



Impact of CDL Under-the-Hood Testing Requirement on Public Transit Agencies' Ability to Hire Bus Operators

A mixed-methods study
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Executive Summary

The public transit industry meets essential needs in communities across the United States by providing a reliable transportation option that enhances mobility while reducing traffic-related fatalities, congestion, and greenhouse gas emissions. But severe workforce challenges over the past decade have reduced the transit industry's ability to provide the comprehensive, affordable services that communities need to meet these goals.

A [2022 survey](#) from the American Public Transportation Association (APTA) found that almost 96 percent of transit agencies are experiencing workforce shortages, with 84 percent saying that shortages are impacting their ability to provide service. Workforce shortages have hit bus operations most severely, with [94 percent of transit agencies](#) saying bus operator positions are the most challenging or second-most challenging to fill.

APTA commissioned this research to understand how the Federal Motor Carrier Safety Administration (FMCSA) commercial driver's license (CDL) requirements affect public transit agencies' ability to hire bus operators. In particular, APTA and many of its member agencies have identified a portion of the CDL vehicle inspection test, called the "under-the-hood" requirement, as potentially irrelevant to a bus operator's job because transit agencies use maintenance departments to service and maintain their bus fleets. Agencies have also expressed concern that this test intimidates otherwise qualified bus operator candidates, increases costs, and extends new-operator training time for public transit agencies.

This study uses a mixed-methods approach to investigate the impact of the under-the-hood requirement on U.S. transit agencies and assesses whether agencies would support a waiver of this requirement. The research includes a national survey of U.S. transit agencies, qualitative interviews with agencies, and conversations with transit bus operators. Research was conducted August through October 2024.

Key Findings

Key findings from this research include:

The majority (84.6 percent) of U.S. transit agencies continue to face worker shortages, with bus operator positions described as particularly difficult to fill. Most agencies (67.5 percent) said it is either very difficult or difficult to hire bus operators, and only 3.5 percent reported that hiring operators is easy. Agencies said a shortage of operators increases the amount of overtime they pay and contributes to driver fatigue and operator burnout.

“It plays absolutely no part at all in what the operator job description requires them to do, and that’s provide safe service to the public.”

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use approaches such as written materials, flash cards, diagrams, walk-throughs, and quizzes to help candidates learn this content. Agencies said this section of the exam is where they see the most failures and retakes.

The overwhelming majority of transit agencies (92.3 percent) see under-the-hood content as either not at all relevant or only somewhat relevant for their operators. All agencies have separate maintenance workers who are responsible for routine bus maintenance and breakdowns. Operators are never responsible for those functions. Some agencies openly tell candidates that they are required to learn this information only to pass the CDL exam and that they will never use it again.

Operators engage in detailed pre-trip vehicle safety inspections, but these inspections typically do not require operators to open the engine compartment. Operators conduct thorough pre-trip inspections before starting their routes, often checking 70 or more items. These inspections focus on visually inspecting the interior and exterior of the bus, checking under the bus for fluid leaks, checking that safety equipment is present and functioning, ensuring that the bus is functioning correctly, and ensuring that no warning lights are displayed on the dashboard. The engine portion of the pre-trip inspection is typically conducted by maintenance staff and is not the responsibility of the operator.

As bus fleets transition to zero-emission buses, under-the-hood components become even less relevant. The number of zero-emission transit buses is projected to increase from 11.5 to 50.4 percent over the next 10 years. Electrified buses have fewer mechanical components. Agencies said electrified engine components can be very dangerous for untrained personnel and that these engine compartments are often locked for safety.

Based on agency feedback, waiving the under-the-hood requirement would likely achieve an equivalent or greater level of safety. Agencies and operators agreed that safe operation of the vehicle is the key responsibility of the bus operator. All transit agencies have workers who have responsibility for maintenance and repairs of bus fleets. Maintenance workers are specifically trained to conduct this work and are available to support operators.

CDL requirements are one of the most challenging aspects of hiring transit bus operators, and the under-the-hood portion of the CDL is particularly difficult for would-be operators.

Most agencies (64.1 percent) rate under-the-hood as either very difficult or difficult. Operators also acknowledged that the under-the-hood requirement can be a challenge. Several operators said it was hard to learn this information and identified under-the-hood as the most difficult aspect of obtaining a CDL.

Transit agencies invest significant time and resources to prepare operators to pass the under-the-hood portion of the CDL exam. On average, agencies devote 11.8 days to training operators on the material necessary to pass the vehicle inspection portion of the exam, which includes under-the-hood. Agencies

“The impact to the transit authority is millions of dollars every year, and it’s additional training for folks that will never be able to do that, because a) they don’t have the skill set to do that, and b) contractually, under our bargaining contracts with our unions, bus operators are not allowed to perform that duty.”

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Public transit agencies support a waiver of the under-the-hood requirement because the test:

- Adds time and expense to the process of training bus operators. Training time can be better used on higher priority functions, such as teaching operators how to safely operate the vehicle in traffic.
- Is a memorization exercise that does not correlate to success as an operator, and much of the information taught is not useful to operators after they pass the CDL exam. While operators engage in detailed pre-trip safety inspections, the inspections typically do not require them to open the engine compartment.
- Will become even less relevant as bus fleets electrify because many of the components checked do not exist on zero-emission buses. Additionally, electrified engine components are dangerous to untrained personnel.

Importantly, transit agencies hire mechanics to perform both pre-trip engine compartment inspections and to support operators in the event of a breakdown. Operators do not perform maintenance or repairs on buses, and some are contractually banned from these functions.

Recommendation

We recommend that APTA advocate for an exemption from the under-the-hood requirement for transit bus operators. An exemption would provide several key benefits for transit agencies, including:

- Reducing the overall training required for transit bus operators by decreasing the amount of technical information that operators must learn to pass the CDL exam. A waiver would likewise reduce training costs and decrease training time.
- Positively impacting the number of operator candidates who are able to pass the CDL exam, and reducing the number of retakes that operators require to become certified.
- Tailoring the CDL requirements more specifically to the job functions of transit bus operators. All transit agencies employ mechanics who have responsibility for bus maintenance and repairs; this is not a function of transit bus operators. Removing the under-the-hood requirement would likely achieve an equivalent or greater level of safety.



1. Introduction

The public transit industry meets essential needs in communities across the United States by providing a reliable transportation option that enhances mobility while reducing traffic-related fatalities, congestion, and greenhouse gas emissions. But severe workforce challenges over the past decade have reduced the transit industry's ability to provide the comprehensive, affordable services that communities need to meet these goals.

Before the COVID-19 pandemic in early 2020, many agencies were concerned about the aging of the transit workforce, with retirements outpacing their ability to hire. But the immediate effects of the pandemic were devastating, with the transit and ground passenger transportation industry losing more than 186,000 of its 508,700 employees between February and April 2020, according to a report from the [Mineta Transportation Institute](#).

Although public transit agencies have had some success restoring their workforce, they still struggle to hire enough employees to maintain service levels. A [2022 survey](#) from APTA found that almost 96 percent of transit agencies were experiencing workforce shortages, with 84 percent saying the shortage was impacting their ability to provide service. The survey found that workforce shortages are even more severe at the largest agencies, with 90 percent of those agencies saying the shortage was impacting their operations and services.

Moreover, the problem of the aging workforce has not abated. [Bureau of Labor Statistics estimates](#) show that the transit operator workforce is older than other industries. In 2023, the median age of all workers was 42.1 years, but for bus service and urban transit, the median age was 50.2 years.

Workforce shortages have hit bus operations most severely. A [2022 APTA report](#) found that 92 percent of agencies reported difficulty filling bus operator positions. APTA also found that 94 percent of transit agencies said bus operator positions are the most challenging or second-most challenging to fill.

As a trade association representing more than 1,600 organizations—including bus and rail transit systems, as well as organizations responsible for supporting transit—APTA is the primary advocate for the future of this industry.

Role of CDL Requirements

APTA commissioned this research to understand how the Federal Motor Carrier Safety Administration (FMCSA) commercial driver's license (CDL) requirements affect public transit agencies' ability to hire bus operators. In particular, APTA and many of its member agencies have identified a portion of CDL pre-trip vehicle inspection rules,

called the under-the-hood requirement, as potentially irrelevant to a bus operator's job because transit agencies use maintenance departments to service and maintain bus fleets. Agencies have also expressed concern that this test intimidates otherwise qualified operator candidates, increases costs, and extends new-operator training time for transit agencies.

A [June 2022 school bus driver study](#) found that the under-the-hood section of the CDL test is significantly harder to complete than other parts of the process. School bus drivers in Pennsylvania were asked to rate the difficulty of various aspects of obtaining a CDL, including the clearance process, knowledge tests, on-bus training, skills test, physical examination, and under-the-hood requirement. Typically, only 10 to 20 percent of drivers rated any of these areas as difficult, but almost one-half of all applicants rated the under-the-hood portion as difficult.

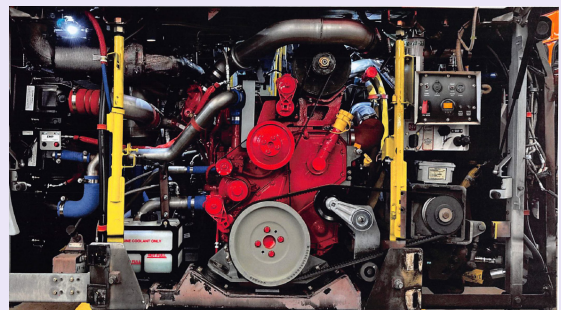
In light of these concerns, the National School Transportation Association (NSTA) successfully petitioned FMCSA for an exemption from the under-the-hood requirement for school bus drivers in intrastate operations. FMCSA granted the exemption from November 27, 2022, through November 27, 2024, and is considering whether to extend it.

In addition, as public transit agencies transition their bus fleets to zero-emission vehicles to reduce greenhouse gas emissions, the under-the-hood requirement becomes even less relevant. In 2020, 15 States and the District of Columbia committed to transitioning to electric vehicles, including [adopting a goal](#) that 30 percent of all new transit buses would be zero-emission by 2030, and 100 percent by 2050. The transition to electric buses requires significant learning for agencies, including new maintenance procedures. In zero-emission buses, most of the moving parts are [replaced with electrical components](#). These buses require less preventive maintenance overall, and their high-voltage components need to be serviced by specially trained personnel for safety reasons.

Definition: Under-the-Hood

The under-the-hood rule ([49 CFR 383.113\(a\)\(1\)\(i\)](#)) requires CDL applicants to correctly identify each safety-related part in the engine compartment and explain what needs to be inspected. This test includes checking for:

- Coolant, power steering, battery, and transmission fluid levels
- Worn or rubbing hoses
- Condition and correct tension of belts
- Fuel, coolant, oil, power steering fluid, hydraulic fluid or battery fluid leaks
- Cracked or worn electrical wiring insulation



About This Research

APTA commissioned this research to try to better understand how the under-the-hood requirement and other aspects of obtaining a CDL are impacting operator shortages, and to study whether an exemption would also be indicated for transit bus operators.

This study uses a mixed-methods approach to investigate the impact of the under-the-hood requirement on U.S. transit agencies, and assesses whether agencies would support a waiver of this requirement. The research includes a national survey of U.S. transit agencies, qualitative interviews with agencies, and interviews with transit bus operators.



2. Transit Agency Survey Findings

APTA invited its U.S. membership to take part in an online survey to examine the impact of FMCSA’s CDL requirements, including under-the-hood provisions, on the ability of public transit agencies to hire bus operators. APTA asked one person per agency who is knowledgeable about bus operations to respond. The survey was fielded August 12–29, 2024. The complete survey questionnaire appears as [Appendix A](#) to this report.

Transit Agency Demographics

A total of 117 transit agencies responded to the survey, representing 32 States. Of respondents, 19.7 percent were large agencies (i.e., more than 20 million annual passenger trips), 35.9 percent were medium-sized agencies (i.e., 4 million to 20 million annual passenger trips), and 44.4 percent were small agencies (i.e., fewer than 4 million annual passenger trips). Most agencies (89.7 percent) did not operate any routes that cross State lines; however, 10.3 percent of agencies had interstate routes. Respondents served in a variety of roles, including agency leadership (69.2 percent), operations (39.3 percent), hiring and recruiting (26.5 percent), agency monitoring and analysis (21.4 percent), and human resources (12.8 percent). [Table 1](#) contains complete demographic information for responding transit agencies.

Table 1. Demographics of U.S. transit agencies participating in APTA CDL survey

Agency size	<i>n</i>	%
Large (more than 20 million annual passenger trips)	23	19.7%
Medium (4 million to 20 million annual passenger trips)	42	35.9%
Small (fewer than 4 million annual passenger trips)	52	44.4%
Have bus routes that cross State lines	<i>n</i>	%
No	105	89.7%
Yes	12	10.3%
Roles held by respondents (multiple options allowed)	<i>n</i>	%
Agency leadership	81	69.2%
Operations	46	39.3%
Hiring and recruiting	31	26.5%
Agency monitoring and analysis	25	21.4%
Human resources	15	12.8%
Other	28	23.9%

Worker Shortages and Bus Operator Role

Agencies were asked to describe how worker availability is affecting their transit agency, thinking about worker positions such as operators, mechanics, and midlevel supervisors. Almost all agencies (84.6 percent) reported that they are experiencing worker shortages. These shortages are typically affecting operations either somewhat (48.7 percent) or substantially (23.1 percent) (see [Figure 1](#)). About 4 in 10 (41.9 percent) agencies think worker shortages will continue to worsen in the next 5 to 10 years, 22.2 percent think shortages will stay the same, and 35.9 percent think worker shortages will improve ([Figure 2](#)).

