manufacturers would continue to pay testing fees after tests are conducted.

The proposed rule would lead to greater overall testing by requiring manufacturers to retest models every 10 years should they wish to keep them eligible for FTA grant funding. The proposed rule could also lead to an increase in testing by lowering the USM threshold for some useful life categories. To assess the effects of the proposed rule, FTA used information from the Altoona Bus Research and Testing Center, including bus testing reports,²

and information from FTA subject-matter experts on bus manufacturers and models.

Benefits

The primary benefit of the proposed rule is that testing reports less than 10 years old would more accurately reflect the safety, reliability, and other characteristics of bus models than older reports. By requiring retesting, FTA can ensure that Bus Testing Reports accurately represent bus models in production. In addition, FTA has improved testing requirements, including testing related to safety, in recent years; setting expiration dates would allow for bus testing that incorporates the improvements. For example, buses tested before 2010 were not subject to FTA’s emissions and braking performance tests, which were added to the full testing requirements in that year.

FTA does not currently have information to quantify or monetize the effects of these benefits. To quantify benefits, FTA would need information on accidents, service disruptions, or increased maintenance costs involving buses with outdated testing reports.

Costs

The primary costs of the proposed rule stem from the additional bus testing required after setting expiration dates for reports. The proposed rule would lead to greater overall testing by requiring manufacturers to retest models every 10 years should they wish to keep them eligible for FTA grant funding. The lower USM threshold could also lead to a modest increase in the number

of failed tests by less durable buses. The cost of a full test ranges from \$111,000 to \$223,000 depending on a bus’s useful life and which tests are conducted. FTA subject matter experts estimate that the average partial bus test costs \$62,000.

Test Expirations

When the requirement goes into effect, 278 Bus Testing Reports older than ten years would immediately expire, although many of those models are no longer being offered to FTA recipients. To prevent the Bus Testing Center from becoming overloaded and to allow manufacturers time to prepare for and complete retesting, FTA proposes a three-year phase-in period before the 10-year expiration provision goes into effect. A manufacturer with Bus Testing Report(s) that would expire within the first three years after the final rule is enacted has until the end of that three-year phase-in period to retest its affected bus model(s). FTA estimates that manufacturers would retest 68 bus models over the first three years and 120 models total over the first ten years.

Figure 6 shows the number of bus testing reports in each useful life category from active bus manufacturers that would expire from 2027 to 2036, the first ten years after the proposed rule goes into effect. FTA assumes that manufacturers would seek new tests for expired models throughout the phase-in period, for an average of 28 bus models retested per year. FTA does not expect that this provision would result in additional failed tests because the retested models already successfully completed Bus Testing.

FIGURE 6—EXPIRING BUS REPORTS AND RETESTED BUS MODELS BY USEFUL LIFE CATEGORY, 2027–2036

Useful life category	Reports set to expire		Reports that will be retested	
	Full	Partial	Full	Partial
4 years	37	1	12	1
5 years	15	0	7	0
7 years	79	30	30	18
10 years	51	9	15	3
12 years	94	68	19	23
Total	273	103	80	40

Unscheduled Maintenance Hours

Lowering the threshold for allowable USM hours and expanding the provision to partial tests may lead to more failed tests, which would increase testing costs. To capture an upper bound of these costs, FTA used

historical testing data to estimate the annual average number of bus tests that would fail testing and require retesting. FTA anticipates that a very small number of seven-year and 10-year useful life bus models—less than one model per year—would fail testing due to the

lower threshold, for an average annual cost of \$82,447. In practice, retesting costs may be even lower because some manufacturers may be able to perform USM more efficiently without incurring additional costs.

² Altoona Bus Research and Testing Center (n.d.). “Bus Testing Report.” <https://www.altoonabustest.psu.edu/bus-list.aspx>.

Other Provisions

The proposed rule would require manufacturers to pay testing fees up front if they withdraw and resubmit a bus model for testing. While the change is a transfer rather than a cost or benefit, the change could result in less testing—and lower economic costs—if it leads manufacturers to learn from testing failures and make meaningful

improvements to their buses before requesting additional testing.

The proposed rule would also change and clarify several definitions in regulation to reflect current practice and terminology used in bus testing. These changes are not expected to have an economic effect.

Summary of Costs

Figure 7 shows total undiscounted costs for each year of the proposed rule. During the three-year phase-in period from 2027 to 2029, costs are higher, ranging from \$3.7 million to \$5.6 million per year. From 2027 onward, costs are lower, although costs for 2036 may be understated due to a lack of complete testing data for 2026 at the time of this proposed rulemaking.

FIGURE 7—SUMMARY OF ANNUAL COSTS, 2027–2036

Year	Test expirations	Unscheduled maintenance hours	Total
2027	\$3,722,210	\$82,447	\$3,804,656
2028	5,077,705	82,447	5,160,152
2029	5,576,930	82,447	5,659,377
2030	1,233,212	82,447	1,315,659
2031	1,305,757	82,447	1,388,203
2032	1,509,763	82,447	1,592,210
2033	747,702	82,447	830,148
2034	747,213	82,447	829,660
2035	596,926	82,447	679,373
2036	150,287	82,447	232,733
Total	20,667,705	824,467	21,492,172

Summary of Economic Effects

Figure 8 summarizes the economic effects of the proposed rule over the ten-year analysis period. At a three percent discount rate, the proposed rule would

have total costs of \$18.3 million in 2024 dollars and annualized costs of \$2.0 million discounted to 2024. At a seven percent discount rate, the proposed rule would have total costs of \$14.6 million in 2024 dollars and annualized costs of

\$1.7 million discounted to 2024. To assess net benefits, FTA would need information to quantify benefits for requiring more recent bus testing reports.

FIGURE 8—SUMMARY OF ECONOMIC EFFECTS, 2027–2036

[\$2024, discounted to 2024]

Item	Total (undiscounted)	Annualized (3%)	Annualized (7%)
Benefits	Unquantified .....	.....	.....
Costs:			
Testing recertification requirements.	\$20,667,705	\$1,968,313	\$1,618,569
Lowered threshold for USM	\$824,467	73,800	56,307
Total costs	\$21,492,172	2,042,113	1,674,876
Net benefits	Unquantified .....	.....	.....

