

## 1. BACKGROUND

This Regulatory Impact Analysis (RIA) provides an assessment of the costs and benefits of potential changes in Department of Transportation Federal Motor Carrier Safety Administration (FMCSA) Hours of Service regulations. The Hours of Service (HOS) regulations address the number of hours that a commercial vehicle driver (CMV) may drive, and the number of hours a CMV driver may be on duty, before rest is required, as well as the minimum amount of time that must be reserved for rest.

The HOS regulations in effect until 2003 were promulgated pursuant to the Motor Carrier Act of 1935 and codified at 49 CFR Part 395. These regulations were originally promulgated in 1937, and last revised significantly in 1962. These regulations required eight hours off between tours of duty that could be of indeterminate length, lasting until the driver accumulated 15 hours on duty. They also limited work to 60 or 70 hours in a 7 or 8 day period. Concerns that these rules were outdated and contributed to driver fatigue led to an effort to incorporate new knowledge about fatigue, rest, and their effects on safety.

### **The Revised Rule**

Revisions to the HOS regulations were proposed in a Notice of Proposed Rulemaking (NPRM) published in the May 2, 2000 Federal Register (65 FR 25540). Following reviews of the comments on the NPRM and additional study, the Federal Motor Carrier Safety Administration (FMCSA) developed a revised set of HOS regulations. The new rule was promulgated on April 28, 2003 (68 FR 22456) and took effect on January 4, 2004. A regulatory impact analysis (RIA) comparing the costs, benefits, and impacts of this rule relative to the previous rule and several alternatives was conducted in accordance with the requirements of Executive Order 12866. That RIA, which is available in the HOS rule docket, [http://dmses.dot.gov/docimages/pdf88/240882\\_web.pdf](http://dmses.dot.gov/docimages/pdf88/240882_web.pdf), showed that full compliance with the new rule (the “2003 HOS rule”) could both save lives and increase productivity compared to full compliance with the rule then in existence. Much of the safety advantage of the 2003 HOS rule was shown to come from the mandate for at least 10 hours off for each tour of duty, and from the contribution to keeping drivers on a regular 24-hour cycle. The contributions of the new regulations to productivity came from a provision allowing drivers to “restart” the accumulation of their 60 or 70 hours on-duty within 7 or 8 days once they took 34 hours off at one stretch.

### **The Appeals Court Action**

After the 2003 HOS rule had been in effect for several months, it was vacated by a federal appeals court. The D.C. circuit court found, on July 16 2004, that FMCSA had not considered effects on drivers’ health, and had concerns about several areas of the rule:

- Permission to drive 11 hours in a tour of duty, rather than 10;
- Allowing more hours on-duty in a given week as a result of the restart provisions;
- Allowing drivers to split their off-duty periods into two parts through the use of sleeper berths (that is, bunks within the tractor); and

- Lack of consideration of the electronic on-board recorders.

In response to the court's action, Congress extended the 2003 rule for a year, in order to give FMCSA a chance to revisit the issues cited by the court.

## **1.1 PURPOSE AND NEED FOR PROPOSED ACTION**

The proposed action is for the FMCSA to revise its HOS regulations. The HOS regulations apply to motor carriers (operators of CMVs) and CMV drivers, and regulate the number of hours that CMV drivers may drive, and the number of hours that CMV drivers may remain on duty, before a period of rest is required. The current regulations are divided into "daily" and "multi-day" provisions, which can be expressed as follows:

- Operators can cumulatively drive up to 11 hours or be on duty up to 14 consecutive hours since the end of their last 10-consecutive-hour break.<sup>2</sup>
- Operators can cumulatively drive or be on-duty up to 60 hours over the last 7 consecutive 24-hour periods, or 70 hours over the last 8 24-hour periods.
- If a sleeper berth is used, the 10-hour break can be split into two periods of no less than 2 hours each, provided that the duty periods preceding and following each of these two periods sum to no more than 14 hours.
- Operators who obtain 34 consecutive hours of off-duty time can begin a new seven-day period, over which they can be drive or be on duty a cumulative total of 70 hours (i.e., the seven-day "clock" is restarted by a 34-hour off-duty period).

Several categories of motor carriers and drivers are exempt from parts of the HOS regulations or from the entire HOS regulation under the National Highway System Designation Act of 1995 (referred to as the NHS Act).