Figure 1: Worker shortages at U.S. transit agencies

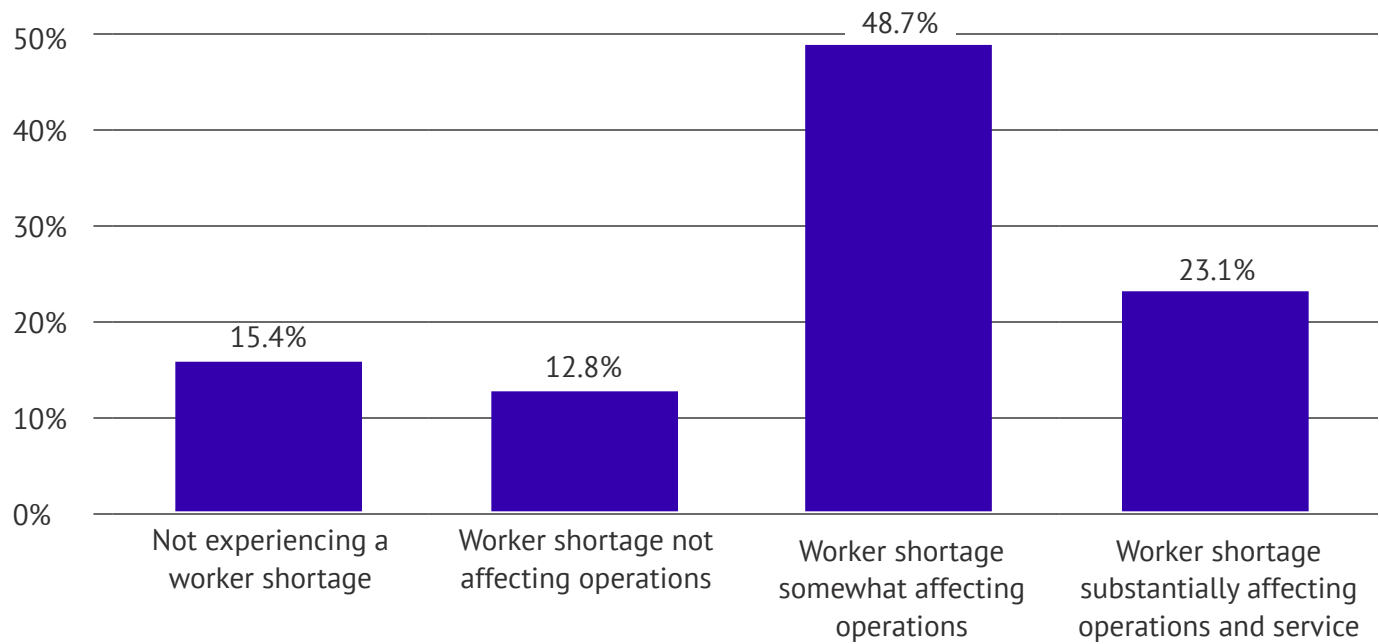
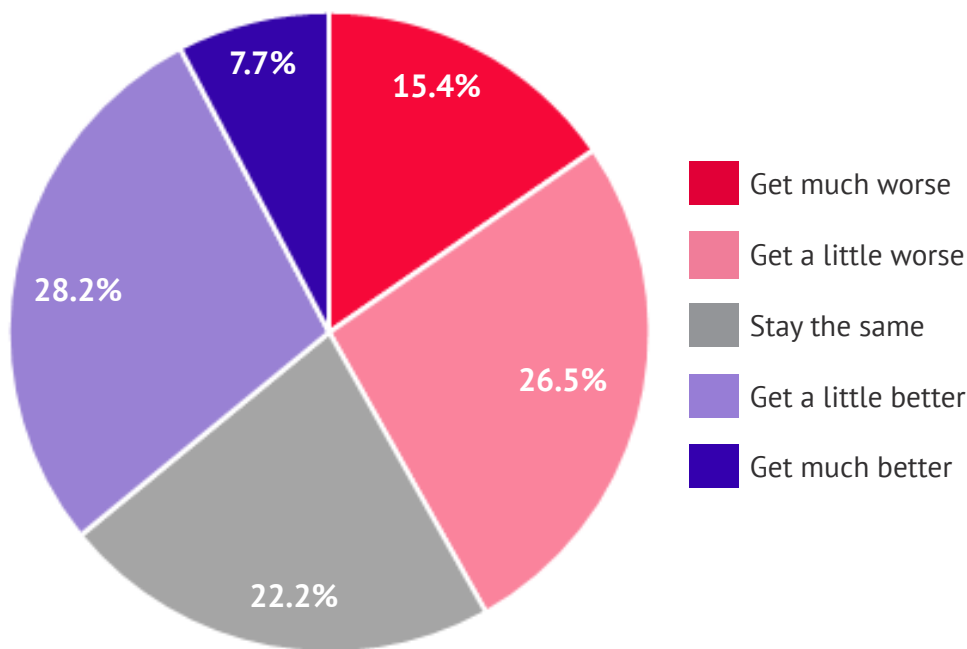
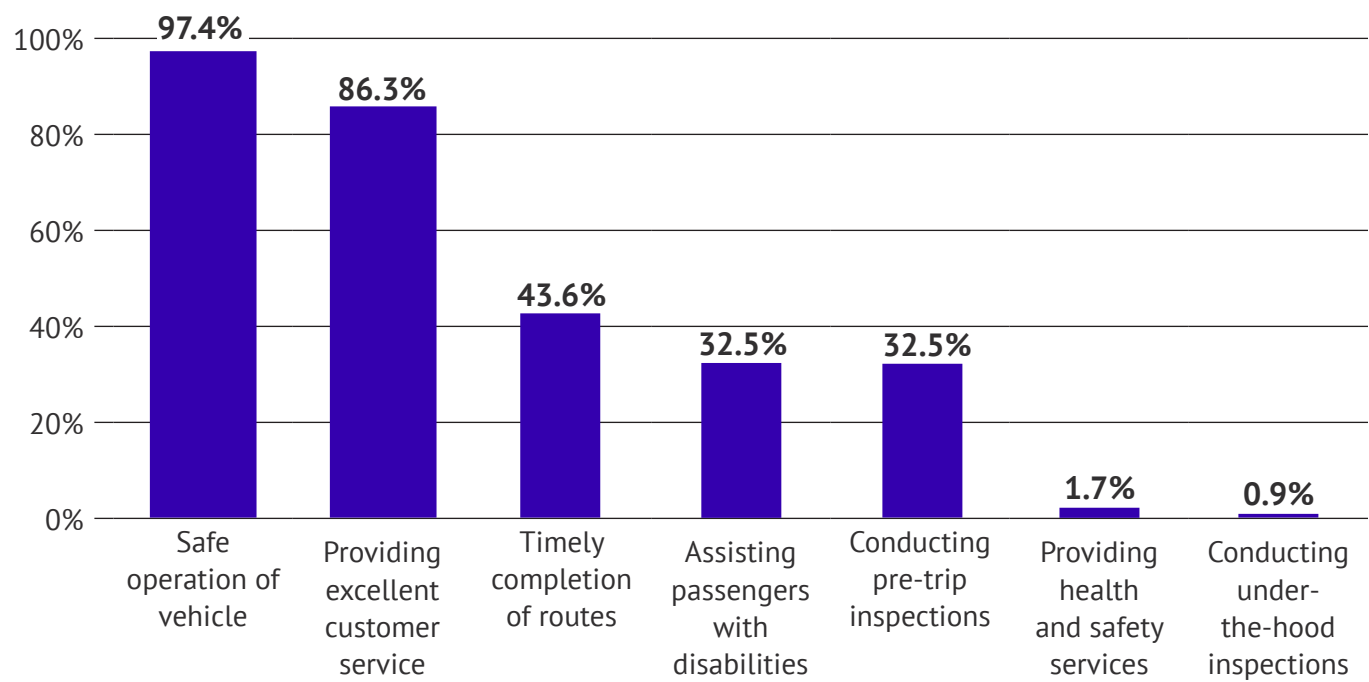


Figure 2: Transit agency expectations related to future worker shortages (next 5 – 10 years)



Agencies were asked to think specifically about transit bus operators and to identify the most important roles of a bus operator (selecting up to three options). Overwhelmingly, the most important role of the operator was safe operation of the vehicle, with 97.4 percent of agencies selecting this response (Figure 3). The next most important role was providing excellent customer service (86.3 percent). After these two roles, a cluster of three answers were selected most often: timely completion of routes (43.6 percent), assisting passengers with disabilities (32.5 percent), and conducting pre-trip safety inspections (32.5 percent). Only one agency (0.9 percent) identified conducting under-the-hood inspections as one of the three most important roles of a bus operator.

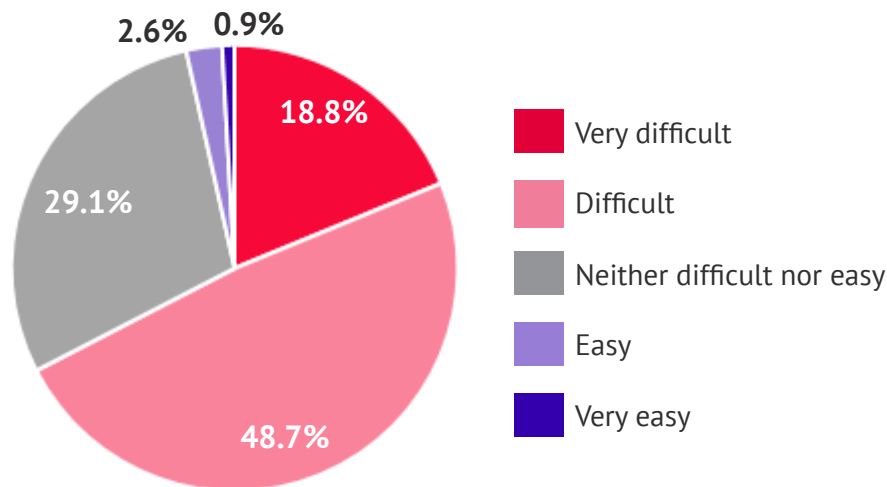
Figure 3: Top three most important roles of transit bus operators



Challenges Hiring Bus Operators

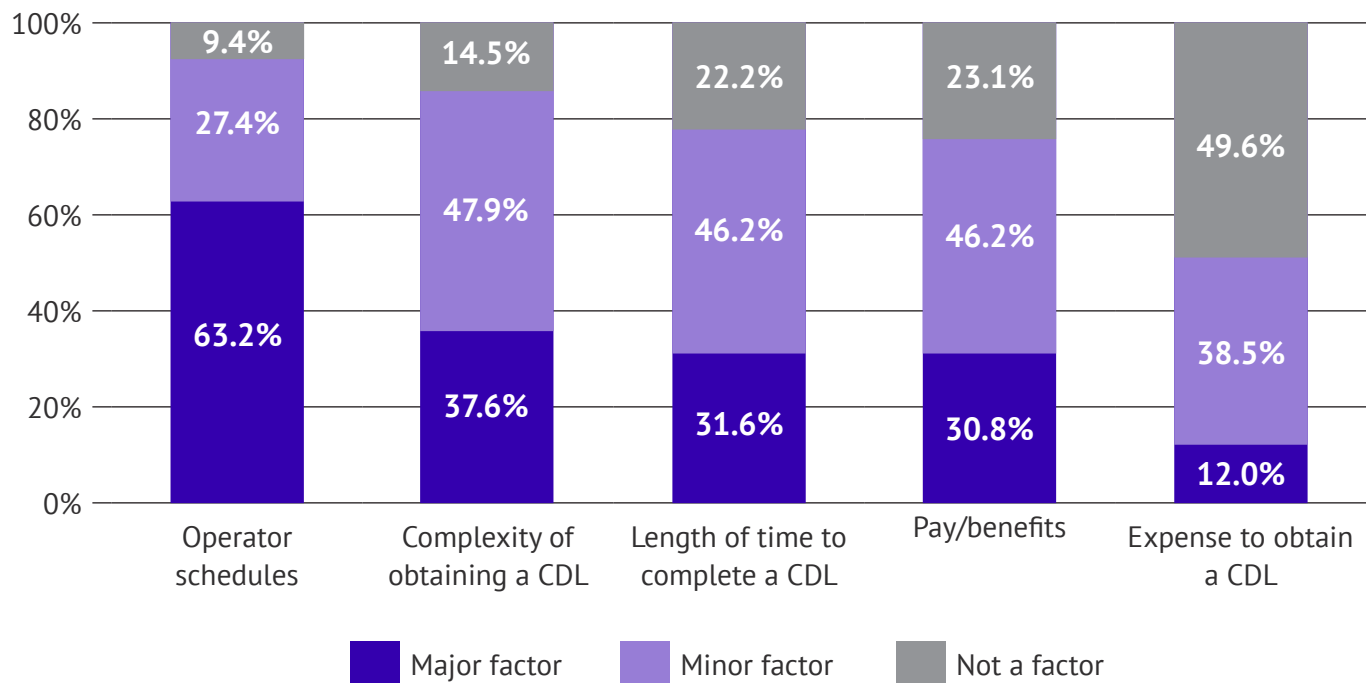
Agencies were asked to consider how challenging it is to hire bus operators. Overall, agencies reported that it is very challenging to hire bus operators. Two-thirds of agencies (67.5 percent) said it is either difficult or very difficult to hire operators. In contrast, only 3.5 percent of agencies said hiring operators is easy or very easy (Figure 4).

Figure 4: How challenging it is to hire bus operators



A variety of factors make it difficult to hire bus operators. These challenges include operator schedules (90.6 percent see this as a challenge to hiring), the complexity of obtaining a CDL (85.5 percent), the length of time to obtain a CDL (77.8 percent), and pay and benefits (77.0 percent). See [Figure 5](#).

