240883

FMCSA-1997-2350-23303

Finding Of No Significant Impact (FONSI)

"PUBLIC NOTICE – ALL INTERESTED PARTIES"

Federal Motor Carrier Safety Administration's
FINDING OF NO SIGNIFICANT IMPACT
FOR
Hours of Service of Drivers; Driver Rest and Sleep for Safe Operations
Regulatory Identification Number 2126-AA23

In accordance with the National Environmental Policy Act of 1969 (NEPA) (P.L. 91-190) and the Council of Environmental Quality Regulations dated 28 November 1978 (40 CFR Parts 1500-1508), this action has been thoroughly reviewed by the FMCSA and it has been determined, by the undersigned, that this project will have no significant impact on the human environment. Therefore, no Environmental Impact Statement (EIS) will be prepared.

This finding of no significant impact is based on the attached FMCSA prepared December 2002 Environmental Assessment which has been determined to adequately and accurately discuss the environmental issues and impacts of the proposed action and provides sufficient evidence and analysis for determining that an environmental impact statement is not required.

4/16/03 — [signature] — Economist
Date — Environmental Reviewer — Title/Position

I have considered the information contained in the Environmental Assessment, which is the basis for this Finding of No Significant Impact. Based on the information in the Environmental Assessment and this Finding of No Significant Impact document, I agree that the proposed action as described above, and in the Environmental Assessment, will have no significant impact on the environment.

4/16/03 — [signature] — Acting Admin.
Date — Responsible Official — Title/Position

FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION

ENVIRONMENTAL ASSESSMENT FOR HOURS OF SERVICE (HOS) RULE

Prepared by:

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for the

Federal Motor Carrier Safety Administration
U.S. Department of Transportation
Washington, D.C.

December 2002

ENVIRONMENTAL ASSESSMENT
FOR HOURS OF SERVICE (HOS) RULE

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ENVIRONMENTAL ASSESSMENT FOR HOURS OF SERVICE (HOS) RULE

Introduction

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C. 4321 et seq.) to provide an analysis of potential environmental consequences of proposed revisions to the Department of Transportation (DOT) Federal Motor Carrier Safety Administration (FMCSA) Hours of Service (HOS) regulations. The HOS regulations address the number of hours that a commercial motor vehicle (CMV) operator may drive, and the number of hours a CMV driver may be on duty, before rest is required. The current HOS regulations were promulgated pursuant to the Motor Carrier Act of 1935 and are codified at 49 CFR Part 395. The revised HOS regulations were proposed in a Notice of Proposed Rulemaking (NPRM) published in the May 2, 2000 Federal Register (65 FR 25540).

In all of its rulemaking actions, the FMCSA, a relatively new modal administration within the DOT, now indicates that it is analyzing the proposal under NEPA, the regulations for implementing NEPA as issued by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508), and the DOT Order 5610.1C (September 18, 1979, as amended on July 13, 1982 and July 30, 1985), entitled "*Procedures for Considering Environmental Impacts*." The FMCSA continues to use CEQ regulations and the DOT Order for implementing NEPA until it develops its own environmental procedures in an FMCSA Order.

Under paragraph 4(d) of the DOT Order, entitled "*Environmental Assessment,*" an EA or environmental impact statement (EIS) shall be prepared for actions normally categorically excluded, but which are likely to involve: (1) significant impacts on the environment; (2) substantial controversy on environmental grounds; (3) impacts which are more than minimal on properties protested by section 4(f) and sections 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470); or (4) inconsistencies with any Federal, State, or local law or administrative determination relating to environment.

Because the HOS proposal involves the number of hours that a CMV operator may drive on our nations highways, and the number of hours that a CMV driver may be on duty before rest is required, the FMCSA has determined that this action may lead to substantial controversy on environmental grounds. Thus, the basis for this agency's determination that an EA is required for this proposal can be found in paragraph 4(d)(2) of the DOT Order.

If on the basis of the EA, the FMCSA determines that a full EIS is not required, the agency may make a finding of no significant impact (FONSI) briefly explaining why an action will not have a significant effect. See paragraph 5 of the DOT Order. On the other hand, if after completion of the EA the FMCSA determines that an EIS is required, an EIS shall be prepared for any proposed major Federal action significantly affecting the environment. See paragraphs 4(b) and

7 of the DOT Order, and CEQ regulations at 40 CFR 1508.27. The FMCSA can also determine to withdraw the proposal on the basis of anticipated environmental impacts.

The FMCSA conducted a preliminary impact analysis of the Proposed Action in accordance with DOT guidelines for NEPA analyses and determined that the provisions of the Proposed Action and Alternatives could affect the way in which motor carriers and drivers operate. These changes could affect how motor carrier operations affect air quality, land use, noise levels, safety, socioeconomics, energy consumption, and sensitive environmental resources. FMCSA evaluated the potential effects on these environmental conditions to determine whether significant adverse effects could occur. The impacts evaluated in this EA are generally anticipated to be experienced within two years of the implementation of an Alternative. This EA presents the results of FMCSA's analysis and provides a basis for FMCSA to determine whether the potential effects of the Proposed Action and Alternatives warrant consideration in an environmental impact statement.

1. Purpose and Need for Proposed Action

The Proposed Action is for the FMCSA to revise its Hours of Service (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, as well as the minimum amount if time that must be reserved for rest. The current regulations are divided into "daily" and "multi-day" provisions, which can be expressed as:

- Operators can cumulatively drive up to 10 hours since the end of their latest 8-consecutive-hour break. Drivers may remain on duty indefinitely but may not drive after they have been on-duty for 15 hours after their latest 8-hour consecutive break.

- Operators can cumulatively drive or be on-duty up to 60 hours over the previous six consecutive 24-hour periods plus the current 24-hour period, or 70 hours over the previous seven 24-hour periods plus the current 24-hour period.

The HOS regulations were originally promulgated in 1937, and the last significant revision to the regulations was in 1962. The FMCSA published a Notice of Proposed Rulemaking (NPRM) in the May 2, 2000 Federal Register (65 FR 25540) proposing to revise the HOS regulations. 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 FMCSA is authorized to conduct rulemaking concerning all but one of the NHS Act exemptions, and proposed changes to them in the May 2000 NPRM. [1] None of the Alternatives evaluated in this document propose any revisions of the NHS exemptions.

[1] The FMCSA does not have the statutory authority to rescind or revise the exemption to the HOS regulation that is applicable to groundwater well drill rigs. Therefore, the Proposed Action does not affect this exemption.

1.1 Purpose of the Proposed Action

The purpose of the proposed action is to improve CMV safety by revising the FMCSA HOS regulations to require motor carriers to provide CMV drivers with expanded periods of rest, which in turn will provide drivers with better opportunities to obtain sleep. The expanded periods of rest and associated improved opportunities for drivers to obtain sleep will reduce the incidence of drowsy, tired, or fatigued drivers. FMCSA thereby expects to be able to prevent a number of the hundreds of fatalities and thousands of injuries that occur each year on U.S. roads because of fatigued CMV drivers and the crashes in which they are involved.

1.2 Need for the Proposed Action

The need for the Proposed Action is based on the FMCSA's estimation of the total number of crashes involving vehicles subject to the rule, the damages imposed by those crashes, and the assessment of the percentage of those crashes and damages attributable to fatigue. The total crashes and damages are presented in Table 1. Of these crashes, an estimated 8.15 percent are related to fatigue. Thus, the total damages from fatigue-related crashes have a value of about 8 percent of $32 billion, or about $2.5 billion per year. Excluding a fraction of crashes that occur in operations that would be little affected by the Proposed Action, the fatigue-related crashes subject to the Proposed Action are estimated to impose costs of about $2.3 billion per year. The analysis of the effects of the Proposed Action and Alternatives on crash risks shows that these damages could be reduced substantially.

Table 1: Calculation of Total Value of Large Truck Crashes by Year

	Average per Year
Number of Fatal Crashes	4,568
Number of Injury Crashes	92,000
Number of Property Damage Only Crashes	329,250
Total Number of Large Truck Crashes	425,818
Average Damages per Large Truck Crash	$75,637
Total Damages from Large Truck Crashes	$32,208,000,000

Source: RIA for HOS Rule Options, Exhibit ES-4.

The current HOS regulations are not based on a 24-hour day, 7-day week work cycle, and do not allow sufficient off-duty time for drivers to obtain 8 hours of sleep. The HOS regulations were originally promulgated in 1937 and have existed in their current form since 1962. Since that time the construction of the Interstate highway system has contributed to much higher traffic speeds and volumes and longer shipment distances, none of which were considered in the development of the current regulations. The high volume and speed of CMV operations on Interstate highways and the more crowded traffic conditions in local and regional environments require a high level of driver alertness. Also, the results of scientific studies into fatigue causation, sleep, circadian rhythms, night work, and other relevant matters were not available when the current HOS regulations were developed. Therefore, there is a need for the current FMCSA HOS regulations to be revised.

2. Alternatives

This EA considers and assesses the potential environmental consequences of four Alternatives. These are the No Action Alternative, the Parents Against Tired Truckers (PATT) Alternative, the American Trucking Associations (ATA) Alternative, and the FMCSA Alternative. The EA also evaluates the consequences of a Full Compliance Baseline, which provides the Agency a second baseline from which to compare the impacts of Alternatives. The Alternatives and the basis for their selection are described in this section. A summary of the major provisions of each Alternative is included in Table 2. None of the Alternatives analyzed in this EA address the NHS Act exemptions.

2.1 No Action Alternative

DOT and Council on Environmental Quality (CEQ) NEPA regulations require that the No Action Alternative be considered in the EA, which represents the status quo (continued implementation of the current HOS regulations and exemptions). The No Action Alternative would result in no additional rulemaking and no changes in the method of enforcing the current HOS regulations. Under the No Action Alternative, the HOS rule proposed by the FMCSA in the May 2, 2000 NPRM would be withdrawn and no new rule would be promulgated. The FMCSA would continue to enforce the current HOS regulations. Under the No Action Alternative, the existing exemptions to the current HOS regulations under the NHS Act would remain in effect.

The current HOS regulations are divided into "daily" and "multi-day" provisions. The daily and multi-day provisions of the current regulations can be expressed as:

- Operators can cumulatively drive up to 10 hours since the end of their latest 8-consecutive-hour break. Drivers may remain on duty indefinitely but may not drive after they have been on-duty for 15 hours after their latest 8-hour consecutive break.
- Operators can cumulatively drive or be on-duty up to 60 hours over the last six consecutive 24-hour periods plus the current 24-hour period, or 70 hours over the last seven 24-hour periods plus the current 24-hour period.

The impact analyses for the No Action Alternative are based on the assumption that the FMCSA will continue to implement the current HOS regulations in the same manner as today and that the regulated community will also continue to comply with the current HOS regulations in the same manner as it does now.

2.2 Full Compliance Baseline

The Full Compliance Baseline was evaluated in the Regulatory Impact Analysis (RIA) for HOS Rule Options, and is included in this EA as a way to establish the baseline effect of the regulation if carriers and drivers properly implemented the existing regulations. The Full Compliance Baseline is similar to the No Action Alternative in that both anticipate the continuation of the current HOS regulations with no additional rulemaking. However, the Full Compliance Baseline also assumes that the FMCSA would implement specific changes in the method by which the Agency implements the current HOS regulations, in order to achieve 100 percent compliance by motor carriers and CMV drivers.

The Full Compliance Baseline assumes that the HOS rule proposed by the FMCSA in the May 2, 2000 NPRM would be withdrawn and no new rule would be promulgated, and that the existing exemptions to the current HOS regulations under the NHS Act would remain in effect. The Full Compliance Baseline assumes that the compliance rate increases to 100 percent. No specific provisions or procedures to increase the compliance rate are specified. The FMCSA is not proposing to implement the Full Compliance Baseline as an alternative to the Proposed Action. This Baseline provides a means to gauge the effect the current rule would have if it were fully enforced.

2.3 PATT Alternative

This Alternative was suggested by the organization Parents Against Tired Truckers (PATT).

The PATT Alternative is divided into "daily" and "multi-day" provisions. The daily and multi-day provisions of the PATT Alternative can be expressed as:

- Operators can cumulatively drive up to 10 hours or be on-duty up to 12 hours since the end of their last 12-consecutive-hour break.
- Operators can cumulatively be on-duty up to 60 hours or drive up to 50 hours over the last six consecutive 24-hour periods before the beginning of the current 24-hour period.[2]

2.4 ATA Alternative

This Alternative was suggested by the American Trucking Associations (ATA).

The ATA Alternative is divided into "daily" and "multi-day" provisions. The daily and multi-day provisions of the ATA Alternative can be expressed as:

- Operators can generally drive or be on duty 14 cumulative hours with up to 16 cumulative hours twice per 7-day period. The 14-hour (or 16-hour) on-duty period must be followed by a 10-hour off-duty period.
- Operators can generally drive or be on duty 70 hours over the last seven 24-hour periods or 140 hours over the last 14 24-hour periods.
- Off duty breaks do not count against the 14-hour limit.

[2] Note that in all Alternatives, the start times for the 24-hour time-periods for drivers are established by the carrier, by terminal.

2.5 FMCSA Alternative

The FMCSA Alternative represents the proposed new HOS rule.

The FMCSA Alternative is divided into daily and multi-day provisions, which can be expressed as:

- 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.
- Operators cannot drive after accumulating 60 hours on duty or driving over the last six consecutive 24-hour periods plus the current 24-hour periods or 70 hours over the last seven 24-hour periods plus the current 24-hour period.
- Short-haul drivers can be on-duty up to 16 consecutive hours one day during a seven-day workweek so long as two such days do not occur consecutively.
- A new 60- or 70- hour period begins whenever the driver takes 34 consecutive hours off duty.

Several categories of motor carriers and drivers are exempt from parts of the current HOS regulations or from the entire HOS regulation under the NHS Act. During preparation of the NPRM, the FHWA Office of Motor Carriers (the predecessor agency to the FMCSA) received a petition from the citizens' organization Advocates for Highway and Auto Safety seeking rulemaking to reevaluate the NHS Act exemptions. As noted above, the FMCSA Alternative does not rescind or revise the NHS Act exemptions.

2.6 Summary Comparison of Alternatives

The No Action Alternative (the status quo) assumes that there are no changes to the current Hours of Service Rule or to the current level of compliance with the current Hours of Service Rule. The No Action Alternative would not provide CMV drivers with expanded rest periods and would have no effect upon the opportunity for drivers to obtain more sleep. Therefore, the No Action Alternative would have no effect on CMV safety.

Each of the other Alternatives requires motor carriers to provide CMV drivers with expanded rest periods, which would provide additional opportunities for CMV drivers to obtain more sleep and result in a decrease in the incidence of fatigue-related crashes and associated costs. The analysis of the effects of the expanded rest periods under each Alternative on hours of driver sleep and associated analysis of the effect of changes in hours of driver sleep on CMV safety and fatigue-related crash incidence for long-haul (LH) and short-haul (SH) operations are included in the *Regulatory Impact Assessment for HOS Options* (RIA, 2002). The methodology for the safety analysis is described in Chapter 2, *Overview of the Analysis*, Appendix F, *Modeling Schedules: Detailed Description of Generating Long-Haul Driver Schedules and Increments*, and Appendix G, *Procedure for Estimating Incremental Relative Crash Risk: The Sleep Performance Spreadsheet*, of the RIA. The comparative analysis of the Alternatives in the RIA is based on the assumption that motor carriers and CMV drivers achieve 100 percent compliance with the provisions of the Alternative. The Full Compliance Baseline assumes that there are no changes to the Hours of Service Rule, but that the level of compliance with the current HOS rule increases to 100 percent.

- The Full Compliance Baseline represents a reduction in crash incidents for LH operations of 2.7% from the No Action Alternative, and a reduction in crash incidents for SH operations of 0.2%, with an associated reduction in cost of crash incidents of $443 million per year.

- The FMCSA Alternative results in a reduction in crash incidents for LH operations of 4.1% from the No Action Alternative, and a reduction in crash incidents for SH operations of 0.2%, with an associated reduction in cost of crash incidents of $671million per year.

- The PATT Alternative results in a reduction in crash incidents for LH operations of 5.0% from the No Action Alternative, and a reduction in crash incidents for SH operations of 0.4%, with an associated reduction in cost of crash incidents of $783 million per year.

- The ATA Alternative results in a reduction in crash incidents for LH operations of 1.0% from the No Action Alternative, and a reduction in crash incidents for SH operations of 0.1%, with an associated reduction in cost of crash incidents of $170 million per year.

In terms of meeting the purpose and need for the Proposed Action, each of the Alternatives provides a reduction in fatigue-related crash incidence and associated costs from that of the No Action Alternative. Of the Alternatives, the PATT Alternative provides the largest percent reduction in fatigue-related crash incidence from the No Action Alternative, and the largest reduction in the associated cost of fatigue-related crashes, and the ATA Alternative provides the smallest percent reduction in fatigue-related crash incidence and associated cost. The FMCSA Alternative provides a greater reduction in fatigue-related crash incidence and associated cost than the Full Compliance Baseline, which provides a greater reduction than the ATA Alternative. Each of the Alternatives provide a major benefit with respect to reduction in fatigue-related crash incidence and associated cost.

With respect to the impacts of the Alternatives, economic impacts of the Alternatives are analyzed in RIA Chapter 6, *Assessment of Costs of Changes in Operations*, Chapter 9, *Cost and Benefit Results* (in particular Section 9.4, *Costs and Benefits Relative to the Status Quo*), and Chapter 10, *Impacts on Carriers* (in particular Section 10.1, *Summary of Results*). As shown in the RIA, all of the Alternatives result in a decrease in motor carrier net income relative to the No Action Alternative for all carrier net income categories3. Changes in the net income of carriers and changes in the number of employees required by the carriers under each Alternative could cause socioeconomic impacts by affecting the movement of people and demand for resources. The PATT Alternative would most adversely affect the net income of carriers when compared with the No Action Alternative. The Full Compliance Baseline would result in a larger

3 The RIA presents income data compared to the full compliance baseline, while this document compares the data to the status quo (No Action).

economic impact than the FMCSA Alternative, but both would have a smaller impact than the PATT Alternative. The ATA Alternative would cause the least impacts to net income of carriers.

While all of the Alternatives have the potential to cause socioeconomic impacts that connect with the environment, relative to the No Action Alternative, FMSCA is not able to predict the specific locations where such impacts might occur or the specific entities to which such impacts might occur. The national scope of the proposed regulatory change means that potential socioeconomic impacts could occur across the entire U.S. or in isolated areas, and are likely to involve very small numbers of people. Given the national distribution of potential impacts and the very low population numbers that would likely be involved, FMCSA has concluded that there would not be significant socioeconomic impacts resulting from any of the Alternatives.

Impacts to air quality, land use, sensitive resources, noise, and energy consumption are minor for all Alternatives as compared to the No Action Alternative, representing a less than 1 percent change relative to the No Action Alternative, with the exception that air quality impacts of the PATT Alternative are moderate, representing a 2 percent increase in air emissions relative to the No Action Alternative. These minor impacts are summarized in Section 4.9, *Comparison of Alternatives*.

Table 2 - Summary of Hours of Service Alternatives

Provisions of Alternatives	No Action Alternative and Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Daily Provisions				
Time Limits – Maximum hours on duty (including driving and non-driving hours).	Drivers may remain on duty indefinitely but may not drive after being on duty for a total of 15 hours after their last 8 hours off duty.	12 consecutive hours after first beginning on-duty status.	Generally, 14 cumulative hours, with up to 16 cumulative hours twice per 7-day period, if the period in which the on-duty hours exceeded 14 is followed by a period in which the on-duty hours are less than 14 by an equivalent amount.	14 consecutive hours after first beginning on duty status; up to 16 consecutive hours one day in every seven days for short haul drivers.

Provisions of Alternatives	No Action Alternative and Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Time Limits – Maximum hours driving.	10 cumulative hours.	10 cumulative hours.	Not considered separately from hours on-duty.	11 cumulative hours.
Off-duty break required when time limit is met.	8 consecutive hours.	12 consecutive hours.	10 consecutive hours off-duty required (14 hours after beginning on-duty status following the last 10 consecutive hour off-duty period). Drivers with sleeper berths are allowed to split these 10 hours into two separate breaks of consecutive hours summing to 10 hours.[4] Team drivers may count time in passenger seat as sleeper berth time under some conditions.	10 consecutive hours for most drivers; Drivers with sleeper berths may split the sleeper berth/off-duty time into two separate periods determined by the driver.
Count of hours resets to zero?	No. There is no daily on duty limit to be reset.	Yes. Count of hours resets at the end of the required break.	Yes. Count of hours resets at the end of the required break of 34 consecutive hours.	Yes. Count of hours resets at the end of any break of 34 consecutive hours off duty.
Multi-Day Rule Provisions				
Time Limits – Maximum hours on duty (including driving and non-driving hours).	No on-duty limit, but drivers cannot drive after 60 hours on duty over any 7 consecutive 24-hour periods or 70 hours on duty over any 8 consecutive 24-hour periods. [5]	60 hours over the last 6 consecutive 24-hour periods plus the current 24-hour period.	70 hours over the last 7 24-hour periods (ending with the last completed 24-hour period), *or* 140 hours over the last 14 24-hour periods, with no more than 84 hours allowed in one of the 7 24-hour periods, if followed by a 34-hour off-duty period, and no more than 56 hours in the remaining 7 24-hour periods.	14 hours on duty after each 10-hour period off duty, but no driving after 60 hours on duty over any 7 consecutive 24-hour periods or 70 hours on duty over any 8 consecutive 24-hour periods.[6]

[4] There are also a few special exceptions for specific markets such as drivers using natural gas well sleeper units (49 CFR §395.1). Because this provision applies to few drivers, this EA does not account separately for these exceptions.

[5] That is, 60 hours over the last 6 completed 24-hour periods plus the current 24-hour period as well as 60 hours over last 7 completed 24-hour periods. This is true likewise for the 70-hour provision.

[6] That is, 60 hours over the last 6 completed 24-hour periods plus the current 24-hour period as well as 60 hours over last 7 completed 24-hour periods. This is true likewise for the 70-hour provision.

Provisions of Alternatives	No Action Alternative and Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Time Limits – Maximum hours driving.	There is no differentiation between on-duty and driving for the multiple-day provisions.	50 hours over the last 6 consecutive 24-hour periods plus the current 24-hour period.	Driving hours are not considered separately from hours on-duty.	There is no differentiation between on-duty and driving for the multiple-day provisions.
Off-duty break required when multi-day limit met?	No.	No.	Yes. A 34-hour break is required only if, in the 140 hour averaging alternative, 84 hours are accumulated in the first 7 24-hour periods.	No, but a 34-hour break is required before the driver can drive again.
Count of hours resets to zero?	No. The 60- and 70-hour periods do not reset to zero after 8 hours off duty.	Not Applicable – No recovery period specified.	Count of hours for "7-day" alternative resets to zero after a 34-hour off-duty break; Count of hours for "14-day" alternative does not reset to zero after a 34-hour off-duty break.[7]	Yes. Count of hours resets to zero after 34 hours off duty.