The purpose of the proposed action is to further improve CMV safety by revising the FMCSA HOS regulations to require motor carriers to provide CMV drivers with better opportunities to obtain sleep, in order to reduce the incidence of drowsy, tired, or fatigued drivers and the crashes in which they are involved.

## **1.2 OPTIONS**

This analysis considers and assesses the potential consequences of four potential regulatory options. Option 1 is to readopt the 2003 rule. The others are referred to as Option 2, Option 3, and Option 4. The options and the rationale behind their provisions are described briefly in this section.

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<sup>2</sup> To be more exact, drivers cannot drive after they have been on-duty 14 cumulative hours after their last 10-consecutive-hour break.

### **1.2.1 Option 1**

Option 1 is to readopt the 2003 HOS rule, with no additional rulemaking and no changes in the method of implementation. The FMCSA would continue to enforce the 2003 HOS regulations without change. The existing exemptions to the current HOS regulations under the NHS Act would remain in effect.

The 2003 rule is divided into daily and multi-day provisions, which can be expressed as follows:

- Operators can drive up to 11 hours within a period of 14 consecutive hours from the start of the duty tour, followed by a break of 10 consecutive hours.
- Short-haul operators can be on-duty up to 16 consecutive hours one day during a seven-day work week so long as two such days do not occur consecutively.
- Operators can cumulatively drive or be on-duty up to 60 hours over the last seven days or 70 hours over the last eight days.
- If a sleeper berth is used, the 10-hour break can be split into two periods of no less than 2 hours each, provided that the duty periods preceding and following each of these two periods sum to no more than 14 hours.
- Operators who obtain 34 consecutive hours of off-duty time can begin a new seven- or eight-day period, over which they can drive or be on duty a cumulative total of 60 or 70 hours respectively (i.e., the seven- or eight-day “clock” is restarted by a 34-hour off-duty period).

### **1.2.2 Option 2**

This option changes the 2003 rule in a way that is intended to improve safety while readopting their most important advantages.

- The use of split sleeper berth periods is limited such that one of the two periods must be at least 8 hours long.
- Short-haul operators of vehicles less than 26,000 lbs GVW, remaining within a 150 mile radius of their base, may keep timecards in lieu of logbooks and may be on-duty up to 16 consecutive hours two days during a seven-day work week.
- As under Option 1, operators who obtain 34 consecutive hours of off-duty time can begin a new seven- or eight-day period, over which they can drive or be on duty a cumulative total of 60 or 70 hours respectively (i.e., the seven- or eight-day “clock” is restarted by a 34-hour off-duty period).
- As under Option 1, operators are limited to 11 hours of driving within a period of 14 consecutive hours from the start of the duty tour, followed by a break of 10 consecutive hours.

### 1.2.3 Option 3

This option is more stringent than Options 1 or 2, and essentially keeps the most restrictive features of the pre-2003 and 2003 HOS rules.

- Operators are limited to 10 (rather than 11) hours of driving within a period of 14 consecutive hours from the start of the duty tour, followed by a break of 10 consecutive hours.
- The use of split sleeper berth periods is eliminated – all 10-hour breaks must be consecutive, whether in a sleeper berth or not.
- As in Option 1, short-haul operators can be on-duty up to 16 consecutive hours one day during a seven-day work week so long as two such days do not occur consecutively. As in Option 2, however, operators of vehicles less than 26,000 lbs GVW, remaining within a 150 mile radius of their base, may keep timecards in lieu of logbooks and may be on-duty up to 16 consecutive hours two days during a seven-day work week
- Operators who obtain 58 consecutive hours of off-duty time can begin a new 7 or 8-day period, over which they can drive or be on duty a cumulative total of 60 or 70 hours (i.e., the 7/8-day “clock” is restarted by a 58-hour off-duty period).

### 1.2.4 Option 4

Finally, Option 4 is a variant on Option 3 which allows operators to restart the 7/8-day clock by taking a 44-hour off-duty period. It is intended to test whether the costs of virtually eliminating the restart can be mitigated while keeping some of the presumed fatigue-reducing benefits of a longer break.