Figure 5: Factors that make it a challenge to hire bus operators

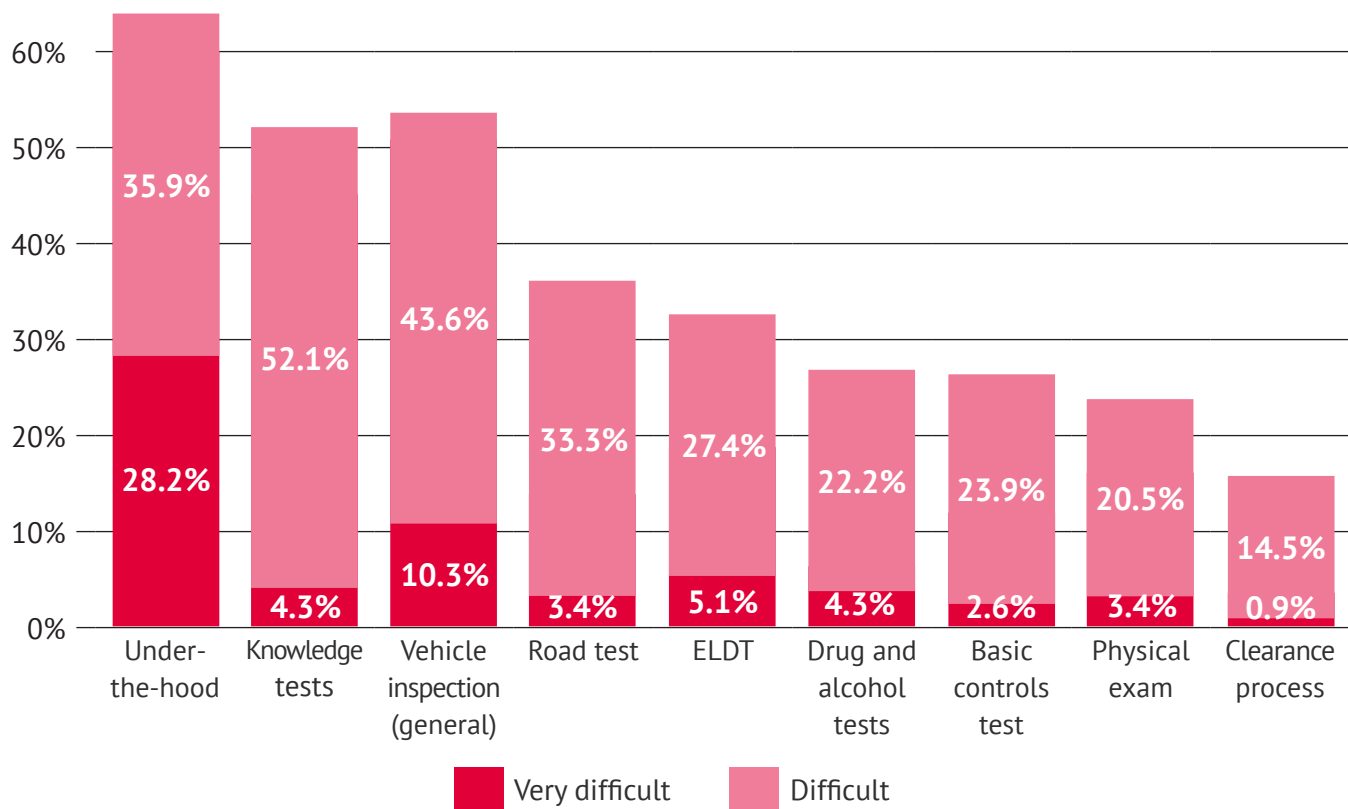


Challenging Aspects of Obtaining a CDL

Agencies were also asked to consider the most challenging aspects of obtaining a CDL. Agencies specifically identified the under-the-hood requirement as the most difficult aspect of this process. Under-the-hood was the only aspect of getting a CDL that was frequently noted as very difficult; more than one-quarter of all agencies (28.2 percent) identified the under-the-hood requirement as very difficult. In addition, vehicle inspection requirements in general (which include under-the-hood) were seen as very difficult by 1 in 10 agencies (10.3 percent). No other aspects of getting a CDL were rated as very difficult by more than 10 percent of agencies ([Figure 6](#)).

Under-the-hood was also rated as the most challenging aspect of getting a CDL when considering combined ratings of very difficult and difficult. Overall, nearly two-thirds of agencies (64.1 percent) said under-the-hood requirement is very difficult or difficult for operators seeking a CDL. Two additional requirements were noted as very difficult or difficult by most agencies: CDL knowledge tests to obtain a permit (56.4 percent) and vehicle inspection tests (53.9 percent), of which under-the-hood is a part, were rated as difficult by over one-half of all responding agencies. Many agencies also reported that road tests (36.7 percent) and entry-level driver training (32.5 percent) are difficult for CDL operator candidates. See [Figure 6](#) for more information.

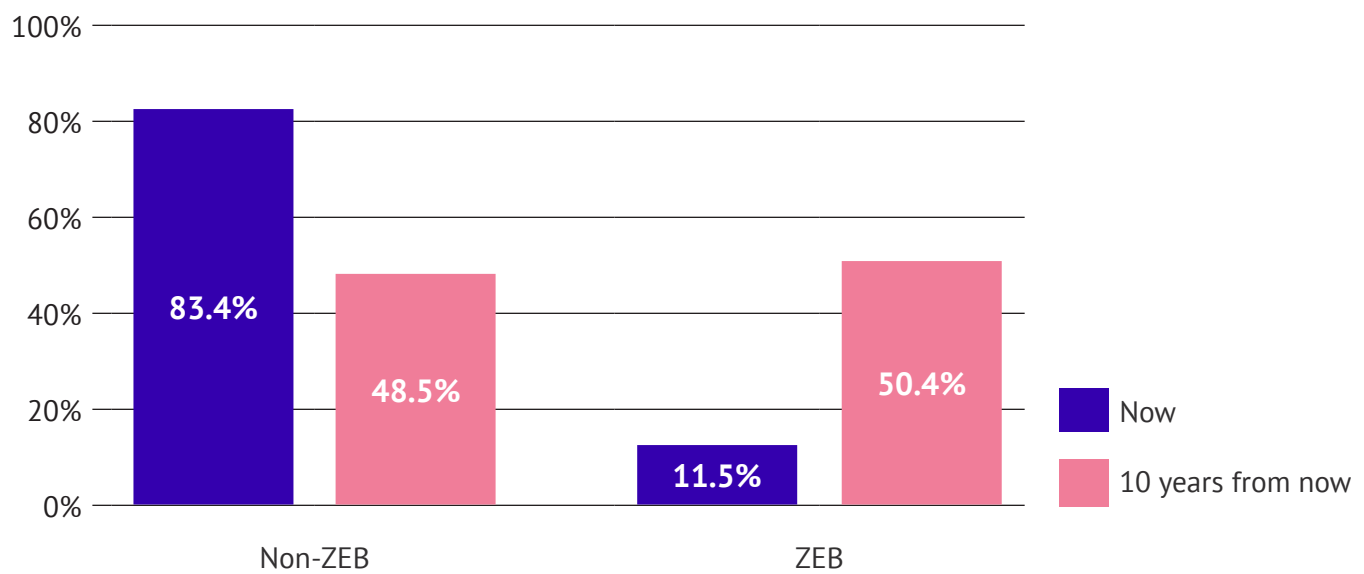
Figure 6: Public transit agency ratings of difficult aspects of obtaining a CDL



Agency Bus Fleet Composition and Bus Maintenance

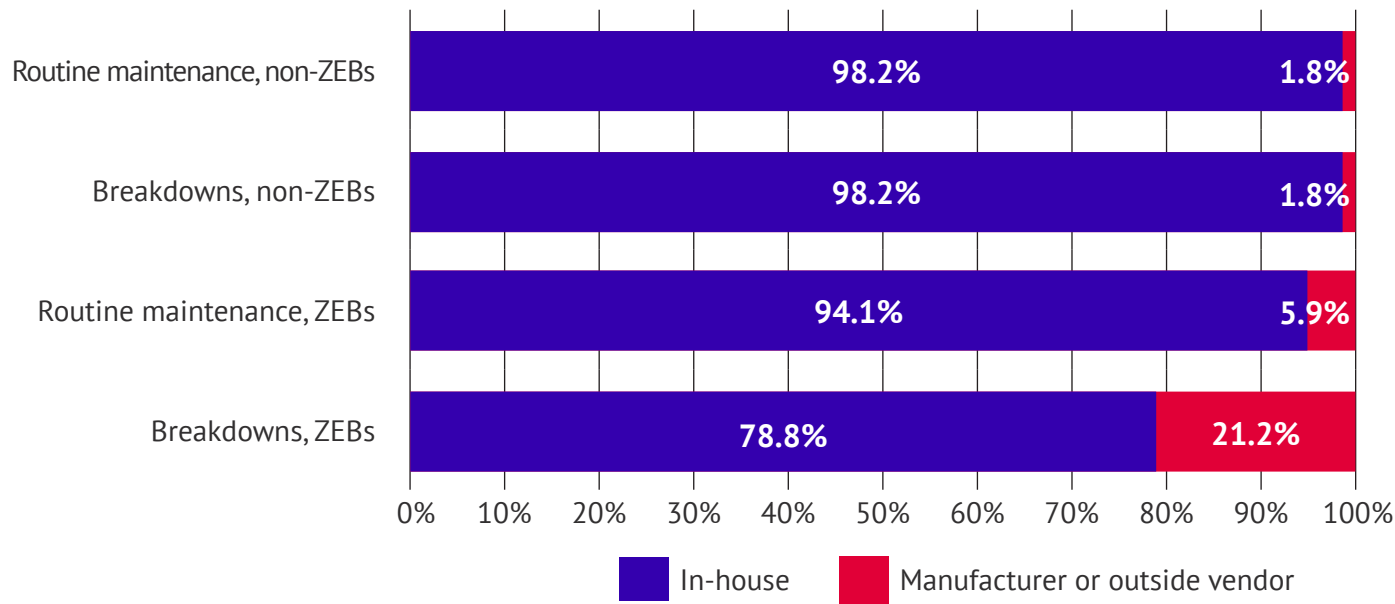
Agencies reported that the majority (83.4 percent) of their current buses are non-zero-emission buses such as diesel, compressed natural gas, liquefied natural gas, and propane buses. However, they expect that figure to drop significantly over the next 10 years to approximately 48.5 percent of their fleets. At the same time, the number of zero-emission buses (ZEBs) is expected to increase from 11.5 to 50.4 percent (Figure 7).

Figure 7: Expected U.S. transit agency bus fleet composition now and 10 years from now



As bus fleets transition to ZEBs, the way that agencies maintain and service vehicles will change as well. Currently, almost all routine maintenance (98.2 percent) and breakdown repairs (98.2 percent) of non-zero-emission buses are conducted in-house by transit agency staff. However, agencies reported that they are more likely to use manufacturers or outside vendors to conduct routine maintenance for ZEBs (5.9 percent), especially for breakdowns or repairs (21.2 percent). Therefore, more bus maintenance work will likely shift to manufacturers or outside vendors as bus fleets transition to ZEBs (Figure 8). Regardless, no agencies reported that operators are responsible for maintenance or repairs for any type of bus, as this is simply not a part of their role. As discussed previously (Figure 3), key operator roles are safe operation of the vehicle and providing excellent customer service; maintenance is a separate function at public transit agencies.

Figure 8: Maintenance and breakdown repair responsibilities by type of transit bus

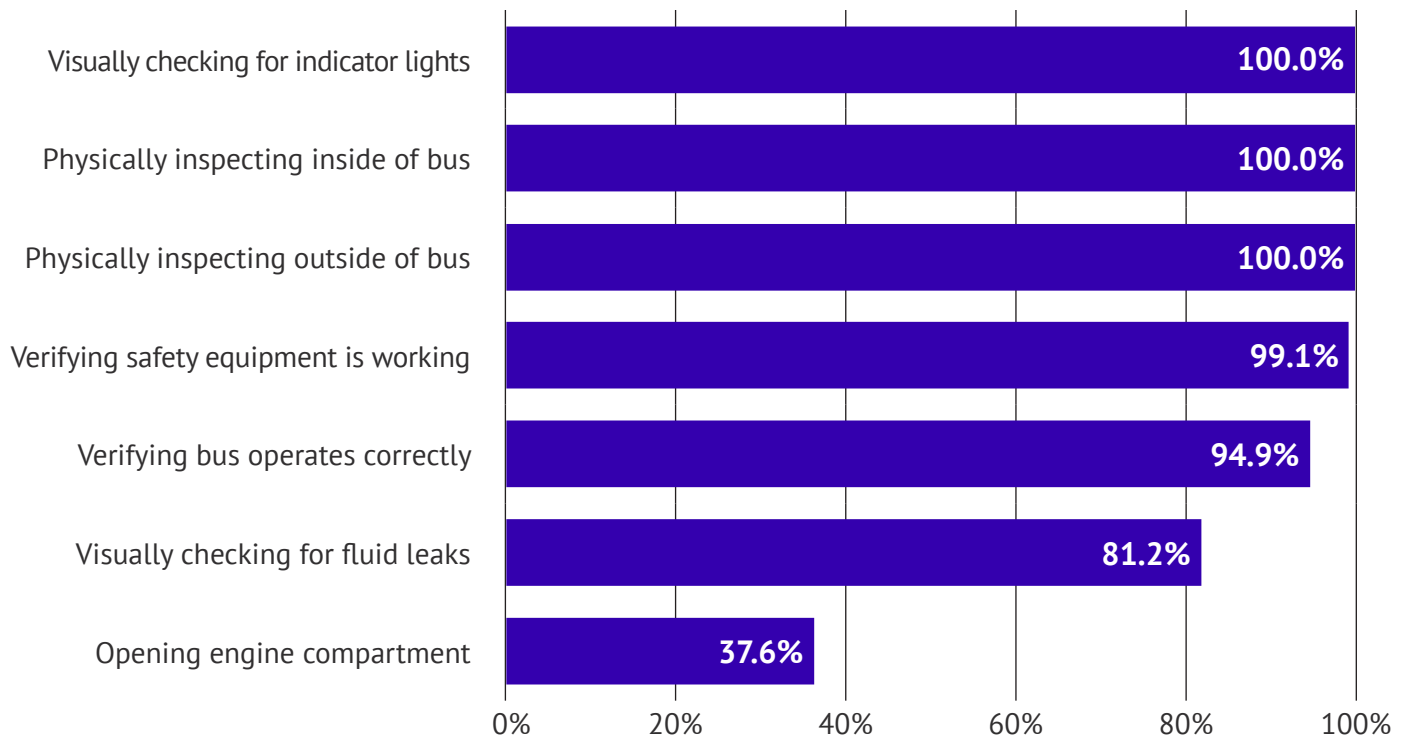


Note: Percentages are based on relevant vehicle types and exclude don't know/not applicable responses.

