

# MERCATUS CENTER

## REGULATORY STUDIES PROGRAM

### **Public Interest Comment on the Department of Transportation's Proposed Rules: Hours of Service of Drivers; Driver Rest and Sleep for Safe Operations<sup>1</sup>**

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The Regulatory Studies Program (RSP) of the Mercatus Center at George Mason University is dedicated to advancing knowledge of the impact of regulation on society. As part of its mission, RSP conducts careful and independent analyses employing contemporary economic scholarship to assess rulemaking proposals from the perspective of the public interest. Thus, this comment on the Department of Transportation's proposed hours of service rulemaking for truckers does not represent the views of any particular affected party or special interest group, but are designed to evaluate the effect of the Agency's proposals on overall consumer welfare.

In May 2000 the Federal Motor Carrier Safety Administration (FMCSA) of the Department of Transportation proposed revising the regulations concerning hours of service permitted drivers of commercial motor vehicles (CMVs). The purpose of the proposed regulations, which significantly alter those in place since the 1960s, is to provide new levels of road safety and to prevent fatigue-induced, road-related deaths. According to the FMCSA, the proposed new rules to reduce fatigue would prevent "approximately 2,600 crashes, 115 fatalities and 2,995 serious injuries annually"<sup>2</sup> with a goal of reducing fatigue-related truck fatalities by 50 percent by 2010. (There were, according to the FMCSA, 5,203 truck-related fatalities in 1999).<sup>3</sup>

Underlying the DOT proposal is the research contained in 150 international studies relating to sleep cycles, fatigue research, highway fatalities, motor truck involvement in highway deaths and industry data. Most significantly, the proposed regulation represents a shift in emphasis from mandated maximum driving time for truckers and self-reporting to mandatory *rest periods* for five types of motor carriers and a recording device to monitor compliance (electronic on-board recording devices or EOBRs) for long-haul (type 1) and regional (type 2) drivers. The DOT and

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<sup>2</sup> See "U. S. Transportation Secretary Slater Announces Proposal to Improve Highway Safety by Ensuring Truck Drivers Get Adequate Rest," (<http://www.fmcsa.dot.gov/contactus/press/2000/042500.htm>) April 25, 2000.

<sup>3</sup> Note that only a small number of truck related accidents are attributed to fatigue by the FMCSA. For example, see Table 15 in "Preliminary Regulatory Evaluation and Regulatory Flexibility Act Analysis Hours of Service NPRM" (FMCSA-97-2350-954) April 2000, p. 24 (hereafter "Preliminary Regulatory Evaluation") where statistical range estimates are reported for large truck crashes that are fatigue-related. For "All Fatal," the estimates for single-unit trucks are 1.3% to 3.0%; for combination-unit trucks, 3.2% to 7.1%; and for all large trucks, a range of 2.8% to 6.1% of all crashes.

FMCSA also claim to take into account the impact of new regulations on small commercial trucking firms in their cost-benefit studies.<sup>4</sup>

Our evaluation examines the logic underlying the hours-of-service proposal vis-à-vis the costs and benefits alleged by the DOT and FMCSA. Our conclusions are that the DOT and FMCSA estimates of the likely effects of the proposed regulation are tenuous if not faulty on a number of bases. We argue that their cost calculation as well as their estimates of benefits are problematic, and that implementation of the proposed regulations will impose significant *net* costs on small truckers as well as on society and that it is highly speculative to argue that the regulation would achieve stated benefits.

## **I. DOT Examines Five Regulatory Options Covering Five Driver Types**

The FMCSA examined five driver types and considered five basic regulatory options. Type 1 drivers are away from their work reporting location and home for more than three days at a time. These long-haul drivers have the highest accident exposure (in terms of miles traveled) and, according to the FMCSA, they have the least regular wake and sleep cycles, including periods where they must get daytime sleep. Type 2 drivers are regional drivers who are like long-haul operators but are away from home base less than three days at a time. They have more regular schedules and are subject to more frequent monitoring by trucking companies. Type 3 drivers are local split shift workers who drive the main part of their job and are not on duty more than twelve hours (prevalent in the motor coach industry). Types 4 and 5 drivers are local pickup and delivery and drivers whose primary work is not driving but who operate from a home base less than 100 miles from home location.<sup>5</sup>

Currently operative federal hours of service regulations identify four categories of drivers' time: on-duty driving, on-duty not driving, off-duty, and sleeper berth use. Regulations limit driving time in the following way: drivers may not drive more than 10 hours after a minimum 8-hour off-duty period. Further, they cannot drive after having been on-duty (including both driving and non-driving time) for more than 15 hours. After 10 hours of driving or being on-duty for 15 hours, driving is prohibited until he or she has had a minimum of 8 hours off duty.<sup>6</sup> Current regulations require driver-kept logs (called record of duty status or RODS) showing the driver's status in 15-minute increments. Those drivers operating within a 100-mile radius from home base are not required to keep RODSs, but time records are kept by their employers.

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<sup>4</sup>See "Preliminary Regulatory Evaluation," and Department of Transportation, Federal Motor Carrier Safety Administration, "Proposed Rules: Hours of Service of Drivers; Driver Rest and Sleep for Safe Operations" [Docket No. FMCSA-97-2350] *Federal Register*. Vol. 65, No. 85 (May 2, 2000) (hereafter "Proposed Rules").

<sup>5</sup> See "Proposed Rules," p. 25559 for additional details.

<sup>6</sup> Somewhat more complex regulations pertain to drivers who work for companies operating commercial motor vehicles 7 days a week. Such drivers may not drive after having been on duty more than 70 hours (total) in the previous 8 days. If the company does not operate vehicles every day, the driver may not drive after having been on-duty more than 60 hours in the previous 7 days. There are also driver-initiated exceptions using sleeper berths and diving off-duty time into two periods.

