

THE ELECTRONIC LOGGING DEVICES OVERSIGHT REPORT TO CONGRESS

Pursuant to Section 23017 of the Infrastructure Investment and Jobs Act (Pub. L. 117-58)
April 2023

INTRODUCTION

Section 23017 of the Infrastructure Investment and Jobs Act, Pub. L. 117-58, required the Secretary of Transportation to submit to Congress a report analyzing the cost and effectiveness of electronic logging devices (ELDs). As requested, this report also details the processes the Federal Motor Carrier Safety Administration (FMCSA) uses to: (1) review driver logs recorded by ELDs; (2) protect proprietary information and personally identifiable information (PII) obtained from ELD logs; and (3) explain how an operator may challenge or appeal a violation notice issued by FMCSA relating to an ELD.

COST AND EFFECTIVENESS OF ELDs

Cost

The costs of ELDs vary greatly by provider, type of device, service options, and whether additional fleet management capabilities, beyond the ELD functionality required by the regulations, are included. At the low end of the cost spectrum, some devices are available at no initial cost to motor carriers and require a low-cost monthly subscription (a few dollars per month), while others can be purchased outright and require no subscription for a basic ELD with minimal functionality. In the ELD final rule, titled “Electronic Logging Devices and Hours of Service Supporting Documents” and published on December 16, 2015 [80 FR 78291], FMCSA estimated the annual cost for ELDs that use cellular telematics (the ability to transfer hours of service data remotely, such as over a cellular network) to be \$419, and for ELDs that rely on local transfer (through Bluetooth or USB 2.0) to be \$166. The lower price of the local transfer units reflects their limited Fleet Management System (FMS) functionality and simplicity rather than reduced manufacturing or component costs. For estimating the cost of the final rule, FMCSA conservatively assumed that drivers would purchase an ELD with telematics; however, the Agency reduced the baseline price estimate of these units to reflect the market trend towards more basic ELDs without added FMS capabilities, designed primarily for ELD functionality. Although FMCSA did not specifically account for the cost of driver turnover, the ELD final rule factored in the cost of installing, removing, and repairing ELDs. The Agency noted that some independent drivers will have the option to purchase a portable ELD, which falls at the lower end of the price range and which typically can be removed and reinstalled in less than 30 minutes.

In addition, the final rule stated that ELDs will significantly reduce the paperwork and recordkeeping burden associated with the Hours of Service (HOS) regulations. Drivers’ time spent completing records of duty status (RODS) and forwarding RODS to their employers, while

away from the motor carriers' terminals will be reduced by \$558 and \$65, respectively. Further, the final rule estimated that the savings in clerical time spent retaining paper RODS and eliminating the need to purchase paper logbooks is \$144 and \$42, respectively. This amounts to a total annual paperwork savings of \$809 per driver, based on accepted hourly pay rates and associated fringe benefits for Drivers and Record Clerks and the time they are estimated to expend while performing the tasks listed above.

The ELD rule estimated the annualized cost of replacing existing devices to be between \$93 per device for FMS upgrades and \$128 per device for Automatic On-Board Recording Device (AOBRD) replacements. (AOBRDs were authorized for use until the full ELD implementation date of December 16, 2019, if they met the requirements contained in 49 CFR 395.15. As stated below, many AOBRDs were able to be upgraded to an ELD with minor changes, oftentimes through remote software updates.) Because FMCSA carefully studied the industry and looked at several devices representing a significant fraction of the AOBRDs in use, the Agency estimated that the majority of FMS devices that existed prior to the rule publication could have easily met the minimum specifications of the ELD final rule with relatively inexpensive upgrades. Informational materials from many providers indicated that ELD functionality was available for their FMS prior to the ELD compliance date. FMCSA based the estimated cost to add ELD functionality on real price data from providers.

The Regulatory Impact Analysis (RIA) for the ELD final rule (80 FR 78294 (Dec. 16, 2015)) evaluated the costs and benefits of improvements in motor carrier compliance with the underlying HOS rules through the use of ELDs. To evaluate compliance costs, FMCSA updated its assessment of the cost to come into compliance with the HOS rules to account for changes in factors such as inflation, changes in the HOS violation rate that preceded the mandate for ELD use, and the vehicle miles traveled by commercial motor vehicles (CMVs). The RIA shows the total estimated industry cost, using 2013 dollars and annualized using a 7 percent discount, to be \$1.836 million.

To evaluate safety benefits, FMCSA performed several types of analysis and used its judgment to select a conservative result for the number of crashes and fatalities avoided by ELD use. Using the elements of the Office of Management and Budget (OMB) approved Information Collection Request for the paper records of duty status, the paperwork savings (driver time to prepare the paper records, clerical time to file and maintain the paper records and supporting documents for at least 6 months from the date the records are generated, and paper costs) and safety (crash reductions), the RIA estimated the total annualized industry cost, using 2013 dollars and a 7 percent discount, to be \$1.836 million, with annualized total benefits of \$3.010 million, resulting in net benefits of \$1.174 million.