IV. Regulatory Analyses and Notices

Executive Order 12866 (E.O.) (Regulatory Planning and Review) and E.O. 13563 (Improving Regulation and Regulatory Review)

E.O. 12866 (“Regulatory Planning and Review”), as supplemented by E.O. 13563 (“Improving Regulation and Regulatory Review”), directs Federal agencies to assess the benefits and costs of regulations, to select regulatory approaches that maximize net benefits when possible, and to consider economic, environmental, and distributional effects. It also directs the

Office of Management and Budget (OMB) to review significant regulatory actions, including regulations with annual economic effects of \$100 million or more. OMB has determined that the proposed rule is not significant within the meaning of E.O. 12866 and has not reviewed it under that order.

E.O. 14192 (Deregulatory Action)

E.O. 14192 (“Unleashing Prosperity Through Deregulation”) requires that for “each new [E.O. 14192 regulatory action] issued, at least ten prior regulations be identified for elimination.” Implementation Guidance

for E.O. 14192, issued by OMB (Memorandum M–25–20, March 25, 2025) defines an E.O. 14192 regulatory action as “a significant regulatory action as defined in Section 3(f) of E.O. 12866 that has been finalized and that imposes total costs greater than zero.”

This proposed rule, if finalized, is not expected to be a significant regulatory action under E.O. 12866 and therefore is not expected to be an E.O. 14192 regulatory action.

Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980 (RFA) (5 U.S.C. 601 *et seq.*) requires

Federal agencies to assess the impact of a regulation on small entities unless the agency determines that the regulation is not expected to have a significant economic impact on a substantial number of small entities.

The primary cost of the proposed rule is the additional bus testing required after setting expiration dates for the reports. Using historical testing data and information on the bus manufacturing industry, FTA estimates that 32 bus manufacturers would submit models for retesting during the 10-year analysis period. Each manufacturer would submit an average of 1.9 tests over the 10-year period, for an annual average cost of \$32,700. FTA has therefore determined that the proposed rule would not have a significant effect on a substantial number of small entities.

Unfunded Mandates Reform Act of 1995

FTA has determined that this proposed rule does not impose unfunded mandates, as defined by the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4, March 22, 1995, 109 Stat. 48). This proposed rule does not include a Federal mandate that may result in expenditures of \$100 million or more in any one year (when adjusted for inflation) for either State, local, and Tribal governments in the aggregate, or by the private sector. In addition, the definition of “Federal mandate” in the Unfunded Mandates Reform Act excludes financial assistance of the type in which State, local, or Tribal governments have authority to adjust their participation in the program in accordance with changes made in the program by the Federal Government. The Federal Transit Act permits this type of flexibility.

E.O. 13132 (Federalism Assessment)

E.O. 13132 requires agencies to assure meaningful and timely input by State and local officials in the development of regulatory policies that may have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government. This action has been analyzed in accordance with the principles and criteria contained in E.O. 13132 dated August 4, 1999, and FTA determined this action will not have a substantial direct effect or sufficient federalism implications on the States. FTA also determined this action will not preempt any State law or regulation or affect the States’ ability to discharge traditional State governmental functions.

E.O. 12372 (Intergovernmental Review)

The regulations implementing E.O. 12372 regarding intergovernmental consultation on Federal programs and activities apply to this program.

Paperwork Reduction Act

In compliance with the Paperwork Reduction Act of 1995 (44 U.S.C. *et seq.*) (PRA), and OMB implementing regulation at 5 CFR 1320.8(d), FTA is seeking approval from OMB for changes to an information collection that is currently approved and associated with this notice of proposed rulemaking. The information collection (IC), OMB control number 2132–0550, was previously approved on February 24, 2023. However, this submission includes revised changes and clarifications to the Bus Testing Program including updates to the procedures, program policies, and interpretations.

Type of Collection: Bus Manufacturers.

Type of Review: OMB Clearance. Previously Approved Information Collection Request.

Summary of the Collection: FTA funds appropriated or otherwise made available may not be obligated or expended for the acquisition of a new bus model unless a bus of that model has been tested for maintainability, reliability, safety, performance (including braking performance), structural integrity, fuel economy, emissions, and noise at a bus testing facility authorized under 49 U.S.C. 5318(a). In addition, Partial Testing is available for previously tested bus models being produced with a major change that could produce significantly different data in one or more of the test procedures. Upon completion of the testing of the vehicle, a bus testing report is provided to the manufacturer. Under 49 CFR 665.7(a), a recipient of Federal funds must certify that any new bus model acquired with FTA financial assistance has been tested in accordance with the requirements of part 665 and received a passing test score before expenditure of any FTA funding on a bus.

Need for and Expected Use of the Information To Be Collected: The Bus Testing Program was created to provide transit agencies an independent source of bus performance results that could be used to improve their bus procurement decisions. Without the program, transit agencies would have to rely on either manufacturer-supplied information, information supplied by third parties, information from their own pilot bus demonstrations, or experiences other transit agencies choose to share

regarding a particular bus model. Without a neutral testing program, it is likely that the market would be flooded with lower-quality bus models that would increase life-cycle costs and degrade bus service. The information collected by the Bus Testing Program is needed to: (1) identify and describe the bus model in question, (2) determine the eligibility of a new bus model for testing as per 49 CFR 665.11; (3) determine the type of testing necessary; (4) satisfy the legal and administrative requirements necessary to authorize the Bus Testing Facility to schedule the testing of a new bus model; (5) collect new bus model design and component information for inclusion in the Bus Testing Report; and (6) determine the maximum rated standee passenger capacity of a new bus model.

Respondents: Bus manufacturers and recipients of FTA funds.

Frequency: Periodic.