The FMCSA proposes five alternatives (or options) and calculates minimum fatigue-related commercial motor vehicle crash reduction for each option. Although there are many details attached to these options, they basically include the following restrictions:

- Option 1 All commercial motor vehicle drivers (of all types) are permitted 12 consecutive hours off duty and 12 consecutive hours on duty. This option, according to FMCSA calculations, would reduce fatigue-related commercial motor vehicle crashes by 5 percent.
- Option 2 Under option 2, type 1 drivers would take 10 consecutive hours off duty with a 14-hour work period including 2 hours for breaks/meals/naps. There would be a “weekly recovery period” of 32 to 56 hours (a feature of Options 3, 4, and 5 also). This option, according to FMCSA calculations, would reduce fatigue-related commercial motor vehicle crashes by 5 percent.
- Option 3 Option 3 is the same as Option 2 except that only 18 hours per workweek can be spent driving during the hours from midnight to 6AM. This option, according to FMCSA calculations, would reduce fatigue-related commercial motor vehicle crashes by 7.5 percent.
- Option 4 Same as Option 3 except that Type 1 drivers must use electronic on-board recording devices (EOBRs). This option, according to FMCSA calculations, would reduce fatigue-related Type 1 commercial motor vehicle crashes by 15 percent; the rest by 5 percent.
- Option 5 Same as Option 4 except that both Type 1 and Type 2 drivers must use electronic on-board recording devices. This option, according to FMCSA calculations, would reduce fatigue-related Type 1 and Type 2 commercial motor vehicle crashes by 15 percent; the rest by 5 percent.

The FMCSA favors the adoption of either Option 4 or 5 since, in its words “Options 4 and 5 have the most dramatic safety impact, with an estimated 20 percent reduction in certain fatigue-related crashes.” There are other apparent reasons for the agency’s choice, chief of which is that strict enforcement of existing regulations under the self-reporting RODS system is virtually impossible. (The agency estimates that 40 to 75 percent of drivers violate current regulations). As FMCSA puts the matter: “electric on-board recorders make it easier to verify drivers’ compliance with the proposed rules, improve motor carrier ability to effectively manage driver compliance and enable safety investigators to better verify the driver’s adherence to the proposed requirements” (Proposed Rules, p. 25570). Thus a major reason given for the implementation of Options 4 or 5 is the failure (in the agency’s estimation) of current regulations and enforcement procedures.

## **II. DOT Offers Inadequate and Faulty Analysis to Support Its Proposal**

The analysis used to support the hours of service proposal, as outlined in the Preliminary Regulatory Evaluation and Proposed Rules contains serious problems. Among these are data problems and, most particularly, faulty analysis and logic which is used to support the need for

the rule and the expected benefits it will produce. We first examine the supporting evidence on fatigue and then turn to benefit estimates and to other statistical and analytical problems related to the proposed new regulations.

**A. The proposal is based on the premise that fatigue-induced accidents impose significant social costs.**

The foundation of the benefit estimate made by FMCSA is the alleged fact that fatigue or fatigue-related factors cause accidents that create costs to society in the form of unnecessary deaths. Fatigue related accidents are thus at the heart of the study of benefits in the DOT study. However there is (Proposed Rules, p. 25545) an immediate recognition that “the difficulty in determining the incidence of fatigue-related accidents is due, at least in part, to the difficulty in identifying fatigue as a causal or contributing factor in accidents.” There is no chemical test, for example, but the report persists in stating that although “the exact number of accidents due to fatigue is difficult to determine [they] are likely to be underestimated.”<sup>7</sup> We believe that the inclusion of an ill-defined (if not illusory) cause is one of the most serious problems in the study. This is so for several critical reasons: (a) no serious, well-executed or believable study of the cause of accidents exists, and (b) proposals to reduce fatigue (hours of service regulation) would take flexibility out of the system leading, perhaps, to more accidents.

1. Fatigue and the Causes of Accidents

Evidence presented that “fatigued truckers cause accidents” is weak and contradictory. First, as with alcohol-related accidents, reportage is ambiguous—if a perfectly sober driver hits a drunken pedestrian, the result is an alcohol-related accident. Further, as the Preliminary Evaluation Analysis (pp. 21-22) notes, accident causes are often a secondary (or lower) concern of police officers who investigate accidents. Police interviews cannot be trusted “since stress produces an adrenaline surge, eliminating traces of fatigue.” Further, the evidence presented examines the possibilities of “reportage bias” in truck-auto crashes, raising the possibility that, since truck drivers are five times more likely to survive a fatal crash than the driver of the other vehicle, there is bias against citing fatigue as a cause. (Drivers would have an incentive to underreport fatigue). But in a study conducted by Dan Blower of the University of Michigan Transportation Research Institute (UMTRI), a larger number of cases with fatalities where *both* drivers survived were reported. In that study the car driver was assigned a “fatigue” factor in 74 percent of the cases with the truck driver only 34.5 percent. This evidence casts doubts on the entire DOT/FMCSA analysis. This evidence suggests that car drivers, not truckers, are more likely to cause the accidents. The whole premise of the DOT proposal is that the cause of accidents is fatigue and that this can be mitigated by regulating truck behavior. The evidence presented is, however, that it is auto driver fatigue that is causing most fatigue-related accidents involving cars and truck. Regulations which apply to truck drivers can do relatively little to reduce accidents of this type.

The argument that “fatigue causes accidents” therefore lacks substance. In any well-executed study, “fatigue” as an “independent variable” must be defined in some manner which makes it

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<sup>7</sup> In the draft proposal, the FMCSA readily admits that “Fatigue can not be measured” (Preliminary,” p. 1).

suitable as a “cause” of accidents. Along with fatigue, if it is given substance statistically, a number of other “causes” or potential “causes” must be included. Accidents for trucks are a function of a many factors—road conditions, state of the vehicle, tire pressure, etc. Fatigue *could* be a factor, but what is its relative importance as an independent factor if it could be accurately measured? The studies presented by the Department of Transportation as “proof” lack credibility. Furthermore, as noted below, evidence that most fatal crashes occur in the first hour of driving does not appear to lend itself to the conclusion that fatigue is very important as an independent cause of fatalities.<sup>8</sup>

## 2. Flexibility

Yet another problem in this study is DOT’s failure appropriately to take into account the likely consequence of reducing driver flexibility in selecting the time of day in which to drive. In studying Option 3, which places a “limit on night time driving of 18 hours per week,” (Table 6, Proposed Rules, p. 25569), DOT researchers do understand that traffic is pushed to congested traffic times of day which may lead to increased accidents and deaths. They admit as much: “While there might be an overall reduction in nighttime crashes, the extra traffic during already congested times of the day might result in an increase in daytime crashes” (Proposed Rules, p. 25570). No amount of sophistry can hide the fact that most truckers are paid by the mile and want to avoid congestion. Truckers drive at night to avoid peak hour congestion in cities. The proposal to limit nighttime driving will increase the number of trucks on the highway during peak hours and the number of daytime fatalities. It is not at all clear that total fatalities will decline. The DOT study mentions this possibility but brushes it aside.