3. Affected Environment

FMCSA analyzed the Alternatives to determine provisions that could change the way in which the affected trucking industry and associated facilities interact with the natural and social environment. The Alternatives, except the No Action Alternative, would all alter the hours that long haul truckers could operate before taking mandatory breaks and rest periods. FMCSA analyzed the Alternatives in a Regulatory Impact Analysis and determined that the Alternatives would:

- Affect the number of vehicle miles traveled (VMT);
- Affect the number of vehicle hours idling (VHI);
- Induce some mode shift of freight from truck to rail;
- Change the demand for truck parking;
- Affect the economics of the industry and the cost of compliance with the regulatory requirements; and

[7] In the ATA Alternative, the 34-hour break required after accumulating 84 hours in the first seven 24-hour periods does not allow the 56-hour maximum to be exceeded in the second seven 24-hour periods, and it is not possible to exceed the 84 or 56-hour maximums in a "7-day" period in which an extra 34-hour break has been taken, given the 14–hour maximum per 24 hours. If the driver is on-duty for just under 84 hours in the first seven 24-hour periods, however, no 34-hour break appears to be required, and the driver can exceed the 56-hour maximum.

- Reduce the number of fatal and injury crash incidents resulting from tired, drowsy, or fatigued drivers.

FMCSA determined that changes in VMT, VHI, and a mode shift to rail could affect emissions of air pollutants, noise, and energy consumption. FMCSA found that the demand for truck parking has the potential to induce development of new truck parking facilities, although the Alternatives do not contain provisions that would mandate any new construction. New construction could potentially affect land uses, historic resources, natural resources, and sensitive environmental resources. Socioeconomic impacts could also occur as a result of compliance with new regulations. Finally, the FMCSA determined that the safety improvements could have potential socioeconomic, human health, and environmental benefits by reducing accidents and associated injuries, fatalities, and property damage.

This section describes the physical environment potentially affected by the Proposed Action and Alternatives. It describes the baseline environmental setting, which includes the existing air emissions resulting from the current level of CMV operations and the existing land use (i.e., number of existing highway rest areas) associated with the current level of CMV operations. The socioeconomic setting and energy setting are also described below.

3.1 Air Quality Baseline

The air quality baseline encompasses the total mobile source criteria air pollutant emissions from operation of CMVs affected by the current HOS regulations. The FMCSA estimates that there are 1,125,000 CMVs operating in the U.S. that are affected by the current HOS regulations and that these CMVs travel approximately 101,152,550,000 vehicle miles and experienced 2,059,000,000 hours of vehicle idling per year. Table 3 summarizes relevant operating data for CMV operations by driver/vehicle type.

Table 3 – Operating Data for CMV Operations by Driver/Vehicle Type

Vehicle Operating Data	Total
Total Vehicles in Service	1,125,000
Vehicle miles traveled (VMT)	101,152,550,000
Vehicle hours idling (VHI)	2,059,000,000
Total Rail Freight (Revenue Ton miles)	1,466,000,000,000

Sources: RIA for HOS Rule Options, Appendix A and Association of American Railroads (2000)

The total VMT for this analysis includes long haul (LH) and private carriage hauls >250 miles (referred to as affected CMV operations in this analysis). VMT excludes team driving, short haul trucks, and the less-than-truckload sector. Sectors other than LH and private carriage hauls are not expected to undergo any significant change in VMT with respect to the No Action Alternative. The total VHI for this analysis is based on simulating extreme truck driving conditions in accordance with the existing and proposed Hours of Service Regulations. Only 46 percent of For-Hire CMVs and 35 percent of Private Carriage CMVs are anticipated to be subject to these extreme conditions. The remaining percentage is not expected to undergo any change in idling hour emissions with respect to the No Action Alternative.

Annual emissions of criteria air pollutants, including carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM) and volatile organic compounds (VOCs) were calculated for the air quality baseline, based on number of vehicle miles traveled and number of vehicle hours idling for each vehicle type. Annual emissions of carbon dioxide (CO_2), a greenhouse gas, were also calculated for the air quality baseline using the same methodology. Emission factors (grams of pollutant per vehicle mile traveled and grams per vehicle idling hour) and emission estimation models were taken from the EPA publication *Compilation of Air Emission Factors.*[8] Table 4 summarizes criteria air pollutant emission factors for CMV driver/vehicle types and operations and for rail carriers who might be affected by a mode shift from truck to rail.

Table 4 – Criteria Air Pollutant Emissions Factors For CMV Operations

Emission Source	CO	NO_x	PM	VOC	CO_2
Long Haul Vehicle Travel (grams per VMT)	4.80	19.21	0.73	0.75	1,677.0
Short Haul Vehicle Travel (grams per VMT)	9.48	28.01	1.46	1.73	1,677.0
Long Haul Vehicle Idling (grams/hour)	53.2	69.5	1.6	5.8	10,799.0
Short Haul Vehicle Idling (grams/hour)	105.2	102.0	3.4	13.4	10,799.0
Rail Carriers (grams/gallon of fuel)	26.6	221.5	6.7	10.0	9832.0

Source: EPA, 2000. Compilation of Air Emission Factors. EPA Publication AP-42, Volume II (pending 5th edition). 2000.

Baseline criteria air pollutant emissions were calculated separately for vehicle miles traveled and vehicle idling hours because the different Alternatives affect the number of vehicle miles traveled and number of vehicle idling hours in different ways. Baseline criteria air pollutant emissions were also calculated separately for long haul trucks and drayage trucks[9] because the criteria air pollutant emission factors differ for each driver/vehicle type and different Alternatives affect the vehicle miles traveled and vehicle hours idling differently for the different vehicle types. Table 5 summarizes baseline air emissions from CMV operations under the current HOS regulations ("No Action Alternative"). Additional information on the air quality analysis baseline is presented in Appendix A.

[8] EPA, 2000. Compilation of Air Emission Factors. EPA Publication AP-42, Volume II (pending 5th edition), 2000.
[9] Drayage trucks are used to transport shipments between rail yards and final delivery locations, for either pickup or delivery purposes. This type of truck is necessary to assist in intermodal operations.

Table 5 – Baseline Air Pollutant Emissions from CMV Operations by Driver/Vehicle Type (metric tons/year)

Emission Source	CO (MT/yr)	NO_x (MT/yr)	PM2.5 (MT/yr)	PM10 (MT/yr)	VOC (MT/yr)	CO_2 (MT/yr)
Vehicle Miles Traveled	485,532	1,943,140	65,446	73,740	75,864	169,632,826
Vehicle Idling Hours	109,474	143,135	3,057	3,331	11,941	22,231,511
Rail Carriers	N/A	N/A	N/A	N/A	N/A	N/A
Total All CMV Types in Service	595,006	2,086,275	68,503	77,071	87,805	191,864,338

Note: Total numbers may vary due to rounding.

3.2 Land Use Baseline

The land use baseline consists of the existing highway rest areas in the Interstate and State highway systems. The current HOS regulations require drivers to go off duty for a period of time after a certain number of driving/on-duty hours. This rest period may take place at the driver's home, a hotel or motel, a highway rest area, or a truck stop. Rest areas are generally parking areas that are constructed alongside Interstate and in some cases State highways for drivers to park their CMVs during rest periods. Rest areas may or may not include service areas. Public comments on the NPRM by State Highway Administrators and other commenters indicated that there is an existing shortage of rest areas and suggested that the Proposed Action and Alternatives (other than the No Action Alternative) would exacerbate the existing shortage. FHWA studies indicate that there are shortages in some States (1996, 2002). Therefore, the potential that the Proposed Action could induce construction of additional rest areas, with associated land use effects, is evaluated in this EA.

In June 2002, FHWA published the results of a study of the existing demand for public and non-public parking spaces in: *Report to Congress: Study of Adequacy of Parking Facilities.*[10] The study reported FHWA research on parking spaces at public rest areas, commercial truck stops, and travel plazas. The FHWA reported an estimated 315,850 parking spaces at 1,771 public rest areas and 5,153 commercial truck stops and travel plazas serving Interstate highways and other National Highway System (NHS) routes carrying more than 1,000 trucks per day. Routes carrying fewer than 1,000 trucks per day were not surveyed. Approximately 10 percent of truck parking spaces were in public rest areas and 90 percent were in commercial truck stops and travel plazas.

To determine the adequacy of the parking facilities, the FHWA compared the supply of public parking spaces to the demand for public parking spaces, compared the supply of non-public parking spaces to the demand for non-public parking spaces, and compared the total supply to the total demand for each State (except Hawaii, which was not included in the study). Public and commercial spaces were evaluated separately because truckers use these facilities for different purposes. Public spaces are used for resting. Commercial spaces are used for meals,

[10] FHWA, 2002. Report to Congress: Study of Adequacy of Parking Facilities, June 2002.

maintenance and other purposes. The results showed that 35 States have a shortage of public parking spaces, while only 8 States have a shortage of commercial parking spaces. The comparison of total spaces to total demand showed that twelve States have overall shortages. Appendix B presents detailed information on the State-by-State adequacy of parking facilities.

3.3 Noise Environment

Sources of noise associated with motor carrier operations potentially affected by the Proposed Action include trucks traveling along highways and trucks idling at truck stops and rest areas. In addition, trains that could carry extra freight as some traffic is shifted from truck to rail also produce noise that could be affected by the Proposed Action. FMCSA did not conduct site-specific noise background studies because there is no practical or reliable way to predict the location and magnitude of the changes along individual highways, rest areas, or rail lines. However, FMCSA did evaluate the relative changes in noise by considering the changes in operating parameters (i.e., VMT, VHI, etc,) that affect noise levels. The baseline conditions of these parameters are discussed throughout section 3 of this EA.

3.4 Safety Baseline

The safety baseline includes the number of crash incidents with fatalities and injuries and the number of incidents with property damage only, that occur under the current HOS regulations. It also includes the related economic costs of such incidents. The FMCSA estimates that under existing conditions, 8.15 percent of all crashes are fatigue-related. Table 6 shows data concerning average fatal and injury crash incidents and property damage only crash incidents.

Table 6 - Large Truck Crashes by Year

	1997	1998	1999	2000	Average
Fatal Crashes	4,614	4,579	4,560	4,519	4,568
Total fatalities	5,398	5,395	5,380	5,211	5,346
- Truck occupants	723	742	759	741	741
- Other vehicle occupants	4,223	4,215	4,180	4,060	4,170
- Non vehicle occupants	452	438	441	410	435
Trucks involved	4,917	4,955	4,920	4,930	4,931
- Combination trucks involved	3,711	3,747	3,713	3,708	3,720
- Single unit trucks involved	1,206	1,208	1,207	1,222	1,211
Single vehicle crashes	847	803	808	802	815
Injury Crashes	92,000	85,000	95,000	96,000	92,000
Total injuries	131,000	127,000	142,000	140,000	135,000
Trucks involved	96,000	89,000	101,000	101,000	96,750
- Combination trucks involved	53,000	51,000	57,000	52,000	53,250
- Single unit trucks involved	43,000	38,000	44,000	48,000	43,250
Single vehicle crashes	16,000	15,000	17,000	17,000	16,250
Property Damage Only Crashes	325,000	302,000	353,000	337,000	329,250
Trucks involved	337,000	318,000	369,000	351,000	343,750
- Combination trucks involved	197,000	178,000	184,000	179,000	184,500
- Single unit trucks involved	141,000	140,000	185,000	173,000	159,750
Single vehicle crashes	95,000	91,000	98,000	104,000	97,000

Source: National Highway Traffic Safety Administration (NHTSA) General Estimates System
Note: Total numbers may vary due to rounding.

The estimated economic cost of these incidents is summarized in Table 7. The economic cost was estimated using the standard Department of Transportation methodology described in the RIA for HOS Rule Options.[11]

Table 7 - Economic Cost of Large Truck Crashes

Accident	Average per year
Fatal Crashes	4,568
Injury Crashes	92,000
Property Damage Only Crashes	329,250
Total Large Truck Crashes	**425,818**
Average Damages per Large Truck Crash	$75,637
TOTAL Economic Cost ($Millions)	**$32,208**

Source: RIA for HOS Rule Options, Exhibit 8-1; "Costs of Large Truck- and Bus-Involved Crashes," Zaloshnja *et al.* (2000).

[11] RIA for HOS Rule Options, Chapter 2, Chapter 8.

3.5 Socioeconomic Baseline

Analysis of the economic impacts associated with the Proposed Action and Alternatives are included in the RIA and are beyond the scope of NEPA. However, NEPA requires consideration of socioeconomic impacts if there would be a connection to the environment. This could occur if the Proposed Action caused the movement of people to a new area, creating demand for homes, schools, and services. This type of socioeconomic demand could cause environmental impacts. The socioeconomic analysis in this EA draws on information presented in the RIA.

3.6 Energy Consumption Setting and Baseline

The energy consumption baseline represents the total energy (i.e., diesel fuel) consumed directly by operation of the CMV fleet affected by the current HOS regulations. The FMCSA estimates that the 1,125,000 long-haul CMVs operating in the U.S. that are affected by the current HOS regulations traveled approximately 101,152,550,000 vehicle miles (VMT) and experienced 2,059,000,000 hours of vehicle idling in 1999. The total baseline energy consumption (in British Thermal Units [BTUs] per year) was calculated for the CMV fleet based on the fuel consumption estimates of number of vehicle miles traveled and number of vehicle hours idling for each vehicle type, and the BTU content of diesel fuel. Fuel economy factors for diesel trucks (BTUs per vehicle mile traveled and BTUs per vehicle idling hour) were taken from EPA publication *Compilation of Air Emission Factors.*[12]

Baseline energy consumption was calculated based on vehicle miles traveled and vehicle hours idling because different Alternatives affect the number of vehicle miles traveled and the number of vehicle hours idling differently.

Table 8 summarizes baseline energy consumption from CMV operations under the current HOS regulations.

Table 8 - Baseline Energy Consumption Factors for Affected CMV Operations

Operating Parameter	Quantity
Vehicle miles traveled (VMT)	101,152,550,000
Vehicle hours idling (VHI)	2,059,000,000
Gallons of Diesel Fuel Consumed	18,911,818,421
Barrels of Diesel Fuel Consumed	450,281,391
Million BTU (MBtu)	2,622,889,102
Quadrillion BTU (QBtu)	2.62

[12] EPA, 2000. Compilation of Air Emission Factors. EPA Publication AP-42, Volume II (pending 5th edition). 2000.

The Proposed Action affects only one segment of the transportation system in the U.S. To place the energy consumption into context, FMCSA compared the baseline fuel consumption for the affected CMV operations with different measures of U.S. fuel consumption as shown in Table 9.

Table 9 - Affected CMV Operations Energy Consumption as a Percentage of U.S. Energy Consumption

Energy Consumer	Annual Consumption (QBtu)	Percentage from Affected CMV Operations
Affected CMV Operations	2.62	100%
All Medium and Heavy Duty Trucks	4.56	57.5%
Total Transportation Energy Consumption	25.84	10.2%
Total U.S. Energy Consumption	98.8	2.7%

3.7 Sensitive Environmental Resources

FMCSA evaluated the proposed action to identify sensitive environmental resources protected by law or Executive Order that could be either directly or indirectly affected by the proposed action. These resources are:

- Threatened or endangered species habitat;
- Prime or unique farmland;
- Floodplains;
- Wetlands;
- Wild and scenic rivers;
- Coastal zones;
- Historical or cultural resources; and
- Resources protected under Section 4(f) of the Department of Transportation Act.

FMCSA did not identify any provisions of the proposed action that would directly affect sensitive environmental resources. The proposed action does not mandate any new construction. However, the proposed action could indirectly affect sensitive environmental resources by: 1) increasing the demand for additional parking facilities, which could result in construction of new facilities; and 2) improving the safety of hazardous material transportation, thereby reducing the threat of hazardous material spills resulting from accidents.

A survey of public and private truck parking facility supply and demand by FHWA determined that there is a shortage of truck parking facilities in some States.[13] The environmental consequence analysis (see Section 4.2) indicates that the FMCSA and PATT Alternatives would increase the demand for parking facilities in several States. Any construction of new facilities to meet the existing demand or increased demand due to the Proposed Action or Alternatives could affect sensitive environmental resources.

[13] FHWA, 2002. Report to Congress: Study of Adequacy of Parking Facilities, July 2002.

Traffic accidents related to tired, sleepy, or fatigued CMV drivers have a potential to affect floodplains, wetlands, wild and scenic rivers, and prime or unique farmland if they involve spills of hazardous material. The consequence analysis (see Section 4.4) indicates that the Proposed Action and the Alternatives would decrease the number of accidents. This should result in a decrease in the risk of hazardous material spills affecting sensitive resources. However, FMCSA did not identify any practical approach to reliably predict where such traffic accidents could occur near these sensitive resources.

FMCSA did not conduct an inventory of sensitive environmental resources for the Proposed Action because the location of any new parking facility construction cannot be determined or predicted. Individual State government agencies and/or private enterprises may construct additional parking facilities to meet any additional demand. However, the specific areas where such additional demand would be experienced under the various Alternatives and the specific locations where public agencies and private enterprises would elect to construct additional parking facilities to meet the new demand cannot be predicted. FMCSA also notes that the FHWA study identified existing shortages of public and non-public parking facilities in several States that have not been addressed with new construction by public agencies or private enterprises. Therefore, it is not a foregone conclusion that any new demand resulting from the Proposed Action would definitely be addressed by new construction. Also, it is impossible to accurately project the extent to which any new parking facility construction would be in response to existing demand or to the increased demand due to the Proposed Action or the Alternatives.

4. Environmental Consequences

This section describes the potential environmental consequences of the Alternatives. The No Action Alternative would not result in any air quality impacts, socioeconomic impacts, energy impacts, land use impacts, environmental justice impacts, or commitment of resources beyond those already being experienced. No Action would also avoid the positive human health and safety benefits that would occur with the Proposed Action and the Alternatives. Each of the four action Alternatives may result in potentially adverse or beneficial impacts in one or more of these areas.

4.1 Air Quality Impacts

FMCSA estimated the effects of the Alternatives on criteria air pollutant emissions and on emissions of greenhouse gases, as detailed in Appendix A. The analysis considered the effects of the Alternatives on the number of vehicle miles traveled, number of vehicle idling hours, and a mode shift of freight to rail as projected by the RIA. The results are summarized in Table 10 and discussed in this section.

FMCSA considered both criteria air pollutants and greenhouse gases in its analysis. The criteria pollutants considered in the analysis were carbon monoxide (CO), nitrogen oxides (NO_x), particulate matter (PM), and volatile organic compounds (VOCs). The particulate matter analysis considered both $PM_{2.5}$ and PM_{10}. ($PM_{2.5}$ is a component of PM_{10}.) The effects of these criteria pollutant emissions are manifested at a local level and will vary depending upon local conditions. The greenhouse gas carbon dioxide (CO_2) was also evaluated due to its effects on a global scale.

The air quality effects of the criteria pollutants (NO_x, VOC, CO, $PM_{2.5}$ and PM_{10}) cannot be accurately predicted on a national scale because the effects are dependant upon local conditions. Without knowing the location, periodicity, time of day, concentration, ambient pollutant concentrations, and meteorological conditions (temperature, sunlight, wind conditions, etc.) under which these emissions occur, their potential impacts on air quality are purely speculative. Therefore, FMCSA used the total nationwide emissions of each of these pollutants as an indicator of relative impact of these pollutants. The Full Compliance Baseline and the ATA Alternative would reduce the emissions of pollutants from the affected sector of the trucking industry by 0.3 and 0.8 percent, respectively. The FMCSA Alternative and the PATT Alternative would increase emissions from this sector by 0.6 and 1.7 percent, respectively. FMCSA does not consider these changes to have the potential for a significant effect on air quality.

CO_2 is a greenhouse gas with relatively constant effects regardless of the time, place, or conditions during emission, and therefore, its impacts can be placed in context. Based on EPA data (EPA, 2002b), the total CO_2 emissions for the No Action Alternative (191,864,338 metric tons per year) represent approximately 10.22 percent of U.S. transportation greenhouse gas emissions (1,877,000,000 metric tons) or 2.74 percent of total U.S. net greenhouse gas emissions (7,001,200,000 metric tons). Under the PATT and FMCSA Alternatives, these numbers would rise to 10.43 and 10.29 percent of U.S. transportation greenhouse gas emissions or 2.80 and 2.76 percent of total U.S. net greenhouse gas emissions, respectively. Under the Full Compliance Baseline and the ATA Alternative, these numbers would fall to 10.17 and 10.12 percent of U.S. transportation greenhouse gas emissions or 2.73 and 2.71 percent of total U.S. net greenhouse gas emissions, respectively. In all, this change represents a range of just less than one-tenth of one percent in annual total U.S. net greenhouse gas emissions across the various scenarios. FMCSA does not consider this to be a significant change in net greenhouse gas emissions.

Table 10 – Criteria Air Pollutant Emissions From Affected CMVs for Alternatives
(metric tons per year)

Air Quality Impacts	No Action	Full Compliance	PATT	ATA	FMCSA
Carbon Monoxide (CO)	595,006	592,672	617,708	586,197	602,325
Particulate Matter ($PM_{2.5}$)	68,503	68,273	68,874	68,205	68,620
Particulate Matter (PM_{10})	77,071	76,788	77,422	76,736	77,181
Volatile Organic Compounds (VOCs)	87,805	87,655	90,448	86,877	88,659
Nitrogen Oxides (NO_x)	2,086,275	2,079,729	2,110,366	2,073,647	2,093,995
Total Criteria Air Pollutants (tons)	2,846,157	2,836,844	2,895,944	2,823,457	2,862,160
Percent Change from No Action	0	-0.3%	1.7%	-0.8%	0.6%
Carbon Dioxide (CO_2)	191,864,338	190,911,287	195,708,029	189,923,275	193,097,092
Percent Increase over No Action	0	-0.5%	2.0%	-1.0%	0.6%

Pursuant to the Clean Air Act (CAA), the Environmental Protection Agency (EPA) is required to establish National Ambient Air Quality Standards (NAAQS) for specified pollutants, including NO_x and PM_{10}. See 42 U.S.C. 7409 and 40 CFR part 50. To implement these standards, the CAA requires each State to adopt and submit for EPA approval a State Implementation Plan (SIP). See 42 U.S.C. 7410(a)(1). Under the CAA and implementing regulations, all States are divided into air quality control regions, classified as attainment or non-attainment with respect to each pollutant for which a NAAQS has been established. See 42 U.S.C. 7407. Each SIP must include emissions limitations and other measures necessary to bring non-attainment areas into attainment, to maintain air quality in attainment areas and to otherwise comply with the NAAQS. See 42 U.S.C. 7410(a)(2).

To ensure these goals are met, the CAA contains a "conformity" requirement, which states that no Federal agency may engage in support in any way or provide financial assistance for, license or permit, or approve, any activity that does not conform to a (SIP). See 42 U.S.C. 7506(c)(1). To "conform," a Federal action must be consistent with the purposes of a SIP and must not: (1) cause or contribute to any new violation of an applicable air quality standard; (2) increase the frequency or severity of an existing violation; or (3) delay timely attainment or any applicable standard, interim-reduction requirement or other milestone. EPA implemented regulations at 40 CFR parts 6, 51 and 93 to assist Federal agencies in complying with the conformity requirement. The requirements provide for both "transportation conformity" analysis (applicable to highways and mass transit) and "general conformity" analysis (applicable to everything else). EPA's "general conformity" requirements at 40 CFR Parts 51 and 93 apply to all FMCSA actions.

With respect to general conformity, all Federal actions are covered, unless otherwise exempt. Under the regulations at 40 CFR part 93, Federal agencies need not perform conformity determinations as to certain types or categories of actions, even if the actions may or will cause emissions in non-attainment areas. See 40 CFR 93.153(c). Among other things, Federal agencies need not perform conformity determinations: (1) when the total of direct and indirect emissions of an agency action are below stated threshold levels for specified pollutants, see 40 CFR 93.153(c)(1); or (2) when the action in question is listed by the EPA as an action which would result in no emissions increase or an increase in emissions that is clearly de minimis. See 40 CFR 93.153(c)(2). Also included on this list are actions that constitute "rulemaking." 40 CFR 93.153(c)(2)(iii).