National Environmental Policy Act

The Department has analyzed the environmental impacts of this notice of proposed rulemaking pursuant to the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 *et seq.*). FTA has determined that this rule is categorically excluded pursuant to 23 CFR 771.118(c)(4). Categorical exclusions are categories of actions that the agency has determined normally do not significantly affect the quality of the human environment and therefore do not require either an environmental assessment (EA) or environmental impact statement (EIS). See DOT Order 5610.1D § 9. In analyzing the applicability of a categorical exclusion, the agency must also consider whether extraordinary circumstances are present that would warrant the preparation of an EA or EIS. *Id.* § 9(b). This rulemaking, which revises FTA’s Bus Testing regulations, is categorically excluded pursuant to 23 CFR 771.118(c)(4), which states that the promulgation of rules and regulations are categorically excluded. FTA does not anticipate any environmental impacts, and there are no extraordinary circumstances present in connection with this rulemaking.

E.O. 12630 (Taking of Private Property)

FTA has analyzed this proposed rule under E.O. 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights. FTA does not believe this proposed rule affects a taking of private property or otherwise has taking implications under Executive Order 12630.

Executive Order 12988 (Civil Justice Reform)

This proposed rule meets applicable standards in sections 3(a) and 3(b)(2) of E.O. 12988, Civil Justice Reform, to minimize litigation, eliminate ambiguity, and reduce burden.

E.O. 13045 (Protection of Children)

FTA has analyzed this proposed rule under E.O. 13045, Protection of Children from Environmental Health Risks and Safety Risks. FTA certifies that this action will not cause an environmental risk to health or safety that might disproportionately affect children.

E.O. 13175 (Tribal Consultation)

FTA has analyzed this proposed rule under E.O. 13175, dated November 6, 2000, and believes that it will not have substantial direct effects on one or more Indian Tribes; will not impose substantial direct compliance costs on Indian Tribal governments; and will not preempt Tribal laws. Therefore, a Tribal summary impact statement is not required.

Executive Order 13211 (Energy Effects)

FTA has analyzed this action under E.O. 13211, Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use. FTA has determined that this action is not a significant energy action under that order and is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Therefore, a Statement of Energy Effects is not required.

Regulation Identifier Number

A Regulation Identifier Number (RIN) is assigned to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. The RIN number contained in the heading of this document can be used to cross-reference this proposed rule with the Unified Agenda.

List of Subjects in 49 CFR Part 665

Buses, Grant programs—transportation, Motor vehicle safety, Public transportation, Reporting and recordkeeping requirements.

Jamie Pfister,

Acting Executive Director.

For the reasons set forth in the preamble, the Federal Transit Administration proposes to revise and republish 49 CFR part 665 to read as follows:

PART 665—BUS TESTING**Subpart A—General**

- Sec.
665.1 Purpose.
665.3 Scope.
665.5 Definitions.
665.7 Certification of compliance.

Subpart B—Bus Testing Procedures

- Sec.
665.11 Testing requirements.
665.13 Test report and manufacturer certification.

Subpart C—Operations

- Sec.
665.21 Scheduling.
665.23 Fees.
665.25 Transportation of vehicle.
665.27 Procedures during testing.

Appendix A to Part 665—Bus Model Scoring System and Pass/Fail Standard

Authority: 49 U.S.C. 5318 and 49 CFR 1.91.

Subpart A—General**§ 665.1 Purpose.**

An applicant for Federal financial assistance for the purchase or lease of buses with funds obligated by the Federal Transit Administration (FTA) shall certify to FTA that any new bus model acquired with such assistance has been tested and has received a passing test score in accordance with this part. This part contains the information necessary for a recipient to ensure compliance with this provision.

§ 665.3 Scope.

This part shall apply to an entity receiving Federal financial assistance under 49 U.S.C. chapter 53.

§ 665.5 Definitions.

As used in this part—

Administrator means the Administrator of the Federal Transit Administration or the Administrator's designee.

Automotive means that the bus is not continuously dependent on external power or guidance for normal operation. Intermittent use of external power or guidance shall not automatically exclude a bus of its automotive character or the testing requirement.

Baseline (bus) model means the original configuration of a bus model that completed full testing and serves as a basis for partial testing of subsequent changes in configuration or components.

Baseline report means a full bus testing report on a closely-related bus model that provides the data for those test procedures that are not covered in a partial testing report for a bus model.

Bus means a rubber-tired automotive vehicle used for the provision of public

transportation service by or for a recipient of FTA financial assistance.

Bus model means a bus design or variation of a bus design usually designated by the manufacturer by a specific name, model number, or both.

Bus Testing Facility means the facility used by the entity selected by FTA to conduct the bus testing program, including test track facilities operated in connection with the program.

Bus testing report (full report or full testing report) means the complete test report for a bus model, documenting the results of performing the complete set of bus tests on a bus model. A full testing report on a zero-emission vehicle includes all test procedures except for the Emissions test.

Curb weight (CW) means, for the Check-In test procedure described in § 665.27(a), the weight of the bus ready to operate including maximum fuel, oil, and coolant, but without passengers or driver. During the Structural Durability test and any other test performed with a driver, curb weight includes the actual weight of the driver operating the bus during dynamic testing.

Emissions means the components of the engine tailpipe exhaust that are regulated by the United States Environmental Protection Agency (EPA), plus carbon dioxide (CO₂) and methane (CH₄).

Emissions control system means the components on a bus whose primary purpose is to minimize regulated emissions before they exit the tailpipe. This definition does not include components that contribute to low emissions as a side effect of the manner in which they perform their primary function (e.g., fuel injectors or combustion chambers).

Failure means an abrupt or gradual cessation of normal function or inability to function as required.

Failure class means the classification assigned by the Operator to a failure of the bus that occurs at any time during any testing. The failure classes are:

Class 1—A failure that represents a serious safety hazard such as a high risk of passenger, driver, or bystander injury, or major property damage.

Class 2—A failure in which the vehicle cannot be operated and requires maintenance personnel to perform an on-road repair, or tow the vehicle to a maintenance facility.