The proposal, in relation to driver flexibility problems described above, does not mention serious and well-executed studies detailing the incidence of serious and fatal accidents by hours of driving. Stricter regulation of hours of driving, both daily and weekly, is bound to create more frequent starts and stops. Restrictions on hours of long-haul driving, for example, might require greater reliance on team driving or on a greater number of driving sessions. (An additional number of drivers is to be expected, moreover, 50,000 or more, if the DOT proposal goes into effect as we discuss later in this comment).

In particular, a larger number of “starts” by drivers may have significant effects on serious accidents and fatalities. A study conducted at Northwestern University compared the driving hours of accident-involved drivers with a random sample of non-accident drivers with a separate study of accidents that only involve serious injury or fatality.<sup>9</sup> The study is quite revealing. The highest accident rate is by far during the *first* hour of driving, with the remaining hours of driving

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<sup>8</sup> Further, the fact that the fatal accident rate of large trucks per 100 million miles traveled is starkly declining does not add conviction that there is a serious problem as alleged by FMCSA. According to DOT’s own statistics, the 1998 large-truck rate is the lowest on record. In 1998, in comparison with 1989, the large-truck fatal accident rate fell 30%. The rate is lower than for passenger cars. (See American Trucking Trends 2000, American Trucking Associations’ Economics & Statistics Group, Transport Topics Press, Alexandria, VA, 2000, p. 52.)

<sup>9</sup> See Paul P. Jovanis, “A Perspective on Motor Carrier Safety Issues in the 1980s” in *Transportation Deregulation and Safety*, The Transportation Center, Northwestern University (Conference, Evanston, June 23-25, 1987), pp. 536 and Table 5, p. 550. According to Jovanis, “similar data were tested statistically and we were unable to reject the null hypothesis of no increasing trend in accident rate after the first hour.”

remaining relatively steady. This means that any factors which increase “stop and start” driving, such as the DOT proposal, could well have a negative impact on serious accidents and fatalities.

### 3. Statistical Problems with Fatigue Calculations

The “Preliminary Regulatory Evaluation” (Tables 13 and 14, p. 24), reports the percentage of large truck crashes that are fatigue-related. The mid-point estimate for all fatal large truck crashes is 4.45 percent. How might it be argued that fatalities would fall 15 percent by regulating trucker behavior? That is achieved because in the study:

“15 percent of all truck involved fatal crashes are “fatigue-relevant,” that is, fatigue is either a primary or secondary factor. This includes the 4.5 percent of fatal crashes where fatigue is directly involved, and another 10.5 where it contributes to other mental lapses, which then result in a crash” (“Preliminary,” p. 30).

In other words, more than twice the primary problem of “fatigue” is charged to “mental lapses” without a scintilla of evidence on fatigue or on the “mental lapses” that fatigue is supposed to cause.

These estimates of the causes of truck crashes are simply illusory—and scientifically inadequate to form the basis for cost calculations. There is no well-executed study of truck crashes as a function of all likely contributing factors. Truck crashes are clearly a function of a number of factors in addition to the fatigue (however defined) of truckers, including: congestion, time of day, condition of truck drivers and other drivers, speed, drug use, alcohol use (and alcohol use as a function of time of day), and weather. The DOT/FMCSA seeks to create a problem by definition and by exclusion. No well-executed study is reported showing that, *ceteris paribus*, fatigue is a clear determinant of fatal crashes in some particular percentage of cases. Factors are attributed to fatigue (“mental lapses,” “mis-directed attention”) that may have multiple causes (daydreaming, a favorite tune on the radio, or contemplating beautiful scenery). These problems of calculation spill over into the assessment of the benefits of the proposed new regulations.

#### **B. Estimates of benefits in the DOT study contain questionable and debatable statistics.**

Estimates of benefits in the DOT study contain questionable and debatable statistics. Recall the primary aim of the regulation: “The FMCSA is proposing to revise its hours-of-service (HOS) regulations to require motor carriers to provide drivers with better opportunities to obtain sleep, and thereby reduce the risk of drivers operating commercial vehicles (CMVs) while drowsy, tired, or fatigued to reduce crashes involving these drivers” (Proposed Rules, p. 25540). Given this primary aim, the calculation of benefits, (Proposed Rules, p. 25572) contains a curious twist. In Table 10, the annual benefits of proposals after full implementation by all carriers are calculated for the five options (summarized above). Table 10 estimates fatal crashes and injuries avoided and calculates crash benefits and “annual paperwork benefits” to find annual benefits and 10-year discounted benefits. Unfortunately, “paperwork benefits” are 70 percent of total

benefits for Options 1 and 2, over 60 percent for option 3 and just at 50 percent for options 4 and 5.<sup>10</sup>

The result of the inclusion of such gains becomes somewhat apparent when the benefits calculation of the DOT/FMCSA is translated to a benefit/cost calculation (see Proposed Rules, Tables 15 and 16, p. 25579). In Table 15, benefits are contrasted with costs and *net* benefits range from \$1.7 to \$3.4 billion. However, when paperwork benefits are excluded, net benefits are *negative* except for Option 5. Even Option 5, the most stringent with respect to hours and monitoring, yields only a projected net-of-paperwork gain of \$153 million. Except for reduced paperwork, there are basically *no* net benefits. (Both costs and benefits are discounted for a 10-year period at a rate of 7% in the DOT calculations).

The exact nature of “paperwork benefits” is not spelled out but, presumably, these benefits are in the nature of “cost savings” to drivers and businesses in the current system. Drivers must, as noted earlier, keep a record of duty status (RODS) or a “logbook” showing the driver’s status in 15-minute increments. The exception is for those who drive only within a 100-mile radius of home base, where employers must keep records. All of these records and their reporting are costly in terms of time (and resources) so that there would be costs saved (benefits). However, there are costs—the amortized costs of electronic on-board recording devices in particular as well as reportage of their contents—that must be borne by motor carriers in Options 4 and 5 (see below).

These calculations assume that the DOT estimates of fatigue-related crashes are completely accurate – i.e., those fatalities will decline 15 percent by regulating trucker behavior. By DOT’s own admission, this calculation is highly speculative.<sup>11</sup> Primary fatigue-related accidents are only 4.45 percent, with secondary fatigue (an even more speculative calculation) taking up the remainder of accident “causes.” Only when benefits are inflated by secondary fatigue do DOT’s options begin to show a positive net benefit. To summarize:

- the definition and calculation of fatigue-related accidents is highly speculative and must be manipulated to create a possible accident-reduction rate of 15 percent; and
- a net benefit calculation is (fundamentally) only positive with the inclusion of paperwork benefits.