The FMCSA determined that a Clean Air Act conformity analysis is not required under the EPA's general conformity guidelines for the Proposed HOS Action and its Alternatives because they do not meet the definition of actions for which a conformity analysis is required. Federal agencies need not perform conformity determinations as to actions that will not cause emissions above specified threshold levels or that are categorically excluded. The Proposed Action and Alternatives are regulatory actions that EPA has categorically excluded from the requirement to conduct conformity analysis (EPA, 1994; Spickard, 2002). In addition, as this chapter and Appendix A demonstrate, the national air pollution impact of the Proposed Action and Alternatives is clearly de minimis. The Proposed Action would result in a 0.6 percent increase in criteria air pollutants and CO_2, spread throughout the country. Therefore, FMCSA has not conducted a conformity analysis for the Proposed Action and Alternatives.

4.2 Land Use Impacts

None of the Alternatives contain provisions that would require construction of additional parking facilities. Land use impacts associated with the Proposed Action are related to the effects of the Alternatives on the number of highway rest areas that may need to be constructed over and above the existing inventory, in order to respond to potential increases in the number of vehicles in service and the increased need for rest time, including the effects of mode shift from truck to rail. The land use impact of construction of additional highway rest areas is measured in the number of additional acres of land that would need to be dedicated to the construction of additional rest areas to meet any increased demand.

FMCSA analyzed the total parking demand and supply on a State-by State basis to determine the adequacy of truck parking under each Alternative. Table 11 shows the results of this analysis where surplus parking is defined as a demand to supply ratio of >1.1; sufficient parking is defined as a demand to supply ratio >0.9 but <1.1; and a shortage is defined as a demand to supply ratio of <0.9. The results showed that the ATA Alternative and the FMCSA Alternative would decrease the demand and improve the availability of truck parking as compared to the No Action Alternative. However, the Full Compliance Baseline and the PATT Alternative would increase parking demand and result in parking shortages in 20 and 23 States, respectively. Appendix B presents the detailed analysis of truck parking availability.

Table 11 - Evaluation of total parking demand/supply ratio: State-by-State analysis

	No Action		Full Compliance		PATT		FMCSA		ATA	
State	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**
Alabama	0.93	Sufficient	1.15	Shortage	1.22	Shortage	0.89	Surplus	0.79	Surplus
Alaska[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	0.53	Surplus	0.76	Surplus	0.83	Surplus	0.48	Surplus	0.38	Surplus
Arkansas	0.99	Sufficient	1.11	Shortage	1.15	Shortage	0.96	Sufficient	0.91	Sufficient
California	2.29	Shortage	2.90	Shortage	3.10	Shortage	2.15	Shortage	1.85	Shortage
Colorado	1.15	Shortage	1.66	Shortage	1.82	Shortage	1.05	Sufficient	0.82	Surplus
Connecticut	1.67	Shortage	2.53	Shortage	2.82	Shortage	1.49	Shortage	1.11	Shortage
Delaware	2.28	Shortage	3.47	Shortage	3.86	Shortage	2.04	Shortage	1.52	Shortage
Florida	0.81	Surplus	1.00	Sufficient	1.06	Sufficient	0.77	Surplus	0.69	Surplus
Georgia	0.75	Surplus	0.93	Sufficient	0.98	Sufficient	0.72	Surplus	0.64	Surplus
Idaho	1.44	Shortage	2.08	Shortage	2.29	Shortage	1.31	Shortage	1.03	Sufficient
Illinois	1.33	Shortage	1.61	Shortage	1.70	Shortage	1.28	Shortage	1.16	Shortage
Indiana	1.10	Shortage	1.33	Shortage	1.41	Shortage	1.06	Sufficient	0.96	Sufficient
Iowa	0.50	Surplus	0.60	Surplus	0.63	Surplus	0.48	Surplus	0.43	Surplus
Kansas	0.51	Surplus	0.74	Surplus	0.81	Surplus	0.47	Surplus	0.37	Surplus
Kentucky	1.17	Shortage	1.44	Shortage	1.53	Shortage	1.12	Shortage	1.00	Sufficient
Louisiana	0.96	Sufficient	1.07	Sufficient	1.11	Shortage	0.93	Sufficient	0.88	Surplus
Maine	0.66	Surplus	1.00	Sufficient	1.11	Shortage	0.59	Surplus	0.44	Surplus
Maryland	1.00	Sufficient	1.51	Shortage	1.68	Shortage	0.89	Surplus	0.66	Surplus
Massachusetts	1.83	Shortage	2.78	Shortage	3.08	Shortage	1.63	Shortage	1.21	Shortage
Michigan	0.72	Surplus	0.87	Surplus	0.91	Sufficient	0.69	Surplus	0.62	Surplus
Minnesota	0.75	Surplus	0.91	Sufficient	0.96	Sufficient	0.72	Surplus	0.65	Surplus
Mississippi	0.73	Surplus	0.90	Sufficient	0.96	Sufficient	0.70	Surplus	0.62	Surplus
Missouri	0.89	Surplus	1.08	Sufficient	1.14	Shortage	0.85	Surplus	0.77	Surplus
Montana	0.58	Surplus	0.83	Surplus	0.92	Sufficient	0.53	Surplus	0.41	Surplus
Nebraska	0.35	Surplus	0.51	Surplus	0.56	Surplus	0.32	Surplus	0.25	Surplus
Nevada	0.57	Surplus	0.72	Surplus	0.77	Surplus	0.53	Surplus	0.46	Surplus
New Hampshire	0.40	Surplus	0.61	Surplus	0.68	Surplus	0.36	Surplus	0.27	Surplus
New Jersey	0.45	Surplus	0.69	Surplus	0.76	Surplus	0.40	Surplus	0.30	Surplus
New Mexico	0.83	Surplus	1.19	Shortage	1.31	Shortage	0.75	Surplus	0.59	Surplus
New York	0.95	Sufficient	1.45	Shortage	1.61	Shortage	0.85	Surplus	0.63	Surplus
North Carolina	0.69	Surplus	0.86	Surplus	0.91	Sufficient	0.66	Surplus	0.59	Surplus
North Dakota	0.36	Surplus	0.52	Surplus	0.57	Surplus	0.33	Surplus	0.26	Surplus
Ohio	1.12	Shortage	1.35	Shortage	1.42	Shortage	1.07	Sufficient	0.97	Sufficient
Oklahoma	0.45	Surplus	0.51	Surplus	0.52	Surplus	0.44	Surplus	0.42	Surplus
Oregon	0.79	Surplus	0.99	Sufficient	1.06	Sufficient	0.74	Surplus	0.64	Surplus
Pennsylvania	0.65	Surplus	0.99	Sufficient	1.10	Sufficient	0.58	Surplus	0.43	Surplus
Rhode Island	1.07	Sufficient	1.62	Shortage	1.80	Shortage	0.95	Sufficient	0.71	Surplus
South Carolina	0.59	Surplus	0.73	Surplus	0.77	Surplus	0.56	Surplus	0.50	Surplus
South Dakota	0.51	Surplus	0.73	Surplus	0.81	Surplus	0.46	Surplus	0.36	Surplus
Tennessee	0.74	Surplus	0.91	Sufficient	0.96	Sufficient	0.70	Surplus	0.63	Surplus
Texas	1.49	Shortage	1.68	Shortage	1.74	Shortage	1.46	Shortage	1.37	Shortage
Utah	0.62	Surplus	0.90	Sufficient	0.99	Sufficient	0.57	Surplus	0.45	Surplus
Vermont	0.19	Surplus	0.29	Surplus	0.32	Surplus	0.17	Surplus	0.13	Surplus
Virginia	0.93	Sufficient	1.15	Shortage	1.22	Shortage	0.89	Surplus	0.79	Surplus
Washington	1.14	Shortage	1.44	Shortage	1.53	Shortage	1.07	Sufficient	0.92	Sufficient
West Virginia	0.92	Sufficient	1.13	Shortage	1.20	Shortage	0.87	Surplus	0.78	Surplus
Wisconsin	0.41	Surplus	0.50	Surplus	0.53	Surplus	0.40	Surplus	0.36	Surplus
Wyoming	0.42	Surplus	0.60	Surplus	0.66	Surplus	0.38	Surplus	0.30	Surplus

1 Data on Non-public parking spaces was not obtained for Alaska. Hawaii is not included in the FHWA Study

FMCSA then analyzed the land area needed to satisfy the increased parking demand under either the Full Compliance Baseline or the PATT Alternative. FMCSA assumed that the ATA Alternative and the FMCSA Alternative would not induce construction of additional parking facilities because these Alternatives would reduce parking demand. FMCSA considered the total demand for parking spaces versus the total aggregate supply of public and non-public parking spaces because rest breaks may occur at either public rest areas or commercial establishments. Appendix B includes an analysis of the adequacy of both public and commercial truck parking facilities. FMCSA assumed that construction of additional parking facilities would not be induced in States where truck parking is projected to be either sufficient or where there would be a surplus. FMCSA also assumed that in States with a shortage of parking, additional parking facilities would be constructed to meet the increased demand. This assumption is believed to be conservative (i.e., overstate the effect) because existing shortages are not being addressed in 12 of the States that would experience shortages under Full Compliance Baseline or the PATT Alternative.

Table 12 summarizes the potential land area that would be needed to satisfy parking demand in the 23 States experiencing a shortage, assuming an average of 18 spaces per acre (NATSO, 2001). Under the Full Compliance Baseline, 2,350 acres would be needed to satisfy the additional demand in the 20 States that would experience shortages. Under the PATT Alternative, which would create shortages in 23 States, 3,408 acres would be needed to satisfy the increased demand. For individual States, the effect ranges from a low of 21 acres to a high of 385 acres.

The FMCSA did not attempt to assess the site-specific environmental consequences of construction of the additional rest areas. Such impacts would depend upon the characteristics of the specific locations where the rest stops would be constructed. Also, State and Federal highway construction projects would generally be covered by State and/or Federal regulations requiring analysis of environmental consequences of the project.

Table 12 – Number and Acreage of Additional Highway Truck Parking Spaces Needed for Alternatives That Result in Shortages of Parking Spaces

	No Action Alternative	Full Compliance Baseline		PATT Alternative		ATA Alternative	FMCSA Alternative
State	Increased Demand (spaces)	Increased Demand (spaces)	Area (acres)	Increased Demand (spaces)	Area (acres)	Increased Demand (spaces)	Increased Demand (spaces)
Alabama	No effect	1,647	92	2,185	121	No effect	No effect
Arkansas	No effect	951	53	1,261	70	No effect	No effect
California	No effect	5,219	290	6,923	385	No effect	No effect
Colorado	No effect	1,461	81	1,937	108	No effect	No effect
Connecticut	No effect	1,388	77	1,841	102	No effect	No effect
Delaware	No effect	467	26	620	34	No effect	No effect
Idaho	No effect	1,412	78	1,873	104	No effect	No effect
Illinois	No effect	3,001	167	3,981	221	No effect	No effect
Indiana	No effect	3,867	215	5,130	285	No effect	No effect
Kentucky	No effect	2,222	123	2,947	164	No effect	No effect
Louisiana	No effect	No effect	0	1,460	81	No effect	No effect
Maine	No effect	No effect	0	617	34	No effect	No effect
Maryland	No effect	1,336	74	1,772	98	No effect	No effect
Massachusetts	No effect	1,949	108	2,585	144	No effect	No effect
Missouri	No effect	No effect	0	3,150	175	No effect	No effect
New Mexico	No effect	2,342	130	3,107	173	No effect	No effect
New York	No effect	4,064	226	5,391	299	No effect	No effect
Ohio	No effect	2,970	165	3,940	219	No effect	No effect
Rhode Island	No effect	381	21	505	28	No effect	No effect
Texas	No effect	4,428	246	5,874	326	No effect	No effect
Virginia	No effect	1,786	99	2,369	132	No effect	No effect
Washington	No effect	936	52	1,242	69	No effect	No effect
West Virginia	No effect	473	26	628	35	No effect	No effect
TOTAL	**No effect**	**42,299**	**2,350**	**61,338**	**3,408**	**No effect**	**No effect**

4.3 Noise Impact Analysis

The Proposed Action and Alternatives would result in changes in the amount of truck and rail traffic, and as a result, there is a potential for noise impacts from changes in the operating characteristics of these noise sources. There are five potential sources of noise emissions from activities affected by the Proposed Action. These are:

- Operation of long haul trucks on roads and highways (vehicle miles of travel);
- Operation of short haul trucks on roads and highways (vehicle miles of travel);
- Operation of trucks at highway rest stops (vehicle idling hours);
- Operation of rail locomotives from mode shift of freight from truck to rail; and
- Operation of drayage trucks from mode shift of freight from truck to rail.

Operation of Long Haul and Short Haul Trucks - Changes in noise levels generated by long haul and short haul trucks operating on roads and highways are not anticipated to be significant for the Proposed Action and Alternatives, because the number of vehicle miles of travel (VMT) would decrease for all of the Alternatives as compared to the No Action Alternative. The numbers of vehicle miles of travel for trucks for each Alternative as compared to the No Action Alternative are shown in Table 13. As shown, the number of vehicle miles traveled would decrease from between 0.27 percent to 1.35 percent for all of the Alternatives as compared to the No Action Alternative. These reductions in vehicle miles of travel for long haul trucks would be distributed both regionally and nationally, and include the effects of mode shift from truck to rail. The FMCSA cannot predict the specific routes and locations where such changes in vehicle miles of travel would be experienced for the Alternatives, and it is possible that certain routes would experience an increase in truck traffic while other routes experience a decrease in truck traffic. However, the small changes in the total number of vehicle miles of travel for long haul trucks for the Proposed Action and Alternatives are not anticipated to result in significant changes in the noise associated with long haul vehicle operations.

Table 13 - Hours of Service Truck Vehicle Miles of Travel Analysis

	No Action	Full compliance	PATT	ATA	FMCSA
Total truck VMT (in millions)	101,153	100,300	99,788	100,882	100,701
Net VMT change as compared to No Action (in millions)	0	-853	-1,364	-271	-451
% change in VMT as compared to No Action	0%	-0.84%	-1.35%	-0.27%	-0.45%

The total VMT for this analysis includes long haul (LH) and private carriage hauls >250 miles. VMT excludes team driving, short haul trucks, and the less-than-truckload sector. Sectors other than LH and private carriage hauls are not expected to undergo any significant change in VMT with respect to the No Action Alternative.

Operation of trucks at highway rest stops (vehicle idling hours) - The Proposed Action and Alternatives would result in changes to the number of long haul trucks in operation, changes in the number of vehicle idling hours, and changes in the demand for long haul truck parking spaces at public and non-public parking facilities. Table 14 shows the changes in vehicle idling hours for each Alternative as compared to the No Action Alternative, including the effects of mode shift from truck to rail. As shown, the Full Compliance Baseline would result in no change while the PATT Alternative would result in an approximately 25 percent increase in the total number of vehicle idling hours. The FMCSA Alternative would result in an approximately 8 percent increase in the number of vehicle idling hours, and the ATA Alternative would result in a decrease in vehicle idling hours. These increases and decreases in vehicle idling hours for long-haul trucks would be distributed both regionally and nationally. The Proposed Action and Alternatives would also result in changes in the total number of trucks in operation and in the demand for public and non-public parking spaces. The Full Compliance Baseline and the PATT Alternative would result in an increase in parking demand and the FMCSA and ATA Alternatives would result in a decrease in parking demand. The changes in parking demand for each State for each Alternative are described in Appendix B.

It is anticipated that the increases or decreases in vehicle idling hours would be experienced at public and non-public parking facilities, and that for the PATT and FMCSA Alternatives, additional trucks and additional idling hours would generate noise[14]. As discussed in Appendix B, there would be an increase in demand for parking spaces for some States. For example, in Connecticut the peak hour demand for non-public parking spaces for the No Action Alternative would be 171 trucks per facility, and for the PATT Alternative the peak hour parking space demand would increase to 306 trucks per facility, assuming that the number of non-public facilities remains constant.

Table 14 - Summary of Vehicle Idling Hours for Each Alternative

	No Action	Full Compliance	PATT	ATA	FMCSA
For-Hire relative percentages	100%	100%	127%	92%	109%
Private relative percentages	100%	100%	121%	94%	107%
For-Hire idle hours (millions)	1,098	1,098	1,396	1,007	1,195
Private idle hours (millions)	961	961	1,159	900	1,025
Total idling hours (millions)	2,059	2,059	2,556	1,907	2,220

Note: Total numbers may vary due to rounding.

The number of vehicle idling hours under the No Action Alternative (i.e., the current regulations with the current level of compliance) is assumed to be same as for the Full Compliance Baseline (i.e., the current regulations with a 100 percent level of compliance) because data on work schedules show that violations of current rules usually take the form of working more days rather than violating daily constraints.

Although the FMCSA acknowledges that the Proposed Action and Alternatives would result in increases in vehicle idling hours and increases in activity at public and non-public parking facilities, the FMCSA cannot predict the specific facilities or locations where such increased noise-generating activity would be experienced. Public and non-public operators of parking facilities could decide to respond to increased demand by expanding existing parking facilities or constructing new facilities. Therefore, site-specific noise analyses cannot be conducted for this EA.

Operation of rail locomotives and drayage trucks from mode shift of freight from truck to rail – The mode shift from truck to rail will result in either a greater number or rail cars on some trains or additional trains along some railways. The distribution of the additional rail shipments regionally and nationally would be negligible with respect to the total rail shipments. In addition, the specific routes and locations that would experience such increases cannot be predicted. Similarly, the increase in operation of drayage trucks for rail freight transportation would not be significant with respect to overall operations of drayage trucks at rail facilities. Therefore, no site-specific analyses of noise impacts from potential increased rail transportation and drayage truck operation associated with the Alternatives were conducted for this EA.

14 The PATT Alternative requires additional trucks even though it has less VMT because of the reduction in proposed hourly driving limits. Therefore, a greater number of trucks will be required even though VMT declines. This larger number of trucks will spend more time on breaks, and therefore more idling will occur.

4.4 Safety Impacts

Implementation of any of the Alternatives, with the exception of the No Action Alternative, would reduce the number of fatal crash incidents and injury crash incidents related to tired, drowsy, or fatigued CMV drivers.

There are three parts to the safety impact analysis. The effects of the Alternatives on crash incidence for long haul and short haul drivers were estimated using the modeling approach described in Appendix C. Then the change in crash incidence for each Alternative was translated into economic value using standard Department of Transportation valuation methods. The valuation of the change in crash incidence was then adjusted to account for two secondary effects. One secondary effect of the Alternatives is the change in the total number of drivers for each Alternative, and the second secondary effect is amount of "mode shift" (i.e., shift in freight transported by truck to transport by rail.)

Table 15 shows, for LH and SH operations:

- Modeled increments in crash incidence caused by fatigue under each Alternative relative to schedules that would leave drivers fully rested;
- Modeled increments in crash incidence scaled up to match the independent estimate of existing fatigue-related crashes; and
- The difference in total crashes for each Alternative relative to the current rules under current compliance conditions (i.e., the No Action Alternative).

Table 15 - Crash Increment and Fatigue-Related Crashes

		No Action	Full Compliance	PATT	ATA	FMCSA
LH	Raw Crash Increment vs. Non-Fatigued Baseline	11.5%	8.4%	6.0%	10.3%	7.0%
	Fatigue-Related Crashes	10.3%	7.8%	5.7%	9.4%	6.5%
	Calibrated % Crashes Attributable to Fatigue	11.2%	8.5%	6.2%	10.2%	7.1%
	Reductions Relative to No Action Alternative	0.0%	2.7%	5.0%	1.0%	4.1%
SH	Raw Crash Increment vs. Non-Fatigued Baseline	3.7%	3.6%	3.3%	3.6%	3.5%
	Fatigue-Related Crashes	3.6%	3.4%	3.2%	3.5%	3.4%
	Calibrated % Crashes Attributable to Fatigue	3.9%	3.8%	3.5%	3.8%	3.7%
	Reductions Relative to No Action Alternative	0.0%	0.2%	0.4%	0.1%	0.2%

Source: RIA Exhibits 8-9, 8-10, subtraction from No Action Alternative.

The annual economic value of the crash incidence reductions shown in Table 15 was found by multiplying the percentage reductions in crashes by FMCSA estimates of the total annual damages caused by all LH and SH crashes. The total annual damage from all LH crashes is almost $13 billion, and the total damage from all SH crashes is about $16 billion[15]. The value of reducing the number of crashes by the percentages shown in Table 15 are shown in Table 16 for each Alternative, broken down by the type of operation.

Table 16 - Value of Avoided Crashes for Alternatives relative to the No Action Alternative (Millions of dollars per year)

	No Action	Full Compliance	PATT	ATA	FMCSA
Total Value of Avoided LH Crashes	0	429	794	162	653
Total Value of Avoided SH Crashes	0	22	58	14	32
Total Value of Avoided LH and SH Crashes	0	451	852	176	685

Source: RIA Exhibit 9-16.

The reductions in the number of fatigue-related crashes and the economic value of the reductions shown in Tables 15 and 16 include only effects of schedule changes on driver fatigue. While these are the primary effects of the Alternatives, two secondary effects need to be considered in estimating net reductions in fatigue-related crashes. Changes in the number of operating drivers resulting from schedule changes and mode shifts associated with each Alternative would result in changes in the number of relatively inexperienced drivers in the industry for each Alternative. Both of these secondary effects are presented in Table 17, along with the adjusted total benefits of the net reduction in fatigue-related crashes.

Table 17 - Adjustments to Benefits due to Secondary Effects of Alternatives: New Drivers and Mode Shift (Millions of Dollars per Year)

	No Action	Full Compliance	PATT	ATA	FMCSA
Reduction in LH Benefits due to New Drivers	0	103	154	36	54
Reduction in SH Benefits due to New Drivers	0	7	77	3	-13
Reduction in Benefits due to New Drivers	0	110	230	38	67
Reduction in LH Benefits due to Changes in LH VMT (negative values indicate increase in LH benefits)	0	-101	-162	-32	-54
Net Reduction in Benefits due to Secondary Effects	0	9	68	6	14
Total Adjusted Benefits	0	443	783	170	671

Source: RIA Exhibit 9-17. Note: Total numbers may vary due to rounding.

Overall, fatigue-related crashes were predicted to be more of a concern for LH operations than SH operations, for all Alternatives. This fact can be attributed in part to the somewhat heavier work schedules of LH drivers, but also to the fact that LH operations appear to be more likely to

[15] The cost estimation methodology and results are described in Chapter 4 of the RIA.

subject drivers to irregular and rotating schedules than SH operations. Two of the Alternatives, the PATT Alternative and the FMCSA Alternative, are projected to reduce fatigue-related accidents substantially relative the No Action Alternative and with respect to the Full Compliance Baseline. The ATA Alternative is projected to reduce fatigue-related accidents to a lesser extent than the PATT or FMCSA Alternatives. Much of the effectiveness of the FMCSA Alternative and the PATT Alternative in reducing crash incidence stems from the greater likelihood that drivers could stay on regular, non-rotating schedules; these Alternatives also allow for increased sleep during the workweek. Reductions in SH crashes would be much smaller than the reductions in LH crashes for all Alternatives, both in relative and absolute terms.