Class 3—A failure that requires prompt repair to the vehicle, but the vehicle can be driven to a maintenance facility.

Class 4—A failure that degrades the functionality of the vehicle but does not require prompt repair.

Failure mode means the way in which a component or system fails.

Final acceptance means the formal approval by the recipient that the vehicle has met its key bid specifications, the recipient has received proper title, and the recipient has released the FTA funding to the vehicle manufacturer.

Gross weight (Gross vehicle weight, or GVW) means the seated load weight of the bus plus 150 pounds of ballast for each standee passenger, up to and including, the maximum rated standee passenger capacity identified by the manufacturer on the bus interior bulkhead.

Hybrid means a propulsion system that combines more than one power source, at least one of which is capable of capturing, storing, and re-using energy.

Major change in design means a change in the design of the vehicle that could result in significantly different testing data compared to the baseline model. Major changes in design include, but are not limited to, a change in chassis model, frame structure, material or configuration, or a change in suspension type.

Major change in components means a change or substitution in the components installed in the vehicle that could result in significantly different testing data compared to the baseline model. Major changes in components include, but are not limited to:

(1) For those vehicles that are not manufactured on a third-party chassis, a change in a vehicle's engine, axle, transmission, suspension, or steering components;

(2) For those that are manufactured on a third-party chassis, a change in the vehicle's chassis from one major design to another.

Major change in configuration means a change in the configuration of the vehicle that could result in significantly different testing data compared to the baseline model.

Non-recurring engineering hours means time that a vehicle manufacturer expends to perform a root-cause analysis of a failure that occurs or is imminent during testing and develop a change to the vehicle design that will be incorporated into production vehicles.

New bus model means a bus model that—

(1) Has not been used in public transportation service in the United States before; or

(2) Has been used in public transportation service in the United States but which is being produced with a major change in configuration or a major change in components.

Operator means the operator of the Bus Testing Facility.

Original equipment manufacturer (OEM) means the original manufacturer of a chassis or van supplied as a complete or incomplete vehicle to a bus manufacturer.

Parking brake means a system that prevents the bus from moving when parked by preventing the wheels from rotating.

Partial testing means the performance of only that subset of the complete set of bus tests in which significantly different data would reasonably be expected compared to the data obtained in previous full testing of the baseline bus model at the Bus Testing Facility.

Partial testing report (partial test report) means a report documenting, for a previously-tested bus model that is produced with major changes, the results of performing only that subset of the complete set of bus tests in which significantly different data would reasonably be expected as a result of the changes made to the bus from the configuration documented in the original full bus testing report. A partial testing report is not valid unless accompanied by the corresponding baseline full bus testing report for the corresponding bus configuration.

Public transportation service means the operation of a vehicle that provides general or special service to the public on a regular and continuing basis consistent with 49 U.S.C. chapter 53.

Recipient means an entity that receives funds under 49 U.S.C. chapter 53, either directly from FTA or through a direct recipient.

Recurring failure means a failure mode that occurs repeatedly during testing.

Regenerative braking system means a system that decelerates a bus by recovering kinetic energy and storing that energy on-board for subsequent use.

Retarder means a system other than the service brakes that slows a bus by dissipating kinetic energy.

Seated load weight (SLW) means the curb weight of the bus plus the seated passenger load simulated by adding 150 pounds of ballast to each seating position and 600 pounds per wheelchair position.

Service brake(s) means the primary system used by the driver during normal operation to reduce the speed of a moving bus and to allow the driver to bring the bus to a controlled stop and hold it there. Service brakes may be supplemented by retarders, regenerative braking systems, or both.

Tailpipe emissions means the exhaust constituents emitted to the atmosphere

at the exit of the vehicle tailpipe or corresponding system.

Third-party chassis means a commercially available chassis whose design, manufacturing, and quality control are performed by an entity independent of the bus manufacturer.

Unmodified mass-produced van means a 4-year/100,000-mile useful life category van that is mass-produced, complete and fully assembled as provided by an OEM, and is identified on a list of unmodified mass-produced vans that shall be maintained by FTA. This may include vans with raised roofs, or wheelchair lifts or ramps that are installed by the OEM or by a party other than the OEM provided that the installation of these components is completed in strict conformance with the OEM modification guidelines.

Unmodified third-party chassis means a third-party chassis that has not been modified.

Uncorrected failure means a failure that was detected during the test that has not been successfully resolved through design, manufacturing process, quality control, or other improvement(s) by the manufacturer and successfully validated by sufficient subsequent testing.

Unscheduled maintenance hours means the time required to repair or otherwise correct a failure that occurs during testing. Such time does not include non-recurring engineering hours incurred to understand and correct the root cause of a failure.

Useful life category means the time or distance that a vehicle must remain in service before it is eligible for FTA-funded replacement. The Bus Testing Program uses the useful life categories defined in the current version of FTA Circular 5010.

§ 665.7 Certification of compliance.

(a) In each application to FTA for the purchase or lease of any new bus model, or any bus model with a major change in configuration or components to be acquired or leased with funds obligated by FTA, the recipient shall certify that the bus model was tested at the Bus Testing Facility and that the bus received a passing test score as required in this part. A recipient may only certify under this section based on a bus testing report, or a combination of a baseline full bus testing report and a partial testing report, that each have not expired pursuant to § 665.13(g) at the time of initial contract award. The recipient shall receive the appropriate full bus testing report and any applicable partial testing report(s) before final acceptance of the first vehicle.

(b) The recipient shall be responsible for determining whether a vehicle to be acquired has satisfied the requirements of this part.

(c) When a bus manufacturer or recipient is uncertain whether full or partial testing is required for a bus model, the bus manufacturer should request an FTA review and determination of Bus Testing requirements for that bus model.

Subpart B—Bus Testing Procedures

§ 665.11 Testing requirements.