## 1.3 BASELINE FOR THE ANALYSIS

This RIA compares the costs and benefits of the options relative to the rule that is currently in force – i.e., Option 1 – and assumes that there is full compliance with each of the options. This approach ensures that the full effects of the options’ provisions on costs and benefits are captured. The pre-2003 rule was not used explicitly as a baseline in this analysis because a separate regulatory impact analysis was completed that measured the economic effects between a pre-2003 baseline and the 2003 rule. However, the effects of today’s options can be compared to the pre-2003 rule using the effects reported in the Regulatory Impact Analysis for Hours of Service Options (the HOS RIA), prepared by ICF Consulting Inc. and Jack Faucett Associates, in December, 2002 (henceforth referred to as the 2003 RIA). That report, which is available in the HOS rule docket at [http://dmses.dot.gov/docimages/pdf88/240882\\_web.pdf](http://dmses.dot.gov/docimages/pdf88/240882_web.pdf), assessed the effects of compliance with the 2003 rule relative to several other options. These options included a “Status Quo” option (i.e., the HOS rule that was in effect at the time of the analysis, assuming less than 100-percent compliance levels), as well as a “Current Rule/100%” option, which, similar to the current analysis, assumed full compliance with the pre-2003 rule.

## **1.4 OVERVIEW OF THE ANALYSIS**

### **1.4.1 Assessing Costs**

The analysis of costs recognizes that the different provisions of the options will affect carrier operations in complex and interacting ways. It also recognizes that these effects will depend strongly on the carriers' baseline operating patterns, which vary widely across this diverse industry. To produce a realistic measurement of the options' impacts, then, we divided the industry into broad segments, collected information on operations within these segments, and then created a model of carrier operations as they are affected by HOS rules. Given the very wide array of operational patterns, it was necessary to limit our analysis to the most important cases.

The model was first loaded with data representative of shipping patterns and carrier cost structures, and tested to ensure that it could realistically simulate typical lengths of haul, empty mile ratios, and productivity. It was then set up to cover most important cases, under constraints representing the options, and used to simulate carrier operations under different conditions and HOS rules. We then analyzed the data representing the simulated operations, using changes in miles driven as a measure of productivity impacts. Output measures from individual runs were weighted to give a realistic representation of the affected industry, including the drivers' use of the most important provisions of the options. The weighted changes in productivity from this procedure were then used to estimate the cost increases imposed on the industry by the options, using an analysis of the changes in wages and other costs likely to result from changes in productivity. These productivity-related costs were combined with transition costs associated with shifting to new rules to produce estimates of total social costs.

### **1.4.2 Assessing Benefits**

Safety impacts were measured by feeding the working and driving schedules from the carrier simulation model into a fatigue model to project driver effectiveness levels, and then estimating the resulting changes in crash risks under different options for different cases. Changes in fatigue-related crash risks, calibrated to match realistic levels, were then multiplied by the value of all affected crashes to yield estimates of total benefits.

### **1.4.3 Assessing Impacts on Carriers**

Finally, impacts on affected carriers were assessed using a pro-forma model of carrier operations for different carrier sizes, allowing for the effects of changes in driver wage rates and prices of trucking services.

## **1.5 REMAINING SECTIONS OF THE REPORT**

The remainder of this report is divided into six additional chapters. Chapter 2 profiles the affected industry, in its qualitative characteristics and in terms of quantitative measures of firm sizes and the degree to which certain HOS provisions are currently used. Chapter 3 presents the methods used to estimate the effects of the options on industry operations, concentrating on the modeling of operational changes, and Chapter 4 then explains how these changes in operations were translated into changes in cost. Chapter 5 explains the translation of the operational

changes into benefits. The results of the operational modeling, and the calculation of net costs and benefits, are presented in Chapter 6. Chapter 7 presents impacts on carriers (with emphasis on small entities), constituting the small business impact analysis.

Appendices are provided to expand on the data sources and calculations in several areas. (These appendices have been labeled with roman numerals in parentheses to avoid confusion with the appendices to the 2003 RIA (conducted for the 2003 HOS rule). Appendix (I) supports the industry profile in Chapter 2, Appendix (II) provides more detail on the simulation modeling described in Chapter 3, Appendix (III) describes recent studies on driving and fatigue, and Appendix (IV) provides more detail on the exemptions for smaller trucks used in short-haul service. Finally, the 2003 RIA is another important source of background material for this document; it is available at [http://dmses.dot.gov/docimages/pdf88/240882\\_web.pdf](http://dmses.dot.gov/docimages/pdf88/240882_web.pdf)