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<sup>10</sup> We note also that options 4 and 5 require long-haul and (for 5) regional and long-haul drivers to use electronic on-board recorders (EOBRs), a device that is strongly resisted by independent truckers. This controversial part of the DOT proposal quickly emerged as a bone of contention. According to Todd Spencer, a spokesman for the Missouri-based Owner Operator Independent Drivers Association, “We find it outrageous. . . . With mandatory on-board monitoring systems, the government has taken the position that truckers are worthy of a level of scrutiny not applied to convicted felons,” quoted in Ricardo Alonso-Zaldivar, “U. S. Moves to Monitor, Limit Hours of Long-Haul Truckers,” *Los Angeles Times* (April 26, 2000), p. A1.

<sup>11</sup> In addition there is an absence of realism with respect to the cost of EOBRs, a necessary component of Options 4 and 5, see “Proposed Rules,” p. 25580. The FMCSA admits that if the cost of an EOBR is \$6000, the cost of option 5 equals benefits. With no substantive evidence, the FMCSA speculates that “the price of EOBRs will fall as production increases” (“Proposed Rules,” p. 25580).

Thus the calculation of any net benefits from the institution of new regulations on the trucking industry is, to say the least, problematical.

## 1. Other Statistical Problems

DOT/FMCSA seek to maintain an hours limitation on driving time for all types of drivers. For Types 1, 2, 3, and 4 operations, a driver may be on duty up to, but not exceeding 60 hours in any workweek (the same as current regulations). Drivers in Type 5 operations (long haul) may be on duty up to but no more than 78 hours in any workweek. While the driving hours limitation remains, a primary emphasis has been created on “at rest” hours. The aim is to “make available for each driver a consecutive minimum off-duty period of time each workday and workweek for the purpose of obtaining restorative sleep” (Proposed Rules, p. 25541). Daily off-duty requirements, for example, vary for different types of operations, but they are mandated for up to 12 consecutive hours of each workday (see Table, Proposed Rules, p. 25603). Further, motor carrier operators are required to give “every driver an off-duty period of at least 32 to 56 consecutive hours that includes at least two consecutive midnight to 6:00 a.m. periods before the start of the next workweek” (Proposed Rules, p. 25603).

While it may be the case that increased off-duty time may be spent in fatigue-restorative activities (sleep, rest, etc.), there is no evidence presented that off-duty time will be spent these ways. The case for new regulations on the motor trucking industry appears to hang critically on this assumption. Alternative scenarios may be posited. For example, if severe loss of income attends the new regulations for truckers, additional employment, within and out of the industry (especially in small owner-operator firms) may be sought. A “second job” could lead to additional “fatigue” (however defined) and increased accidents related to fatigue. Another possibility is that “off-duty” time may be spent on less “restorative” pursuits or in exhausting activities (playing sports with children). The net result of time spent in these manners may well be actually to increase fatigue while driving. There is no evidence presented that more time “off-duty” in any way equates to “less fatigue while driving.” Non-driving does not equal sleep. Until such evidence is presented, a conclusion based on the assumption that “non-driving equals sleep” is speculative at best.

The Proposed Rules (p. 25558) only note that “[d]rivers must still manage their off-duty time if these, or indeed any, proposals are to be effective” and correctly suggest that “[u]nder this proposal, all time spent in any work must be counted as on-duty time, since all work can either induce fatigue or deprive the driver of sleep.” One is left to wonder how second jobs taken by truckers are to be discovered and counted. Given the extremely poor current enforcement record (a record that FMCSA shares in its proposal), one wonders exactly how the off-duty provisions of the proposed regulations are to be enforced.

## 2. Compliance Statistics

All costs and benefits statistics assume full (100 percent) compliance with the proposed regulations. DOT/FMCSA clearly note and present statistics that suggest that violations abound under present regulations. Citing a study conducted by the Insurance Institute for Highway Safety, which interviewed over 1,200 drivers at truck stops, truck inspections stations, and agricultural inspection stations in the early 1990s, the FMCSA reports (“Preliminary,” p. 4) that



73 percent of drivers were hours-of-service violators. Moreover, only 16 percent of logbooks were found to be accurate, with cheating rampant. The point is that the realization of the few net benefits (other than when paperwork reduction is included) that are attributed to the new regulation hinges critically on 100 percent compliance. While opportunities for cheating may be lessened with the new kinds of surveillance, non-compliance of even a small amount would bring any purported net benefits into question.

**Table 1: Sensitivity of DOT’s Benefit Estimates to Key Assumptions (billions)**

Estimate	Option 1	Option 2	Option 3	Option 4	Option 5
DOT’s estimate of accident-prevention benefits including paperwork	\$4.40	\$4.40	\$5.10	\$5.40	\$6.80
DOT’s estimate excluding paperwork benefits	-\$3.10	-\$3.10	-\$3.20	-\$2.80	-\$3.20
Adjusted benefit assuming 50% compliance rate (Excluding paperwork)	\$ .65	\$ .65	\$ .95	\$1.30	\$1.80
(Including paperwork)	\$3.75	\$3.75	\$4.15	\$4.10	\$5.00

Line 1 of Table 1 summarizes DOT’s benefit estimates for each of the five options. Their estimates include the benefits of paperwork reductions. DOT’s estimates of paperwork savings for each of the options are reported on line 2. Line 3 reports our adjustments of the DOT figures assuming that the proposed regulations eliminate 50 percent of fatigue related accidents. (The DOT estimates are based on the assumption of 100 percent compliance with the regulations.) All numbers are in billions of dollars and they reflect benefits for the first 10 years of the program discounted to present value.

### III. DOT’s Cost Estimates Are Understated

#### A. Underestimated wage costs

The FMCSA calculates the number of hours motor carriers would “lose if all over-hours drivers drove 12 hours per day.” Assuming that the “missing” hours calculation provided by the agency is correct, the carriers would need to make up about 586,000 missing hours per day, a figure that translates into about 50,000 drivers. The agency, however, has no accurate gauge of how many hours of driving *over* 12 hours are now taking place for example. But the annual wage cost provided by the agency is likely to be highly underestimated.