(a) In order to be tested at the Bus Testing Facility, a new model bus shall—

(1) Be a single model that complies with NHTSA requirements at 49 CFR part 565 *Vehicle Identification Number Requirements*; 49 CFR part 566 *Manufacturer Identification*; 49 CFR part 567 *Certification*; and where applicable, 49 CFR part 568 *Vehicle Manufactured in Two or More Stages—All Incomplete, Intermediate and Final-Stage Manufacturers of Vehicle Manufactured in Two or More Stages*;

(2) Have been produced by an entity whose Disadvantaged Business Enterprise (DBE) goals have been submitted to FTA pursuant to 49 CFR part 26;

(3) Identify the maximum rated quantity of standee passengers on the interior bulkhead in 2 inch tall or greater characters;

(4) Meet all applicable Federal Motor Vehicle Safety Standards, as defined by the National Highway Traffic Safety Administration in part 571 of this title;

(5) Be substantially representative of subsequent production buses of that model; and

(6) Identify the manufacturing point of origin for the bus structure and key components of the bus in the testing authorization request submitted to FTA.

(b) If the new bus model has not previously been tested at the Bus Testing Facility, then the new bus model shall undergo the full testing requirements for Maintainability, Reliability, Safety, Performance (including Braking Performance), Structural Integrity, Fuel Economy, Noise, and Emissions.

(c) If the new bus model has not previously been tested at the Bus Testing Facility and is being produced on a third-party chassis that has been previously tested on another bus model at the Bus Testing Facility, then the new bus model may undergo partial testing in place of full testing.

(d) Changes in chassis or components.

(1) If the new bus model has previously been tested at the Bus

Testing Facility but is subsequently manufactured with a major change in chassis or components, then the new bus model may undergo partial testing in place of full testing.

(2) Unless FTA issues a written determination to the contrary, a bus model built on an unmodified third-party chassis that has previously satisfied Bus Testing requirements will not require additional testing solely due to model year updates to that chassis made by its third-party chassis manufacturer.

(e) Buses shall be tested according to the useful life category.

(f) Tests performed in a higher useful life category (*i.e.*, longer useful life) need not be repeated when the same bus model is used in lower useful life applications.

(g) Unless FTA determines that it is impractical, or insignificant, a bus model shall be tested in all of its significant modes of operation, and the resulting data shall be included in the bus testing report.

§ 665.13 Test report and manufacturer certification.

(a) The Operator of the Bus Testing Facility shall implement the performance standards and scoring system set forth in this part.

(b) Upon completion of testing, the Operator of the facility shall provide the scored test results and the resulting test report to the entity that submitted the bus for testing and to FTA. The test report will be available to recipients only after both the bus manufacturer and FTA have approved it for release. If the bus manufacturer declines to release the report, or if the bus did not achieve a passing test score, the vehicle will be ineligible for FTA financial assistance.

(c) Release of test reports.

(1) A manufacturer or dealer of a new bus model or a bus produced with a major change in component or configuration shall provide a copy of the corresponding full bus testing report and any applicable partial testing report(s) to a recipient during the point in the procurement process specified by the recipient, but in all cases before final acceptance of the first bus by the recipient.

(2) A manufacturer who releases a report under paragraph (c)(1) of this section also shall provide notice to the Operator of the facility that the test results and the test report are to be made available to the public.

(d) If a tested bus model with a bus testing report undergoes a subsequent major change in component or configuration, the manufacturer or dealer shall advise the recipient during

the procurement process and shall include a description of the change. Any party may ask FTA for a determination regarding the effect of the change on the applicability of the existing bus testing report(s).

(e) A bus testing report or partial testing report shall be available publicly once the bus manufacturer makes it available during a recipient's procurement process. The Operator of the facility shall have copies of all the publicly available reports available for distribution. The Operator shall make the final test results from the approved report available electronically and accessible over the internet.

(f) The full or partial bus testing report and the test results are the only official information and documentation that shall be made publicly available in connection with any bus model tested at the Bus Testing Facility, however FTA may use anonymized Bus Testing data, aggregated Bus Testing data, or a combination to support FTA research.

(g) Effective three years after the effective date of the final rule, each full or partial bus testing report shall expire 10 years after the date of publication of such report.

Subpart C—Operations

§ 665.21 Scheduling.

(a) All requests for testing, including requests for full, partial, or repeat testing, shall be submitted to FTA in the manner and form prescribed by FTA prior to scheduling with the Operator of the Bus Testing Facility.

(b) FTA will review the request and provide an initial response within five (5) business days. FTA will then conduct a detailed review and provide a written response to the requester authorizing testing, or explaining why testing is not authorized.

(c) To schedule a bus for testing, a manufacturer shall contact the Operator of the Bus Testing Facility and reference or provide the written FTA testing authorization. Contact information and procedures for scheduling testing are available on the Operator's Bus Testing website, which will be linked from the FTA Bus Testing website.

(d) Upon contacting the Operator, the Operator shall provide the manufacturer with the following:

(1) A draft contract for the testing;

(2) A time and fee schedule; and

(3) The test procedures for the tests that will be conducted on the vehicle.

(e) The Operator shall process vehicles FTA has approved for testing in the order in which the contracts are signed.

§ 665.23 Fees.

(a) The operator shall charge fees in accordance with a schedule approved by FTA, which shall include different fees for partial testing.

(b) Fees shall be prorated for a vehicle withdrawn from the Bus Testing Facility before the completion of testing.

(c) The manufacturer's portion of the test fee shall be used first during the conduct of testing. If the Operator has concerns about continuing a test of a bus model, the Operator shall obtain approval from FTA prior to continuing testing of that bus model using the Bus Testing Program's share of the testing fee after the manufacturer's fee has been expended.

(d) A manufacturer that resubmits a bus model for testing after previously withdrawing that bus model from testing shall submit 100 percent of the applicable testing fee to the Operator prior to beginning each retest. If that bus model subsequently receives a passing score, the manufacturer shall be refunded upon publication of the resulting full or partial Bus Testing Report for FTA's share of the testing fee that was in effect when the contract was signed for the test that resulted in a published full or partial Bus Testing Report.