4.5 Socioeconomic Impacts

The RIA includes in-depth analysis of the economic impacts of the Proposed Action and Alternatives in terms of the change in the net income to motor carriers. As shown in the RIA, all of the Alternatives result in a decrease in carrier net income relative to the No Action Alternative for all carrier net income categories. Changes in the net income of carriers and changes in the number of employees required by the carriers under each Alternative could cause socioeconomic impacts by affecting the movement of people and demand for resources.

The PATT Alternative would most adversely affect the net income of carriers when compared with the No Action Alternative. The Full Compliance Baseline would result in a larger economic impact than the FMCSA Alternative. The ATA Alternative would cause the least impacts to net income. While all of the Alternatives have the potential to cause socioeconomic impacts that connect with the environment, FMSCA is not able to predict where such impacts might occur. The national scope of the proposed regulatory change means that potential socioeconomic impacts could occur across the entire U.S. or in isolated areas and are likely to involve very small numbers of people. Given the national distribution of potential impacts and the very low population numbers that would likely be involved, FMCSA has concluded that there would not be significant socioeconomic impacts resulting from any of the Alternatives.

4.6 Energy Consumption Impacts

FMCSA estimated the energy consumption impacts of the Proposed Action and Alternatives, based on an analysis of the number of vehicle miles traveled, the number of vehicle idling hours, and the mode shift from truck to rail, as calculated for the RIA. Table 18 summarizes the energy consumption impacts of the Alternatives on the affected sector of the trucking industry in total gallons and barrels of diesel fuel consumed and in millions of British Thermal Units (MBtu) consumed. Table 19 shows the net change in energy consumption for each of the Alternatives compared to the No Action Alternative (baseline).

Table 18 – Energy Consumption Impact of Alternatives

Energy Consumption Impacts	No Action Alternative	Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Energy Consumption, Diesel Fuel (Gallons)	18,911,818,421	18,817,877,416	19,290,686,094	18,720,490,400	19,033,329,352
Energy Consumption, Diesel Fuel (Barrels)	450,281,390	448,044,700	459,302,050	445,725,962	453,174,508
Energy Consumption in Million BTUs (MBtu)	2,622,889,102	2,609,860,380	2,675,434,440	2,596,353,728	2,639,741,511
Percent Change from No Action	0	-0.5	2.0	-1.0	0.6

Table 19 – Net Effect of Alternatives on Energy Consumption Compared to No Action (Baseline)

Net Energy Consumption Impact	No Action Alternative	Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Energy Consumption, Diesel Fuel (Gallons)	0	-93,941,005	378,867,673	-191,328,021	121,510,931
Energy Consumption, Diesel Fuel, (Barrels)	0	-2,236,691	9,020,659	-4,555,429	2,893,117
Energy Consumption in Million BTUs (MBtu)	0	-13,028,723	52,545,338	-26,535,374	16,852,409
Percent Change from No Action	0	-0.5	2.0	-1.0	0.6

Table 20 shows the relative effect of the alternatives on transportation energy consumption by the affected CMV operations, by all medium- and heavy-duty trucks, and by the total transportation system. As explained in Section 3.1 affected CMV operations include long haul and private carriage hauls greater 250 miles. Table 20 also shows the relative effect of the alternatives on national energy consumption from all sources.

Table 20 - Energy Consumption by Consumer in QBtu

Energy Consumer	No Action Alternative	Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Affected CMV Operations	2.62	2.61	2.68	2.60	2.64
All Medium and Heavy Duty Trucks	4.56	4.55	4.62	4.54	4.58
Total Transportation Energy Consumption	25.84	25.83	25.89	25.81	25.86
Total U.S. Energy Consumption	98.80	98.79	98.85	98.77	98.82

The greatest reduction in energy consumption would occur under the ATA Alternative and the greatest increase would occur under the PATT Alternative. The FMCSA Alternative would increase consumption, but to a lesser degree than the PATT Alternative. Energy consumption would decrease under the Full Compliance Baseline, but to a much lesser degree than the ATA Alternative. As shown in Table 21, the energy consumption effects of the Alternatives would range from a reduction of 1% to an increase of 2% in energy consumption for the affected CMV operations. Effects on energy consumption by all medium and heavy-duty trucks would range from a 0.3% reduction to a 1.2% increase. Effects of the Alternatives on energy consumption from all transportation sources would range from a 0.1% reduction to a 0.2% increase. From a national energy consumption perspective, the PATT Alternative has a net increase in energy consumption of about one tenth of one percent. All other Alternatives have essentially a zero effect on national energy consumption. Accordingly, FMCSA does not consider these effects to be significant.

Table 21 - Net Change in Energy Consumption by Consumer by Alternative

Energy Consumer	No Action Alternative	Full Compliance Baseline	PATT Alternative	ATA Alternative	FMCSA Alternative
Affected CMV Operations	0	-0.05%	2.0%	-1.0%	0.6%
All Medium and Heavy Duty Trucks	0	-0.03%	1.2%	-0.6%	0.4%
Total Transportation	0	-0.01%	0.2%	-0.1%	0.1%
Total U.S.	0	-0.00%	0.10%	-0.00%	0.00%

In accordance with Executive Order 13211, FMCSA prepared a Statement of Energy Effects for the proposed rulemaking. A copy of this statement is presented in Appendix D.

4.7 Sensitive Environmental Resource Impacts

As described in Section 3.7, FMCSA considered the potential for the Alternatives to affect sensitive environmental resources that are protected by law or Executive Order. Although none of the Alternatives mandates any construction of facilities, there would be an increased demand for parking under the Full Compliance Baseline and the PATT Alternative. Sensitive environmental resources could be affected if States and or commercial establishments react to this demand by constructing new or expanded truck stops and rest areas. However, FMCSA did not conduct an inventory of the sensitive resources because the locations of any new facilities could neither be determined nor predicted. However, FMCSA can predict the potential for affecting sensitive resources by considering the increased demand and the environmental protections that apply to the resources.

As discussed in Section 4.2, FMCSA projected that 23 States might build new truck parking areas because the surplus or sufficient parking facilities could become a shortage under the PATT Alternative. The Full Compliance Baseline was projected to create shortages in 20 States. Table 12, in Section 4.2, indicates that FMCSA projects that up to 2,350 acres and 3,408 acres, respectively, would be needed to satisfy the entire new demand created in these States by the PATT Alternative and the Full Compliance Baseline. FMCSA notes that this estimate is predicated on the assumption that the States and/or commercial establishments react to meet the entire new demand that could be created.

The exact locations that public agencies and private enterprises would select for any construction of additional parking facilities under the various Alternatives would be based on local conditions and such siting and construction decisions are not under the purview of FMCSA. Any proposed new construction that involves Federal funding or approvals would be subject to the applicable level of NEPA review and, in accordance with applicable regulations, should include consideration of the sensitive environmental resources at the proposed site.

FMCSA concludes that there is a minor potential for induced development of additional parking facilities to affect sensitive resources due to the small amount of space needed to meet the increased demand, and the existing laws that protect these resources. Both the FMCSA Alternative and the ATA Alternative would reduce the demand for truck parking and are not predicted to have any associated effect on sensitive environmental resources.

The Proposed Action and Alternatives do not directly affect any resource covered by Section 4(f) of the Department of Transportation Act. There are no provisions requiring construction that would affect these resources. Any induced development of additional parking facilities that requires an action (funding, approval, etc.) by a Department of Transportation agency would have to comply with the provisions of Section 4(f) if the action affected a covered resource.

4.8 Environmental Justice

FMCSA evaluated the environmental effects of the Proposed Action and Alternatives in accordance with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, and determined that there are no Environmental Justice issues associated with revising the hours of service regulations. Environmental Justice issues would be raised if there were "disproportionate" and "high and adverse impacts" on minority or low-income populations. FMCSA determined through the analyses documented in this EA that there would be no high and adverse impacts associated with any of the Alternatives. In addition, FMCSA analyzed the demographic makeup of the trucking industry potentially affected by the Alternatives and determined that there would be no disproportionate impact on minority or low-income populations. This is based on the finding that low-income and minority populations are generally underrepresented in the trucking occupation. In addition, the most impacted trucking sectors do not have disproportionate representation of minority and low-income drivers relative to the trucking occupation as a whole. Appendix E provides a detailed analysis that was used to reach this conclusion.

4.9 Protection of Children

In accordance with Executive Order 13045, Protection of Children From Environmental Health Risks and Safety Risks, FMCSA evaluated the projected effects of the Proposed Action and Alternatives and determined that they would not create disproportionate environmental health risks or safety risks to children. The only adverse environmental effect with potential human health consequences is the projected increase in emissions of air pollutants. FMCSA has projected that the PATT Alternative and the FMCSA Alternative would result in a minor increase in emissions on a national scale. No adverse human health consequences are projected to either children or adults because the magnitude of emission increases is de minimis. The Proposed Action and Alternatives would, however, reduce the safety risk posed by tired, sleepy, or fatigued drivers of commercial motor vehicles. These safety risk improvements would accrue to children and adults equally.

4.10 Comparison of Alternatives

The CEQ NEPA regulations require a comparison of the potential impacts of each Alternative. Table 22 summarizes the impacts for each Alternative across each of the impact areas. Impacts are evaluated in terms of the percent change from the *status quo* (No Action Alternative). "Minor" is defined here as a 0 to 1 percent change from the *status quo* (0 +/- 1 percent), while "Moderate" is defined as a +/- 10 percent or greater change. Note that these impacts are measured as change from the No Action Alternative (i.e. not from the Full Compliance Baseline). As shown in Table 22, none of the Alternatives would have a significant adverse impact on the human environment and all of the Alternatives would have beneficial impacts in some impact areas. None of the Alternatives stands out as environmentally preferable, when compared to the other Alternatives.

Table 22 - Comparison of Alternatives

Impact Area	No Action	Full Compliance	PATT Alternative	ATA Alternative	FMCSA Alternative
Air Pollutant Emissions from Affected CMVs	No Change	Minor Benefit (0.5% decrease)	Moderate Impact (2% increase)	Minor Benefit (1% decrease)	Minor Impact (0.6% increase)
Air Pollutant Emissions from Transportation	No Change	Minor Benefit (0.02% decrease)	Moderate Impact (0.09% increase)	Minor Benefit (0.01% decrease)	Minor Impact (0.03% increase)
Land Use	No Change	Minor Induced Impact (2,350 acres)	Minor Induced Impact (3,408 acres)	No Impact	No Impact
Sensitive Resources	No Change	Minor Potential Impact	Minor Potential Impact	No Impact	No Impact
Noise	No Change	No Change	Minor Impact (unquantifiable)	Minor Benefit (unquantifiable)	Minor Impact (unquantifiable)
Safety	No Change	Major Benefit ($443 M/yr.)	Major Benefit ($783 M/yr.)	Major Benefit ($170 M/yr.)	Major Benefit ($671 M/yr.)
Socioeconomic Effects	No Change	Minor Impact (unquantifiable)	Minor Impact (unquantifiable)	Minor Impact (unquantifiable)	Minor Impact (unquantifiable)
Transportation Energy Consumption	No Change	Minor Benefit (<0.1% decrease)	Minor Impact (0.1% increase)	Minor Benefit (0.1% decrease)	Minor Impact (0.1% increase)
Environmental Justice	No Impact	No Impact	No Impact	No Impact	No Impact
Protection of Children	No Impact	No Impact	No Impact	No Impact	No Impact

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APPENDIX A
Analysis of Air Quality Impacts

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Analysis of Air Quality Impacts

A.1 Introduction

This section provides an analysis of the air quality impacts of the Proposed Action and Alternatives, including changes in mobile source criteria pollutant air emissions and greenhouse gas emissions resulting from changes in the number of vehicles in service, changes in vehicle-miles traveled, and changes in vehicle idling hours related to changes in the hours of service rules, and also from changes in criteria pollutant emissions resulting from transportation mode shifts for the Proposed Action and Alternatives.

The air quality analysis is based on national and regional changes in mobile source criteria pollutant air emissions (emissions of CO, VOC, and NO_x in units of metric tons per year) and greenhouse gas emissions (emissions of CO_2) from the Proposed Action and Alternatives[16]. Air emissions calculations related to changes in vehicle miles traveled, vehicle idling hours, and transportation mode shifts are based on EPA emission factors for mobile sources and other sources for activity levels. Considering the broad distribution of truck and rail transportation routes throughout the U.S., the air quality impact analysis is limited to estimating the total nationwide increases and decreases in criteria pollutant air emissions and greenhouse gas emissions for each Alternative resulting from changes in vehicle miles traveled, vehicle idling hours, and transportation mode shifts.

The Proposed Action and Alternatives do not mandate any construction, and therefore the air quality impact analysis does not address construction impacts. Also, the air quality impact analysis does not include dispersion modeling to assess the effects of increases and decreases in criteria pollutant emissions on ambient air pollutant concentrations. The FMCSA cannot predict the specific locations of any changes in truck routes and operations and rail routes and operations that would result from the Alternatives. Therefore, no site-specific air dispersion modeling has been conducted for the Environmental Assessment.

A.2 Air Quality Impact Analysis Methodology

The air quality impact analysis methodology consists of estimating total criteria pollutant and greenhouse gas emissions for each Alternative related to three factors:

- Transportation mode shift of freight from long-haul truck to intermodal rail with associated drayage;
- Increase or decrease in aggregate annual vehicle miles traveled (VMT);

[16] CO_2 emissions represent approximately 95 percent of greenhouse gas emissions from the vehicles affected under this rule, and other greenhouse gas emissions are effectively proportional to CO_2 emissions within the vehicle classes and age distributions examined here, making CO_2 an extremely good indicator of overall greenhouse gas emissions.

- Increase or decrease in aggregate annual vehicle idling hours (VHI).

A.2.1 Transportation Mode Shift Emissions

For the segment of long haul trucking that competes with rail, the percentage increase in truck shipping prices (freight rates) is determined as a function of changes in truck driver productivity and driver compensation caused by changes in drivers required for each Alternative compared to the No Action Alternative. These relative percentage increases in truck shipping prices are fed into a logistics cost model to estimate the percentage of truck volume that shifted to intermodal rail. The model predicted a change of approximately 1.4% of mode shift from truck to intermodal rail for every 1% change in truck shipping prices.

Table A-1 shows the percentage and total change in VMT resulting from mode shift for each Alternative based on a long haul operation with an average length of haul of at least 250 miles. The VMT changes shown exclude team driving, short haul trucks, and the less-than-truckload sector. The amount of mode shift from truck to rail is calculated as the change in total Vehicle Miles of Travel for each Alternative compared to the No Action Alternative.

Table A-1 - Hours of Service Truck Vehicle Miles of Travel Mode Shift Analysis

	No Action	Full Compliance	PATT	ATA	FMCSA
Total truck VMT (in millions)	101,153	100,300	99,788	100,882	100,701
Net VMT change as compared to No Action (in millions)	0	-853	-1,364	-271	-451
% change in VMT as compared to No Action	0%	-0.84%	-1.35%	-0.27%	-0.45%
Total Rail Ton Miles (millions)	1,466,000	1,466,000.1	1,466,000.1	1,466,000.0	1,466,000.0
Net Change in Rail Ton Miles	0	89,683	143,493	28,488	47,479
% Change in Rail Ton Miles	0%	~0.0%	~0.0%	~0.0%	~0.0%

The emissions changes due to transportation mode shifts consists of decreased long-haul trucking emissions (accounted for in the above VMT figures) and two types of increased emissions:

- Railroad locomotive emissions; and
- Drayage truck emissions.

The net increase in emissions for the mode shift to rail is calculated based on the decrease in truck ton-miles of travel estimated for each Alternative compared to the No Action Alternative. The VMT shift, provided above, is multiplied by an assumed payload of 16 tons to calculate the total ton-miles moved by rail. This figure is then divided by an intermodal rail locomotive efficiency of 390 ton-miles per gallon of fuel to determine total fuel consumption. Table A-2 shows the rail emission factors in grams per gallon of pollutant that are used to calculate rail emissions.

Table A-2 - Emission factors for rail operations

Pollutant	Grams of pollutant per gallon of fuel
NO_x	221.5
VOC	10.0
CO	26.6
$PM_{2.5}$	6.7
PM_{10}	6.7
CO_2	9,832.0

Source: EPA. Compilation of Air Emission Factors. Publication AP-42, Volume II (pending 5th edition). 2000.

The direct emissions increase from increased rail operations resulting from mode shift are calculated by multiplying the change in gallons of diesel fuel consumption by the mobile source emission factors shown in Table A-2.

Drayage trucks are necessary to assist in intermodal operations. They are used to transport shipments between rail yards and final delivery locations, for either pickup or delivery purposes. Emission factors for trucks are dependent upon the age of the fleet and mileage accumulation rates. The age distributions for line-haul truckload trucks were based on line haul truck registration data. The trucks were assumed to have national average levels of tampering and to not be subject to an Inspection/Maintenance program. PM_{10} emission factors reflect exhaust emissions, not re-entrained road dust. Drayage trucks are commonly used for shorter hauls and tend to be considerably older than long haul trucks. The drayage fleet is assumed to be on average eight years older than long haul fleet vehicles.

Tables A-3 and A-4 show the mileage and idle emission factors for long haul and drayage trucks in terms of grams of pollutant per mile and grams of pollutant per idling hour.

Table A-3 - Long haul and drayage truck emission factors

	Grams of pollutant per mile	
Pollutant	Long Haul	Drayage
NO_x	19.21	28.01
VOC	0.75	1.73
CO	4.80	9.49
$PM_{2.5}$	0.65	1.31
PM_{10}	0.73	1.46
CO_2	1,677.00	1,677.00

Source: EPA. Compilation of Air Emission Factors. Publication AP-42, Volume II (pending 5th edition). 2000.

Table A-4 - Long haul and drayage truck idle emission factors

	Grams pollutant /idling hour	
Pollutant	Long Haul	Drayage
NO_x	69.5	102.0
VOC	5.8	13.4
CO	53.2	105.2
$PM_{2.5}$	1.2	3.0
PM_{10}	1.6	3.4
CO_2	10,799.0	10,799.0

Source: EPA. Compilation of Air Emission Factors. Publication AP-42, Volume II (pending 5th edition). 2000.

To calculate the number of trips for drayage trucks, it is assumed that the truck trips that shift from truck to rail are characterized by an average length of haul of 1,000 miles. The ton-miles carried by rail, as calculated above, are thus divided by 1,000 miles to determine the tons carried, divided by 16 tons to determine the number of truckload shipments, and multiplied by two to represent one drayage move each at the origin and destination. The emissions from drayage trucks are calculated by multiplying the number of drayage moves by forty miles of vehicle miles travel (VMT) and one hour of loading or unloading (truck idle time) at each trip end (i.e. from origin or destination to a rail yard). The total drayage emissions are calculated by multiplying total drayage mileage and idle hours by appropriate drayage emissions factors in grams per mile and grams per hour of pollutant, as shown in Tables A-3 and A-4. Finally, the total emissions increases from transportation mode shift are obtained by summing emissions from rail operations and drayage truck operations.

A.2.2 Truck VMT Emissions

The VMT for each Alternative is multiplied by the long haul emission factors expressed in terms of grams of pollutant per mile to calculate truck mileage based emissions. Emission factors for vehicle miles of travel are shown in A-3.

A.2.3 Truck VHI Emissions

The percentage of time spent idling under each option was estimated by constructing typical weekly schedules for drivers working at maximum capacity, estimating the ratio of idling time to driving time, and then adjusting for the percentage of operations that are not at maximum capacity. In these schedules, hours were broken down into time for loading and unloading, driving, layovers on the road, and other breaks. From these schedules, we computing the ratio of idling hours to driving hours under the assumption, based on data presented by Argonne National Laboratory (2000), that tractors idle a fixed 70 percent of non-driving hours when they are being loaded or unloaded, and during breaks and layovers during the week. (Weekend layovers were excluded from these calculations on the assumption that the trucks would not be left idling for the days in which the drivers were not inside them.)

Using this approach, the ratio of idling hours to hours of driving can increase if drivers are required to take longer layovers or more layovers. As one simple example, if a driver is able to drive a weekly tour of duty in six driving days of 10 hours each, he will need five overnight layovers. Under current rules, each layover is 8 hours for a total of 40 hours, or 28 hours of idling if the engine is running 70 percent of the time during the layover. These idling hours equal almost 47 percent of the 60 driving hours. Under an option that allowed 11 hours of driving but required a 10-hour layover, five layovers would consume 50 hours, resulting in 35 hours of idling. These 35 hours would equal 53 percent of the 66 driving hours in the six-day tour.

The projections of idling conducted for this report examined more complex schedules that accounted for time needed for short breaks, loading, and unloading. In these schedules, limits on daily hours of work were binding in some cases. As a result, the differences between options could be greater, because drivers operating under some options could be required to spend more days on the road to complete a tour of duty, and could therefore have to take more layovers for a given number of hours of driving.

The emissions from vehicle idling hours for each Alternative are calculated based on an annual estimate of vehicle idle hours for each Alternative and the emission factors for vehicle idling. The relative percentage change in annual idling hours is calculated based on simulating extreme truck driving conditions in accordance to existing and proposed Hours of Service Regulations. Only 46 percent of For-Hire and 35 percent of Private Carriage are subjected to these extreme conditions. The remaining percentage is not expected to undergo any change in idling hour emissions with respect to the No Action Alternative.

The number of vehicle idling hours under the No Action Alternative (i.e., the current regulations with the current level of compliance) is assumed to be same as for the Full Compliance Baseline (i.e., the current regulations with a 100 percent level of compliance) because data on work schedules show that violations of current rules usually take the form of working more days rather than violating daily constraints. Therefore, the percentage of idling time spent would be little changed regardless of the overall level of compliance. The annual average number of truck idling hours under the No Action Alternative is assumed as 1,830 hours per tractor (based on studies by Argonne National Laboratory).[17] The annual average number of truck idling hours under the remaining Alternatives is calculated by multiplying their relative percentage change in idling hours as compared to the No Action Alternative.

The incremental tractor to driver ratio is assumed as 0.75 and the numbers of drivers under For-Hire and Private Long Haul categories are assumed as 800,000 and 700,000 respectively (corresponding to 600,000 and 525,000 tractors, respectively). The total idling hours for each Alternative is calculated by multiplying the net annual estimate in idling hours under each Alternative by this number of long haul tractors. The total idling hours are multiplied by the emissions factors in grams of pollutant per hour as shown earlier in Table A-4 to calculate the total idling emissions. Table A-5 shows a summary of the idling hours analysis for each Alternative.

Table A-5 - Summary of Vehicle Idling Hours for Each Alternative

	No Action	Full Compliance	PATT	ATA	FMCSA
For-Hire relative percentages	100%	100%	127%	92%	109%
Private relative percentages	100%	100%	121%	94%	107%
For-Hire annual idling hours (per long-haul tractor)	1,830	1,830	2,327	1,678	1,991
Private annual idling hours (per long-haul tractor)	1,830	1,830	2,208	1,715	1,952
For-Hire total idling hours (millions)	1,098	1,098	1,396	1,007	1,195
Private total idling hours (millions)	961	961	1,159	900	1,025
Total idling hours (millions)	2,059	2,059	2,556	1,907	2,220

A.3 Results

This section summarizes the results of emissions for each Alternative resulting from transportation mode shifts, changes in VMT, and changes in VHI. Total emissions for each

[17] See, for example, Argonne National Laboratory (ANL) Center for Transportation Research. Analysis of Technology Options to Reduce the Fuel Consumption of Idling Trucks. ANL/ESD-43. June 2000

Alternative, and changes in emissions as compared to the No Action Alternative are included in Tables A-9, A-13, and A-14.