To date, FMCSA's knowledge of ELD costs and benefits aligns with these estimates.

Effectiveness

To evaluate compliance with the ELD rule, FMCSA analyzed the HOS violations that encompass the 10/11-hour driving time limits for buses and trucks, respectively; the 14/15-hour driving window or on-duty limits for trucks and buses; and the 60/70-hour “weekly” on-duty limits. During the 2-year period from the compliance date, December 18, 2017, to the full compliance phase, which began December 17, 2019, compliance with the HOS categories listed above improved. In December 2017, 1.19 percent of driver inspections cited at least one HOS violation. In December 2021, that percentage decreased to approximately 0.77 percent. Increased compliance with the HOS rules reduces the risks of fatigue-related crashes attributable, in whole or in part, to patterns of violations of the HOS rules.

The transition to ELDs has increased the efficiency and effectiveness of FMCSA’s enforcement personnel and State Partners. ELDs improve the efficiency of investigations by allowing motor carriers to upload requested records for review by safety officials quickly and efficiently during roadside inspections, and also in advance of an investigation. By creating a standardized display in the Electronic Records of Duty Status (eRODS) software, safety officials can easily review logs, without having to decipher hand-written and hand-drawn records.

In addition, ELDs make it easier for FMCSA and its enforcement partners to identify falsified records and take appropriate action. Due to the efficiency of using ELDs to review HOS, safety officials spend less time reviewing RODS, freeing them up to focus on other safety and enforcement matters.

In terms of increased efficiency for the motor carrier industry, ELD data transfer helps relieve the burden on motor carriers by making it faster and easier for carriers to store and provide a subset of the documentation required during an investigation. As mentioned earlier, this significantly reduces the paperwork and recordkeeping burden related to the HOS regulations. In the Information Collection Request (ICR) submitted to the Office of Management and Budget (OMB), FMCSA estimated that filling out driver RODS pre-ELD took an average of 6 minutes, while the post-ELD estimate was 2.5 minutes. In addition, the ICR projected that forwarding the RODS to the motor carrier took about 5 minutes pre-ELD, while the task is eliminated altogether post-ELD, due to the automated nature of the transfer of HOS data to an investigator for review.

The ICR also estimated motor carrier annual pre-ELD recordkeeping costs to be \$78.18 million, consisting of \$76.44 million to supply logbooks to drivers preparing paper RODS and \$1.74 million for the cost of filing cabinets required to store paper RODS. According to the ICR, the use of ELDs reduces the average annual recordkeeping costs by \$53.68 million (i.e., the burden to motor carriers is \$24.50 million, instead of the \$78.18 million associated with paper RODS).

The ELD rule also reduced the number of supporting documents that motor carriers are required to retain from an unlimited number to no more than eight documents. Finally, the ELD allows

motor carriers the flexibility to make the most cost-effective decisions for their particular operations (e.g., allowing motor carriers to decide between an electronic display or printout backup method).

Generally, the anti-harassment provisions of the ELD rule, and ELDs themselves, improve safety and help prevent harassment of drivers by making it difficult for drivers and carriers to falsify drivers' duty status, or force drivers to drive while fatigued or over hours, resulting in fewer violations of the HOS rules. Many drivers have anecdotally reported that the use of ELDs has prevented dispatchers from encouraging or forcing them to commit HOS violations, and drivers paid by the mile (the majority of over-the-road drivers) indicate that the improved documentation supported by ELDs helps reduce paycheck errors.

Overall safety culture at many companies has also improved due to motor carriers accepting the responsibility of reviewing the electronic records and supporting documents and ensuring that their drivers comply with applicable safety regulations.

Since the full implementation of the ELD rule, multiple events have occurred that have impacted the use of ELDs, safety, and HOS enforcement. Such factors include the September 2020 implementation of new HOS regulations, HOS exemptions issued in response to the COVID-19 pandemic (which suspended HOS rules for carriers transporting specified commodities in support of relief efforts during the pandemic), and the implementation of FMCSA's Drug and Alcohol Clearinghouse. These confounding factors have increased the challenges relating to any further analysis of the ELD mandate, making it difficult to tease out their individual safety impacts.

REVIEW PROCESS

Transferring ELD Data

FMCSA requires motor carriers to install, and drivers to use, ELDs when required to maintain and use RODS pursuant to the HOS regulations in 49 CFR part 395. ELDs facilitate enforcement review of HOS. The ELD providers must register and self-certify that their ELD(s) conforms to the standards established in the regulations. This includes the ability to generate a standard data file in a specified format and to transfer that file to a safety official responsible for reviewing a driver's RODS.

The ELD final rule establishes the acceptable methods by which an ELD may transfer data to enforcement personnel during an inspection or investigation. These options include:

- Telematics: These devices must support both the web services transfer method and the email transfer method.
 - Web services: The ELD uploads the data file directly to FMCSA servers via a secure web service call.