§ 665.25 Transportation of vehicle.

A manufacturer shall be responsible for transporting its vehicle to and from the Bus Testing Facility at the manufacturer's own risk and expense.

§ 665.27 Procedures during testing.

(a) Upon receipt or as early as practicable, and during testing of a bus approved by FTA for testing, the Operator shall:

(1) Inspect the bus design configuration and compare it to the configuration documented in the test authorization;

(2) Determine if the bus, when loaded to gross weight, does not exceed its gross vehicle weight rating, gross axle weight ratings, or tire load ratings;

(3) Determine if the bus is capable of negotiating the durability test track at curb weight, seated load weight, and gross vehicle weight;

(4) Determine if the bus is capable of performing the Fuel Economy and Emissions Test duty cycles within the established standards for speed deviation;

(5) Identify any safety concerns; and

(6) Identify any concerns that the bus is not suitable or fit for its intended transit service.

(b) The Operator shall present the results obtained from the activities of paragraph (a) of this section to the bus

manufacturer and the FTA Bus Testing Program Manager for review and correction as needed prior to initiating testing using the Bus Testing Program funds, and any other time during testing that the bus is discovered to be non-compliant with those criteria. FTA will provide a written response within five (5) business days to authorize the start or continuation of testing or to request clarification for any discrepancies noted from the activities of (a). Testing may commence or continue after five (5) business days if FTA does not provide a response.

(c) The Operator shall perform all maintenance and repairs on the test vehicle, consistent with the manufacturer's specifications, unless the Operator determines that the nature of the maintenance or repair is best performed by the manufacturer under the Operator's supervision.

(d) The manufacturer shall be permitted to observe all tests. The manufacturer shall not provide maintenance or service unless requested to do so by the Operator.

(e) The Operator shall investigate any occurrence of unauthorized maintenance or repairs and together with FTA, if necessary, determine the potential impact to the validity of the test results. Tests where the results could have been impacted must be repeated at the manufacturer's expense.

(f) If a manufacturer requests permission to make a modification to a test vehicle to address a problem discovered during testing, the Operator shall perform the modification on the test vehicle consistent with the manufacturer's specifications, unless the Operator determines that the nature of the modification is best performed by the manufacturer under the Operator's supervision. All vehicle modifications performed after a test has started will first require review and approval by FTA. If a modification is determined to be a major change, some or all of the tests already completed shall be repeated or extended at FTA's discretion. Any modification made to a test bus will be documented in the Bus Testing Report and must be applied to future production buses of that model for such bus model to be acquired with FTA financial assistance.

(g) The Operator shall halt testing after any occurrence of unapproved, unauthorized, or unsupervised test vehicle modifications. Following an occurrence of unapproved or unsupervised test vehicle modification, the vehicle manufacturer shall submit a new test request to FTA that addresses all the requirements in § 665.11 to reenter the Bus Testing Program.

(h) The Operator shall perform tests on new bus models in the categories specified by 49 U.S.C. 5318. The tests and their corresponding performance standards are summarized in the following paragraphs, and in appendix A to this part. The Operator shall develop detailed testing procedures, which must be approved by FTA. The Operator shall make any testing procedures publicly available. If a bus model has new technologies, features, capabilities, or limitations, FTA may work with the Operator to modify the testing and reporting for such bus model to the extent necessary to meet the intent of 49 U.S.C. 5318 and this part. If a bus model has limitations that affect the testing that could be performed, the resulting full or partial bus testing report shall prominently note on the cover that the bus model has limitations that may affect its suitability for certain types of public transportation service. The report shall provide details on the nature and degree of such limitations.

(1) *Maintainability test.* The Maintainability test shall include bus servicing, preventive maintenance, inspection, and repair. It shall also include the removal and reinstallation of a representative sample of bus components that are likely to require removal and replacement during the useful life of a transit bus. All servicing, preventive maintenance, and repair actions shall be recorded and reported, including repairs required during any partial testing. These actions shall be performed by test facility staff, although manufacturers shall be allowed to maintain a representative on-site during the testing. Test facility staff may require a manufacturer to provide vehicle servicing or repair under the supervision of the facility staff. All routine and corrective maintenance shall be carried out by the Operator in accordance with the manufacturer's specifications and guidance.

(i) The Maintainability Test Report shall include the frequency, personnel hours, and replacement parts or supplies required for each action during the test. The accessibility of selected components and other observations that could be important to a bus purchaser shall be included in the report.

(ii) The performance standard for Maintainability is that no greater than the following hours of total unscheduled maintenance shall be accumulated over the execution of a test:

(A) 12-year/500,000-mile useful life category: 125 hours.

(B) 10-year/350,000-mile useful life category: 110 hours.

(C) 7-year/200,000-mile useful life category: 80 hours.

(D) 5-year/150,000-mile useful life category: 60 hours.

(E) 4-year/100,000-mile useful life category: 50 hours.

(2) *Reliability test.* The Reliability test is not a separate test but shall be addressed by recording all bus failures and breakdowns during all other testing. The detected bus failures, repair time, and the actions required to return the bus to operation shall be presented in the report. The performance standard for Reliability is that the vehicle under test experience no more than two uncorrected Class 2 failures over the execution of a test.

(3) *Safety test.* The Safety test shall consist of a Handling and Stability test, a Braking Performance test, and a review of the Class 1 failures that occurred during the test.

(i) The Bus Testing Report shall discuss any safety concerns discovered by the Operator and the actions taken to address those concerns prior to starting or resuming testing.

(ii) The Handling and Stability test shall be an obstacle avoidance double-lane change test performed on a smooth and level test track. The performance standard is that the test vehicle can safely negotiate and remain within the lane change test course at a speed of 45 mph.