The emissions resulting from transportation mode shifts for each Alternative (in metric tons per year) are shown in Table A-6.

Table A-6 - Emissions from Mode Shift (in metric tons per year)

Pollutant	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	0	9,831	15,730	3,123	5,205
VOC	0	489	783	155	259
CO	0	1,758	2,813	558	931
$PM_{2.5}$	0	329	527	104	174
PM_{10}	0	338	541	107	179
CO_2	0	476,675	762,680	151,415	252,358

The emissions from total Vehicle Miles of Travel (VMT) for each Alternative (in metric tons per year) are shown in Table A-7.

Table A-7 - Emissions from VMT (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	1,943,140	1,926,763	1,916,937	1,937,938	1,934,470
VOC	75,864	75,225	74,841	75,661	75,526
CO	485,532	481,440	478,985	484,232	483,366
$PM_{2.5}$	65,446	64,894	64,563	65,270	65,154
PM_{10}	73,740	73,119	72,746	73,543	73,411
CO_2	169,632,826	168,203,100	167,345,264	169,178,678	168,875,912

The total emissions from Vehicle Idling Hours for each Alternative (in metric tons per year) are shown in Table A-8.

Table A-8 - Emissions from VHI (in metric tons per year)

Pollutant	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	143,135	143,135	177,699	132,586	154,320
VOC	11,941	11,941	14,824	11,061	12,874
CO	109,474	109,474	135,910	101,406	118,029
$PM_{2.5}$	3,057	3,057	3,796	2,832	3,296
PM_{10}	3,331	3,331	4,135	3,086	3,591
CO_2	22,231,511	22,231,511	27,600,085	20,593,183	23,968,822

The total emissions from mode shift, vehicle miles of travel and vehicle idling hours for each Alternative (in metric tons per year) are shown in Table A-9.

Table A-9 - Emissions from Mode Shift, VMT, and VHI (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	2,086,275	2,079,729	2,110,366	2,073,647	2,093,995
VOC	87,805	87,655	90,448	86,877	88,659
CO	595,006	592,672	617,708	586,197	602,325
$PM_{2.5}$	68,503	68,280	68,885	68,207	68,624
PM_{10}	77,071	76,788	77,422	76,736	77,181
CO_2	191,864,338	190,911,287	195,708,029	189,923,275	193,097,092

The change in emissions from changes in mode shifts for each Alternative, as compared to the No Action Alternative (in metric tons per year) are Table A-10.

Table A-10 - Change in Mode Shift Emissions compared to No Action Alternative (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	0	9,831	15,730	3,123	5,205
VOC	0	489	783	155	259
CO	0	1,758	2,813	558	931
$PM_{2.5}$	0	329	527	104	174
PM_{10}	0	338	541	107	179
CO_2	0	476,675	762,680	151,415	252,358

The change in emissions from changes in VMT for each Alternative, as compared to the No Action Alternative (in metric tons per year) are Table A-11.

Table A-11 - Change in VMT Emissions compared to the No Action Alternative (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NOx	0	-16,377	-26,204	-5,202	-8,670
VOC	0	-639	-1,023	-203	-339
CO	0	-4,092	-6,548	-1,300	-2,166
$PM_{2.5}$	0	-522	-883	-176	-292
PM_{10}	0	-622	-994	-197	-329
CO_2	0	-1,429,726	-2,287,562	-454,148	-756,914

The change in emissions from changes in VHI for each Alternative, as compared to the No Action Alternative (in metric tons per year) are Table A-12.

Table A-12 - Change in VHI Emissions compared to the No Action Alternative (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	0	0	34,565	-10,548	11,185
VOC	0	0	2,884	-880	933
CO	0	0	26,436	-8,068	8,555
$PM_{2.5}$	0	0	739	-225	239
PM_{10}	0	0	804	-245	260
CO_2	0	0	5,368,573	-1,638,329	1,737,310

The net change in emissions with respect to the No Action Alternative in metric tons per year of pollutant under each Alternative is shown in Table A-13.

Table A-13 - Change in Emissions from Mode Shift, VMT and VHI compared to the No Action Alternative (in metric tons per year)

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	0	-6,546	24,090	-12,628	7,720
VOC	0	-150	2,643	-928	854
CO	0	-2,334	22,701	-8,809	7,319
$PM_{2.5}$	0	-223	382	-296	121
PM_{10}	0	-284	351	-336	110
CO_2	0	-953,051	3,843,691	-1,941,063	1,232,754

The percentage changes in emissions from affected CMV operations for each Alternative with respect to the No Action Alternative (in metric tons per year) are shown in Table A-14.

Table A-14 - Percentage Change in Emissions from Affected CMV Operations compared to the No Action Alternative

Pollutants	No Action	Full Compliance	PATT	ATA	FMCSA
NO_x	0%	-0.3%	1.1%	-0.6%	0.4%
VOC	0%	-0.2%	2.9%	-1.1%	1.0%
CO	0%	-0.4%	3.7%	-1.5%	1.2%
$PM_{2.5}$	0%	-0.3%	0.6%	-0.4%	0.2%
PM_{10}	0%	-0.4%	0.5%	-0.4%	0.1%
CO_2	0%	-0.5%	2.0%	-1.0%	0.6%

Tables A-9 and A-13 show the aggregate emissions and the change in emissions for each Alternative (in metric tons). For the four local pollutants (NO_x, VOC, CO, and PM_{10}), it is difficult to discuss the impacts of these emissions changes without further context. Without knowing the location, periodicity, time of day, concentration, ambient pollutant concentrations, and meteorological conditions (temperature, sunlight, wind conditions, etc.) under which these emissions occur, their potential impacts on air quality are purely speculative. Unfortunately, such an analysis is well beyond the scope of this EA.

Because CO_2 is a greenhouse gas with relatively constant effects regardless of the time, place, or conditions during emission, its impacts can be placed in context. The total CO_2 emissions for the No Action Alternative represent approximately 9.5 percent of U.S. transportation greenhouse gas emissions or 2.8 percent of total U.S. net greenhouse gas emissions. Under the PATT and FMCSA Alternatives these numbers would rise to 9.7 and 9.6 percent of U.S. transportation greenhouse gas emissions or 2.86 and 2.82 percent of total U.S. net greenhouse gas emissions, respectively. Under the Full Compliance Baseline and the PATT Alternatives these numbers would fall to 9.47 and 9.44 percent of U.S. transportation greenhouse gas emissions or 2.79 and 2.77 percent of total U.S. net greenhouse gas emissions, respectively. In all, this represents a range of less than one-tenth of one percent in annual total U.S. net greenhouse gas emissions across the Alternatives.

Tables A-13 and A-14 show that the ATA Alternative and the Full Compliance Baseline would reduce net emissions, while the FMCSA and PATT Alternatives would increase emissions when compared to the No Action Alternative. The ATA Alternative would reduce net emissions from affected CMV operations in the range of 0.4% to 1.1% when compared to the No Action Alternative. The Full Compliance Baseline would reduce net emissions from affected CMV operations in the range of 0.2% to 0.5% when compared to the No Action Alternative. The FMCSA Alternative would increase net emissions from affected CMV operations in the range of 0.1% to 1.2% when compared to the No Action Alternative. The PATT Alternative would increase net emissions from affected CMV operations in the range of 0.5% to 3.7% when compared to the No Action Alternative.

The emissions from affected CMV operations are only one segment of the emissions of criteria pollutants from transportation sources and other sources that affect air quality. Table A-15 compares these emissions with emissions from all highway transportation sources and Table A-16 compares the emissions with those from all sources. As shown in the tables, the changes in emissions resulting from the Proposed Action and Alternatives are a very small percentage of the emissions from these sources.

Table A-15 - Change in Emissions Compared to all Highway Sources (in metric tons per year and Percent Change)

Pollutants	Highway Sources	No Action (metric tons [% change])	Full Compliance (metric tons [% change])	PATT (metric tons [% change])	ATA (metric tons [% change])	FMCSA (metric tons [% change])
NO_x	7,394,000	0 [0.0%]	-6,546 [-0.09%]	24,090 [0.33%]	-12,628 [-0.17%]	7,720 [0.10%]
VOC	4,568,000	0 [0.0%]	-150 [0.0%]	2,643 [0.06%]	-928 [-0.02%]	854 [0.02%]
CO	43,971,000	0 [0.0%]	-2,334 [-0.01%]	22,701 [0.05%]	-8,809 [-0.02%]	7,319 [0.02%]
$PM_{2.5}$	190,000	0 [0.0%]	-223 [-0.00%]	382 [0.01%]	-296 [-0.00%]	121 [0.00%]
PM_{10}	248,000	0 [0.0%]	-284 [-0.11%]	351 [0.14%]	-336 [-0.14%]	110 [0.04%]

Source: U.S. EPA. National Emission Inventory (NEI) Air Pollutant Emissions Trends (http://www.epa.gov/ttn/chief/trends)

Table A-16 - Change in Emissions Compared to All Emissions Sources (in metric tons per year and Percent Change)

Pollutants	All Emissions Sources	No Action (metric tons [% change])	Full Compliance (metric tons [% change])	PATT (metric tons [% change])	ATA (metric tons [% change])	FMCSA (metric tons [% change])
NO_x	22,588,000	0 [0.0%]	-6,546 [-0.03%]	24,090 [0.11%]	-12,628 [-0.06%]	7,720 [0.03%]
VOC	18,492,000	0 [0.0%]	-150 [0.00%]	2,643 [0.01%]	-928 [-0.01%]	854 [0.00%]
CO	99,195,000	0 [0.0%]	-2,334 [0.00%]	22,701 [0.02%]	-8,809 [0.01%]	7,319 [0.01%]
$PM_{2.5}$	7,027,000	0 [0.0%]	-223 [-0.00%]	382 [0.01%]	-296 [-0.00%]	121 [0.00%]
PM_{10}	22,567,000	0 [0.0%]	-284 [-0.00%]	351 [0.00%]	-336 [-0.00%]	110 [0.00%]

Source: U.S. EPA. National Emission Inventory (NEI) Air Pollutant Emissions Trends (http://www.epa.gov/ttn/chief/trends)

A.4 Clean Air Act Conformity

Pursuant to the Clean Air Act (CAA), the Environmental Protection Agency (EPA) is required to establish National Ambient Air Quality Standards (NAAQS) for specified pollutants, including NO_x and PM_{10}. See 42 U.S.C. 7409 and 40 CFR part 50. To implement these standards, the CAA requires each State to adopt and submit for EPA approval a State Implementation Plan (SIP). See 42 U.S.C. 7410(a)(1). Under the CAA and implementing regulations, all States are divided into air quality control regions, classified as attainment or non-attainment with respect to each pollutant for which a NAAQS has been established. See 42 U.S.C. 7407. Each SIP must include emissions limitations and other measures necessary to bring non-attainment areas into attainment, to maintain air quality in attainment areas and to otherwise comply with the NAAQS. See 42 U.S.C. 7410(a)(2).

To ensure these goals are met, the CAA contains a "conformity" requirement, which states that no Federal agency may engage in support in any way or provide financial assistance for, license or permit, or approve, any activity that does not conform to a (SIP). See 42 U.S.C. 7506(c)(1). To "conform," a Federal action must be consistent with the purposes of a SIP and must not: (1) cause or contribute to any new violation of an applicable air quality standard; (2) increase the frequency or severity of an existing violation; or (3) delay timely attainment or any applicable standard, interim-reduction requirement or other milestone. EPA implemented regulations at 40 CFR parts 651 and 93 to assist Federal agencies in complying with the conformity requirement. The requirements provide for both "transportation conformity" analysis (applicable to highways and mass transit) and "general conformity" analysis (applicable to everything else). EPA's "general conformity" requirements at 40 CFR Parts 51 and 93 apply to all FMCSA actions.

With respect to general conformity, all Federal actions are covered, unless otherwise exempt. Under the regulations at 40 CFR part 93, Federal agencies need not perform conformity determinations as to certain types or categories of actions, even if the actions may or will cause emissions in non-attainment areas. See 40 CFR 93.153(c). Among other things, Federal agencies need not perform conformity determinations: (1) when the total of direct and indirect emissions of an agency action are below stated threshold levels for specified pollutants, see 40 CFR 93.153(c)(1); or (2) when the action in question is listed by the EPA as an action which would result in no emissions increase or an increase in emissions that is clearly de minimis. See 40 CFR 93.153(c)(2). Also included on this list are actions that constitute "rulemaking." 40 CFR 93.153(c)(2)(iii).

The FMCSA determined that a Clean Air Act conformity analysis is not required under the EPA's general conformity guidelines for the Proposed HOS Action and its Alternatives because they do not meet the definition of actions for which a conformity analysis is required. Federal agencies need not perform conformity determinations as to actions that will not cause emissions above specified threshold levels or that are categorically excluded. The Proposed Action and Alternatives are regulatory actions that EPA has categorically excluded from the requirement to conduct conformity analysis (EPA, 1994; Spickard, 2002). In addition, as this chapter and Appendix A demonstrate, the national air pollution impact of the Proposed Action and Alternatives is clearly de minimis. The Proposed Action would result in a 0.6 percent increase in criteria air pollutants and CO_2, spread throughout the country. Therefore, FMCSA has not conducted a conformity analysis for the Proposed Action and Alternatives.

APPENDIX B
Public Rest Area/Commercial Parking Facility Impacts

APPENDIX B
Public Rest Area/Commercial Parking Facility Impacts

This appendix presents an assessment of the impacts of the four Alternatives on the demand for public and non-public parking spaces in each State (except Hawaii). The anticipated changes in the number of trucks operating and the changes in the total demand for parking spaces for each region was estimated using the HOS RIA results, and the results compared to Federal Highway Administration (2002) estimates of the existing demand for public and non-public parking spaces. The HOS RIA results are summarized in Table B-1.

Table B-1: Impact of Alternatives on Number of Trucks and Demand for Parking Spaces

Full Compliance Baseline			PATT Alternative		FMCSA Alternative		ATA Alternative	
Region	**Incremental Trucks**	**Parking Demand Change**	**Incremental Trucks**	**Parking Demand Change**	**Incremental Trucks**	**Parking Demand Change**	**Incremental Trucks**	**Parking Demand Change**
Northeast	29,556	16,625	39,207	22,054	-6,032	-3,393	-19,101	-10,744
Southeast	26,817	15,085	35,574	20,010	-5,473	-3,079	-17,331	-9,749
Midwest	27,254	15,330	36,153	20,336	-5,562	-3,129	-17,613	-9,907
South Central	12,542	7,055	16,637	9,359	-2,560	-1,440	-8,105	-4,559
Plains / Rockies	21,406	12,041	28,396	15,973	-4,369	-2,457	-13,834	-7,782
Far West	14,725	8,283	19,533	10,987	-3,005	-1,690	-9,516	-5,353
TOTAL	132,300	74,419	175,500	98,719	-27,000	-15,188	-85,500	-48,094

Northeast	Southeast	Midwest	South Central	Plains/Rockies	Far West
Connecticut Delaware Maine Maryland Massachusetts New Hampshire New Jersey New York Pennsylvania Rhode Island Vermont	Alabama Florida Georgia Kentucky Mississippi North Carolina South Carolina Tennessee Virginia West Virginia	Illinois Indiana Iowa Michigan Missouri Minnesota Ohio Wisconsin	Arkansas Louisiana Oklahoma Texas	Arizona Colorado Idaho Kansas Montana Nebraska New Mexico North Dakota South Dakota Utah Wyoming	Alaska California Nevada Oregon Washington [Hawaii is not included in FHWA study]

As shown in Table B-1, the PATT Alternative and the Full Compliance Baseline would result in an increase in the number of trucks operating and an increase in the demand for parking spaces, while the FMCSA Alternative and the ATA Alternative would result in a decrease in the number of trucks operating and a decrease in the demand for parking spaces for each region of the U.S.

B.1 Existing Parking Supply

In June 2002 the Federal Highway Administration (FHWA) published the results of their study of the existing demand for public and non-public parking spaces in: *Report to Congress: Study of Adequacy of Parking Facilities*. The Study reported FHWA research on parking spaces at public rest areas and commercial truck stops and travel plazas. The FHWA reported an estimated 315,850 parking spaces at public rest areas and commercial truck stops and travel plazas serving Interstate highways and other National Highway System (NHS) routes carrying more than 1,000 trucks per day. Routes carrying fewer than 1,000 trucks per day were not surveyed. Approximately 10 percent of truck parking spaces were in public rest areas and 90 percent were in commercial truck stops and travel plazas. Table B-2 presents an inventory of public and commercial truck parking spaces along interstate and national highway system routes with greater than 1,000 trucks per day.

To determine the adequacy of the existing parking facilities, the FHWA compared the supply of public parking spaces to the demand for public parking spaces, compared the supply of non-public parking spaces to the demand for non-public parking spaces, and compared the total supply to the total demand for each State (except Hawaii, which was not included in the study). Public and commercial spaces were evaluated separately because truckers use these facilities for different purposes. Public spaces are used for resting. Commercial spaces are used for meals, maintenance, and other purposes. The results showed that 35 States have a shortage of public parking spaces, while only 8 States have a shortage of commercial parking spaces. The comparison of total spaces to total demand showed that twelve States have overall shortages. Table B-2 presents a State-by-State analysis. Table B-3 presents the peak hour demand for these public and commercial truck stops and plazas.

Each State was classified in the FHWA study as having a surplus (a ratio of demand to supply less than 0.90), sufficient supply (a ratio of demand to supply between 0.90 and 1.10) or shortage (a ratio of demand to supply greater than 1.10) of public parking spaces and of non-public parking spaces. Table B-4 presents a State-by-State analysis of the adequacy of these existing facilities. The results of the FHWA survey suggest some interchangeability, albeit incomplete, between parking spaces at public rest areas and commercial truck stops and travel plazas. The analysis of the effects of increase or decrease in parking space demand for the four Alternatives assumes that driver preferences with respect to use of public rest areas and commercial parking facilities will remain unchanged from the status quo for all Alternatives.

B.2 Parking Impact Analysis Approach

The anticipated increase or decrease in parking demand by region for each Alternative, projected by the HOS RIA results, was disaggregated in order to assess the impact of each Alternative on the demand for public and for non-public parking spaces for each State. First, the State-by-State data from the FHWA Report to Congress was reorganized according to the regions described in Table B-1, and the total existing demand for public parking spaces and the total existing demand for non-public parking spaces were calculated for each region.

The total projected increase or decrease in demand for parking spaces for each Alternative for each region was apportioned to each State in that region based on the existing demand for public and for non-public parking spaces in each State in the region and based on the existing inventory of public and non-public parking spaces in each State in the region. For example, in the Northeast Region, 88 percent of the existing parking spaces are non-public spaces, and therefore 88 percent of the increase or decrease in parking space demand estimated for the Northeast Region for each Alternative is allocated to non-public parking, and 12 percent allocated to public parking. Similarly, New York State constitutes 24.5 percent of the existing demand for non-public parking spaces in the Northeast Region, and therefore 24.5 percent of the increase or decrease in demand for non-public parking spaces estimated for the Northeast Region for each Alternative is allocated to New York State.

The two scenarios for which parking demand would increase, the Full Compliance Baseline and the PATT Alternative, would create shortages of public and/or non-public spaces in certain States and exacerbate existing shortages in other States. For example, according to the FHWA report, the existing "peak hour" demand for non-public parking spaces in Maryland is 1,983, and the existing number of non-public parking spaces is 2,290, indicating that Maryland has a surplus of non-public parking spaces. The ratio of demand to supply for non-public parking spaces for Maryland is 0.87. For the Full Compliance Baseline, the demand for non-public parking spaces would increase to 3,154. Assuming that the supply of non-public parking spaces remains constant, the ratio of demand to supply for non-public parking spaces for Maryland would increase to 1.38 for the Full Compliance Baseline, indicating a shortage of non-public parking spaces. For the ATA Alternative, demand for non-public parking spaces for Maryland would decrease to 1,226, and the demand/supply ratio would decrease to 0.54, indicating an increased surplus of non-public parking spaces. A comparison of the demand/supply ratios for public parking spaces and non-public parking spaces for the four Alternatives and the No Action Alternative are included as Tables 5 and 6.

As shown in the tables, the Full Compliance Baseline and the PATT Alternative would result in an increase in truck operations that would exacerbate existing shortages of public and/or non-public parking spaces in certain States and create shortages or eliminate surpluses of public and / or non-public parking spaces in other States. Shortages of parking spaces that result from implementation of these Alternatives may be remedied by construction of additional public or non-public parking spaces. For purposes of the EA, FMCSA has assumed that the increased demand created by these two Alternatives would be met by constructing new facilities to satisfy all of the increased demand. This assumption is believed to be conservative (i.e. overstate the effect) because existing shortages are not being addressed in 12 of the States that would experience shortages under the Full Compliance Baseline or the PATT Alternative. A more likely scenario is that the States and commercial establishments would develop only enough facilities to make their supply sufficient.

The ATA Alternative and the FMCSA Alternative would result in a decrease in truck operations, which would reduce shortages in some States and eliminate shortages in other States. FMCSA assumes that there would be no induced development of parking facilities as a result of these two Alternatives.

B.3 Adequacy of Total Parking Spaces on a State-by-State Basis

FMCSA also analyzed the HOS RIA results to determine the effects of the Alternatives on total parking demand and supply in individual States. Table B-7 summarizes the results of this analysis. Currently, and under the No Action Alternative, 12 States have a shortage of truck parking spaces, 8 have sufficient parking spaces, and 28 States have a surplus. Two States, Alaska and Hawaii, were not considered because there was insufficient information to evaluate the adequacy of their total parking supply. FMCSA grouped the States into three categories: States that would experience shortages under the Full Compliance Baseline or the PATT Alternative; States with a current surplus that would be reduced to a sufficient supply under the Full Compliance Baseline or the PATT Alternative; and States with a current surplus and a projected surplus under the Full Compliance Baseline or the PATT Alternative.

Table B-8 summarizes the parking adequacy of the 23 States that would experience a shortage under the Full Compliance Baseline or the PATT Alternative. All 23 of these States would experience a shortage under the PATT Alternative, while 20 of the States would experience a shortage under the Full Compliance Baseline.

Table B-9 summarizes the parking adequacy for 11 States that have an existing surplus of truck parking spaces that would be reduced to sufficient parking under either the Full Compliance Baseline or the PATT Alternative. Under the Full Compliance Baseline, 8 of these States would have sufficient parking and three would continue to have a surplus. However, all 11 would have sufficient parking under the PATT Alternative.

Table B-10 summarizes the parking adequacy for the 14 States that would continue to have a surplus of truck parking under all Alternatives.

B.4 Land Area Needed to Provide Additional Parking

FMCSA analyzed the land area needed to satisfy the increased parking demand under either the Full Compliance Baseline or the PATT Alternative. FMCSA assumed that the ATA Alternative and the FMCSA Alternative would not induce construction of additional parking facilities because these Alternatives would reduce parking demand. FMCSA also assumed that an Alternative would not induce construction of additional parking facilities in States where truck parking is projected to be either sufficient or a surplus. FMCSA also assumed that States and/or commercial establishments in States with a shortage of parking would construct additional parking facilities to meet all of the increased demand. This assumption is believed to be conservative (i.e. overstate the effect) because existing shortages are not being addressed in 12 of the States that are would experience shortages under the Full Compliance Baseline or the PATT Alternative.

Table B-11 summarizes the potential land area that would be needed to satisfy parking demand in the States experiencing a shortage, assuming an average of 18 spaces per acre (NATSO, 2001).[18] Under the Full Compliance Baseline, 2,350 acres would be needed to satisfy the additional demand in the 20 States that would experience shortages. Under the PATT Alternative, which would create shortages in 23 States, 3,408 acres would be needed to satisfy the increased demand.