DOT/FMCSA assume a high elasticity of supply of truckers (on the magnitude of 10), suggesting that more drivers can be recruited without large wage increases. This seems unrealistic. Other things equal, clearly, additional truckers will be demanded by motor carrier firms. Assuming relatively full employment, trucker wages will have to rise in order to pay the opportunity costs of employed individuals. Assuming a constant demand for the services of motor carriers (an unlikely event) and full compliance with the new regulations, additional

truckers will be demanded. The hours of service restrictions (of all types) make this so. Independent long haul and regional truckers or “trucker-owners” who contract with larger firms must meet new and higher wage payments.

Note, however, that a countervailing force will exist on the wage rates and employment of truckers. Increased motor transport rates, inevitable due to the new regulations, will force shippers to recalculate their own opportunities. In Marshallian terms, the elasticity of demand for services of motor carriers (and the ultimate demand for truckers) is a derived demand that will depend on a number of (at least four) factors: the elasticity of demand for substitutes, the elasticity of demand for motor carriers, the importance of motor carrier services costs in demanders’ production functions and the cross elasticity of supply between inputs including motor carrier services. This means that substitution (of an unknown quantity) will take place away from motor carrier services, especially on long-haul shipments (to rails, airfreight, etc.). Reduction in motor carrier services demanded will create a deadweight loss to society as well as a reduction in the number of truckers and trucks demanded. Thus the effects of the new regulations will likely be an upward pressure on wages with the increased demand for truckers created by new hours of service requirements, mitigated by a somewhat reduced demand for motor freight and truckers from price increases. The net result will be a wage increase however.<sup>12</sup>

#### **B. Electronic on-board recording devices and small trucker’s costs**

One of the most serious miscalculations in the entire proposal to address fatigued truckers lies in the calculations identifying harm to small truckers. The motor carrier industry is a competitive industry with an estimated 500,000 motor carriers in 1999 (the FMCSA has data on 413,000 of them). Further, the FMCSA calculates that “almost one half of the motor carriers with size data have only one truck, and 95 percent of motor carriers, almost 395,000, have 20 or fewer trucks” (Proposed Rules, p. 25575). Thus, the size distribution of the industry suggests that about 95 percent of trucking firms (for which FMCSA have data) are “small truckers.” These small carriers operated about 37 percent of trucks with the average carrier operating about 3 trucks. It is on this “average” small firm that FMCSA made hypothetical cost estimates which form the basis of its “impact calculations.” FMCSA assumes that the average firm is a regional or long haul firm that will be affected by the cost of electronic on-board recording devices and by higher wages. Assuming revenue data from Standard Industrial Classification codes (SICs), the “Proposed Rules” conclude that the impact on small truckers will be minimal.

However, the DOT cost and benefits estimates to small truckers appear faulty. First, estimates of the cost of electronic on-board recording devices to small companies are based on speculation. Estimates of these costs, by the admission of the report, vary between \$1,000 and \$19,000 per unit. The estimate used for the cost calculation is \$2,850 to purchase and \$282 annually for maintenance. This calculation is purely speculative. If there are economies of scale in the purchase of electronic on-board recording devices, smaller firms will pay higher prices.

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<sup>12</sup> There may also be a distributional consequence with the market outcome described. Average wage rates will rise when more truckers are demanded, assuming a positively sloped supply curve of trucker labor. Under current regulations, however, particularly safe drivers who may require less sleep—i.e, the very productive—receive superior income. The HOS rule may well lower the productivity of these sorts of drivers and reduce their incomes.

Maintenance costs, moreover, reveal no calculation of transactions and time costs associated with installation and maintenance. The “life” of one of these devices, moreover, is by no means known. Ostensibly, that will be based on use and quality of maintenance. (The SBA estimates a life of 3 years).<sup>13</sup> The FMCSA calculates “first year” costs as \$3,132 (\$2,850 plus \$282 annually for maintenance). This is clearly a speculative calculation and most likely an underestimate for the new monitoring system. Further, on this basis and assuming annual receipts from SIC codes for small truckers (\$400,000 per year for firms with fewer than 20 employees), the FMCSA calculates new (first-year) costs of only  $\frac{3}{4}$  of one percent of the average small motor carrier’s receipts.

This legerdemain ignores a number of important facts, including: (a) no one knows what the cost of electronic on-board recording devices will be to small firms; and (b) no one has (or can?) separate the additional time, transactions, or terminal costs for small (or large) carriers until the operation and efficiency of electronic on-board recording devices is experienced. The greatest lacunae in the calculation for small (or large) firms in motor trucking is the failure to estimate and include the higher labor costs (due to higher wages and more drivers per haul) that will be associated with the institution of the “proposed rules” and the likely effects on motor carrier firms.

Whatever the net effects on wages, marginal high-cost trucking firms will go out of business. In economic terms, it is the infra-marginal, more efficient firms that will survive the regulations. If those infra-marginal firms are larger in scale, the size distribution of the industry could change in the long run.<sup>14</sup>

### C. Truck costs

It appears that the agency proposal underestimates costs for a number of reasons, including: underestimated increased wage costs, possibly due to the overestimate of cost saving to carriers,<sup>15</sup> and a probable underestimate of the electronic on-board devices (and especially their effects on small truckers). But a major cost of implementation of Options 4 or 5 is completely ignored. Fifty thousand new drivers will require new vehicles—both tractors and trailers. Using the FMCSA’s own estimates, 50,000 new drivers will be needed (as noted above). The cost estimates of tractors and trailers vary, but estimates for tractors range from \$75,000 to \$150,000

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<sup>13</sup> See Allen C. Basala, “Comments on the Department of Transportation-Office of Motor Carrier Safety Draft Rule Making Package Regarding Hours of Service and the Required Use of Electronic On-Board Recording Devices,” Small Business Administration (March 21, 2000), p. 3.

<sup>14</sup> We do not entertain the possibility that some groups of motor carriers may find it in their interests to “raise rivals’ costs” by supporting stringent regulations on small competitors. This phenomenon is known to exist in other forms of regulated enterprise, such as with OSHA and EPA regulations (see Ann P. Bartel and Lacy Glenn Thomas, “Predation Through Regulation: The Wage and Profit Effects of the Occupational Safety and Health Administration and the Environmental Protection Agency,” *Journal of Law and Economics*, 30 (1987) in Robert B. Ekelund, Jr. (ed.) *The Foundations of Regulatory Economics*, III, Cheltenham, Elgar, 1998, pp. 149-174.