(iii) The functionality and performance of the service, regenerative (if applicable), and parking brake systems shall be evaluated at the test track. The test bus shall be subjected to a series of brake stops from specified speeds on high, low, and split-friction surfaces. The parking brake shall be evaluated with the bus parked facing both up and down a steep grade. There are three performance standards for braking. The stopping distance from a speed of 45 mph on a high friction surface shall be based on the bus stopping distance requirements of FMVSS 105 or 121 as applicable. The bus shall remain within a standard 12-foot lane width during split coefficient brake stops. The parking brake shall hold the test vehicle stationary on a 20 percent grade facing up and down the grade for a period of 5 minutes.

(iv) A review of all the Class 1 failures that occurred during the test shall be conducted as part of the Safety test. The performance standard is that the vehicle completes testing with no uncorrected Class 1 failure modes.

(4) *Performance test.* The Performance test shall measure the maximum acceleration, speed, and gradeability capability of the test vehicle, or calculate these values if direct

measurement is not feasible. In determining the transit vehicle's maximum acceleration and speed, the bus shall be accelerated at full throttle from rest until it achieves the lesser of its maximum speed or the maximum required test speed on an actual or simulated level roadway. The performance standard for acceleration is that the maximum time that the test vehicle requires to achieve 30 mph is 18 seconds on a level grade. The gradeability performance of the test vehicle shall be calculated based on the data measured on a level grade during the Acceleration test if it cannot be measured directly. The performance standard for the gradeability test is that the test vehicle achieves a sustained speed of at least 40 mph on a 2.5 percent grade and a sustained speed of at least 10 mph on a 10 percent grade.

(5) *Structural integrity tests.* The structural integrity of the vehicle will be assessed by a combination of static and dynamic tests:

(i) *Structural strength and distortion tests.*

(A) *Structural Distortion*—The bus shall be loaded to GVW, with each wheel raised one-at-a-time to simulate being on top of a curb, and then lowered to simulate being in a pothole. The following three tests will be performed at each suspension travel condition, and the performance standards shall be:

(1) Normal operation of the steering mechanism;

(2) Operability of all passenger doors, passenger escape mechanisms, windows, and service doors; and

(3) No uncorrected safety hazards during a water leak test.

(B) *Static Towing*—Using a load-equalizing towing sling, a static tension load equal to 1.2 times the curb weight shall be applied to the bus towing fixtures (front and rear). The load shall be removed, and the tow fixtures and adjoining structure inspected for damages or permanent deformations. The performance standard shall be that no significant damage or deformation is experienced at static loads up to 1.2 times the vehicle curb weight.

(C) *Dynamic Towing*—The bus shall be towed at curb weight with a tow truck and then inspected for structural damage or deformation. The performance standard shall be that the vehicle is safely towable by a tow truck without experiencing any significant damage to the vehicle.

(D) *Jacking*—With the bus at curb weight, probable damages and clearance issues due to tire deflating and hydraulic jacking shall be assessed. The performance standard shall be that the vehicle is capable of being lifted safely,

securely, and without damage using a hydraulic floor jack with a tire fully deflated.

(E) *Hoisting*—With the bus at curb weight, possible damages or deformation associated with lifting the bus on a two-post hoist system or wheel lifts and supporting it on jack stands shall be assessed. The performance standard shall be that the vehicle is capable of being hoisted, supported by jack stands, and lowered safely and without damage.

(ii) *Structural durability test.* The Structural Durability test shall be performed by operating the bus on the durability course, simulating twenty-five percent of the vehicle's expected useful life. The bus structure shall be inspected regularly during the test, and any identified structural anomalies and failures, and actions taken to address them, shall be described, classified, and reported in the Reliability test along with the corresponding date and test mileage. There shall be two performance standards for the Structural Durability test, one to address the vehicle frame and body structure, and one to address the bus propulsion system. The performance standard for the vehicle frame and body structure shall be that there are no uncorrected failure modes of the vehicle frame and body structure at the completion of the test. The performance standard for the vehicle propulsion system is that there are no uncorrected powertrain failure modes at the completion of the test.

(6) *Fuel economy test.* The Fuel Economy test shall be conducted using duty cycles that simulate representative transit service operating profiles. This test shall measure the fuel economy, or energy efficiency and driving range, of the vehicle and present the results in metrics that are accepted by the transit community and minimize the number of unit conversions for mass, volume, and energy.

(i) The Fuel Economy test shall be designed only to enable FTA recipients to compare the relative fuel economy, or energy efficiency and driving range, of buses operating at a consistent loading condition on the same set of typical transit driving cycles. The results of this test are intended to be independent of fuel economy estimates by other agencies, such as the National Highway Traffic Safety Administration (NHTSA) or the U.S. Environmental Protection Agency (EPA) or for other purposes.

(ii) The performance standard for the Fuel Economy test is that the vehicle shall be compliant with the prevailing model year fuel consumption standards for heavy-duty vocational vehicles outlined in NHTSA's Medium and

Heavy-Duty Fuel Efficiency Program (49 CFR part 535).

(iii) Scoring for the Fuel Economy test shall be pro-rated for vehicles that use more than one fuel type or energy source. Plug-in hybrid vehicles will be pro-rated using industry standards, otherwise, dual-fuel or multi-fuel vehicles will be pro-rated by each fuel source equally for scoring purposes.

(7) *Noise test.* The Noise test shall measure interior noise and vibration while the bus is idling (or in a comparable operating mode), accelerating, and driving over smooth and irregular road surfaces. The Noise test shall also measure the transmission of exterior noise to the interior while the bus is not running. The Noise test will also report any notable audible vibrations, rattles, or loud noises during operation on public roadways. There shall be two minimum noise performance standards: The performance standard for interior noise shall be no greater than 80 decibels A-weighted in any normal condition encountered during testing, including while the vehicle accelerates from 0–35 mph. The performance standard for exterior noise shall be no greater than 83 decibels A-weighted in any normal condition encountered during testing,

including while the vehicle accelerates from 0–35 miles per hour. If a bus model fails a noise performance standard, the manufacturer may make corrections to the bus and repeat the noise tests.

(8) *Emissions test.* The Emissions test shall measure tailpipe emissions of those exhaust constituents regulated by the United States Environmental Protection Agency (EPA) for transit bus emissions, plus carbon dioxide (CO₂) and methane (CH₄), as the bus is operated over specific repeatable transit vehicle driving cycles.