Operator Pre-Trip Safety Inspections

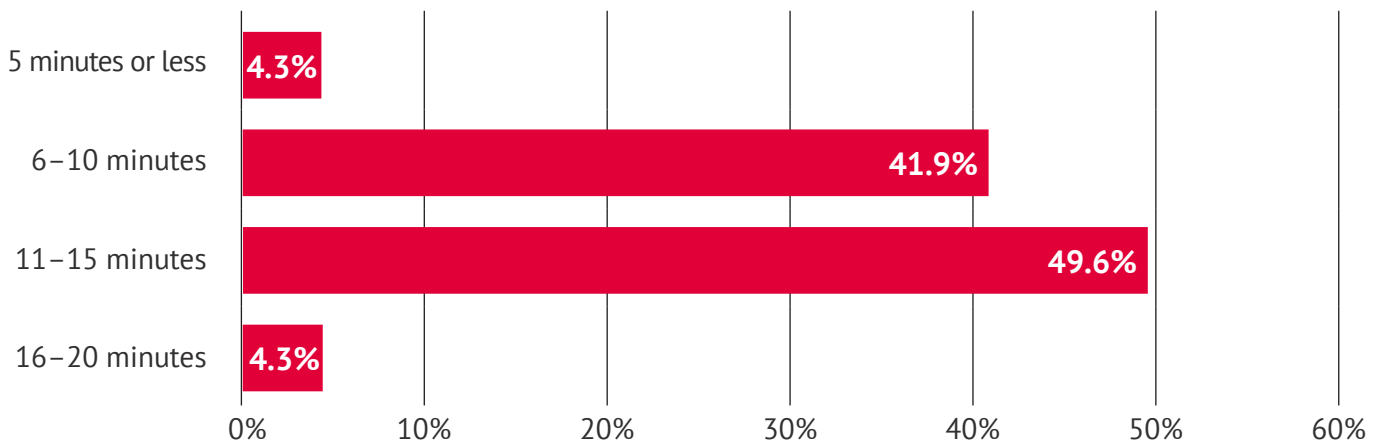
While maintenance staff—and to a lesser extent manufacturers and outside vendors—are responsible for routine maintenance and breakdown service for transit buses, bus operators play a key role in certain aspects of pre-trip safety inspections (see Figure 9). All transit agencies reported that operators are responsible for physically inspecting the inside and outside of the bus, as well as visually checking for indicator lights. In addition, almost all agencies said operators are also responsible for verifying that all safety equipment is functional (99.1 percent) and that the bus operates correctly (94.9 percent). Most operators also visually check for fluid leaks (81.2 percent). In contrast, fewer operators are responsible for opening the engine compartment (37.6 percent); this task is usually the responsibility of agency maintenance staff.

Figure 9: Pre-trip safety inspection tasks public transit bus operators are responsible for



This pre-trip operator inspection takes 12 minutes on average, with more than 90 percent of agencies reporting that the inspection takes between 6 and 15 minutes ([Figure 10](#)).

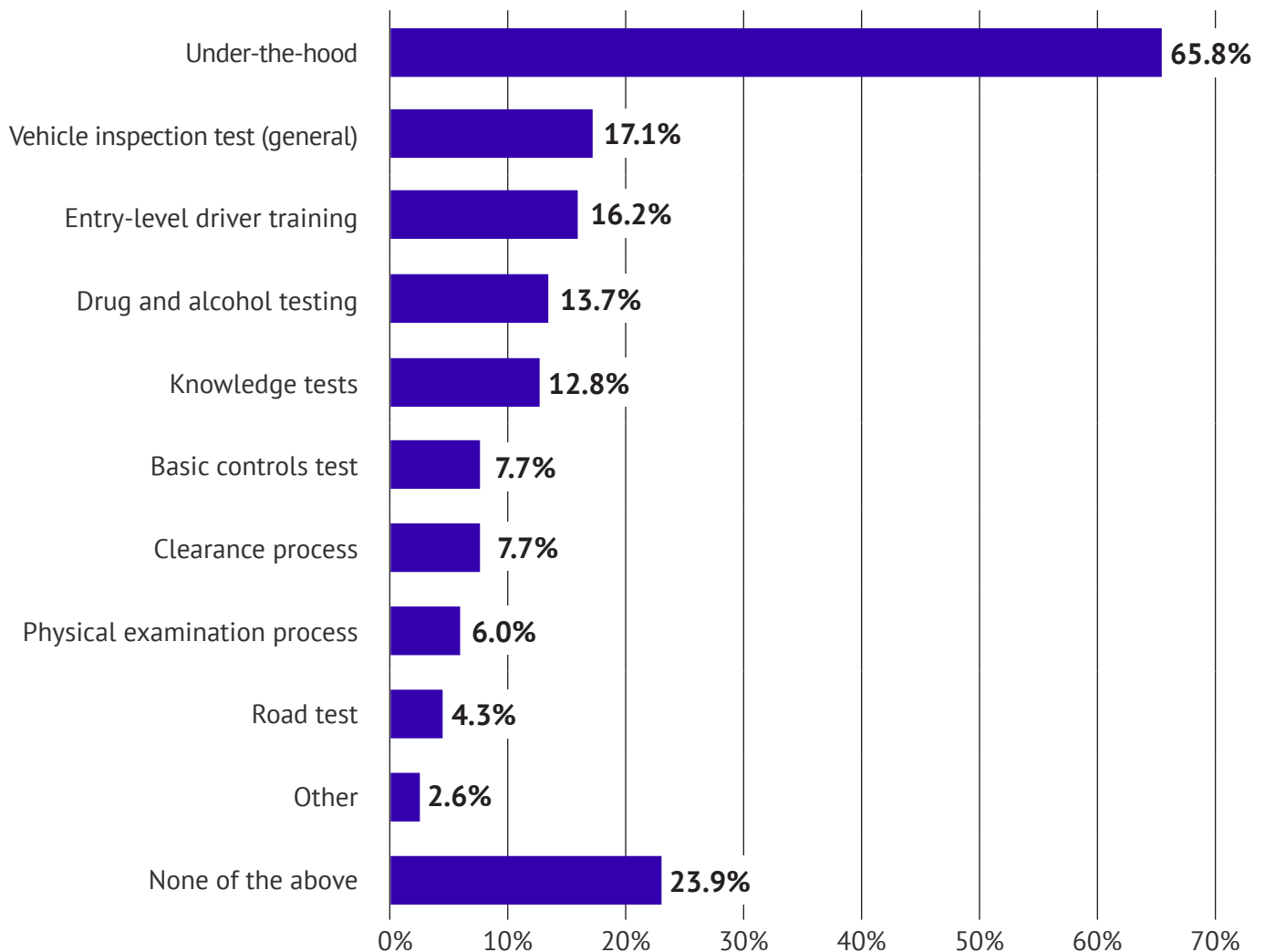
Figure 10: Typical length of time for bus operator pre-trip inspection



Support for Changes to CDL Requirements and Waiver for Under-the-Hood

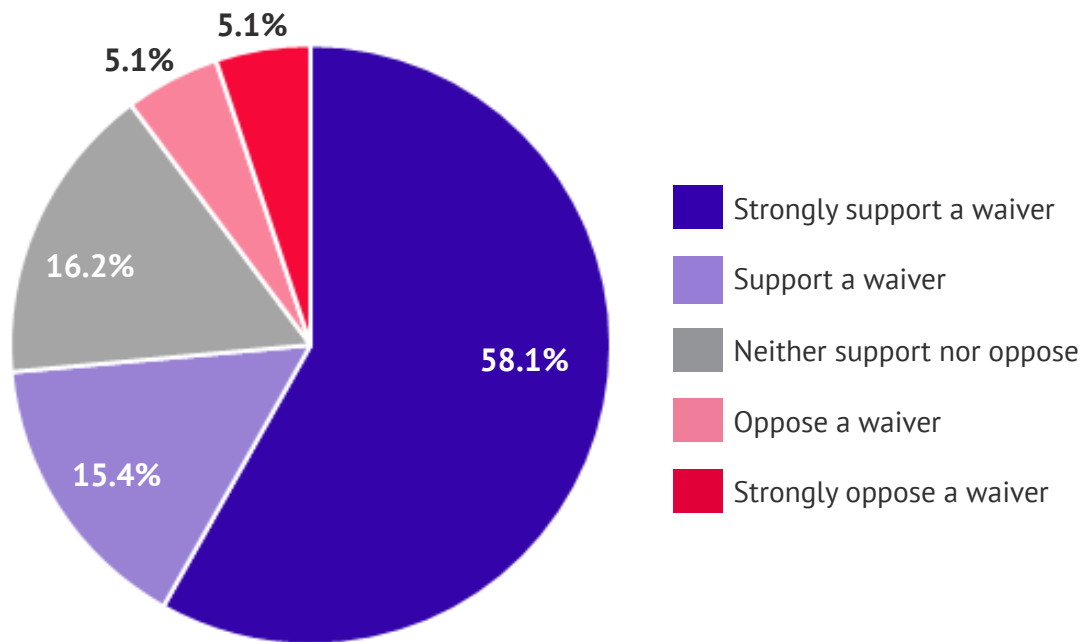
Transit agencies were asked whether FMCSA should consider changes to any CDL requirements to make it easier to hire operators. Most agencies (76.1 percent) identified at least one CDL requirement they would like to see changed. Most commonly, agencies would like to see changes to under-the-hood requirement (65.8 percent). In addition, there was some interest in altering additional CDL requirements, including vehicle inspections in general (17.1 percent), entry-level driver training (16.2 percent), drug and alcohol testing requirements (13.7 percent), and the permit knowledge test (12.8 percent) (Figure 11).

Figure 11: Aspects of FMCSA CDL requirements where transit agencies would support changes



Agencies were asked specifically if they would support a waiver of the under-the-hood requirement for transit bus operators, similar to what FMCSA recently granted for school bus operators. **Almost three-quarters of agencies (73.5 percent) expressed support for such a waiver, with 58.1 percent strongly supporting a waiver and 15.4 percent supporting a waiver.** One in 10 agencies were opposed to a waiver (Figure 12).

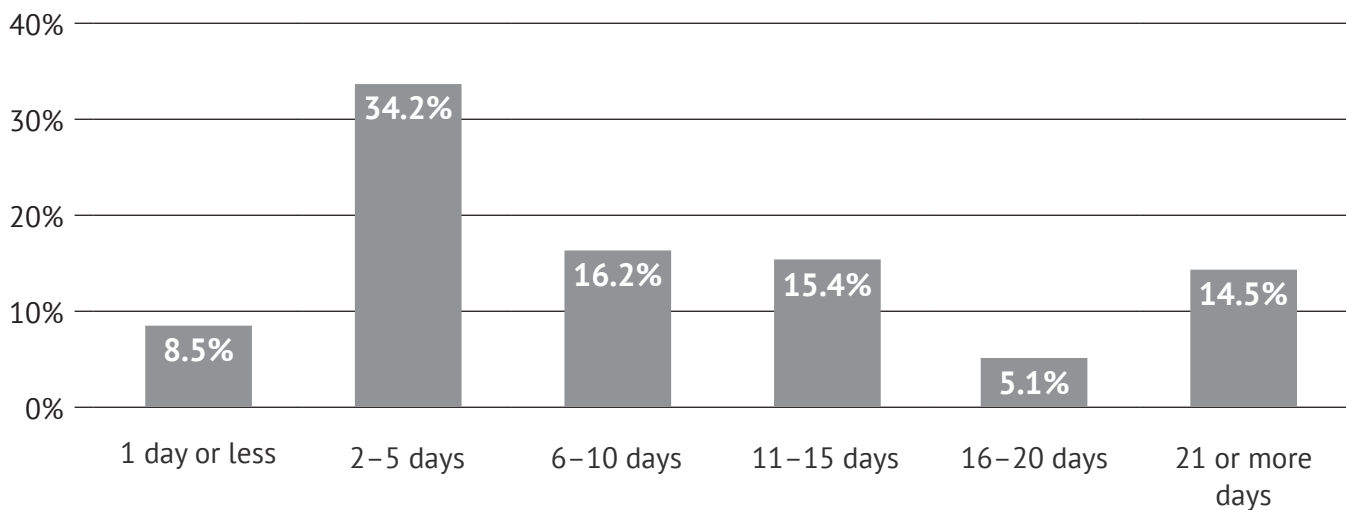
Figure 12: Support for a waiver of under-the-hood requirement for transit bus operators



Training Time, Relevance, and Impact of Under-the-Hood

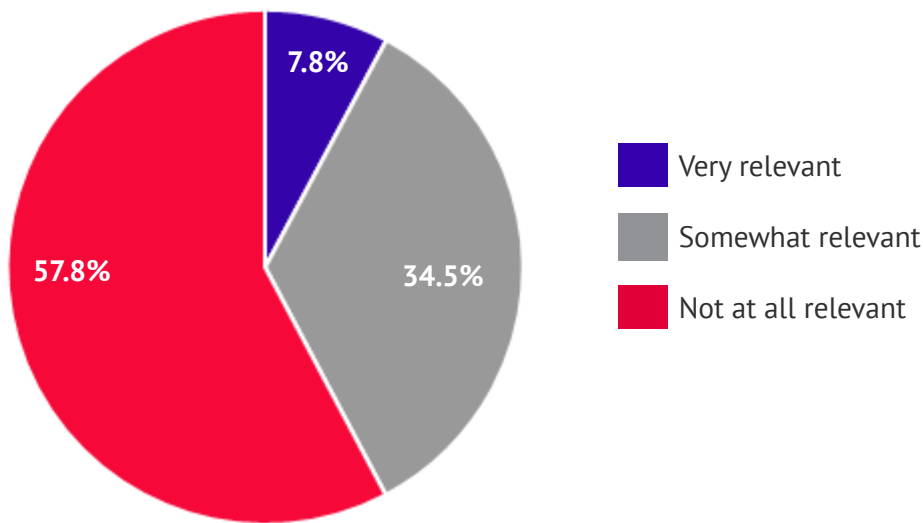
Agencies support a waiver of the under-the-hood requirement because they perceive this requirement as both time-intensive to master and not relevant. Agencies reported spending an average of 11.8 days training operator candidates to master the content necessary to pass the vehicle inspection portion of the CDL exam. The range was substantial, with 10 agencies saying they devote one day or less to this topic, while 17 agencies devote more than 21 days, including 2 agencies that spend up to 60 days on this training (Figure 13). Agencies reported a median of 7 days to train operators on the vehicle inspection test.