<sup>15</sup> Some studies calculate a serious overestimate of the savings from reduced hours. The National Economic Research Associates study (“A Review of the Federal Motor Carrier Safety Administration’s Economic Analysis for its Proposed Hours of Service Standard,” August 3, 2000, pp. 16-18) shows, for example, that the agency’s own statistics on “hours saved” by imposing a 12 hour rule are considerably lower than they report in the “cost” portion of their study.

each with trailers costing approximately \$20,000 each. Using conservative estimates (and the agency's own estimate of needed new drivers) this results in a cost of (50,000 X \$75,000) 3.75 billion dollars with a trailer cost (given a ratio of tractor to trailer of 2.7:1) of an additional \$2.7 billion. A total cost of new equipment, given FMCSA's estimates, is \$6.55 billion.<sup>16</sup> These additional costs, amortized in any reasonable fashion, would wipe out benefits, even those estimated by FMCSA.

Anecdotal evidence supports these estimates. The Crete Carrier Corporation, in a response to one of its major customers (Proctor and Gamble), estimates that a 20 percent increase (an additional 1,000 vehicles) would be required to do the present job of goods transport. This would represent a capital expenditure of over \$75 million with a wage increase of almost \$45 million (an additional annual expense) and with an annualized loss in asset utilization of \$14.4 million and driver training costs of \$12.5 million.<sup>17</sup> Estimates of new capital costs and recurring expenses made by affected large carriers, whether higher or lower depending upon assumptions, are all quite substantial. These costs are grossly underestimated in the FMCSA proposed regulations.

#### **D. Other industry costs**

Other wage costs must be included as costs to the trucking industry. Additional insurance for new drivers and equipment must be added to the total. Further, a "full wage" calculation should be made in any estimate of the additional full costs to trucking firms. These full costs would include all fringe benefits, such as contributions to retirement funds, health insurance co-premiums and other expenses.

Trucking firms will undergo more subtle and (at this point perhaps unpredictable and less calculable) adjustment costs. Hours limitations on drivers mean that productivity may well decline. If promulgated, for example, long-haul drivers can be on duty no more than 12 hours within a consecutive 24-hour period on any single workday. Under current regulation, with typical on-load and off-load delays, a driver can go off-duty and rest, hours that do not count toward his or her service for the day. He or she may also stop driving when conditions are not safe and not have this time count against the total driving time. Required weekend off-duty rules proposed in the regulations—332 to 56 consecutive hours with at least 112 hours in a two-week period—will in effect shift delivery time from Mondays to later in the week. Almost certainly, the "productivity" of motor trucking will be adversely affected in actual practice, not to mention new congestion (and possibly new investment in) truck stops and other resting-places.

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<sup>16</sup> We should note that our estimate is low compared to others that have been made. The "MLA Transportation Focus Special Report" on "Hours of Service—Impact Scenarios" estimates that an additional 198,734 additional drivers will be needed, with full compliance and moving the same amount of freight. Thus the estimate of the costs of new power units and trailers rise to a one-time cost to the economy of \$34.2 billion, a figure that includes driver training and recruitment and inventory adjustments. Further, the MLA estimates an annual recurring costs, additional service and driver costs, of \$20.2 billion.

<sup>17</sup> "Letter from Tonn M. Ostergard, President and CIO of Crete Carrier Corporation" (June 13, 2000), p. 2.

The hours-of-service proposal does not account for other costs that will be borne by all producers (and ultimately consumers) that depend on motor transportation. Modern computerized input ordering systems depend, sometimes critically, upon just in time acquisition of resources. Higher costs of technologically combining these resources will affect final output production functions. Higher prices must be charged to consumers to the extent that systems are stressed through dislocations in supplies stemming from restricted driving times and schedules of motor carriers. These diseconomies could be considerable and the higher costs are in addition to the higher charges expected for motor transportation itself when costs of higher trucker wages and electronic metering devices are passed on to manufacturers.

Estimates of these costs are difficult to make on an economy-wide basis. Nevertheless it is apparent that the trucking industry has considerable leverage over business logistics cost in the United States. According to one estimate, “drivers already account for 65 to 67 percent of LTL (less than truckload) trucking costs and 42 to 44 percent of truckload costs.”<sup>18</sup> Any reductions in productivity must be put through the U.S. logistics system, resulting in increased costs of goods and services. Practically speaking, the rise in trucking costs that this reduction in productivity would cause would create increased inventory-to-sales ratios for businesses using motor transportation. Proponents of the proposed regulations have completely ignored the economic costs of carrying larger inventories. Increased inventory means increased business investment above and apart from increased prices for motor transportation. In a competitive market, some of the increased cost of variance in trucking reliability (caused by reduced productivity engendered by the new regulations) will manifest itself in a shift away from trucking (especially on the long haul) and new, less-efficient logistics.

In sum, the increased costs to a prosperous and growing economy from ill-considered regulations on transportation may actually dwarf the potential benefits from the proposed policies. The aim in all economies that pursue high-growth is to reduce all transactions costs in order that new and productive exchange will be facilitated. Raising the costs of transportation—a large part of overall transactions costs—would be sure to have deleterious effects on economic growth. Without significant attendant benefits to this proposal, the actual effects of proposed regulation would be to work at cross-purposes to the overall long-standing economic goals of U. S. society.

#### **E. Adjustments to DOT’s Cost Estimates**

Line 1 of Table 2 reports DOT’s cost estimates for the 5 options under consideration. The entries are present value estimates for the costs over the first 10 years of the program, and they are expressed in billions of dollars. They range from \$2.7 billion for option 1 to \$3.4 billion for option 5.

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<sup>18</sup> Robert V. Delaney, Cass Information Systems (letter of June 16, 2000).

**Table 2: DOT Cost Estimate Sensitivity to Key Assumptions (billions)**

Adjustment	Option 1	Option 2	Option 3	Option 4	Option 5
DOT cost estimate	\$2.70	\$2.70	\$2.60	\$3.10	\$3.40
Additional Labor ( $e_s = 5.0$ )	\$ .185	\$ .185	\$ .185	\$ .185	\$ .185
Additional Hiring, Training, Fringe Benefits	\$ .035	\$ .035	\$ .035	\$ .035	\$ .035
Additional EOBR Costs	\$ n/a	\$ n/a	\$ n/a	\$ .250	\$ .250
Cost of Additional Trucks, Trailers	\$2.70	\$2.70	\$2.70	\$2.70	\$2.70
Adjusted Costs	\$5.62	\$5.62	\$5.52	\$6.27	\$6.57

In subsequent lines, we report our estimates of various costs which differ from DOT estimates or which are ignored by DOT. A part of DOT's estimated costs are the costs associated with hiring more workers and paying them higher wages. In producing the estimates, DOT assumed that the labor supply in the truck-driver market has a price elasticity of 10. With this estimate, wages will have to rise by 0.39% to attract the 3.9% additional drivers that will be needed to comply with the proposed regulation. Here, we do not dispute DOT's estimate of the number of additional drivers that will be required but we do dispute its assumed price elasticity which seems implausibly high. On line 2 we report our adjustments to their labor cost estimates assuming that the price elasticity of supply equals 5 and that a wage increase of 0.78% will be necessary to attract the needed drivers. This leads to an increase in labor costs over 10 years of \$185 million.