[18] See estimate performed by the National Association of Truck Stop Owners, available on-line at: http://www.natso.com/for_members/government_downloads/truckparking_solutions2001.doc

Table B-2. Commercial truck parking inventory along Interstate and other NHS routes carrying more than 1,000 trucks per day

	Public rest areas			Truck stops and travel plazas			Total
State	Number of facilities	Number of spaces	Percent of total	Number of facilities	Number of spaces	Percent of total	Number of spaces
Alabama	27	712	9%	99	6,902	91%	7,614
Alaska[1]	N/A	457	100%	N/A	N/A	N/A	457
Arizona	38	559	6%	58	8,140	94%	8,699
Arkansas	21	343	4%	108	7,519	96%	7,862
California	88	1,106	13%	122	7,496	87%	8,602
Colorado	31	167	6%	57	2,710	94%	2,877
Connecticut	20	361	23%	12	1,243	77%	1,604
Delaware	1	70	18%	8	324	82%	394
Florida	69	1,709	19%	85	7,339	81%	9,048
Georgia	31	1,162	9%	122	11,475	91%	12,637
Idaho	30	245	11%	25	1,967	89%	2,212
Illinois	54	1,267	12%	122	9,602	88%	10,869
Indiana	52	2,430	14%	119	14,529	86%	16,959
Iowa	38	804	13%	65	5,209	87%	6,013
Kansas	29	455	9%	55	4,383	91%	4,838
Kentucky	44	991	12%	76	7,186	88%	8,177
Louisiana	15	221	2%	115	9,159	98%	9,380
Maine	11	113	8%	16	1,248	92%	1,361
Maryland	11	295	11%	14	2,290	89%	2,585
Massachusetts	17	140	7%	20	1,916	93%	2,056
Michigan	75	1,570	20%	90	6,147	80%	7,717
Minnesota	40	536	11%	58	4,503	89%	5,039
Mississippi	43	428	6%	98	7,003	94%	7,431
Missouri	35	618	5%	140	12,272	95%	12,890
Montana	43	392	11%	39	3,085	89%	3,477
Nebraska	22	263	8%	46	2,835	92%	3,098
Nevada	36	260	5%	31	4,979	95%	5,239
New Hampshire	6	86	11%	13	697	89%	783
New Jersey	19	667	15%	34	3,730	85%	4,397
New Mexico	11	78	1%	49	6,322	99%	6,400
New York	36	1,257	15%	97	6,970	85%	8,227
North Carolina	37	642	8%	102	7,323	92%	7,965
North Dakota	30	260	11%	25	2,039	89%	2,299
Ohio	98	1,402	11%	135	11,474	89%	12,876
Oklahoma	63	767	7%	129	9,632	93%	10,399
Oregon	40	602	10%	52	5,702	90%	6,304
Pennsylvania	65	1,298	8%	134	14,502	92%	15,800
Rhode Island	5	267	39%	3	420	61%	687
South Carolina	49	816	9%	96	8,515	91%	9,331
South Dakota	21	371	22%	30	1,331	78%	1,702
Tennessee	30	767	11%	89	6,419	89%	7,186
Texas	105	654	3%	284	23,525	97%	24,179
Utah	24	238	9%	43	2,488	91%	2,726
Vermont	41	178	28%	63	449	72%	627
Virginia	39	820	10%	13	7,445	90%	8,265
Washington	29	455	15%	39	2,663	85%	3,118
West Virginia	21	506	23%	21	1,717	77%	2,223
Wisconsin	23	652	10%	80	5,971	90%	6,623
Wyoming	58	792	17%	51	3,806	83%	4,598
Total	1,771	31,249	10%	3,382	284,601	90%	315,850

[1] An inventory of private parking spaces was not performed for Alaska. Hawaii is not included in the FHWA study.

Table B-3. Peak hour demand for commercial vehicle parking along Interstate highways and other NHS routes carrying more than 1,000 trucks per day, 2000

State	Public rest area demand	Commercial truck stop demand	Total demand	20-Year forecasted annual increase in parking demand
Alabama	1,634	5,473	7,107	4.4%
Alaska	25	88	113	1.0%
Arizona	1,052	3,523	4,575	3.2%
Arkansas	1,783	5,968	7,751	2.9%
California	4,539	15,183	19,722	1.9%
Colorado	760	2,546	3,306	3.0%
Connecticut	616	2,060	2,676	1.7%
Delaware	206	694	900	2.4%
Florida	1,694	5,665	7,359	2.8%
Georgia	2,188	7,324	9,512	3.0%
Idaho	734	2,462	3,196	3.0%
Illinois	3,338	11,172	14,510	1.1%
Indiana	4,299	14,400	18,699	3.0%
Iowa	688	2,302	2,990	3.6%
Kansas	566	1,907	2,473	2.7%
Kentucky	2,206	7,380	9,586	2.7%
Louisiana	2,060	6,910	8,970	3.0%
Maine	205	691	896	0.5%
Maryland	592	1,983	2,575	2.0%
Massachusetts	863	2,894	3,757	1.3%
Michigan	1,275	4,262	5,537	2.2%
Minnesota	872	2,925	3,797	2.0%
Mississippi	1,254	4,194	5,448	2.7%
Missouri	2,643	8,841	11,484	2.7%
Montana	462	1,550	2,012	2.6%
Nebraska	251	837	1,088	3.6%
Nevada	682	2,285	2,967	2.0%
New Hampshire	72	243	315	2.2%
New Jersey	457	1,528	1,985	0.6%
New Mexico	1,218	4,083	5,301	2.5%
New York	1,801	6,034	7,835	3.0%
North Carolina	1,270	4,262	5,532	3.0%
North Dakota	188	635	823	3.0%
Ohio	3,301	11,059	14,360	2.9%
Oklahoma	1,078	3,610	4,688	1.8%
Oregon	1,139	3,819	4,958	1.8%
Pennsylvania	2,360	7,903	10,263	3.0%
Rhode Island	167	566	733	1.4%
South Carolina	1,265	4,236	5,501	3.8%
South Dakota	199	666	865	1.7%
Tennessee	1,214	4,073	5,287	4.0%
Texas	8,305	27,797	36,102	2.7%
Utah	391	1,307	1,698	4.3%
Vermont	27	91	118	1.2%
Virginia	1,772	5,932	7,704	1.4%
Washington	815	2,724	3,539	2.1%
West Virginia	468	1,572	2,040	3.0%
Wisconsin	633	2,115	2,748	4.2%
Wyoming	440	1,475	1,915	3.6%
Grand total	66,067	221.249	287,316	2.7%

Table B-4. Evaluation of parking shortages: State-by-State analysis

	Public Spaces		Commercial Spaces		Total Spaces	
State	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**
Alabama	2.29	Shortage	0.79	Surplus	0.93	Sufficient
Alaska[1]	0.05	Surplus	N/A	N/A	N/A	N/A
Arizona	1.88	Shortage	0.43	Surplus	0.53	Surplus
Arkansas	5.20	Shortage	0.79	Surplus	0.99	Sufficient
California	4.10	Shortage	2.03	Shortage	2.29	Shortage
Colorado	4.55	Shortage	0.94	Sufficient	1.15	Shortage
Connecticut	1.71	Shortage	1.66	Shortage	1.67	Shortage
Delaware	2.94	Shortage	2.14	Shortage	2.28	Shortage
Florida	0.99	Sufficient	0.77	Surplus	0.81	Surplus
Georgia	1.88	Shortage	0.64	Surplus	0.75	Surplus
Idaho	3.00	Shortage	1.25	Shortage	1.44	Shortage
Illinois	2.63	Shortage	1.16	Shortage	1.33	Shortage
Indiana	1.77	Shortage	0.99	Sufficient	1.10	Shortage
Iowa	0.86	Surplus	0.44	Surplus	0.50	Surplus
Kansas	1.24	Shortage	0.44	Surplus	0.51	Surplus
Kentucky	2.23	Shortage	1.03	Sufficient	1.17	Shortage
Louisiana	9.32	Shortage	0.75	Surplus	0.96	Sufficient
Maine	1.81	Shortage	0.55	Surplus	0.66	Surplus
Maryland	2.01	Shortage	0.87	Surplus	1.00	Sufficient
Massachusetts	6.16	Shortage	1.51	Shortage	1.83	Shortage
Michigan	0.81	Surplus	0.69	Surplus	0.72	Surplus
Minnesota	1.63	Shortage	0.65	Surplus	0.75	Surplus
Mississippi	2.93	Shortage	0.60	Surplus	0.73	Surplus
Missouri	4.28	Shortage	0.72	Surplus	0.89	Surplus
Montana	1.18	Shortage	0.50	Surplus	0.58	Surplus
Nebraska	0.95	Sufficient	0.30	Surplus	0.35	Surplus
Nevada	2.62	Shortage	0.46	Surplus	0.57	Surplus
New Hampshire	0.84	Surplus	0.35	Surplus	0.40	Surplus
New Jersey	0.69	Surplus	0.41	Surplus	0.45	Surplus
New Mexico	15.62	Shortage	0.65	Surplus	0.83	Surplus
New York	1.43	Shortage	0.87	Surplus	0.95	Sufficient
North Carolina	1.98	Shortage	0.58	Surplus	0.69	Surplus
North Dakota	0.72	Surplus	0.31	Surplus	0.36	Surplus
Ohio	2.35	Shortage	0.96	Sufficient	1.12	Shortage
Oklahoma	1.41	Shortage	0.37	Surplus	0.45	Surplus
Oregon	1.89	Shortage	0.67	Surplus	0.79	Surplus
Pennsylvania	1.82	Shortage	0.54	Surplus	0.65	Surplus
Rhode Island	0.63	Surplus	1.35	Shortage	1.07	Sufficient
South Carolina	1.55	Shortage	0.50	Surplus	0.59	Surplus
South Dakota	0.54	Surplus	0.50	Surplus	0.51	Surplus
Tennessee	1.58	Shortage	0.63	Surplus	0.74	Surplus
Texas	12.70	Shortage	1.18	Shortage	1.49	Shortage
Utah	1.64	Shortage	0.53	Surplus	0.62	Surplus
Vermont	0.15	Surplus	0.20	Surplus	0.19	Surplus
Virginia	2.16	Shortage	0.80	Surplus	0.93	Sufficient
Washington	1.79	Shortage	1.02	Sufficient	1.14	Shortage
West Virginia	0.92	Sufficient	0.92	Sufficient	0.92	Sufficient
Wisconsin	0.97	Sufficient	0.35	Surplus	0.41	Surplus
Wyoming	0.56	Surplus	0.39	Surplus	0.42	Surplus

[1] The supply of parking spaces at commercial truck stops and travel plazas was not determined for Alaska. Hawaii is not included in the FHWA study.

Table B-5. Evaluation of public parking demand/supply ratio: State-by-State analysis

	No Action		Full Compliance		PATT		FMCSA		ATA	
State	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**
Alabama	2.29	Shortage	2.54	Shortage	2.62	Shortage	2.24	Shortage	2.13	Shortage
Alaska	0.05	Surplus	0.06	Surplus	0.06	Surplus	0.05	Surplus	0.05	Surplus
Arizona	1.88	Shortage	2.20	Shortage	2.31	Shortage	1.82	Shortage	1.67	Shortage
Arkansas	5.20	Shortage	5.30	Shortage	5.34	Shortage	5.18	Shortage	5.13	Shortage
California	4.10	Shortage	4.68	Shortage	4.86	Shortage	3.99	Shortage	3.73	Shortage
Colorado	4.55	Shortage	5.33	Shortage	5.58	Shortage	4.39	Shortage	4.05	Shortage
Connecticut	1.71	Shortage	2.18	Shortage	2.33	Shortage	1.61	Shortage	1.40	Shortage
Delaware	2.94	Shortage	3.76	Shortage	4.03	Shortage	2.78	Shortage	2.42	Shortage
Florida	0.99	Sufficient	1.10	Sufficient	1.13	Shortage	0.97	Sufficient	0.92	Surplus
Georgia	1.88	Shortage	2.09	Shortage	2.15	Shortage	1.84	Shortage	1.75	Shortage
Idaho	3.00	Shortage	3.51	Shortage	3.68	Shortage	2.89	Shortage	2.66	Shortage
Illinois	2.63	Shortage	2.91	Shortage	3.00	Shortage	2.58	Shortage	2.45	Shortage
Indiana	1.77	Shortage	1.96	Shortage	2.02	Shortage	1.73	Shortage	1.65	Shortage
Iowa	0.86	Surplus	0.95	Sufficient	0.98	Sufficient	0.84	Surplus	0.80	Surplus
Kansas	1.24	Shortage	1.46	Shortage	1.53	Shortage	1.20	Shortage	1.11	Shortage
Kentucky	2.23	Shortage	2.47	Shortage	2.54	Shortage	2.18	Shortage	2.07	Shortage
Louisiana	9.32	Shortage	9.51	Shortage	9.57	Shortage	9.28	Shortage	9.20	Shortage
Maine	1.81	Shortage	2.32	Shortage	2.48	Shortage	1.71	Shortage	1.49	Shortage
Maryland	2.01	Shortage	2.56	Shortage	2.74	Shortage	1.89	Shortage	1.65	Shortage
Massachusetts	6.16	Shortage	7.87	Shortage	8.43	Shortage	5.82	Shortage	5.06	Shortage
Michigan	0.81	Surplus	0.90	Sufficient	0.93	Sufficient	0.79	Surplus	0.76	Surplus
Minnesota	1.63	Shortage	1.80	Shortage	1.85	Shortage	1.59	Shortage	1.52	Shortage
Mississippi	2.93	Shortage	3.25	Shortage	3.35	Shortage	2.87	Shortage	2.73	Shortage
Missouri	4.28	Shortage	4.73	Shortage	4.88	Shortage	4.18	Shortage	3.98	Shortage
Montana	1.18	Shortage	1.38	Shortage	1.45	Shortage	1.14	Shortage	1.05	Sufficient
Nebraska	0.95	Sufficient	1.12	Shortage	1.17	Shortage	0.92	Sufficient	0.85	Surplus
Nevada	2.62	Shortage	2.99	Shortage	3.11	Shortage	2.55	Shortage	2.39	Shortage
New Hampshire	0.84	Surplus	1.07	Shortage	1.15	Shortage	0.79	Surplus	0.69	Surplus
New Jersey	0.69	Surplus	0.88	Surplus	0.94	Sufficient	0.65	Surplus	0.56	Surplus
New Mexico	15.62	Shortage	18.29	Shortage	19.16	Shortage	15.07	Shortage	13.89	Shortage
New York	1.43	Shortage	1.83	Shortage	1.96	Shortage	1.35	Shortage	1.18	Sufficient
North Carolina	1.98	Shortage	2.19	Shortage	2.26	Shortage	1.93	Shortage	1.84	Shortage
North Dakota	0.72	Surplus	0.85	Surplus	0.89	Surplus	0.70	Surplus	0.64	Surplus
Ohio	2.35	Shortage	2.60	Shortage	2.68	Shortage	2.30	Shortage	2.19	Shortage
Oklahoma	1.41	Shortage	1.43	Shortage	1.44	Shortage	1.40	Shortage	1.39	Shortage
Oregon	1.89	Shortage	2.16	Shortage	2.24	Shortage	1.84	Shortage	1.72	Shortage
Pennsylvania	1.82	Shortage	2.32	Shortage	2.49	Shortage	1.72	Shortage	1.49	Shortage
Rhode Island	0.63	Surplus	0.80	Surplus	0.86	Surplus	0.59	Surplus	0.51	Surplus
South Carolina	1.55	Shortage	1.72	Shortage	1.77	Shortage	1.52	Shortage	1.44	Shortage
South Dakota	0.54	Surplus	0.63	Surplus	0.66	Surplus	0.52	Surplus	0.48	Surplus
Tennessee	1.58	Shortage	1.75	Shortage	1.81	Shortage	1.55	Shortage	1.47	Shortage
Texas	12.70	Shortage	12.96	Shortage	13.04	Shortage	12.65	Shortage	12.53	Shortage
Utah	1.64	Shortage	1.92	Shortage	2.02	Shortage	1.59	Shortage	1.46	Shortage
Vermont	0.15	Surplus	0.19	Surplus	0.21	Surplus	0.14	Surplus	0.12	Surplus
Virginia	2.16	Shortage	2.39	Shortage	2.47	Shortage	2.11	Shortage	2.01	Shortage
Washington	1.79	Shortage	2.04	Shortage	2.12	Shortage	1.74	Shortage	1.63	Shortage
West Virginia	0.92	Sufficient	1.02	Sufficient	1.06	Sufficient	0.90	Sufficient	0.86	Surplus
Wisconsin	0.97	Sufficient	1.07	Sufficient	1.11	Shortage	0.95	Sufficient	0.90	Sufficient
Wyoming	0.56	Surplus	0.65	Surplus	0.68	Surplus	0.54	Surplus	0.49	Surplus

Table B-6. Evaluation of non-public parking demand/supply ratio: State-by-State analysis

	No Action		Full Compliance		PATT		FMCSA		ATA	
State	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**
Alabama	0.79	Surplus	1.01	Sufficient	1.08	Sufficient	0.75	Surplus	0.66	Surplus
Alaska[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	0.43	Surplus	0.66	Surplus	0.73	Surplus	0.39	Surplus	0.29	Surplus
Arkansas	0.79	Surplus	0.92	Sufficient	0.96	Sufficient	0.77	Surplus	0.72	Surplus
California	2.03	Shortage	2.64	Shortage	2.84	Shortage	1.88	Shortage	1.58	Shortage
Colorado	0.94	Sufficient	1.43	Shortage	1.59	Shortage	0.84	Surplus	0.62	Surplus
Connecticut	1.66	Shortage	2.64	Shortage	2.96	Shortage	1.46	Shortage	1.02	Sufficient
Delaware	2.14	Shortage	3.41	Shortage	3.82	Shortage	1.88	Shortage	1.32	Shortage
Florida	0.77	Surplus	0.98	Sufficient	1.05	Sufficient	0.73	Surplus	0.64	Surplus
Georgia	0.64	Surplus	0.81	Surplus	0.87	Surplus	0.60	Surplus	0.53	Surplus
Idaho	1.25	Shortage	1.91	Shortage	2.12	Shortage	1.12	Shortage	0.83	Surplus
Illinois	1.16	Shortage	1.44	Shortage	1.53	Shortage	1.11	Shortage	0.99	Sufficient
Indiana	0.99	Sufficient	1.23	Shortage	1.30	Shortage	0.94	Sufficient	0.84	Surplus
Iowa	0.44	Surplus	0.55	Surplus	0.58	Surplus	0.42	Surplus	0.37	Surplus
Kansas	0.44	Surplus	0.66	Surplus	0.74	Surplus	0.39	Surplus	0.29	Surplus
Kentucky	1.03	Sufficient	1.30	Shortage	1.39	Shortage	0.97	Sufficient	0.85	Surplus
Louisiana	0.75	Surplus	0.87	Surplus	0.91	Sufficient	0.73	Surplus	0.68	Surplus
Maine	0.55	Surplus	0.88	Surplus	0.99	Sufficient	0.49	Surplus	0.34	Surplus
Maryland	0.87	Surplus	1.38	Shortage	1.54	Shortage	0.76	Surplus	0.54	Surplus
Massachusetts	1.51	Shortage	2.40	Shortage	2.69	Shortage	1.33	Shortage	0.93	Sufficient
Michigan	0.69	Surplus	0.86	Surplus	0.91	Surplus	0.66	Surplus	0.59	Surplus
Minnesota	0.65	Surplus	0.80	Surplus	0.85	Surplus	0.62	Surplus	0.55	Surplus
Mississippi	0.60	Surplus	0.76	Surplus	0.81	Surplus	0.57	Surplus	0.49	Surplus
Missouri	0.72	Surplus	0.89	Surplus	0.95	Sufficient	0.69	Surplus	0.61	Surplus
Montana	0.50	Surplus	0.76	Surplus	0.85	Surplus	0.45	Surplus	0.33	Surplus
Nebraska	0.30	Surplus	0.45	Surplus	0.50	Surplus	0.26	Surplus	0.20	Surplus
Nevada	0.46	Surplus	0.60	Surplus	0.64	Surplus	0.43	Surplus	0.36	Surplus
New Hampshire	0.35	Surplus	0.55	Surplus	0.62	Surplus	0.31	Surplus	0.22	Surplus
New Jersey	0.41	Surplus	0.65	Surplus	0.73	Surplus	0.36	Surplus	0.25	Surplus
New Mexico	0.65	Surplus	0.98	Sufficient	1.09	Sufficient	0.58	Surplus	0.43	Surplus
New York	0.87	Surplus	1.38	Shortage	1.54	Shortage	0.76	Surplus	0.54	Surplus
North Carolina	0.58	Surplus	0.74	Surplus	0.79	Surplus	0.55	Surplus	0.48	Surplus
North Dakota	0.31	Surplus	0.47	Surplus	0.53	Surplus	0.28	Surplus	0.21	Surplus
Ohio	0.96	Sufficient	1.19	Shortage	1.27	Shortage	0.92	Sufficient	0.82	Surplus
Oklahoma	0.37	Surplus	0.43	Surplus	0.45	Surplus	0.36	Surplus	0.34	Surplus
Oregon	0.67	Surplus	0.87	Surplus	0.94	Sufficient	0.62	Surplus	0.52	Surplus
Pennsylvania	0.54	Surplus	0.87	Surplus	0.97	Sufficient	0.48	Surplus	0.34	Surplus
Rhode Island	1.35	Shortage	2.14	Shortage	2.40	Shortage	1.19	Shortage	0.83	Surplus
South Carolina	0.50	Surplus	0.63	Surplus	0.67	Surplus	0.47	Surplus	0.41	Surplus
South Dakota	0.50	Surplus	0.76	Surplus	0.85	Surplus	0.45	Surplus	0.33	Surplus
Tennessee	0.63	Surplus	0.81	Surplus	0.86	Surplus	0.60	Surplus	0.52	Surplus
Texas	1.18	Shortage	1.36	Shortage	1.42	Shortage	1.14	Shortage	1.06	Sufficient
Utah	0.53	Surplus	0.80	Surplus	0.89	Surplus	0.47	Surplus	0.35	Surplus
Vermont	0.20	Surplus	0.32	Surplus	0.36	Surplus	0.18	Surplus	0.13	Surplus
Virginia	0.80	Surplus	1.01	Sufficient	1.08	Sufficient	0.75	Surplus	0.66	Surplus
Washington	1.02	Sufficient	1.33	Shortage	1.43	Shortage	0.95	Sufficient	0.80	Surplus
West Virginia	0.92	Sufficient	1.16	Shortage	1.24	Shortage	0.87	Surplus	0.76	Surplus
Wisconsin	0.35	Surplus	0.44	Surplus	0.47	Surplus	0.34	Surplus	0.30	Surplus
Wyoming	0.39	Surplus	0.59	Surplus	0.66	Surplus	0.35	Surplus	0.26	Surplus

[1] The evaluation of non-public parking demand/supply ratio was not determined for Alaska. Hawaii is not included in the FHWA study.