Figure 13: Days required to master content for vehicle inspection portion of the CDL test



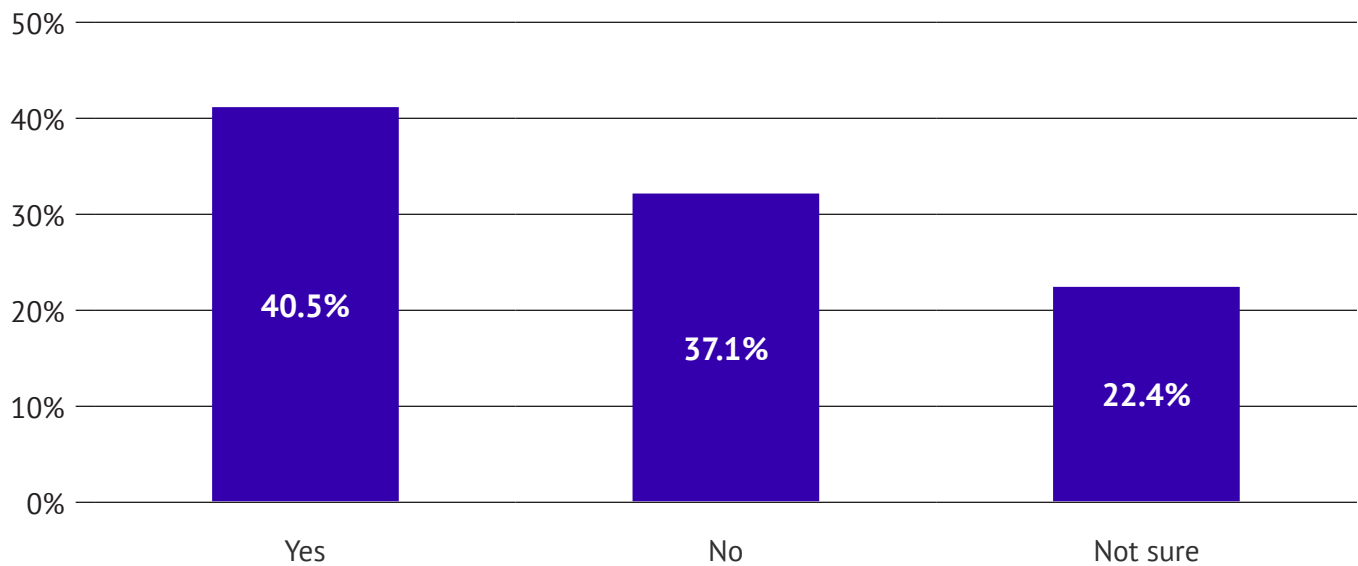
Despite the significant amount of time devoted to learning under-the-hood content, most agencies (57.8 percent) said the content is not at all relevant for their transit bus operators (**Figure 14**).

Figure 14: Relevance of under-the-hood content for transit bus operators



The under-the-hood requirement is also reported to have a negative impact on operator hiring. About 4 in 10 agencies said they have lost an operator candidate because of the under-the-hood requirement (**Figure 15**). In open-ended responses, 80.4 percent of agencies that have lost a candidate explained that the under-the-hood test was too difficult for candidates to pass.

Figure 15: Whether agencies have lost an operator candidate due to under-the-hood requirement





3. Transit Agency Qualitative Interview Findings

APTA asked a subset of member agencies who responded to its survey to take part in follow-up interviews to better understand the challenges associated with hiring operators, the impact of the under-the-hood requirement, and their support for or opposition to a waiver. A total of 28 agencies completed an interview, including representatives from 10 small agencies, 9 medium-sized agencies, and 9 large agencies. Agencies were intentionally recruited to reflect a diversity of opinions with respect to support for a waiver, with 6 agencies opposed to a waiver, 5 neutral, and 17 supporting a waiver. Interviews were conducted September 4 through September 27, 2024, and lasted 45 minutes. The guide used for the interviews appears as [Appendix B](#) to this report.

Interview findings help to contextualize survey results, and relevant survey findings are included in these results. Findings relate to the overall impacts of operator shortages, challenges related to CDL requirements in general and under-the-hood specifically, the relevance of the under-the-hood requirement for transit bus operators, and reasons to support or oppose a waiver.

Impacts of Operator Shortages

Agencies were asked to describe some of the impacts they are seeing from operator shortages, which almost all agencies (84.6 percent) are experiencing. Agencies reported a variety of impacts. Several noted that they have made reductions in services/routes or scaled back plans for expansion. Others said they are seeing more gaps in service, such as missed pull-outs or more buses out of service.

“We reduced our service to essentially our weekend service. ... We’re still at 70 percent [of desired routes], because we can’t add any more service.” —Medium-sized transit agency

“Right now, it’s mostly missed pull-outs, and that fluctuates wildly. It can be we miss zero one week and we miss 20 the next week.” —Large transit agency

Agencies also described having to rely more heavily on their existing operators to take on extra work to compensate for worker shortages. This approach increases overtime costs and contributes to operator burnout. One agency expressed concern that this overwork also decreases safety.

“We did have quite a bit of overtime hours last year to try and keep that service on the road.” —Small transit agency

“We were working our people constantly.” —Medium-sized transit agency

“You have other operators who will step up and do overtime, and they get fatigued. And as a result of that fatigue, it could be contributing to more accident rates.” —Medium-sized transit agency

Key Challenge Related to Hiring and Training: CDL Requirements

When asked where in the hiring process they lose the most applicants and/or what the most challenging part of hiring operators is, about two-thirds of agencies mentioned aspects of the CDL. They said operators can be intimidated by the amount of information they have to learn, and that some find the test stressful. Getting a CDL also requires significant study, which agencies said can be off-putting to candidates.

“When a newbie starts to just quickly flip through the chapters that they have to learn ... looking at mechanical diagrams of archaic steering systems that don’t even apply anymore, I think people kind of go, ‘This is going to take some work.’” —Small transit agency

“They are coming to the job expecting to just drive a bus and not necessarily to go to school again. ... They’re not really prepared for that.” —Medium-sized transit agency

Transit agencies noted that while most operators ultimately are able to obtain a CDL, a significant number of candidates need to take at least part of the exam multiple times, and some cannot pass it. Agencies reported varying pass rates, with some saying their initial pass rate can be as low as 70 percent.

“We do have operator candidates who just can’t pass either the pre-trip part of the CDL exam, or they lose too many points on the drive. ... They get a few more days of time with an instructor, and then they take it again. If they fail a second time, then nine times out of ten they say, ‘Yeah, this is not for me,’ and we part ways.” —Small transit agency

“You might invest all this time into them, and it ends up they can’t pass a test, or they can’t pass something. And so you just wasted some of those resources.” —Medium-sized transit agency

Challenges Remain Despite Modernized CDL

FMCSA approved a new, [modernized version of the CDL skills exam](#) in 2022. The new modernized exam focuses the vehicle inspection on critical safety items and allows operators to use a checklist to aid in the pre-trip exam. Many States have recently adopted these new requirements or are in the process of adopting them.

Agencies in States where these changes have been implemented said it has helped the process, although CDL testing still remains a challenge.

One challenge to getting a CDL is the amount of studying required, including independent study, which can be a barrier for some candidates. Agencies said candidates with lower literacy levels or for whom English is not their native language can also find the test harder. All agencies support candidates through at least one retake opportunity, which increases their overall training costs and the length of training. Some agencies expressed frustration at the significant level of resources they invest to help candidates pass the CDL, especially given the common perception that not all the skills required to pass are necessary for transit operators to have.

“It’s very challenging. A lot of frustration, a lot of anxiety. We’ve had people break down and cry. They want the job, they need the job, they want to provide for their family. But it is so stressful.” —Large transit agency

“It’s a lot of reading. Some people have challenges with language as well.” —Medium-sized transit agency

“It seems like maybe not the best tool to determine who might be a good transit operator, just because it is so reliant on memorization.” —Small transit agency

Passing the CDL exam is the first focus of most bus operator training programs, but it’s only part of the process. All agencies require additional training after completing the CDL. This training lasts anywhere from 3 to 10 weeks, and during this time, agencies train operators on specific protocols, customer service, and service routes, as well as providing additional driver training.

“We have a lot of applicants that have limited English proficiency. They speak and understand English, but when you relate that to a computer test, that completely changes how quickly they can understand the language enough to come up with the right answer.”

MEDIUM-SIZED TRANSIT AGENCY

Challenges Related to Under-the-Hood

In APTA’s survey, 64.1 percent of agencies described the under-the-hood component of the CDL as either very difficult or difficult for operators. During the interviews, agencies were asked to describe some of these challenges. One of the challenges they described is that operators can be overwhelmed by the information. Agencies also said some candidates find the under-the-hood portion of the test to be scary or intimidating.

*“Everyone [initially] thinks... ‘Well, I’m not a mechanic. I don’t even know the first thing about this.’ ”
—Medium-sized transit agency*

Not All Agencies See Under-the-Hood as a Challenge

In APTA’s survey, 24.8 percent of agencies said the under-the-hood testing components are neither easy nor difficult for operators to learn, and 6.8 percent said they are easy. Agencies that expressed this viewpoint focused on their high overall pass rates, yet some acknowledged that operators can find this information intimidating. In these agencies’ experience, with enough training and support, under-the-hood does not keep candidates from becoming operators.

“Most of our candidates that do not have a CDL are terrified, just standing at the back of a 40-foot transit coach. It’s terrifying because they’ve never been up close, let alone driven a vehicle that large. They’ve never seen an engine that big. ... It’s just intimidating, especially when they know that ‘If I don’t pass this, I don’t get this job.’ ”
—Small transit agency

“A lot of people coming to driving a bus have no mechanical experience, and they’re learning pretty technical concepts with being able to identify and describe the function of what those mechanical parts do.... I think it scares them away.”

MEDIUM-SIZED TRANSIT AGENCY

Agencies said under-the-hood is particularly challenging for individuals who are not mechanically inclined or for those who struggle with memorization. Some agencies also noted that testing operators on their memorization is not consistent with how pre-trip inspections are conducted on the job, because operators typically have access to a checklist to complete required inspections.

“I would say that older operators who don’t have a CDL and are starting from scratch struggle a bit more. ... It’s memorization, and you’ve got to take into consideration education level and reading comprehension. ... It’s not an easy process.” —Medium-sized transit agency

“Those are the parts that people just struggle so hard to know, because it’s not intuitive.” —Small transit agency

Preparing candidates to pass under-the-hood adds cost and time to training programs, which some agencies believe is not necessary. Large agencies were particularly concerned about this and were more attuned to the high dollar investment they make into this portion of operator training.

“A lot of studying, a lot of training goes into it. And the impact to the transit authority is millions of dollars every year, and it’s additional training for folks that will never be able to do that, because a) they don’t have the skill set to do that, and b) contractually, under our bargaining contracts with our unions, bus operators are not allowed to perform that duty.” —Large transit agency

“Spending the time teaching them that versus focusing on the things they would need is a hardship. Having them retain that information, and having to repeat that information for the CDL, is challenging. We get through it because that’s just what we do in transit.” —Large transit agency

“We have to spend extra time coaching on these and training on these ... under-the-hood aspects, getting them to remember that, because we don’t ordinarily allow them to open a hood.” —Large transit agency

In the survey, 40.5 percent of transit agencies said they had operator candidates who were not able to pass the under-the-hood portion of the CDL exam. In addition to candidates not being able to pass, agencies also described that under-the-hood contributes to numerous retakes, with some operators needing two or three attempts to pass. This extends training time and also increases costs.

“We lose some students during that process that are just unsuccessful with passing the CDL. And it’s mostly related to the technical under-the-hood process.” —Large transit agency

“I would say that there are some people that have gotten extremely nervous about that section because it’s just more difficult. And it’s something they’re not used to.” —Medium-sized transit agency

“They just couldn’t pass the test. They had had all three attempts. We went in to do an individualized retraining with them, and they just could not get it.” —Large transit agency

Training Approach and Testing Process for Under-the-Hood

Agencies said the initial portion of their operator training is devoted to passing the CDL, including the under-the-hood components. Thirteen agencies provided materials to demonstrate how they train operators for under-the-hood. These materials show how under-the-hood components are taught as part of the larger vehicle inspection/pre-trip component of the CDL. Materials ranged from overall lists of what needs to be inspected to verbatim wording suggestions for how to describe these components. Several agencies included diagrams or pictures of these components.

Many agencies described a multifaceted approach to teaching the under-the-hood content, in which they teach the materials and then work with candidates individually or in small groups. Most teach the information repeatedly over a series of days and give operators multiple times to practice.

“They train every day. They’re given anywhere between 30 minutes to an hour.” —Large transit agency

*“We do have flash cards. ... We can do practice walkarounds, practice tests, those kinds of things as well.”
—Large transit agency*

“We just keep doing it over and over and over. It’s the worst part. It’s the most tedious part of it.” —Small transit agency

Another complicating factor is the strictness of the examiners administering the under-the-hood portion of the CDL. Many agencies are third-party testers, so they can administer their own CDL exams. However, others reported that their candidates are tested by outside agencies, usually a department of motor vehicles. Testing by outside agencies results in more challenging logistics, and it also introduces variation across examiners in what is acceptable to pass the CDL test. Some agencies expressed frustration at what they see as the arbitrary nature of this process.

“[Candidates] get failed because they didn’t say one thing exactly the right way. ... We’ve put in a lot of effort and a lot of training, and we don’t just take people off the street up there [to test]. They’ve learned a lot of things here, and they should be able to pass that test.” —Small transit agency

“You have examiners that are like, ‘Okay, I understand what you’re saying.’ Then you have other ones that are, ‘That is not what the book says. If you don’t tell me what the book says, I’m going to fail you.’”

SMALL TRANSIT AGENCY

Relevance of Under-the-Hood

In APTA’s survey, most agencies (57.8 percent) said under-the-hood content is not at all relevant for operators, and 34.5 percent found it only somewhat relevant. In the interviews, agencies described why they believe this content has limited to no relevance.