We also account for the costs of hiring and training the new workers and of providing them with fringe benefits. We conservatively estimate that this cost will be 20 percent of the additional labor costs or \$35 million over 10 years.

The third adjustment that we make to the DOT estimates pertains to the costs of the electronic on-board recording devices that are required under options 4 and 5. Despite estimates to the contrary obtained by DOT, it assumes that the units will cost \$1,000 each. (DOT reports estimates as high as \$19,000 each). We believe that \$2,000 per unit is more reasonable. This adjustment adds \$250 million to the costs of options 4 and 5.

Our final adjustment is to include the cost of new trucks that the proposed regulations will necessitate. Based on industry data on the ratios of drivers and trailers to trucks, the 10 year cost of additional trucks and trailers will amount to \$2.7 billion.

When all the adjustments are taken into account (see line 6) the cost of each of the 5 proposals will be about two times as high as has been estimated by DOT.

## IV. Implications for Proposed Regulatory Approach

### A. Market failure?

DOT's goals of preventing accidents and saving lives are laudable. However, DOT has not identified any market failure that would prevent truck drivers and companies from achieving life-saving objectives. Indeed, accident reduction is in the personal, as well as financial, interests of all market participants in the motor carrier industry.<sup>19</sup> Beyond the incentive to protect their own well-being, the well-being of employees and the value of trucks, liability and insurance claims internalize both costs and benefits to all participants in accidents—victims and perpetrators alike.

DOT's own benefit estimates only serve to reinforce this observation. They are primarily based upon savings in paperwork costs to truck drivers and companies. These are clearly private costs since they are borne by truckers and companies themselves. If private savings could be effected through the use of on-board computers, trucking companies would voluntarily adopt them, rather than resist their imposition. Since the adoption of that system, if efficient, would place a company at a competitive advantage over others and since we have not observed such an adoption, the inescapable conclusion is that such devices are not cost-effective.

Statistics from DOT's National Highway Traffic Safety Administration also do not support the need for new regulation, but reveal that market forces are working well to reduce accidents. The large-truck fatal crash rate—the number of fatal accidents per 100 million miles traveled—has dropped from about 3.3 in 1989 to 2.33 in 1998. There was, furthermore, a decline between 1997 to 1998, the most recent year for which data is available.<sup>20</sup> This reduction in fatalities occurred despite a same-period ten-year increase in tons carried from 716 billion in 1989 to 1,037 billion in 1998. Thus, both the record of and the incentives for highway safety already exist and they exist, moreover, due to completely internalized mechanisms within the trucking industry, including those related to the drivers themselves.

### B. Unintended Consequences

The inability to define fatigue in any meaningful manner, let alone the impossibility of relating fatigue to accident rates, could have serious consequences in terms of the agency's recommendation. Altering hours of service to emphasize more off-duty time in the belief that such time would translate into more sleep for truckers is only a triumph of hope over the lack of evidence. Without Herculean and intrusive enforcement, there is no reason to believe that more sleep would be forthcoming. While the conclusions and recommendations hinge critically on the assumption that “non-driving equals sleep,” the real possibility that truckers will engage in other activities and even second jobs (e.g. on enforced week-end rest) might have an impact the opposite of that intended in the proposal. While the possibility of higher wages due to the higher

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<sup>19</sup> Casual observation also leads to evidence of internalization of costs and benefits in trucking. Back-of-truck advertising for “safe” drivers or requests for call-ins to 800 numbers respecting safety are clear suggestions that social costs are being internalized.

<sup>20</sup> Data taken from *American Trucking Trends 2000* (American Trucking Association), pp. 16-17, 52-53.

demand for truckers might somewhat mitigate the necessity for a second job, that result is by no means obvious.<sup>21</sup>

Other critical problems regarding highway safety could attend this development. First, when new truckers are attracted to the industry (of possibly a smaller number of firms), they will of necessity be less experienced. Many of the new hires will be applicants who have previously been passed over for employment in the trucking industry, so they will also tend to be less dependable. Prima facie, this development will increase accidents and fatalities. Secondly, and of even greater importance, there is plentiful evidence that financial status is an important predictor of firm safety performance. Beard (1992), utilizing statistics on cash flow and random, comprehensive roadside safety results to measure financial status and safety performance, finds that “financial conditions of firms are important predictors of their inspection performances... [and that] the trucks of successful firms are significantly more likely to pass random inspections than . . . those of less wealthy companies.”<sup>22</sup> These studies suggest that, to the extent that rising costs and decreased demand put motor freight truckers at risk, maintenance and other aspects of transport safety will decline.

Finally, implementation of the proposal will require, by conservative estimates, 50,000 new trucks on the road. This fact, coupled with less flexible on-duty driving requirements, does not suggest that accidents, some of them fatal, will be reduced. On the contrary, road congestion will increase accidents with a high probability of increased fatalities. Implementation of the agency’s recommendation may, thus, have exactly the opposite effect of that intended by the regulation.

## V. Recommendations and Conclusions

After careful examination, we conclude that the agency proposal to amend hours of work for truckers in order to produce greater highway safety is inadequately supported. The most critical foundation for the argument to amend existing work hour rules—*some clear identification of fatigue and the linking of fatigue to fatal accidents*—is not only inadequate but actually non-existent in the material supporting this proposal. While the laudatory goal of accident prevention drives the proposal, the remedies suggested will not achieve that result.

A central problem with the FMCSA proposal, quite apart from a fatally flawed fundamental presumption of causation between fatigue and fatalities, is the method by which costs and benefits are calculated and the remedies given for the perceived problem. First, benefits are inflated and costs are underestimated. Benefits to new hours of service requirements are almost exclusively calculated to be savings on paperwork (log keeping and firm accounting costs). Except for paperwork, there are basically no net benefits to be had from the proposed

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<sup>21</sup> The result would of course hinge on the elasticity of supply of truckers, an elasticity that FMCSA estimates indicate is quite low.