(i) The Emissions test is not a certification test and is designed only to enable FTA recipients to compare the relative emissions of buses operating on the same set of typical transit driving cycles. The results of this test need not be directly comparable to emissions measurements reported to other agencies, such as the EPA, or for other purposes.

(ii) The emissions performance standard shall be based on the prevailing EPA emissions requirements for heavy-duty vehicles outlined in 40 CFR part 86 and 40 CFR part 1037.

(iii) Buses that are defined by EPA as “zero-emission vehicles” are categorically exempt from the Emissions test of this part.

Appendix A to Part 665—Bus Model Scoring System and Pass/Fail Standard

1. Bus Model Scoring System

The Bus Model Scoring System shall be used to score the test results using the performance standards in each category. A bus model that fails to meet a minimum performance standard shall be deemed to have failed the test and will not receive an aggregate score. For buses that have passed all the minimum performance standards, an aggregate score shall be generated and presented in each bus testing report. A bus model that just satisfies the minimum baseline performance standard and does not exceed any of the standards shall receive a score of 60. The maximum score a bus model shall receive is 100. The minimum and maximum points available in each test category shall be as shown below in Table A. The bus testing report will include a scoring summary table that displays the resulting scores in each of the test categories and subcategories. The scoring summary table shall have a disclaimer footnote stating that the use of the scoring system is not mandatory, only that the bus being procured receive a passing score.

2. Pass/Fail Standard

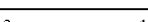
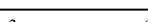
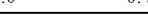
The passing standard shall be a score of 60. Bus models that fail to meet one or more of the minimum baseline performance standards will be ineligible to obtain an aggregate passing score.

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TABLE A: Performance Standards, Scoring System, and Pass/Fail (page 1 of 2)

Test Category		Performance Standard	All Performance Standards Met?		
			No = FAIL	Yes → Assess Score	
Base Score	+ Prorated Points for Measured Test Performance				
Structural Integrity (30 pts.)	Distortion	Normal operation of steering mechanism, all exits remain operational under each distortion loading condition, and no hazardous water leakage		1.0	
	Static Towing	No significant damage under 120% curb weight load		1.0	
	Dynamic Towing	Bus is towable with standard tow truck safely and without significant damage		1.0	
	Jacking	Bus with deflated tire is safe, secure, and undamaged when lifting with a standard floor jack		1.0	
	Hoisting	Bus stable and undamaged during lifting and on jackstands		1.0	
	Durability	No uncorrected frame & body structure failures remaining at completion of test		13.0	
No uncorrected powertrain failures remaining at completion of test		12.0			
Safety (20 pts.)	Hazards	No uncorrected Class 1 reliability failures remaining at test completion		10.0	
	Stability	Safe and stable at 45 mph lane change speed	2.5		
	Braking	Stopping distance from 45 mph within 158 feet	0.5	Stopping distance from 45 mph: (ft): 158 80 Points: 0.0 2.0	
		Bus remains within lane during split coefficient brake stops	2.5		
		Parking brake holds on 20% grade	2.5		
Maintainability (16 pts.)		Accumulation of no more than the maximum unscheduled maintenance hours applicable to the useful life category of the test	2.0	Hours: (Max USM) 0 Points: 0.0 14.0	
Reliability (8 pts.)		No more than 2 uncorrected Class 2 failures remaining at completion of test	2.0	Failures: 2 0 Points: 0.0 6.0	

TABLE A: Performance Standards, Scoring System, and Pass/Fail (page 2 of 2)

Fuel Economy (7 pts.) (Score pro-rated for multi-mode vehicles)	Liquid Fuels (Diesel, Gasoline, LPG, LNG)	Compliant with 49 CFR Part 535 MEDIUM- AND HEAVY-DUTY VEHICLE FUEL EFFICIENCY PROGRAM – <i>Heavy-Duty Vocational Vehicle Fuel Consumption Standards</i>	No = FAIL	1.0	MPG: 1  13 Points: 0.0  6.0
	CNG				SCF/mi: 50  10 Points: 0.0  6.0
	Hydrogen				SCF/mi: 98  15 Points: 0.0  6.0
	Electric				kW-hr/mi: 3  1 Points: 0.0  6.0
Emissions (7 pts.) (All emissions categories scored)	Carbon Dioxide (CO ₂)	Compliant with all applicable EPA exhaust emissions regulations at date of manufacture including: 40 CFR Part 86 CONTROL OF EMISSIONS FROM NEW AND IN-USE HIGHWAY VEHICLES AND ENGINES 40 CFR Part 1037 CONTROL OF EMISSIONS FROM NEW HEAVY-DUTY MOTOR VEHICLES		1.0	Grams/mi: 4000  0 Points: 0.0  4.0
	Carbon Monoxide (CO)				Grams/mi: 20  0 Points: 0.0  0.4
	Total Hydrocarbon (THC)				Grams/mi: 3  0 Points: 0.0  0.4
	Non-Methane Hydrocarbon (NMHC)				Grams/mi: 3  0 Points: 0.0  0.4
	Nitrogen Oxides (NO _x)				Grams/mi: 2  0 Points: 0.0  0.4
	Particulate Matter (PM)				Grams/mi: 0.1  0 Points: 0.0  0.4
Noise (7 pts.)	Interior	No greater than 80 decibels (dB(A))		0.5	dB(A): 80  30 Points: 0.0  3.0
	Exterior	No greater than 83 decibels (dB(A))		0.5	dB(A): 83  50 Points: 0.0  3.0
Performance (5 pts.)	Acceleration	Time from 0-30 mph no greater than 18 sec		1.5	
	Gradeability	Sustained speed on 2.5% grade no less than 40 mph		1.5	
		Sustained speed on 10% grade no less than 10 mph		2.0	
Overall Result		Failure to meet any Performance Standard = FAIL		60	+ 0  40
		PASS			
Maximum Total Score: 100					