Many agencies emphasized that under-the-hood is not a key component of the bus operator job. In fact, several said they openly tell candidates during training that the content is not relevant, and that operators will never use the information again after they pass their CDL. Many agencies do not think the under-the-hood test is a good way to gauge whether an operator will be successful once employed.

“It plays absolutely no part at all in what the operator job description requires them to do, and that’s provide safe service to the public.” —Large transit agency

Electric Buses Will Make Under-the-Hood Less Relevant

Almost all interviewed agencies agreed that under-the-hood components are becoming even less relevant as fleets transition to zero-emission buses. Agencies noted that the components of electrified engines are very different, with fewer moving parts, so there is not a lot an operator could observe under the hood. “They’re completely different mechanically,” a large agency respondent said. “There’s no emissions. There’s no looking under the hood. There’s not going to be oil leaking and things like that. You’re not going to be looking for puddles under the bus. ... It’s a different technology.”

Additionally, because of the safety concerns around high-voltage components, many believe operators should not have access to electrified engine components. “I don’t think any of us at any agency would want our operators down there messing with that electric current on some of these vehicles,” one respondent from a large agency said. “I mean, we’re talking 750,000 volts.”

A medium-sized transit agency representative added: “Most of those electronic compartments are locked and have an alarm on them because they don’t want the operator to go in there.”

One respondent said their State testing agency will not even allow operators to open the engine compartment of these buses during CDL testing.

“You have to go through a certain set of exercises to get your CDL. But then once you’re in the job, you don’t have to do all of that extra stuff.” —Small transit agency

“Our instructors also let them know that most of this stuff is taught just strictly for the test.” —Large transit agency

“It’s rote memorization. We give them a script that says, ‘Point at this and say this,’ and then, ‘Point at this, say this, touch this, and say this.’ And so all they’re really doing is learning that script. If you ask someone three months later, ‘What’s a slack adjuster?’ that same glazed look is going to come over their face. They won’t remember it, because they don’t need to.” —Small transit agency

All agencies interviewed have separate departments that are responsible for the day-to-day maintenance of the buses, and these maintenance departments also have primary responsibility during a breakdown. Most agencies said their operators have a limited role related to the mechanical operation of the bus.

“If the bus is disabled, they don’t have to go under the hood to try to do any sort of troubleshooting it. That’s not their job. That’s not their function.” —Large transit agency

“We have a full maintenance facility with over 50 technicians that take care of the maintenance, so there’s no need for them to understand or even go under the hood.” —Large transit agency

Several agencies agreed that there is a baseline level of knowledge that operators should have about the mechanical functions of the bus, and they would teach this information even if the under-the-hood requirement was eliminated. This knowledge includes a high-level understanding of how a bus works, and identifying different fluids that could be leaking from a bus. Some agencies also mentioned that it is helpful for operators to be able to identify when hoses or belts are cracked, or to know how to manually turn off the engine. However, they drew a distinction between the

modest value of this general mechanical knowledge and their view that the detailed information required to pass under-the-hood is of low to no value.

“They need to understand how things work to a point, but... they’re going to say, ‘Hey, I’ve got this color fluid leaking,’ and that’s about the extent of it.” —Medium-sized transit agency

“They would need a general understanding of the bus, how it works, and what some of the issues could be.” —Small transit agency

A few transit agencies in the survey (7.8 percent) said the under-the-hood content is very relevant. Agencies who see this requirement as relevant offered a variety of reasons, including that redundancy is helpful when identifying mechanical issues, that operators can do a better job assisting the maintenance department if they know this information, and that CDL holders should be held to a high standard in general.

“It’s always helpful to have a second pair of eyes on certain things.” —Large transit agency

“They’re getting a license for a commercial vehicle. ... I think it’s good rounded knowledge for them to have the basic understanding of what’s going on in certain systems of the vehicle.” —Small transit agency

Additional Benefit of a Waiver

A few agencies noted one additional benefit of an under-the-hood waiver: Operators who obtain a CDL under a waiver provision would not be able to transition to driving an over-the-road vehicle without completing additional CDL training.

Many respondents noted that their agencies invest in operators and pay for their training, only to have some of these operators subsequently leave transit to work elsewhere. Agencies said one benefit of a waiver is that it may help keep operators employed in transit, as their CDLs would not be easily transferable.

Day-to-Day Requirements: Pre-Trip Inspections and Breakdowns



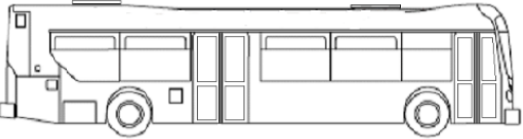
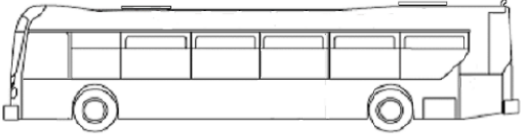
Agencies were asked to describe the role of the operator after they finished training with respect to both pre-trip inspections and breakdowns. In particular, they were asked whether the operator would ever have any responsibility for opening the engine compartment.

Operator pre-trip inspections include interior and exterior visual inspections, checking to be sure safety items are present, and verifying that lights and signals work, among other items. All agencies said operators use a checklist or other list of requirements to complete these tasks, and 13 agencies shared a copy of their checklist for this research. Those agency checklists contained 71 items on average (ranging from 15 to 153 items). Most of these items do not relate to the engine compartment. Each of the checklists included checking for fluid leaks: the majority of checklists required operators to visually check under the vehicle for leaks but not to open the engine compartment.

According to APTA’s survey, operators engage in detailed pre-trip vehicle safety inspections, but these inspections typically do not have operators open the engine compartment. Agencies said this is not required because the maintenance department conducts these under-the-hood inspections, while operators are focused on other tasks.

“Operators’ responsibility is greatly reduced because of maintenance staff. And we have a contract with the union, so they’re limited on what they can actually do. But their job is basically to do more of a walkaround.” —Medium-sized transit agency

“The normal walkaround is checking for your safety lights, checking your headlights, your taillights, your tires, and your wear indicators. You’re also going to be checking your glass, your windshield wipers. And then interior of the vehicle, you still want to go through and do a check of all the safety gear inside.” —Large transit agency

Full Circle Check (Required before Leaving UMTS)			
Lights Check: <input type="checkbox"/> Clearance/Headlights/Signals <input type="checkbox"/> Entry/Step <input type="checkbox"/> Tail/Reverse <input type="checkbox"/> License Plate Exterior Check: <input type="checkbox"/> Bike Rack/Front <input type="checkbox"/> Windshield/Wipers		<input type="checkbox"/> Inspection Sticker <input type="checkbox"/> Destination Signs <input type="checkbox"/> Mirrors/Glass <input type="checkbox"/> Body Damage <input type="checkbox"/> Tires/Tread/Inflation/Stems/Lugs <input type="checkbox"/> Fuel Cap <input type="checkbox"/> Panels/Bumper	
<input type="checkbox"/> Engine Leaks Interior Check: <input type="checkbox"/> Interior/Step Lights <input type="checkbox"/> Chimes/Seats/Graffiti <input type="checkbox"/> WC Seats/Restraints <input type="checkbox"/> Trash Bags/Puke Powder/Tape <input type="checkbox"/> Spit Guard		Drivers Compartment: <input type="checkbox"/> Safety Equipment <input type="checkbox"/> Washers/Wipers <input type="checkbox"/> WC Ramp/Doors <input type="checkbox"/> 4-Ways, Turn Signals, High Beams <input type="checkbox"/> Warning Lights <input type="checkbox"/> Camera System <input type="checkbox"/> Avail/3-Way	
WC Ramp	Avail Radio	3Way	MDT
<input type="checkbox"/> Functional <input type="checkbox"/> Manual <input type="checkbox"/> INOP	<input type="checkbox"/> Clear <input type="checkbox"/> Static <input type="checkbox"/> INOP	<input type="checkbox"/> Clear <input type="checkbox"/> Static <input type="checkbox"/> INOP	OK INOP Announcements <input type="checkbox"/> <input type="checkbox"/> APC <input type="checkbox"/> <input type="checkbox"/> Schedule <input type="checkbox"/> <input type="checkbox"/>
Shift <u> </u> - <u> </u> Initials <u> </u>			
 Front		 Back	
 Right			
 Left			

Date: <u> </u>		Vehicle # <u> </u>		
Pre-Start Checklist				
At-Garage Start:		On-Route Start:		
<input type="checkbox"/> Chock Block <input type="checkbox"/> Engine Start <input type="checkbox"/> Full Tank of Air <input type="checkbox"/> Rec. Start Mileage	<input type="checkbox"/> Adjust Mirrors <input type="checkbox"/> Pull-Out (to curb) <input type="checkbox"/> Full Circle Check <input type="checkbox"/> Reset PAX Count	<input type="checkbox"/> Detours, defects, surveys. <input type="checkbox"/> Log Over or Log into Avail next timecheck <input type="checkbox"/> Adjust Mirrors	<input type="checkbox"/> Reset PAX Count; record if necessary <input type="checkbox"/> 10-5 for 10-15 <input type="checkbox"/> Circle check @ next time-check.	
Report any safety defects or new body damage to the RO <u>IMMEDIATELY</u> . Other defects should be recorded on this sheet.				
Unit	Driver	Start Mileage	End Mileage	PAX Count
AM				
[AM2]				
MID				
PM1				
[PM2]				
EVE				
End-of-Shift Check: <input type="checkbox"/> End Mileage <input type="checkbox"/> Reset PAX Counter <input type="checkbox"/> Info Handoff <input type="checkbox"/> Passenger Count <input type="checkbox"/> Disinfect Driver's Compt. <input type="checkbox"/> Extra Time? Call RO.				
Notes: 				
WHERE IS YOUR CHOCK BLOCK?!!?				

UMass Transit Services operator pre-trip checklist

For the agencies where the operators open the engine compartment as a part of the pre-trip inspection, agencies said operators are mainly looking for cracked or broken belts or hoses, checking fluid levels, and looking for leaks. In the interviews, one agency said only operators at “outside domiciles” conduct these under-the-hood tasks.

APTA’s survey did not specifically ask whether operators open the engine compartment during a breakdown, but agencies addressed that issue during the interviews. Many agencies said operators would not open the engine compartment during a breakdown. **These agencies cited safety concerns related to operators being exposed to hazards such as electrical components, high temperatures, or leaking fluids.** One agency said operators do not even carry the key to open the engine compartment.

“Things are hot, and people need to not touch things when the engines have just been running.” —Small transit agency

“We’ve had some operators who would open [the engine compartment] and there’s been oil leaks and sprays or something.” —Medium-sized transit agency

“A lot of that stuff is now sealed in that rear compartment where the engine sits. So that’s another reason why we tell the operators to kind of stay out of that area, because there’s too many situations where you can end up with electrocution or their fingers going somewhere they shouldn’t be.” —Large transit agency

Agencies that reported that their operators would open the engine compartment during a breakdown noted that it would be a signal to others that the bus was broken down, or to visually inspect for leaks, smoke, or other immediate hazards. No agencies said operators would initiate repairs in a breakdown situation.

“We do require, if you’re going to be pulled off on the side of the road, normally, to lift that rear hood, set your triangles, so that all vehicles know that you’re actually broken down. ... Other than that, the only time I know of an operator lifting the rear hood will be if there is some kind of report of fire or smoke or something.” —Large transit agency

Support for a Waiver of Under-the-Hood Requirement

In APTA’s survey, 73.5 percent of agencies expressed support for a waiver of the under-the-hood requirement. When asked to describe why they supported a waiver, they focused on several key themes. These themes include that the under-the-hood requirement is not relevant to the day-to-day job of an operator, that agencies employ trained mechanics to handle engine inspection and maintenance functions, and that training time and resources could be better spent elsewhere.

Because under-the-hood requirement is not relevant to the day-to-day job of a bus operator at many agencies, interview respondents said operators learn this information merely to pass the CDL exam. Some said under-the-hood is a memorization exercise that is not relevant to whether candidates will be able to successfully perform as operators.

“All it’s doing is these people are learning just to pass the test. There’s not a lot of value in the effort that they’re putting forth to try to learn this stuff. ... And, look, let’s be honest, these people are paid to drive the bus, not service the bus.” —Medium-sized transit agency

“I think a successful CDL exam should analyze if the candidate is fit to perform the work that they’ll be assigned. And a problem with the current script is that they are memorizing and learning how to perform pre-trip duties that aren’t necessarily in line with the work that they’ll be doing.” —Small transit agency

“I want them to focus more on the driving aspect and the safety of the driving...versus the engine aspect of it.”

SMALL TRANSIT AGENCY

Transit agencies also supported a waiver because they hire mechanics specifically to perform these under-the-hood pre-trip inspections. Maintenance is a separate skill set and job classification. Some agencies also have union rules that prohibit operators from conducting maintenance tasks.

“We have entire job classifications that do that work for the operator.” —Small transit agency

“Our rule of thumb is if there’s a bus on the road, there’s a mechanic in the facility that could support that during any hours of operation.” —Medium-sized transit agency

“We have mechanics on our premises and working for us and on our staff, so they can handle that portion of the vehicle.” —Small transit agency

Other agencies support a waiver because they feel resources spent training on under-the-hood are poorly spent, and because dropping this requirement could make training faster and more efficient.

“The objective of a transportation authority is to provide good customer—safe, reliable service. And what [under-the-hood] does is it impacts and delays that process. And then, of course, it costs the agency millions of additional dollars just to be able to qualify these folks to do that.” —Large transit agency

“Any one or two days that I can recover and put back into my training program is always beneficial to me.” — Large transit agency

“The time that we’re spending on this we could use to better prepare our operators for the work that they will be responsible for.” —Large transit agency

Concerns of Agencies That Are Neutral About or Oppose a Waiver

In APTA’s survey, 1 in 10 agencies were opposed to a waiver of the under-the-hood requirement, and some were neutral (16.2 percent). Some agencies described their reasons for opposition or neutrality as related to conceptual concerns about lowering the standard for obtaining a CDL. Some agencies also believed that there would be no benefit to a waiver, as they have not experienced operators struggling with the under-the-hood requirement, nor do they see the requirement as creating a training burden.