Table B-7. Evaluation of total parking demand/supply ratio: State-by-State analysis

	No Action		Full Compliance		PATT		FMCSA		ATA	
State	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**	**Ratio**	**Category**
Alabama	0.93	Sufficient	1.15	Shortage	1.22	Shortage	0.89	Surplus	0.79	Surplus
Alaska[1]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	0.53	Surplus	0.76	Surplus	0.83	Surplus	0.48	Surplus	0.38	Surplus
Arkansas	0.99	Sufficient	1.11	Shortage	1.15	Shortage	0.96	Sufficient	0.91	Sufficient
California	2.29	Shortage	2.90	Shortage	3.10	Shortage	2.15	Shortage	1.85	Shortage
Colorado	1.15	Shortage	1.66	Shortage	1.82	Shortage	1.05	Sufficient	0.82	Surplus
Connecticut	1.67	Shortage	2.53	Shortage	2.82	Shortage	1.49	Shortage	1.11	Shortage
Delaware	2.28	Shortage	3.47	Shortage	3.86	Shortage	2.04	Shortage	1.52	Shortage
Florida	0.81	Surplus	1.00	Sufficient	1.06	Sufficient	0.77	Surplus	0.69	Surplus
Georgia	0.75	Surplus	0.93	Sufficient	0.98	Sufficient	0.72	Surplus	0.64	Surplus
Idaho	1.44	Shortage	2.08	Shortage	2.29	Shortage	1.31	Shortage	1.03	Sufficient
Illinois	1.33	Shortage	1.61	Shortage	1.70	Shortage	1.28	Shortage	1.16	Shortage
Indiana	1.10	Shortage	1.33	Shortage	1.41	Shortage	1.06	Sufficient	0.96	Sufficient
Iowa	0.50	Surplus	0.60	Surplus	0.63	Surplus	0.48	Surplus	0.43	Surplus
Kansas	0.51	Surplus	0.74	Surplus	0.81	Surplus	0.47	Surplus	0.37	Surplus
Kentucky	1.17	Shortage	1.44	Shortage	1.53	Shortage	1.12	Shortage	1.00	Sufficient
Louisiana	0.96	Sufficient	1.07	Sufficient	1.11	Shortage	0.93	Sufficient	0.88	Surplus
Maine	0.66	Surplus	1.00	Sufficient	1.11	Shortage	0.59	Surplus	0.44	Surplus
Maryland	1.00	Sufficient	1.51	Shortage	1.68	Shortage	0.89	Surplus	0.66	Surplus
Massachusetts	1.83	Shortage	2.78	Shortage	3.08	Shortage	1.63	Shortage	1.21	Shortage
Michigan	0.72	Surplus	0.87	Surplus	0.91	Sufficient	0.69	Surplus	0.62	Surplus
Minnesota	0.75	Surplus	0.91	Sufficient	0.96	Sufficient	0.72	Surplus	0.65	Surplus
Mississippi	0.73	Surplus	0.90	Sufficient	0.96	Sufficient	0.70	Surplus	0.62	Surplus
Missouri	0.89	Surplus	1.08	Sufficient	1.14	Shortage	0.85	Surplus	0.77	Surplus
Montana	0.58	Surplus	0.83	Surplus	0.92	Sufficient	0.53	Surplus	0.41	Surplus
Nebraska	0.35	Surplus	0.51	Surplus	0.56	Surplus	0.32	Surplus	0.25	Surplus
Nevada	0.57	Surplus	0.72	Surplus	0.77	Surplus	0.53	Surplus	0.46	Surplus
New Hampshire	0.40	Surplus	0.61	Surplus	0.68	Surplus	0.36	Surplus	0.27	Surplus
New Jersey	0.45	Surplus	0.69	Surplus	0.76	Surplus	0.40	Surplus	0.30	Surplus
New Mexico	0.83	Surplus	1.19	Shortage	1.31	Shortage	0.75	Surplus	0.59	Surplus
New York	0.95	Sufficient	1.45	Shortage	1.61	Shortage	0.85	Surplus	0.63	Surplus
North Carolina	0.69	Surplus	0.86	Surplus	0.91	Sufficient	0.66	Surplus	0.59	Surplus
North Dakota	0.36	Surplus	0.52	Surplus	0.57	Surplus	0.33	Surplus	0.26	Surplus
Ohio	1.12	Shortage	1.35	Shortage	1.42	Shortage	1.07	Sufficient	0.97	Sufficient
Oklahoma	0.45	Surplus	0.51	Surplus	0.52	Surplus	0.44	Surplus	0.42	Surplus
Oregon	0.79	Surplus	0.99	Sufficient	1.06	Sufficient	0.74	Surplus	0.64	Surplus
Pennsylvania	0.65	Surplus	0.99	Sufficient	1.10	Sufficient	0.58	Surplus	0.43	Surplus
Rhode Island	1.07	Sufficient	1.62	Shortage	1.80	Shortage	0.95	Sufficient	0.71	Surplus
South Carolina	0.59	Surplus	0.73	Surplus	0.77	Surplus	0.56	Surplus	0.50	Surplus
South Dakota	0.51	Surplus	0.73	Surplus	0.81	Surplus	0.46	Surplus	0.36	Surplus
Tennessee	0.74	Surplus	0.91	Sufficient	0.96	Sufficient	0.70	Surplus	0.63	Surplus
Texas	1.49	Shortage	1.68	Shortage	1.74	Shortage	1.46	Shortage	1.37	Shortage
Utah	0.62	Surplus	0.90	Sufficient	0.99	Sufficient	0.57	Surplus	0.45	Surplus
Vermont	0.19	Surplus	0.29	Surplus	0.32	Surplus	0.17	Surplus	0.13	Surplus
Virginia	0.93	Sufficient	1.15	Shortage	1.22	Shortage	0.89	Surplus	0.79	Surplus
Washington	1.14	Shortage	1.44	Shortage	1.53	Shortage	1.07	Sufficient	0.92	Sufficient
West Virginia	0.92	Sufficient	1.13	Shortage	1.20	Shortage	0.87	Surplus	0.78	Surplus
Wisconsin	0.41	Surplus	0.50	Surplus	0.53	Surplus	0.40	Surplus	0.36	Surplus
Wyoming	0.42	Surplus	0.60	Surplus	0.66	Surplus	0.38	Surplus	0.30	Surplus

1 Data on non-public parking spaces was not obtained for Alaska. Hawaii is not included in the FHWA Study

Table B-8: Parking Adequacy for States Experiencing a Shortage of Truck Parking Under Either Full Compliance Baseline or PATT Alternative

Parking Adequacy under Existing Conditions and for the No Action Alternative				Parking Adequacy for Alternatives That Increase the Demand for Truck Parking.						Parking Adequacy for Alternatives That Reduce the Demand for Truck Parking.					
		No Action Alternative		**Full Compliance Baseline**			**PATT Alternative**			**FMCSA Alternative**			**ATA Alternative**		
State	Total Existing Spaces	Total Peak Hour Demand	Adequacy Category	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand
Alabama	7,614	7,107	Sufficient	8,754	Shortage	1,647	9,292	Shortage	2,185	6,771	Surplus	-336	6,042	Surplus	-1,065
Arkansas	7,862	7,751	Sufficient	8,702	Shortage	951	9,012	Shortage	1,261	7,557	Sufficient	-194	7,137	Sufficient	-614
California	8,602	19,722	Shortage	24,941	Shortage	5,219	26,645	Shortage	6,923	18,528	Shortage	-1,194	15,940	Shortage	-3,782
Colorado	2,877	3,306	Shortage	4,767	Shortage	1,461	5,243	Shortage	1,937	3,008	Sufficient	-298	2,362	Surplus	-944
Connecticut	1,604	2,676	Shortage	4,064	Shortage	1,388	4,517	Shortage	1,841	2,393	Shortage	-283	1,779	Shortage	-897
Delaware	394	900	Shortage	1,367	Shortage	467	1,520	Shortage	620	805	Shortage	-95	598	Shortage	-302
Idaho	2,212	3,196	Shortage	4,608	Shortage	1,412	5,069	Shortage	1,873	2,908	Shortage	-288	2,283	Sufficient	-913
Illinois	10,869	14,510	Shortage	17,511	Shortage	3,001	18,491	Shortage	3,981	13,898	Shortage	-612	12,571	Shortage	-1,939
Indiana	16,959	18,699	Sufficient	22,566	Shortage	3,867	23,829	Shortage	5,130	17,910	Sufficient	-789	16,200	Sufficient	-2,499
Kentucky	8,177	9,586	Shortage	11,808	Shortage	2,222	12,533	Shortage	2,947	9,133	Shortage	-453	8,150	Sufficient	-1,436
Louisiana	9,380	8,970	Sufficient	10,071	Sufficient	1,101	10,430	Shortage	1,460	8,745	Sufficient	-225	8,259	Surplus	-711
Maine	1,361	896	Surplus	1,361	Sufficient	465	1,513	Shortage	617	801	Surplus	-95	595	Surplus	-301
Maryland	2,585	2,575	Sufficient	3,911	Shortage	1,336	4,347	Shortage	1,772	2,302	Surplus	-273	1,712	Surplus	-863
Mass.	2,056	3,757	Shortage	5,706	Shortage	1,949	6,342	Shortage	2,585	3,359	Shortage	-398	2,498	Shortage	-1,259
Missouri	12,890	11,484	Surplus	13,859	Sufficient	2,375	14,634	Shortage	3,150	10,999	Surplus	-485	9,949	Surplus	-1,535
New Mexico	6,400	5,301	Surplus	7,643	Shortage	2,342	8,408	Shortage	3,107	4,823	Surplus	-478	3,787	Surplus	-1,514
New York	8,227	7,835	Sufficient	11,899	Shortage	4,064	13,226	Shortage	5,391	7,006	Surplus	-829	5,209	Surplus	-2,626
Ohio	12,876	14,360	Shortage	17,330	Shortage	2,970	18,300	Shortage	3,940	13,754	Sufficient	-606	12,441	Sufficient	-1,919
Rhode Island	687	733	Sufficient	1,114	Shortage	381	1,238	Shortage	505	655	Sufficient	-78	487	Surplus	-246
Texas	24,179	36,102	Shortage	40,530	Shortage	4,428	41,976	Shortage	5,874	35,198	Shortage	-904	33,240	Shortage	-2,862
Virginia	8,265	7,704	Sufficient	9,490	Shortage	1,786	10,073	Shortage	2,369	7,340	Surplus	-364	6,550	Surplus	-1,154
Washington	3,118	3,539	Shortage	4,475	Shortage	936	4,781	Shortage	1,242	3,325	Sufficient	-214	2,860	Sufficient	-679
West Virginia	2,223	2,040	Sufficient	2,513	Shortage	473	2,668	Shortage	628	1,943	Surplus	-97	1,734	Surplus	-306

Table B-9: Parking Adequacy for States With a Current Surplus of Truck Parking and a Projected Reduction to Sufficient Parking Under Either Full Compliance Baseline or PATT Alternative

Parking Adequacy under Existing Conditions and for the No Action Alternative				Parking Adequacy for Baseline and Alternative That Increase the Demand for Truck Parking.						Parking Adequacy for Alternatives That Reduce the Demand for Truck Parking.					
		No Action Alternative		**Full Compliance Baseline**			**PATT Alternative**			**FMCSA Alternative**			**ATA Alternative**		
State	Total Number of spaces	Total Peak Hour Demand	Adequacy Category	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand
Florida	9,048	7,359	Surplus	9,065	Sufficient	1,706	9,621	Sufficient	2,262	7,011	Surplus	-348	6,257	Surplus	-1,102
Georgia	12,637	9,512	Surplus	11,717	Sufficient	2,205	12,437	Sufficient	2,925	9,062	Surplus	-450	8,087	Surplus	-1,425
Minnesota	5,039	3,797	Surplus	4,582	Sufficient	785	4,839	Sufficient	1,042	3,637	Surplus	-160	3,289	Surplus	-508
Mississippi	7,431	5,448	Surplus	6,711	Sufficient	1,263	7,123	Sufficient	1,675	5,190	Surplus	-258	4,632	Surplus	-816
Michigan	7,717	5,537	Surplus	6,682	Surplus	1,145	7,056	Sufficient	1,519	5,303	Surplus	-234	4,797	Surplus	-740
Montana	3,477	2,012	Surplus	2,901	Surplus	889	3,191	Sufficient	1,179	1,831	Surplus	-181	1,437	Surplus	-575
North Carolina	7,965	5,532	Surplus	6,815	Surplus	1,283	7,233	Sufficient	1,701	5,270	Surplus	-262	4,703	Surplus	-829
Oregon	6,304	4,958	Surplus	6,270	Sufficient	1,312	6,699	Sufficient	1,741	4,658	Surplus	-300	4,007	Surplus	-951
Pennsylvania	15,800	10,263	Surplus	15,586	Sufficient	5,323	17,324	Sufficient	7,061	9,177	Surplus	-1,086	6,823	Surplus	-3,440
Tennessee	7,186	5,287	Surplus	6,513	Sufficient	1,226	6,913	Sufficient	1,626	5,037	Surplus	-250	4,495	Surplus	-792
Utah	2,726	1,698	Surplus	2,448	Sufficient	750	2,693	Sufficient	995	1,545	Surplus	-153	1,213	Surplus	-485

Table B-10: Parking Adequacy for States With a Current Surplus of Truck Parking and a Projected Surplus Under All Alternatives

Parking Adequacy under Existing Conditions and for the No Action Alternative				Parking Adequacy for Baseline and Alternative That Increase the Demand for Truck Parking.						Parking Adequacy for Alternatives That Reduce the Demand for Truck Parking.					
		No Action Alternative		Full Compliance Baseline			PATT Alternative			FMCSA Alternative			ATA Alternative		
State	Total Number of spaces	Total Peak Hour Demand	Adequacy Category	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand	Total Peak Hour Demand	Adequacy Category	Incremental Demand
Alaska	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arizona	8,699	4,575	Surplus	6,596	Surplus	2,021	7,256	Surplus	2,681	4,163	Surplus	-412	3,269	Surplus	-1,306
Hawaii	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iowa	6,013	2,990	Surplus	3,608	Surplus	618	3,810	Surplus	820	2,864	Surplus	-126	2,590	Surplus	-400
Kansas	4,838	2,473	Surplus	3,566	Surplus	1,093	3,923	Surplus	1,450	2,250	Surplus	-223	1,766	Surplus	-707
Nebraska	3,098	1,088	Surplus	1,568	Surplus	480	1,725	Surplus	637	990	Surplus	-98	778	Surplus	-310
Nevada	5,239	2,967	Surplus	3,752	Surplus	785	4,009	Surplus	1,042	2,787	Surplus	-180	2,398	Surplus	-569
New Hampshire	783	315	Surplus	479	Surplus	164	532	Surplus	217	282	Surplus	-33	209	Surplus	-106
New Jersey	4,397	1,985	Surplus	3,014	Surplus	1,029	3,350	Surplus	1,365	1,775	Surplus	-210	1,320	Surplus	-665
North Dakota	2,299	823	Surplus	1,187	Surplus	364	1,306	Surplus	483	749	Surplus	-74	588	Surplus	-235
Oklahoma	10,399	4,688	Surplus	5,263	Surplus	575	5,451	Surplus	763	4,571	Surplus	-117	4,316	Surplus	-372
South Carolina	9,331	5,501	Surplus	6,776	Surplus	1,275	7,193	Surplus	1,692	5,241	Surplus	-260	4,677	Surplus	-824
South Dakota	1,702	865	Surplus	1,247	Surplus	382	1,372	Surplus	507	787	Surplus	-78	618	Surplus	-247
Vermont	627	118	Surplus	179	Surplus	61	199	Surplus	81	106	Surplus	-12	78	Surplus	-40
Wisconsin	6,623	2,748	Surplus	3,316	Surplus	568	3,502	Surplus	754	2,632	Surplus	-116	2,381	Surplus	-367
Wyoming	4,598	1,915	Surplus	2,761	Surplus	846	3,037	Surplus	1,122	1,742	Surplus	-173	1,368	Surplus	-547

Table B-11 – Number and Acreage of Additional Highway Truck Parking Spaces Needed for Baseline and Alternatives That Result in Shortages of Parking Spaces

	No Action Alternative	Full Compliance Baseline		PATT Alternative		ATA Alternative	FMCSA Alternative
State	**Increased Demand (spaces)**	**Increased Demand (spaces)**	**Area (acres)**	**Increased Demand (spaces)**	**Area (acres)**	**Increased Demand (spaces)**	**Increased Demand (spaces)**
Alabama	No effect	1,647	92	2,185	121	No effect	No effect
Arkansas	No effect	951	53	1,261	70	No effect	No effect
California	No effect	5,219	290	6,923	385	No effect	No effect
Colorado	No effect	1,461	81	1,937	108	No effect	No effect
Connecticut	No effect	1,388	77	1,841	102	No effect	No effect
Delaware	No effect	467	26	620	34	No effect	No effect
Idaho	No effect	1,412	78	1,873	104	No effect	No effect
Illinois	No effect	3,001	167	3,981	221	No effect	No effect
Indiana	No effect	3,867	215	5,130	285	No effect	No effect
Kentucky	No effect	2,222	123	2,947	164	No effect	No effect
Louisiana	No effect	No effect	0	1,460	81	No effect	No effect
Maine	No effect	No effect	0	617	34	No effect	No effect
Maryland	No effect	1,336	74	1,772	98	No effect	No effect
Massachusetts	No effect	1,949	108	2,585	144	No effect	No effect
Missouri	No effect	No effect	0	3,150	175	No effect	No effect
New Mexico	No effect	2,342	130	3,107	173	No effect	No effect
New York	No effect	4,064	226	5,391	299	No effect	No effect
Ohio	No effect	2,970	165	3,940	219	No effect	No effect
Rhode Island	No effect	381	21	505	28	No effect	No effect
Texas	No effect	4,428	246	5,874	326	No effect	No effect
Virginia	No effect	1,786	99	2,369	132	No effect	No effect
Washington	No effect	936	52	1,242	69	No effect	No effect
West Virginia	No effect	473	26	628	35	No effect	No effect
TOTAL	**No effect**	**42,299**	**2,350**	**61,338**	**3,408**	**No effect**	**No effect**

APPENDIX C
Safety Impact Analysis

APPENDIX C
Safety Impact Analysis

The Purpose of the Proposed Action is to revise 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. The FMCSA estimates that hundreds of fatalities and thousands of injuries occur each year on U.S. roads because of fatigued CMV drivers. This section presents an analysis of the impacts of the Proposed Action and Alternatives on the incidence and economic cost of truck crashes related to fatigue.

To estimate the effects of the Proposed Action and Alternatives on safety, the FMCSA first modeled the effects of the Proposed Action and Alternatives on driver fatigue for long-haul (LH) and short-haul (SH) routes, and then modeled the effects of changes in fatigue on the incidence of truck crashes. The estimated change in incidence of truck crashes for each Alternative was then translated into economic cost. For the purposes of the safety impacts analysis models, the term "long-haul" encompasses both what most truckers would call long haul, and regional, truck operations: encompassing those with average lengths of haul greater than 150 miles. The term "short-haul" covers both local and short-haul operations: encompassing those with average lengths of hauls less than 150 miles. Both long-haul and short-haul operations may either be for-hire or private carriers.

C.1 Methodology

The potential impacts (in this case, potential safety benefits) of the Proposed Action and Alternatives were estimated using a multi-step process to relate proposed changes in HOS rules under the various Alternatives to changes in crash incidence and damages. Each of the Alternatives, with the exception of the No Action Alternative, provide safety benefits in terms of a net reduction in the incidence and economic cost of truck crashes related to driver fatigue. The safety impact analysis involved the following steps for each Alternative:

- Construct a set of sample working and driving schedules of different intensities and degrees of regularity;
- Use the results of the modeling performed for the cost analysis included in the Regulatory Impact Assessment (RIA) to determine the percentages of drivers following each sample schedule, and to determine the shifts in these percentages caused by the various Alternatives;
- Translate the amount of on-duty time in each schedule into expected amounts of sleep, using a function based on a field study of truck drivers;
- Use a version of the Walter Reed Sleep Performance Model (WRSPM) to estimate the effects of different sleep and driving schedules on a measure of alertness;

- Translate changes in alertness into relative changes in crash risks on the basis of a laboratory study of performance on a driving simulator;
- Calibrate the results of the modeling of simulated crash risks to the real world using independent estimates of the total numbers and percentages of crashes related to fatigue;
- Translate the estimated changes in fatigue-related crashes into dollar values for avoided crashes using existing estimates of the damages related to fatal, injury, and property-damage only crashes; and
- Adjust the values for avoided fatigue-related crashes for each Alternative for secondary effects of the Alternatives related to changes in the total number of drivers operating for each Alternative and to changes in total amount of freight transported by truck (mode shift) for each Alternative.

Some detail on these steps is presented in this section of the EA, concentrating on the approach used for long-haul drivers. A more detailed description of the safety benefits analysis is included in the Regulatory Impact Assessment.

C.1.1 Construction of Working and Driving Schedules

In the first step of the safety benefits estimation process, FMCSA reviewed driver survey data on the numbers of days per week, hours per day, and days per week worked and driven by truck drivers[19]. These data were used to construct a range of sample working and driving schedules for drivers under existing conditions, and to estimate the percentage of drivers whose typical workweeks could be represented by each one. An important aspect of these sample schedules was the degree to which the hours of work and hours off-duty kept to a regular pattern, as opposed to "rotating" over the course of a week or two.

C.1.2 Estimating Shifts in the Driving Schedules

In the second step, the results of the simulation of carrier operations for each Alternative were used to determine the effects of each Alternative on drivers' schedules. The carrier operations simulation results for the changes in average hours worked for each Alternative and the limits on permitted hours of work for each Alternative were used to re-estimate the percentages of drivers who could be represented by each sample working and driving schedule. The carrier operations simulation results were also used to estimate the degree to which drivers' schedules could be

[19] Driver survey data used in the safety impact analysis included Commercial Motor Vehicle Driver Fatigue, Alertness, and Countermeasures Study" (DFACS), 1997, by C. Abrams, T. Schultz, and C. D. Wylie; Truck Stop Study and Truck Company Study Surveys, 1999, developed for "Motor Carrier Scheduling Practices and Their Influence on Driver Fatigue," (forthcoming), by Michael Crum, Paula Morrow and Carmen Daecher; and Study of Fatigue-Related Driving Among Long-Distance Truck Drivers in New York State, Volume 1: Survey of Long-Distance Truck Drivers," 1997 (revised 1998), by Anne T. McCartt, Mark Hammer, and Sandra Fuller (Institute for Traffic Safety Management and Research). The driver survey data and their application to the safety impact analysis are described in Appendix B of the RIA.

expected to "rotate" throughout a week, with the starting times of the work shifts and layovers changing from day to day.

C.1.3 Estimating Effects on Sleep

The survey data and carrier operations simulation results provided information on drivers' total time on-duty per day, but did not directly show quantities of sleep for specific schedules. To translate on-duty hours to quantities of sleep, FMCSA used data on reported duty hours and measured sleep from a field study of long-haul truck drivers to determine the extent to which extra hours of work cut into sleep[20]. Another set of data, from a survey of truck drivers, was used to quantify the relationship between the time of day during which a driver sleeps and the amount of sleep the driver is able to get[21].

C.1.4 Effects of Sleep and Work Schedule Changes on Alertness

Sleeping and working schedules were translated into predicted levels of alertness using a slightly modified version of the Walter Reed Sleep Performance Model (WRSPM)[22]. This model was designed to predict the effects of changes in sleep and time of day on alertness as manifested in a measure of reaction time on the psychomotor vigilance task or PVT. By comparing predicted alertness levels for drivers following each of the sample schedules to alertness levels for drivers with ideal sleep and work schedules, we were able to measure the decrease in alertness (and therefore the increase in fatigue) resulting from each sample schedule. The degree to which the schedules allowed the drivers to drive and sleep at appropriate times, as opposed to forcing them to adjust rapidly to shifting sleep and work schedules, turned out to have a substantial effect on the degree of fatigue associated with the schedules.