<sup>22</sup> See T. Randolph Beard, “Financial Aspects of Motor Carrier Safety Inspection Performance,” *Review of Industrial Organization* 7 (1992), pp. 51-64. Also see G. Chow, “Deregulation, Financial Distress, and Safety in the General Freight Trucking Industry,” in Leon Moses and Ian Savage (eds.) *Transportation Safety in an Age of Deregulation*, New York, Oxford University Press, 1989.



regulations, *given* DOT’s estimates of costs and benefits. DOT’s fatality-reduction benefits are also overstated, and sensitive to key assumptions. Altering assumptions regarding the effect of fatigue on accident rates, and the effectiveness of the proposed options on reducing fatigue, we estimate that benefits would range from \$3.75 billion for Option 1 to \$5.0 billion for Option 5. These are all much lower than DOT’s estimated costs.

DOT’s costs, however, are grossly deflated. We made conservative adjustments to DOT’s estimates of wage costs and the cost of electronic on-board recording devices, as well as corrected for its complete exclusion of the cost of new trucks and the logistics costs that would be put on motor freight transportation. Our resulting cost estimates range from \$5.62 billion for Option 1 to \$6.57 billion for Option 5. These costs dwarf even DOT’s benefits estimates, and suggest that promulgation of any of the proposed options would yield significant net costs as shown in Table 3 below.

**Table 3: Net Benefits (billions)**

Adjustment	Option 1	Option 2	Option 3	Option 4	Option 5
Adjusted net benefits (excluding paperwork)	-\$4.97	-\$4.97	-\$4.67	-\$4.97	-\$4.77
Adjusted net benefits (including paperwork)	-\$1.87	-\$1.87	-\$1.37	-\$2.17	-\$1.57

Most critically, perhaps, implementation and enforcement of the proposed regulations may actually have the opposite effects than that intended. New levels of road congestion, the possibility of less rather than more rest or sleep, and regulation of time-of-day driving causing less flexibility for drivers may actually increase driving fatalities. In short, any new regulation with the sweeping economic implications of this proposal should require a far more careful examination of both benefits and costs than those presented by the FMCSA.

Before proceeding, DOT should gather more evidence on the causes of serious and fatal highway accidents. The focus of this rule on reducing driver fatigue is not based on reliable evidence that fatigue is a significant contributor to fatal accidents. Perhaps road congestion, road quality, or other vehicle, driver, or infrastructure considerations are more important factors in accidents involving commercial motor vehicles. Depending on the causes of accidents, the approach proposed by DOT may actually increase, rather than reduce fatal accidents.

The real reduction of accidents involving trucks, and other vehicles as well, is clearly a desirable aim. Restrictions on hours and driver flexibility as proposed in all five options will not, however, achieve those goals. The proposed work hour caps cannot effectively mandate reductions in sleep debt, and DOT’s proposal to eliminate alternatives and flexibility in a system with as large and diverse a work force as trucking will not address the sleep deficit problem, if indeed one exists. The one-size-fits-all assumptions of the proposal cannot possibly fit every driver and every situation. Better enforcement of current rules and built-in flexibility and common sense rules would appear to present a better field for improving highway safety.

APPENDIX I

RSP CHECKLIST

DOT'S HOURS OF SERVICE PROPOSAL

Element	Agency Approach	RSP Comments
1. Has the agency identified a significant market failure?	<p>The agency approach implies that because fatigue may cause accidents, regulation is necessary.</p> <p><b>Grade: F</b></p>	<p>No one would deny that fatigue is potentially associated with accidents. In order to demonstrate a market failure, however, a stricter test must be applied: trucking companies must be shown to have caused accidents for which they did not or do not bear a cost. DOT has not shown this, and indeed, these costs are internalized through insurance rates, reputation and driver welfare.</p>
2. Has the agency identified an appropriate federal role?	<p>Since trucks travel across state borders, DOT argues that uniform rules across states are desirable.</p> <p><b>Grade: B</b></p>	<p>Given the interstate nature of trucking services, a federal role is more appropriate than individual state regulations. However, non-regulatory options, such as private incentives (insurance premiums) or recourse to litigation serve to limit unsafe driving practices.</p>
3. Has the agency examined alternative approaches?	<p>DOT examined five regulatory options.</p> <p><b>Grade: C</b></p>	<p>None of the proposed options consider flexible, market-based alternatives. DOT should also consider better enforcement of current rules before imposing new ones.</p>
4. Does the agency attempt to maximize net benefits?	<p>DOT examines costs and benefits for each option.</p> <p><b>Grade: D</b></p>	<p>DOT has ignored important costs and overestimated benefits with purely arbitrary estimates of avoided fatigue-related crashes. Our adjustments to these estimates suggest that every option will impose net costs, not net benefits. These net costs range from over \$1 billion per year if paperwork benefits are included, to almost \$5 billion per year when paperwork benefits are excluded.</p>

Element	Agency Approach	RSP Comments
5. Does the proposal have a strong scientific or technical basis?	<p>DOT bases its proposal on the fact that the electronic on-board recording devices “would undoubtedly make violations more difficult to conceal.”</p> <p><b>Grade: F</b></p>	<p>The technical and logical foundation of the proposal is weak or non-existent. DOT recognizes that its calculations of “fatigue-related” accidents are speculative, yet it makes unsubstantiated assumptions about the cause of accidents and the effectiveness of the rule in order to support the proposed options. Without these unsupported assumptions, it becomes clear that the costs of the rule will exceed its benefits.</p>
6. Are distributional effects clearly understood?	<p>The analysis estimates that small business impacts will be minimal.</p> <p><b>Grade: D</b></p>	<p>The analysis does not provide adequate foundation for the cost (or revenue) estimates for small businesses purchase of recording devices and does not consider likely small business failures. Society also must incur deadweight losses of increased transport prices and possible production dislocations – costs which are ignored by DOT.</p>
7. Are individual choices and property impacts understood?	<p>DOT does not consider the effect of its proposals on individual choices and actions.</p> <p><b>Grade: F</b></p>	<p>The opportunity for more rest does not equal less fatigue: off-duty does not mean sleep. These rules may force truckers to take on additional jobs, or may allow more leisure time for non-restorative activities. Further, DOT does not consider the incentive to avoid new regulations – assumes 100 percent compliance, a goal that even the it recognizes will not be attained.</p>