“To me, it’s so important to just have the opportunity to take a look to see if that will make a difference for you. You’re physically touching, smelling, looking to see if you can identify any potential hazards.” —Small transit agency

“If someone cannot master that skill set, they shouldn’t get a CDL. I definitely think there are things that we can do to help make things a little easier, try to facilitate things better. But I don’t think I want to get into a space where we’re removing those requirements.” —Medium-sized transit agency

Other Suggested Changes to CDL Requirements

Agencies indicated that an exemption from the under-the-hood requirement is the primary change they would like to see APTA advocate for related to current CDL requirements. However, a few transit agencies offered the following additional suggestions that they believe would make it easier to hire transit bus operators:

- **Consider waiving additional components.** In addition to under-the-hood content, agencies said other portions of the CDL vehicle inspection are not relevant for transit bus operators. These include other mechanical aspects such as steering components and suspension systems. Agencies said operators will also not be required to use this knowledge after they complete their CDL testing requirements.
- **Make it easier to add endorsements to a CDL.** Several agencies noted that adding a “P” endorsement to a CDL license requires an operator to complete all the CDL requirements again. One noted that these operators “might as well be starting from scratch.”
- **Create a specific CDL license for transit bus operators.** Some agencies suggested creating a separate category of CDL license for transit bus operators. They noted that the skills for these operators are unique vs. over-the-road drivers, and testing and training requirements should reflect these differences. Another advantage of this approach would be to prevent operators from earning their CDLs at the expense of transit agencies and then leaving to become over-the-road drivers.
- **Develop standards to test for marijuana impairment.** As more States have legalized marijuana, agencies said they are seeing operator candidates who desire to use marijuana recreationally. However, current testing requirements prohibit this kind of recreational use, as the tests detect marijuana use within a longer time frame (e.g., 30 days). These respondents noted that alcohol tests detect only current impairment, and they would like to see a similar model for marijuana.



4. Transit Bus Operator Qualitative Interview Findings

Agencies who took part in an interview were asked to refer transit bus operators who had recently completed their CDL training to take part in an operator interview. These interviews were designed to gain the operator perspective on the under-the-hood requirement. A total of eight operators completed an interview, including operators from two small agencies, two medium-sized agencies, and four large agencies. Interviews were conducted September 7 through October 2, 2024, and lasted 25 minutes. The guide used for the interviews appears as [Appendix C](#) to this report.

Interview findings focus on the key role of the bus operator, challenges operators see related to the under-the-hood requirement, the relevance of the requirement, and support for a waiver.

Key Roles of the Bus Operator

Operators agreed that their primary role is safe operation of the vehicle, including getting their passengers safely to their destinations.

“The most important part is the safety, driving safely and making sure people get to their destination safely.”
—Small transit agency operator

“The key thing that I’m responsible for as a bus operator is safety, and not only mine, but also the passengers’ and the surrounding public.” —Large transit agency operator

Challenges Related to Under-the-Hood

While all of the operators interviewed had successfully obtained a CDL, they acknowledged that the under-the-hood requirement posed a challenge. Several operators said they were initially intimidated by the content, and most said it took a significant investment of time to master it. Several operators said this was one of the most challenging aspects of the CDL process, both because of the technical nature of the information and because of the amount of

memorization required to learn it. They said their agencies supported them by providing time and opportunities for repetition to learn this material.

“That was the most challenging part, because we had to memorize all of it, and we could only miss so many things and we’d fail.” —Medium-sized transit agency operator

“I thought that it was really overwhelming, because it was a lot of information.” —Large transit agency operator

“I’m like, ‘I don’t know if I’m going to be able to remember this when it comes down to it,’ because I’ve struggled with testing and memorization my whole life.” —Large transit agency operator

“Mainly just memorizing the components of the bus, specifically the engine components, the correct terminology to use, the order of the pre-trip as well ... it’s probably the hardest part.” —Small transit agency operator

A few of the operators had previously obtained a CDL and specifically said they were disappointed that getting their passenger endorsement required them to complete the pre-trip test again.

“I didn’t expect that I had to do all the pre-trip all over again. It was very tough at my age. I didn’t ever want to do it again. ... When you’re starting to learn the pre-trip, you want to throw in the towel. It seems impossible.” —Large transit agency operator

Relevance of Under-the-Hood Content for Transit Operators

Most operators said the under-the-hood content is not relevant in their day-to-day work, as mechanical staff are responsible for maintaining the bus.

“If my bus broke down, I just call and they change my bus or they tell me what the problem is.” —Large transit agency operator

“There were some things that we learned in that process that now are obsolete to us operators. ... We don’t have to know under-the-hood type stuff. But we had to learn that to get the CDL.” —Medium-sized transit agency operator

“The parts of the engine, I don’t think you really need to know. ... Since you have a maintenance crew that’s there that takes care of that, then it’s kind of irrelevant.” —Small transit agency operator

Support for a Waiver of Under-the-Hood Requirement

“They have the mechanics, and you’re never going to get into the hoses and everything to do anything there.”

LARGE TRANSIT AGENCY OPERATOR

Operators who supported a waiver of under-the-hood requirement said this information takes a long time to master, is not directly related to their work, and that removing this requirement may make it easier for others to become CDL holders.

“You don’t really use it. Especially when we have a maintenance crew that—well, in the town that I’m in, a maintenance crew can get there within 15 minutes or 20 minutes.” —Small transit agency operator

Operators who opposed a waiver said knowing this information improves their ability to communicate with dispatch during breakdowns and said it is helpful for them to be able to inspect engine components.



5. Recommendations and Rationale

APTA commissioned this research to better understand how the under-the-hood requirement is impacting operator shortages, and to study whether a waiver of this requirement is indicated for transit bus operators. Key findings from this research include:

The majority (84.6 percent) of public transit agencies continue to face worker shortages, with bus operator positions described as particularly difficult to fill.

- Most agencies (67.5 percent) said it is either very difficult or difficult to hire bus operators.
- Agencies said a shortage of operators increases the amount of overtime they pay and contributes to driver fatigue and operator burnout.

CDL requirements are one of the most challenging aspects of hiring transit bus operators, and the under-the-hood portion of the CDL is particularly difficult for would-be operators.

- Most agencies cite the complexity of the CDL process (85.5 percent) or the length of time required to obtain a CDL (77.8 percent) as a factor in hiring operators.
- Under-the-hood is rated as the most challenging portion of the CDL exam, with 64.1 percent of agencies rating it as either very difficult or difficult.
- In interviews with agencies, CDL requirements were mentioned by about two-thirds of respondents as a barrier to hiring. Agencies said candidates can be intimidated by CDL requirements, and that the under-the-hood portion of the exam is where they see candidates more frequently fail or have to retake the exam.
- Operators also identified under-the-hood as one of the most difficult parts of the CDL, describing it as “challenging” and “overwhelming.”

Transit agencies invest significant time and resources to prepare operators to pass the under-the-hood portion of the CDL exam. Some operators require multiple attempts to pass or are not able to master this content.

- On average, agencies devote 11.8 days to training operators on content to pass the vehicle inspection test, which includes the under-the-hood components.
- Agencies use a variety of approaches to prepare candidates for the vehicle inspection test, including written materials, flash cards, diagrams, walk-throughs, and quizzes.
- All agencies allow at least one retake of the vehicle inspection portion of the CDL, and some will support candidates through multiple retakes. Some agencies said examiners can be particularly strict when testing under-the-hood and require candidates to recite the information verbatim.

Transit and School Transportation Industries Face Similar Challenges

In issuing its exemption to under-the-hood requirement for school bus drivers, FMCSA noted several factors. These factors also apply to transit operators, and include:

- Transit bus agencies are experiencing an operator shortage.
- A waiver would remove a barrier to entry for transit bus operators, and would allow better use of training resources for operators.
- Bus operators can conduct thorough pre-trip safety inspections, including identifying fluid leaks, without having detailed knowledge of under-the-hood components.
- Bus operators do not conduct maintenance in the event of mechanical issues or breakdowns.
- Transit buses are transitioning to electric engines, making the under-the-hood requirement even less relevant.
- Granting an exemption to transit bus operators is likely to achieve a level of safety equivalent to or greater than that which would be achieved in the absence of an exemption.

- One large transit agency said training candidates on under-the-hood adds millions of dollars to their annual training costs.

The overwhelming majority of transit agencies (92.3 percent) see under-the-hood content as either not at all relevant or only somewhat relevant for their operators.

- All agencies have separate maintenance workers who are responsible for routine bus maintenance and breakdowns. Operators are never responsible for those functions.
- Some of the under-the-hood content operators are tested on is not directly applicable, because the buses do not contain these components or they are not visible to the operator.
- Some agencies openly tell candidates that they are required to learn this information only to pass the CDL exam and that they will never use it again.
- Operators who believe this information is not relevant noted that maintenance staff are responsible for bus maintenance and repairs.

Operators engage in detailed pre-trip vehicle safety inspections, but these inspections typically do not require them to open the engine compartment; this part of the inspection is largely conducted by maintenance staff.

- Operators engage in extensive pre-trip safety inspections, often checking 70 or more items before beginning their routes. However, these operator pre-trip inspections usually do not require them to open the engine compartment.

As bus fleets transition to zero-emission buses, under-the-hood becomes even less relevant.

- Agencies expect the number of zero-emission buses to significantly increase from about 11.5 percent of transit bus fleets to 50.4 percent over the next 10 years.
- Agencies said electrified engine components can be very dangerous for untrained personnel and that these engine compartments are often locked for safety. Almost all agencies agreed that operators should not be inspecting electrified engines.

Most public transit agencies (73.5 percent) support a waiver of the under-the-hood requirement. Their reasons for support include:

- Under-the-hood adds time and expense to the process of training bus operators.

- Under-the-hood is a memorization exercise that does not correlate to success as an operator, and much of the information is not useful on the job.
- Transit agencies hire mechanics to perform maintenance and repairs on buses, and operators do not conduct these functions.
- The under-the-hood requirement will become even less relevant as bus fleets electrify.
- Operators conduct detailed pre-trip safety inspections, but these inspections typically do not require them to open the engine compartment.

Waiving the under-the-hood requirement would likely achieve an equivalent or greater level of safety.

- Agencies and operators agreed that safe operation of the vehicle is the key responsibility of the bus operator.
- All agencies have workers who have responsibility for maintenance and repairs of bus fleets. These workers are specifically trained to conduct this work and are available to support operators as needed.
- To the extent that general mechanical knowledge is helpful for operators, agencies said they would continue to teach the necessary content in the event of a waiver. All agencies conduct additional training beyond what is required for the CDL, lasting three to ten additional weeks.
- Whether under-the-hood is required or not, agencies would continue to train operators on the pre-trip safety inspection tasks they require. Agencies that require operators to open the engine compartment would continue to teach the skills needed to perform these functions.

Key Recommendation

We recommend that APTA advocate for an exemption from the under-the-hood requirement for transit bus operators. An exemption would provide several key benefits for transit agencies, including:

- Reducing the overall training required for transit bus operators by decreasing the amount of technical information that operators are required to learn to pass the CDL exam. A waiver would likewise reduce training costs and decrease training time.
- Positively impacting the number of operator candidates who are able to pass the CDL exam, and reducing the number of retakes that operators require to become certified.
- Tailoring the CDL requirements more specifically to the job functions of transit bus operators. All transit agencies employ mechanics who have responsibility for bus maintenance and repairs; this is not a function of transit bus operators. Removing the under-the-hood requirements would likely achieve an equivalent or greater level of safety.

In addition to advocating for a waiver, we also recommend that APTA consider whether to advocate for a separate class of CDL specifically for transit bus operators. This research highlights several areas where CDL requirements are not relevant for transit bus operators, and where these requirements add additional difficulty, cost, and time to operator training. While these CDL requirements may be appropriate for over-the-road drivers who do not have ready access to a maintenance staff, they appear to be unnecessary for transit bus operators. Having a separate class of CDL for transit operators would create efficiencies that would further help to address the operator shortage, reduce overall training time/cost, and contribute to operator retention. ■

Appendixes



Appendix A: U.S. APTA member survey

APTA is following up on its previous research related to workforce shortages. Specifically, APTA is examining the impact of commercial driver's license (CDL) requirements, including under-the-hood provisions, on the ability of public transit agencies to hire bus operators and assessing whether these CDL requirements should be streamlined. This survey should take 5-10 minutes to complete, and we appreciate your feedback. APTA will use the results to inform its legislative and advocacy work in this area.

For additional background information, please see [APTA's Fact Sheet on Commercial Driver's License Testing Requirements](#).

Section 1: Introductory questions

1. What is the name of your transit agency?
2. Agency city/town:
3. Agency state:
4. Which of the following roles do you perform at your agency? Please select all that apply.

Agency leadership	81	69.2%
Operations	46	39.3%
Hiring and recruiting	31	26.5%
Agency monitoring and analysis	25	21.4%
Human resources	15	12.8%
Other	28	23.9%

Section 2. Workforce shortages and bus operators

5. Which statement best captures how worker availability is affecting your agency? By “worker,” we are referring to operations positions such as operators, mechanics, and mid-level supervisors.

We are not experiencing a worker shortage.	18	15.4%
We are experiencing a worker shortage, but it is not affecting operations or service.	15	12.8%
We are experiencing a worker shortage, and it is somewhat affecting operations and service.	57	48.7%
We are experiencing a worker shortage, and it is substantially affecting operations and service.	27	23.1%

6. Looking ahead 5 to 10 years, do you expect worker shortages to:

Get much worse	18	15.4%
Get a little worse	31	26.5%
Stay the same	26	22.2%
Get a little better	33	28.2%
Get much better	9	7.7%

Now, please think specifically about your bus and paratransit operators who require a CDL. For simplicity, we will refer to these people as “bus operators.”