- Email transfer: The ELD sends the data file via a secure, encrypted email to FMCSA servers.
- Local transfer: These devices must support both the Bluetooth transfer method and the USB 2.0 transfer method.
 - Bluetooth: Enables the ELD to use the safety official's internet connection to connect to the ELD provider web service for transferring files to FMCSA servers.
 - USB: Transfer is made using a self-encrypting USB device, provided by the safety official, to transfer data from the ELD to the safety official's USB device.

The safety official selects the method used during this transfer based on the option(s) supported by the ELD. Telematics transfer, specifically through web services, is the preferred method for speed and accuracy and is strongly encouraged during inspections. Once the data is transferred, the safety official performs the HOS review. Devices must also have the ability to print or display certain data for law enforcement.

Reviewing Driver Logs Recorded by ELDs

To allow safety officials to view data recorded by ELDs, FMCSA developed an eRODS software application. The eRODS is installed on a safety official's computer or accessed via FMCSA's ELD website (<https://eld.fmcsa.dot.gov/eRODS>). The eRODS retrieves and displays the information recorded by the ELD after they are transferred and allows safety officials to analyze the output file containing a driver's HOS data during an inspection, investigation, or safety audit. Safety officials also use eRODS to verify that the ELD has been appropriately registered with FMCSA and self-certified to conform with ELD regulations by the ELD vendor, as required.

The eRODS software displays ELD data in a format similar to paper-based RODs with each day's data presented with an ELD file header, a daily header, and a graphical presentation of a driver's duty status changes. An events list contains details for each recorded event. The eRODS also provides visual indicators and a listing of potential areas of non-compliance (visible to safety officials) with HOS regulations. Based on a review of the HOS data and other driver or motor carrier provided supporting documentation, the safety official determines whether there was HOS compliance and whether violations should be cited, and the official may consider other enforcement actions as appropriate. If a violation is noted, the driver is cited, and the supporting data from the ELD is retained. If there are no violations noted, data is not retained.

PROTECTING PROPRIETARY INFORMATION AND PII

Security settings on all FMCSA servers are maintained to meet Federal privacy and cybersecurity requirements.

FMCSA does not retain HOS data beyond use for an inspection, investigation, or follow-on enforcement action, as per Congressional direction regarding specific limitations on use of the data. Section 31137(e)(1) of title 49 U.S.C. provides that the Secretary may use ELD information

only to enforce motor carrier safety and related regulations. FMCSA's ELD database is encrypted using the industry standard AES-256 encryption, including the underlying storage and automated backups.

Data is encrypted during transfer

FMCSA's process for encrypting data during transfer via web services/Bluetooth, email, and USB are as follows:

- Web services/Bluetooth
 - For each transfer, FMCSA uses Federal Information Processing Standards (FIPS) 140-2 validated cryptographic modules and Transport Layer Security (TLS) 1.2 transport layer protection.
 - ELD authentication is confirmed using the public certificate on file with FMCSA for that device.
- Email
 - ELDs encrypt email submissions before transmission using Secure/Multipurpose Internet Mail Extensions (S/MIME) with Advanced Encryption Standard (AES)-256 encryption, which encrypts the emails using FMCSA's public certificate. This ensures that only FMCSA can decrypt the ELD email submission.
 - Emails are signed using the ELD vendor's private certificate, as preconfigured by the ELD provider. FMCSA verifies the signature of the email by matching the signature with the vendor's public certificate on file.
- USB
 - Safety officials are required to use FIPS 140-2 validated hardware-based encrypted USB devices.
 - Safety officials' computers must meet all Federal or State security standards.

FMCSA's ELD system meets government data security and privacy standards

FMCSA uses FIPS 140-2 validated cryptographic modules when working with ELD data. The FIPS 140-2 is a U.S. government computer security standard. Modules validated by the National Institute of Standards and Technology (NIST) as conforming to FIPS 140-2 are accepted by Federal Agencies for the protection of sensitive information.

FMCSA's ELD Submission Web Service received an "A+" grade from the Qualys Secure Sockets Layer (SSL) Labs SSL server test, which performs a deep analysis of the configuration of SSL web servers on the internet and was last conducted the week of February 21, 2022.

FMCSA and ELD vendors use public/private certificates to:

- Encrypt and decrypt data.
- Authenticate ELD submission source.
- Detect ELD data tampering.

APPEALS PROCESS BY OPERATORS WHO WANT TO CHALLENGE AN ELD VIOLATION NOTICE

Motor carriers and drivers who believe that inspection data may be incomplete or incorrect, including certain ELD data, may submit a Request for Data Review (RDR). The Agency's DataQs web system (<https://dataqs.fmcsa.dot.gov>) automatically forwards a motor carrier's or driver's RDR to the appropriate Federal or State personnel for processing and resolution. Any challenges to data provided by State agencies are resolved by the appropriate State agency. The system also allows requestors to monitor the status of each RDR.

FMCSA cannot correct the information associated with the ELD records stored in the motor carrier's information systems; a driver would need to work with their motor carrier employer to correct any discrepancies in the motor carrier's system.