7. What do you see as the most important roles of a transit bus operator? Select up to three.

Safe operation of vehicle	114	97.4%
Providing excellent customer service	101	86.3%
Timely completion of scheduled routes	51	43.6%
Assisting passengers with disabilities	38	32.5%
Conducting pre-trip safety inspections	38	32.5%
Providing health and safety services	2	1.7%
Conducting under-the-hood inspections	1	0.9%

8. Overall, how challenging is it for your agency to hire bus operators?

Very difficult	22	18.8%
Difficult	57	48.7%
Neither difficult nor easy	34	29.1%
Easy	3	2.6%
Very easy	1	0.9%

9. How much impact do the following factors have on your agency’s ability to recruit and hire bus operators?

	Major factor in ability to recruit and hire	Minor factor in ability to recruit and hire	Not a factor in ability to recruit and hire
Operator schedules	63.2%	27.4%	9.4%
Complexity of obtaining a CDL	37.6%	47.9%	14.5%
Length of time to obtain a CDL	31.6%	46.2%	22.2%
Pay/benefits	30.8%	46.2%	23.1%
Expense to obtain a CDL	12.0%	38.5%	49.6%

10. How challenging do operator candidates find the following components of obtaining a CDL?

	Very difficult	Difficult	Neither easy nor difficult	Easy	Very easy	Not sure/ don't know
Vehicle inspection test, under-the-hood requirements	28.2%	35.9%	24.8%	5.1%	1.7%	4.3%
Knowledge tests	4.3%	52.1%	30.8%	11.1%	0.0%	1.7%
Vehicle inspection test in general	10.3%	43.6%	34.2%	7.7%	0.9%	3.4%
Road test	3.4%	33.3%	46.2%	14.5%	0.9%	1.7%
Entry-level driver training	5.1%	27.4%	48.7%	14.5%	2.6%	1.7%
Drug and alcohol testing requirements	4.3%	22.2%	45.3%	16.2%	9.4%	2.6%
Basic controls test	2.6%	23.9%	54.7%	16.2%	0.0%	2.6%
Physical examination process	3.4%	20.5%	51.3%	17.1%	5.1%	2.6%
Clearance process (e.g., review of driving records/background check)	0.9%	14.5%	58.1%	15.4%	5.1%	6.0%

Section 3: Bus fleet and maintenance issues

11. About what percentage of your bus fleet is composed of non-zero-emission buses (e.g., diesel, CNG, LNG, propane buses)? Please answer below for now, and projected 10 years from now.

Now	83.4%
Projected 10 years from now	48.5%

12. About what percentage of your bus fleet is composed of zero-emission buses? Please answer below for now, and projected 10 years from now.

Now	11.5%
Projected 10 years from now	50.4%

13. Thinking about how your buses are maintained, how is each type of maintenance typically performed?

	In-house or transit agency maintenance staff	Manufacturer or outside vendor	Bus operator	Don't know/ Not applicable
Routine maintenance for non-zero-emission buses	92.3%	1.7%	0.0%	6.0%
Breakdowns or repairs for non-zero-emission buses	94.0%	1.7%	0.0%	4.3%
Routine maintenance for zero-emission buses	68.4%	4.3%	0.0%	27.4%
Breakdowns or repairs for zero-emission buses	57.3%	15.4%	0.0%	27.4%

14. Which of the following tasks do your operators routinely conduct as part of a pre-trip safety inspection? Select all that apply.

Physically inspecting the outside of the bus (e.g., tires, signs, lights, mirrors)	117	100.0%
Physically inspecting the inside of the bus (e.g., seats, floors, cleanliness)	117	100.0%
Visually checking for indicator lights	117	100.0%
Verifying that safety equipment is working correctly (e.g., horn, wipers, PA system)	116	99.1%
Verifying that the bus operates correctly (e.g., steering, brakes)	111	94.9%
Visually checking for fluid leaks	95	81.2%
Opening the engine compartment to conduct a safety inspection	44	37.6%

15. [IF ANY SELECTED] About how long does this pre-trip safety inspection take, in minutes?

5 minutes or less	5	4.3%
6-10 minutes	49	41.9%
11-15 minutes	58	49.6%
16-20 minutes	5	4.3%
Average: 12.1 minutes		

Section 4: Support for changing CDL requirements

16. Given the nationwide bus operator shortage, do you think the Federal Motor Carrier Safety Administration (FMCSA) should consider changes to any of the following CDL requirements to make it easier to hire bus operators? Select all that apply.

Vehicle inspection test, under-the-hood requirements	77	65.8%
Vehicle inspection test, general	20	17.1%
Entry-level driver training	19	16.2%
Drug and alcohol testing requirements	16	13.7%
Knowledge tests	15	12.8%
Clearance process (review of driving records/background check)	9	7.7%
Basic controls test	9	7.7%
Physical examination process	7	6.0%
Road test	5	4.3%
Other	3	2.6%
None of the above	28	23.9%

17. [IF ANY SELECTED] What changes should FMCSA consider to CDL requirements?

The National School Transportation Association (NSTA) successfully petitioned FMCSA to waive the CDL under-the-hood requirements for school bus drivers in intrastate operations. Under-the-hood requirements test operators on their ability to identify various safety components of the engine and explain the safety inspection process. Under-the-hood components include oil and coolant levels, belts/gears, leaks/hoses, and other engine parts. FMCSA granted a waiver for school bus operators from November 2022 to November 2024 and is currently considering whether to extend it.

18. Should FMCSA issue a similar waiver for under-the-hood requirements for transit bus operators? Such a waiver would exempt transit bus operators from having to complete the under-the-hood requirements of the CDL licensing process.

Strongly support a waiver	68	58.1%
Support a waiver	18	15.4%
Neither support nor oppose a waiver	19	16.2%
Oppose a waiver	6	5.1%
Strongly oppose a waiver	6	5.1%

19. About how much time does it take new transit bus operators to master the content required to pass the under-the-hood portion of the CDL test (in calendar days)?

1 day or less	10	8.5%
2–5 days	40	34.2%
6–10 days	19	16.2%
11–15 days	18	15.4%
16–20 days	6	5.1%
21 or more days	17	14.5%
Average: 11.8 days		

20. How relevant do you believe these under-the-hood requirements are for transit bus operators?

Very relevant	9	7.8%
Somewhat relevant	40	34.5%
Not at all relevant	67	57.8%

21. Please explain your answer related to how relevant under-the-hood requirements are for transit operators.
22. In your estimation, has your agency ever lost an operator candidate because of the under-the-hood requirements, either because the driver was intimidated by the requirements or because they could not pass this portion of the CDL licensing requirements?

Yes	47	40.5%
No	43	37.1%
Not sure	26	22.4%

Section 5: Conclusion

Thank you. We have just a few final questions.

23. What is the size of your public transit agency?

Small (fewer than 4 million annual passenger trips)	52	44.4%
Medium (4 million to 20 million annual passenger trips)	42	35.9%
Large (more than 20 million annual passenger trips)	23	19.7%

24. Do any of your existing or planned transit bus routes cross state lines?

Yes	12	10.3%
No	105	89.7%

Thank you for taking the time to answer our questions. We greatly appreciate your feedback.

Appendix B: Transit Agency Interview Guide

Introduction

Thank you for agreeing to speak with me. My name is _____, and I am an independent researcher. I am working on this project on behalf of APTA. The purpose of this interview is to better understand some of the challenges transit agencies face in hiring bus operators. The goal is to inform APTA's legislative and advocacy work in this area.

This interview will take about 45 minutes. I will be recording today's call so that I can capture notes from our discussion. These recordings are not shared outside our research team.

We will write a report about what we heard. Your input is confidential, and nothing you say will be attributed to you by name, or by your agency's name. However, we may refer to agencies as small, medium, or large in our report if we see differences in how they view this topic.

As I said, I am an independent researcher, so I'm not an expert on this topic. My job is to hear your honest opinions.

Do you have any questions for me before I start the recording? [ANSWER ANY QUESTIONS THEN START RECORDING]

General discussion of operator hiring and workforce shortages

Thanks. Let's begin with a general discussion about your role.

1. Please briefly tell me about your role at your agency, in particular as it relates to hiring and training new bus operators.
2. Are bus operator shortages currently affecting operations and services at your agency?
 - a. IF YES: How so? What are some of the impacts you are seeing?
 - b. IF NO: Do you anticipate an impact at any point in the future? Why or why not?
3. Please briefly describe the process your agency uses to hire bus operators and get them trained and onboarded. We don't need all the details of this process, just a high-level overview of the main steps at your agency.
 - a. At what points along that process do you lose the most applicants or encounter the most difficulties?
4. Most agencies in our recent survey noted that it's challenging to hire bus operators. Please tell me a little more about the challenges your agency is experiencing in hiring operators.

CDL requirements and under-the-hood

Thanks. Now let's talk specifically about CDL requirements.

5. When in the hiring process do applicants typically obtain their CDL?
 - a. How long does it typically take to get a CDL?
6. How challenging is it for operators to obtain a CDL? Why?
7. Let's talk more specifically about a few aspects of the CDL process that agencies said can be a challenge in our recent survey. What challenges have you seen related to:
 - a. Knowledge tests
 - b. Entry-level driver's training
 - c. Drug and alcohol testing requirements

- d. Vehicle inspection tests in general and under-the-hood requirements specifically [IF NEEDED: Under-the-hood requirements test operators on their ability to identify various safety components of the engine and explain the safety inspection process. Under-the-hood components include oil and coolant levels, belts, gears, hoses, and other engine parts.]
- 8. In your experience, how do applicants view the under-the-hood component of the CDL requirements?
 - a. Who struggles the most with these under-the-hood requirements? Why?
- 9. Has your agency ever lost an applicant because of the under-the-hood requirements?
 - a. IF YES: Can you briefly tell me about that?
- 10. How long does it take applicants to master the content necessary to pass the under-the-hood portion of the CDL requirements?
 - a. Do you have any training materials on under-the-hood requirements you could share with APTA as part of this research process? IF YES: FOLLOW UP TO REQUEST THE MATERIALS VIA EMAIL.

Fleet maintenance and support for a waiver

Thanks. Now we want to discuss a bit more about operators' roles.

- 11. What are the primary tasks your operators conduct as part of a pre-trip safety inspection?
 - a. Do you have a checklist for this inspection you could share with APTA as part of this research process? IF YES: FOLLOW UP TO REQUEST IT VIA EMAIL.
- 12. Do your operators ever open the hood as part of a pre-trip safety inspection or for any other reason such as during a breakdown?
 - a. IF YES: Please describe what they do and why.
 - b. IF NO: Why not? [PROBE TO UNDERSTAND IF THERE ARE ANY RESTRICTIONS ON OPENING THE HOOD, SUCH AS UNION RULES]
- 13. How relevant do you think the under-the-hood requirements are for your operators? Why?
- 14. Do you think the relevance of under-the-hood requirements will change as more agencies transition to zero-emissions buses? Why or why not?
- 15. The National School Transportation Association successfully petitioned FMCSA to waive the under-the-hood requirements for school bus drivers in intrastate operations. Do you think FMCSA should issue a similar waiver of under-the-hood requirements for transit bus operators? Why or why not?
- 16. Would you support APTA advocating for such a waiver? Why or why not?
- 17. Are there any other CDL requirement changes or other legislative priorities you would like to see APTA advocating for?
 - a. IF YES: Please describe.

This has been a really great discussion. Thank you for your time today.

Appendix C: Bus Operator Interview Guide

Introduction

Thank you for agreeing to speak with me. My name is _____. I am working on this project on behalf of the American Public Transportation Association, also called APTA. The purpose of this interview is to better understand some of the challenges people face when deciding to become transit bus operators.

This interview will take about 25 minutes. I will be recording today's call so that I can capture notes from our discussion. These recordings are not shared outside our research team.

We will write a report about what we heard. Your input is confidential, and we won't use your name in any report. We also won't share what you say with your employer.

I am not an expert on this topic. My job is to hear your honest opinions. There are no wrong answers, and any feedback you have is helpful.

Do you have any questions for me before I start the recording? [ANSWER ANY QUESTIONS THEN START RECORDING]

Initial hiring process

Thanks. To begin, I would like to learn a little about you.

1. How long have you been a transit bus operator?
2. Please briefly tell me why you decided to become a transit bus operator.
 - a. What do you like most about your job? What do you like least?
3. What are the most important parts of your job as an operator?
4. Please tell me about the things you needed to do to get your job as an operator. Start from the time you decided to apply for the job all the way through to when you first started driving a bus. I don't need all the details, just the general steps along the way.
 - a. Thinking about all those steps, what was most difficult or most challenging? Why?
 - b. Did you ever consider stopping the process or no longer trying to become an operator? Why?
5. Do you know anyone who did quit the process and decide not to become an operator?
 - a. IF YES: At what point did they quit? Why?

CDL requirements and under-the-hood

Thanks. Now let's talk specifically about getting your CDL, or commercial driver's license.

6. What did you know about the requirements to get a CDL prior to getting hired as a transit bus operator?
 - a. Did anything in the process surprise you?
 - b. Was there anything you thought was unnecessary?
7. How easy or hard was it to get your CDL? Why?

8. I want to ask about a few different parts of the process. What challenges did you have related to:
 - a. Knowledge tests
 - b. Entry level driver's training
 - c. Drug and alcohol testing requirements
 - d. Vehicle inspection tests in general
 - e. Under-the-hood requirements specifically [IF NEEDED: Under-the-hood requirements test operators on their ability to identify various safety components of the engine and explain the safety inspection process. Under-the-hood components include oil and coolant levels, belts, gears, hoses, and other engine parts.]
9. How long did it take you to learn the under-the-hood information required to get a CDL?
 - a. Were you ever concerned that you might not be able to learn this information?
 - b. Do you know any other operators who struggled to learn this information?
10. How relevant do you think the under-the-hood requirements are for transit bus operators? Why?

Safety inspections and support for a waiver

Thanks. I have just a few more questions.

11. What are the main things you are required to do as part of a pre-trip safety inspection?
12. Would you ever open the hood as part of a pre-trip safety inspection or for any other reason?
13. Some people have talked about whether the under-the-hood requirements are necessary for transit bus operators. Would you support an effort to eliminate the under-the-hood portion of the CDL test for transit bus operators? Why or why not?
14. Do you think more people would consider becoming transit bus operators if under-the-hood requirements were eliminated? Why or why not?

Thank you for taking the time to speak with me!



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