C.1.5 Effects of Fatigue on Crash Risks

Using data from a laboratory experiment conducted using truck drivers by the Walter Reed Army Institute of Research (WRAIR), the changes in alertness were used to project relative changes in simulated crashes[23]. The simulations essentially excluded scenarios in which drivers of other vehicles made errors that caused crashes. Therefore, FMCSA interpreted the changes in simulated crash risks as corresponding to the subset of truck crashes in which the truck driver was judged to be at fault.

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[20] Field survey data used in the safety impact analysis included: Effects of Sleep Schedules on Commercial Motor Vehicle Driver Performance," 2000, by Balkin *et al.* (Walter-Reed Army Institute of Research); and the Virginia Polytech Focus Groups and Field Study (full reference information to be added). The field survey data and their application to the safety impact analysis are described in Appendix B of the RIA.

[21] The driver survey data and their application to the safety impact analysis are described in Appendix B of the RIA.

[22] Walter Reed Sleep Performance Model (WRSPM) was developed by the Walter Reed Army Institute of Research.

[23] The laboratory data and their application to the safety impact analysis are described in Appendix B of the RIA.

C.1.6 Calibration of Modeled Fatigue Crash Incidence Results to Actual Fatigue-Related Crash Incidence

Because the measure of crash risks in different driver sleep schedules was based only on performance in driving simulators, the results of the modeling could not be used directly to predict changes in actual crash incidence. Instead, FMCSA developed an independent estimate of the total numbers and percentages of all truck crashes that could be attributed to fatigue under current rules and conditions (i.e., for the No Action Alternative.) This estimate was based on examinations of databases on fatal and non-fatal crashes that included assessments of the causes of the crashes[24]. FMCSA focused this analysis on fatal crashes in which fatigue or inattention were listed as contributing to the crash. A fraction of the crashes attributed to inattention were counted as fatigue-related on the basis of a study of the causes of inattention. The FMCSA estimate of the fraction of crashes caused by fatigue was disaggregated into long-haul and short-haul portions, showing that a larger fraction of long-haul than short-haul crashes is attributable to fatigue.

These independent estimates of the numbers and percentages of crashes that could be attributable to fatigue were then used to calibrate the results of the modeling of simulated crashes to ensure that the overall magnitude of the model results were realistic. To summarize, the WRSPM was used to estimate the relative increase in fatigue-related crashes for each of a large number of sample working schedules; these relative increases were adjusted to create estimates of changes in actual crashes for each schedule; and then the effects of the different Alternatives on the fraction of drivers represented by each sample schedule was factored in to determine the differences in actual numbers of crashes by Alternative.

C.1.7 Economic Value of Changes in Crash Incidence

Changes in crash incidence were valued by using databases on recent crashes to divide the crashes into three categories: fatal crashes; crashes with injuries but no fatalities; and crashes with property damage only. These individual types of crashes were valued on a per-crash basis using research by Miller and Zaloshnja[25] following methods for valuation that are standard for Department of Transportation studies.

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[24] The National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS) and General Estimates System (GES) databases along with the Federal Motor Carrier Safety Administration (FMCSA) Motor Carrier Management Information System (MCMIS) Crash File were reviewed for the years 1997 through 2000. They provided the primary basis for crash estimates. Other databases including the MCMIS Census File, National Motor Carrier Directory (NMCD), and Bluebook were used to categorize crashes by motor carrier firm operations so that the resultant crash data could be linked to the industry profile and schedule/risk analyses used to evaluate the potential effects of proposed changes to the hours of service regulations. The databases used and their application to the safety impact analysis are described in more detail in the RIA.

[25] Zaloshnja E., Miller T., Spicer R., Costs of Large Truck- and Bus-Involved Crashes (2000)

C.2 Results

There are three parts to the safety impact analysis results. The effects of the Alternatives on crash incidence for long-haul and short-haul drivers are estimated using the modeling approach described above. Then the change in crash incidence for each Alternative is translated into economic value using standard Department of Transportation valuation methods. The valuation of the change in crash incidence is then adjusted to account for two secondary effects. One secondary effect of the Alternatives is the change in the total number of drivers for each Alternative, and the second secondary effect is amount of "mode shift" (i.e., shift in freight transported by truck to transport by rail.)

C.2.1 Changes in Crash Incidence and Economic Cost due to Schedule Changes

Table C-1 shows, for LH and SH operations:

- Modeled increments in crash incidence caused by fatigue under each Alternative relative to schedules that would leave drivers fully rested;
- Modeled increments in crash incidence scaled up to match our independent estimate of existing fatigue related crashes; and
- The difference in total crashes for each Alternative relative to the current rules under current compliance conditions (i.e., the No Action Alternative).

Table C-1 - Crash Increment and Fatigue-Related Crashes

		No Action	Full Compliance	PATT	ATA	FMCSA
LH	**Raw Modeled Fatigue-related Crash Increment**	11.5%	8.4%	6.0%	10.3%	7.0%
	Calibrated Fatigue-related Crash Increment	10.3%	7.8%	5.7%	9.4%	6.5%
	Reductions Relative to No Action Alternative	0.0%	2.7%	5.0%	1.0%	4.1%
SH	**Raw Modeled Fatigue-related Crash Increment**	3.7%	3.6%	3.3%	3.6%	3.5%
	Calibrated Fatigue-related Crash Increment	3.6%	3.4%	3.2%	3.5%	3.4%
	Reductions Relative to No Action Alternative	0.0%	0.2%	0.4%	0.1%	0.2%

Overall, fatigue-related crashes were predicted to be significantly more of a concern for LH operations than SH operations. This fact can be attributed in part to the somewhat heavier work schedules of long-haul drivers, but also to the fact that LH operations appear to be more likely to subject drivers to irregular and rotating schedules than SH operations. Two of the Alternatives, the PATT Alternative and the FMCSA Alternative, are projected to reduce fatigue-related accidents substantially relative to the current HOS rules with the current level of compliance (the No Action Alternative) and with respect to the current rules with full compliance (the Full

Compliance Baseline). The ATA Alternative is projected to reduce fatigue-related accidents to a lesser extent than the PATT or the FMCSA Alternatives. Much of the effectiveness of the FMCSA Alternative and the PATT Alternative in reducing crash incidence stems from the greater likelihood that drivers could stay on regular, non-rotating schedules; these Alternatives also allow for increased sleep during the workweek. Reductions in SH crashes were much smaller than the reductions in LH crashes for all Alternatives, both in relative and absolute terms.

The annual economic value of the crash incidence reductions shown in Table C-2 were found by multiplying the percentage reductions in crashes by FMCSA estimates of the total annual damages caused by all LH and SH crashes. The total annual damage from all LH crashes is almost $13 billion, and the total damage from all SH crashes is about $16 billion[26]. The value of reducing the number of crashes by the percentages shown in Table C-1 are shown in Table C-2 for each Alternative, broken down by the type of operation and by crash type.

Table C-2 - Value of Avoided Crashes for Alternatives relative to the No Action Alternative
Millions of dollars per year

	No Action	Full Compliance	PATT	ATA	FMCSA
Total Value of Avoided LH Crashes	0	429	794	162	653
Total Value of Avoided SH Crashes	0	22	58	14	32
Total Value of Avoided LH and SH Crashes	0	451	852	176	685

C.2.2 Adjustments to Benefits due to Secondary Effects

The reductions in the number of fatigue-related crashes and the economic value of the reductions shown in Tables 1 and 2 above include only effects of schedule changes on driver fatigue. While these are the primary effects of the Alternatives, two secondary effects of the Alternatives need to be considered in estimating net reductions in fatigue-related crashes. First, changes in the number of operating drivers resulting from schedule changes and mode shifts associated with each Alternative will result in changes in the number of relatively inexperienced drivers in the industry for each Alternative. The effects of each Alternative on the number of inexperienced drivers and on mode shifts are presented in Tables 3 and 4. Inexperienced drivers tend to have somewhat higher accident rates than the average driver, even over the fairly long time horizon considered in this analysis, and this affects the crash incidence for each Alternative to some extent. Second, changes in the LH operations VMT resulting from mode shift for each Alternative can be expected to result in proportionate changes in the total incidence of LH accidents (mode shift is not applicable to short-haul operations.) Both of these secondary effects are presented in Table C-5 for all Alternatives, along with the adjusted total benefits of net reduction in fatigue-related crashes.

[26] The cost estimation methodology and results are described in Chapter 4 of the RIA.

Table C-3 - Changes in Drivers Needed In Response to HOS Limits for each Alternative

		Full Compliance	PATT	ATA	FMCSA	No Action
Percentage Change	LH	8.1%	4.0%	-5.3%	-3.9%	0%
	SH	0.7%	7.7%	-0.4%	2.1%	0%
Number of Drivers	LH	121,500	60,000	-79,500	-58,500	0
	SH	10,800	115,500	-6,000	31,500	0
	Total	132,300	175,500	-85,500	-27,000	0

Source: Regulatory Impact Assessment, Chapter 9

Table C-4 - LH Cost Changes Including Wage Increases and Resulting Mode Shifts (in million of dollars per year)

	Full Compliance	PATT	ATA	FMCSA	No Action
Direct HOS-Induced Costs, LH Only	1,954	764	-1,356	-1,073	0
Percentage Change in Wages due to Driver Supply Elasticity	0.9%	1.2%	-0.6%	-0.2%	0%
Increase in LH Wage Bill due to Wage Increases	567	752	-366	-116	0
Total Increase in LH Costs	2,521	1,517	-1,722	-1,188	0
Percentage Increase in LH Costs	0.6%	0.4%	-0.4%	-0.3%	0%
Percentage Change in LH VMT due to Mode Shift	-0.54%	-0.32%	0.37%	0.25%	0%
Change in LH Drivers due to Mode Shift	**(8,104)**	**(4,875)**	**5,535**	**3,820**	**0**

Source: Regulatory Impact Assessment, Chapter 9

Table C-5 - Adjustments to Benefits due to Secondary Effects of Alternatives: New Drivers and Mode Shift

	No Action	PATT	ATA	FMCSA	Full Compliance
Reduction in LH Benefits due to New Drivers	0	154	36	54	103
Reduction in SH Benefits due to New Drivers	0	77	3	-13	7
Reduction All in Benefits due to New Drivers	0	236	38	67	110
Reduction in LH Benefits due to Increases in LH VMT	0	-162	-32	-54	-101
Net Reduction in Benefits due to Secondary Effects	0	68	6	14	9
Total Adjusted Benefits	0	783	170	671	443

The secondary impact of changes in the number of relatively inexperienced drivers that operate in the trucking industry is considered separately in the safety impact analysis because there is evidence in the literature linking the number of years of professional driving experience with accident rates. Therefore, any changes in the number of inexperienced drivers resulting from implementation of the Alternatives would correspondingly change the overall accident rates for all drivers under the Alternative considered. FMCSA performed calculations for the changes in accident rates for new drivers using data from the UMTIP driver survey and the discrete time proportional crash hazards model estimated for drivers based on that data to estimate a functional relationship between changes in crash risk difference and driving experience for truck drivers[27]. The total estimated change in crash risk related to changes in the number of inexperienced drivers for each Alternative is shown in Table C-6.

There is evidence that suggests that high turnover rates, especially in the TL segment, have been driven by the nature of the hours of service, among other factors. Based on FMCSA conversations with industry experts on driver retention, the Alternatives could have a positive impact on turnover to the extent that they can make work schedules in the truck driving profession similar to some of the other blue-collar occupations. Moreover, according to some industry experts, there is a growing trend among trucking companies to only hire new drivers with some experience, e.g., at least one year. This trend can also increase the average level of experience for the new drivers as well as change the number of drivers with/without experience in the safety impact analysis. FMCSA does not have data to estimate the reduction in turnover that may result from the Alternatives or data for the fraction of trucking companies that only hire new drivers with some experience. Therefore, FMCSA considered a case where only 50 percent of the new drivers come in with no experience and the rest of the new drivers come in with 4 years of experience. FMCSA also considered an extreme case where 99 percent of the new drivers have no experience. As indicated in Table C-6 the changes in crash risk even in the extreme case are less than one percent for all of the Alternatives.

Table C-6 - Estimated Crash Risk Changes for the Alternatives

Percentage share of new drivers with		PATT		ATA		FMCSA		Full Compliance	
No Experience	4-years Experience	LH	SH	LH	SH	LH	SH	LH	SH
50%	50%	0.11%	0.20%	-0.14%	-0.01%	-0.10%	0.06%	-0.21%	-0.02%
85%	15%	0.27%	0.52%	-0.36%	-0.03%	-0.26%	0.14%	-0.55%	-0.05%
99%	1%	0.34%	0.65%	-0.45%	-0.03%	-0.33%	0.18%	-0.68%	-0.06%

Source: Regulatory Impact Assessment, Chapter 9

[27] University of Michigan Trucking Industry Program (UMTIP) Driver Surveys (1997-1999), by Dale Belman *et al.*, with the University of Michigan Institute for Social Research. The UMTIP driver survey and its application to the safety impact analysis are described in Appendix B of the RIA.

APPENDIX D
Statement of Energy Effects for the FMCSA Hours of Service Proposed Rule

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Statement of Energy Effects for the FMCSA Hours of Service Proposed Rule

Executive Order 13211 of May 18, 2001, calls for the preparation of a Statement of Energy Effects in certain circumstances. The Statement is intended to provide additional information to decision-makers and discussants on the potential effects of certain regulatory actions on energy supply, distribution, or use. The Statement is required for rules determined to be a "significant energy action," defined as being "likely to have a significant adverse effect on the supply, distribution, or use of energy" or that are "designated by the Administrator of the Office of Information and Regulatory Affairs (OIRA) [at the Office of Management and Budget (OMB)] as a significant energy action."

FMCSA's proposed rule Alternatives regarding the hours of service (HOS Alternatives) in the trucking industry appear to satisfy the criteria for classification as a "significant energy action" based on supplemental guidance from OMB. Specifically, the HOS Alternatives under consideration may result in changes in the demand for diesel fuel that exceed the 4,000 barrels-per-day threshold and may have a minor impact on U.S. diesel fuel prices.[28] No other criteria appear to be affected by the proposed HOS Alternatives. FMCSA is filing this Statement of Energy Effects based on this determination, although the OIRA has not formally designated the HOS Alternatives as a "significant energy action" at this time.

A Regulatory Impact Analysis (RIA) and this Environmental Assessment (EA) have been submitted by FMCSA that cover the HOS Alternatives under consideration. The results of these analyses provided for summary-level data on the change in diesel fuel consumption across all HOS Alternatives. FMCSA considered several Alternatives to the No Action Alternative in conducting its analysis (summarized in the RIA) taking into account proposals from industry (ATA), interest groups (PATT), the FMCSA, and also considered the Full Compliance Baseline.[29] The Alternatives allow for different hours of service regulations to maximize the net benefits of a change in the rules with respect to highway safety and industry performance, and therefore satisfy the requirement that the Statement of Energy Effects examine "reasonable alternatives."

The findings presented below are based on the outcomes of the RIA associated with the HOS Rules Alternatives and on this EA analysis. These two analyses estimated the impact on vehicle miles traveled (VMT) and idle-times by tractor-trailer drivers caused by:

1. Direct changes in the proposed HOS rule Alternatives resulting in a change in tractor/trailer operation; and
2. Mode shifts (shifting freight from truck to rail or *vice versa* in response to changes in the price of trucking activity caused by the rule).

Table D-1 shows the anticipated direct impact of the proposed HOS Alternatives on the demand for diesel fuel, as estimated by this Environmental Assessment. The demand is based on the estimated changes in vehicle miles traveled and vehicle idling hours that would result from implementation of the Proposed Action and Alternatives, as compared to the No Action Alternative, and the fuel consumption rate for trucks while traveling or idling. The assumptions regarding vehicle idling by Alternative tend to have a strong influence on the net change in fuel consumption by HOS Alternative.

[28] This represents a combination of criteria #6 and, subsequently, #2 in the OMB guidance.
[29] American Trucking Associations (ATA) and Parents Against Tired Truckers (PATT).

Table D-1 - Change in Annual Transportation Distillate Fuel Consumption by Hours of Service Alternative

CHANGE IN ANNUAL ENERGY CONSUMPTION	NO ACTION	FULL COMPLIANCE	PATT	ATA	FMCSA
Diesel Fuel (Gallons)	0	-93,941,005	378,867,673	-191,328,021	121,510,931
Diesel Fuel (Barrels)	0	-2,236,691	9,020,659	-4,555,429	2,893,117
Diesel Fuel (Bbl/Day)	0	-6,128	24,714	-12,481	7,926

The changes in the demand for diesel fuel relative to the *status quo*, or "No Action" Alternative, may have an impact on fuel prices. However, any change in price is expected to be relatively minor given the change in the demand for diesel fuel at the national level and not analyzed in this Statement of Energy Effects. The analysis assumed that the price elasticity of diesel fuel is relatively small. Table D-2 summarizes the change in annual consumption by Alternative relative to total on-highway diesel consumption. Other comparisons of the change in direct fuel consumption relative to national fuel consumption generally are provided elsewhere in this Environmental Assessment. The regional distribution of the changes in demand for diesel fuel associated with each Alternative is expected to follow the current distribution pattern of fuel in the U.S.

Table D-2 - Change in Annual Transportation Diesel Fuel Consumption and Estimated Price Impacts by Alternative Relative to Total Baseline U.S. Consumption (Year 2000)

	No Action	Full Compliance	PATT	ATA	FMCSA
Change in Diesel Fuel Consumption (Gallons)	0	-93,941,005	378,867,673	-191,328,021	121,510,931
Baseline U.S. Diesel Fuel Consumption (Gallons)	38,281,029,000				
Percentage Change in Consumption Relative to U.S. Total Consumption	0.00%	-0.25%	0.99%	-0.50%	0.32%

Source Baseline Data: *http://www.eia.doe.gov/pub/oil_gas/petroleum/data_publications/fuel_oil_and_kerosene_sales/current/pdf/table23.pdf*

The RIA also evaluated the regional economic impacts of the Alternatives that will lead to indirect impacts on the demand for all fuels as the economy increases or decreases. Table D-3 summarizes the potential impact on energy consumption relative to U.S. energy consumption associated with each Alternative based on the estimated energy intensity in the year 2000 of 10.57 thousand Btu per dollar of additional gross domestic product (GDP).[30] The economic results are taken from the RIA and represent differences in GDP from baseline levels. Some double-counting of the energy impacts with the direct impacts above may be present in the changes in GDP as the economic analysis considered mode shift effects. Therefore, these results may tend to overstate the overall energy impact when combined with the direct energy impacts shown above.

Table D-3 - Change in Annual Energy Consumption Due to the Long-Term Economic Impact of Alternatives Relative to Total Baseline U.S. Energy Consumption (Year 2000)

	No Action	Full Compliance	PATT	ATA	FMCSA
Estimated Change in GDP (Billion Real $2000)	0	-$8.46	-$11.92	$5.69	$1.84
Change in Energy Consumption (Quad. Btu)	0	-0.089	-0.126	0.060	0.019
U.S. Baseline Energy Consumption (Quad Btu)	98.5				
Percentage Change in Energy Consumption Rel. to U.S.	0.00%	-0.09%	-0.13%	0.06%	0.02%

Source Baseline Data: *http://www.eia.doe.gov/emeu/aer/txt/tab0101.htm*

[30] Energy intensity data from Energy Information Administration, U.S. Department of Energy, http://www.eia.doe.gov/emeu/aer/txt/tab0105.htm

APPENDIX E
Environmental Justice Screening

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Environmental Justice Screening

E.1 Summary

This section evaluates whether environmental justice impacts could result from proposed changes to the Federal Motor Carrier Safety Administration's (FMCSA's) Hours of Service (HOS) regulations and enforcement. This screening indicates that the Proposed Action and Alternatives would not disproportionately affect minority and low-income communities because these protected populations are underrepresented in the most impacted trucking sectors.

E.2 Background

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low income Populations*, directs Federal agencies to "promote nondiscrimination in Federal policies substantially affecting human health and the environment." EO 12898 directs agencies to identify and consider disproportionately high and adverse human health or environmental effects of their actions on minority and low-income communities, and provide opportunities for community input in the NEPA process, including input on potential effects and mitigation measures.

The Council for Environmental Quality (CEQ) has oversight for the Federal government's compliance with EO 12898 and the NEPA process. CEQ has prepared guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and considered. This CEQ guidance[31] provides the following definitions of the terms "minority" and "low income" in the context of Environmental Justice (EJ) analysis:

- Minority individuals are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black, and Hispanic.
- A low income-household is one where the household income is below the Department of Health and Human Services poverty guidelines.

The U.S. Department of Transportation (DOT) has also drafted guidelines and issued its own Order[32] on environmental justice to provide its various offices with guidance to integrate EJ requirements into the decision making process. This DOT Order does not create a new set of requirements for State and local agencies, but is intended to reinforce considerations already embodied in existing regulations such as NEPA and Title VI of the Civil Rights Act of 1969.

[31] Council on Environmental Quality, Environmental Justice Guidance Under the National Environmental Policy Act, December 10, 1997.
[32] Department of Transportation Order To Address Environmental Justice in Minority Populations and Low-Income Populations, Federal Register: April 15, 1997 (Volume 62, Number 72).

The Order States that DOT will not carry out any programs, policies or activities that will have a disproportionately high and adverse effect on minority populations or low-income populations unless "further mitigation measures or Alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable."

This section describes the screening process used to assess whether the proposed Hours of Service regulations are likely to have disproportionate impacts on minority and low-income populations. This screening makes broad comparisons in order to evaluate whether a more detailed consideration of environmental justice is merited.

E.3 Methodology

The FMCSA followed the following steps in conducting this environmental justice screening:

1) Identified the proportion of minority and low-income populations among potentially impacted truck drivers. This procedure used the definition of minority and low-income populations specified in CEQ's guidance on environmental justice discussed in Section 4.2 of this Appendix.

    - Low-Income populations were identified based on 1998 Department of Health and Human Services Poverty Thresholds based on household size. Household income and family size are determined for private carriers, for-hire carriers, and TL for-hire carriers using the UMTIP[33] survey.

    - Minority populations were identified from among full time truck drivers and non-union truck drivers using the Bureau of Labor Statistics Current Population Survey[34] for the year 2000.

2) Compared the percentage of low-income and minority populations between the U.S. population as a whole, truckers impacted by Hours of Service regulations, and a subgroup of truckers likely to be disproportionately impacted HOS regulations.

3) Repeated the comparison in step two at the regional level for cases where the nationwide comparison suggested a reasonable possibility of disproportionate impacts to minority or low-income populations.

4) Qualitatively considered secondary impacts that could cause disproportionate burden to minority and low-income populations.

5) Evaluated the distribution of safety benefits that would be realized by a general reduction in the fatality rate from trucking crashes.

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[33] University of Michigan Trucking Industry Program (UMTIP) Driver Surveys (1997-1999), by Dale Belman et al., with the University of Michigan Institute for Social Research.

[34] Current Population Survey (CPS), U.S. Department of Labor, Bureau of Labor Statistics, 2000 <http://www.bls.gov/cps/>

- Fatalities are grouped by vehicle body type, race of victim, and ethnicity of victim. All medium and heavy duty truck types for which a race and ethnicity have been identified are selected.

- Fatalities that meet minority criteria are compared with the total number of fatalities with identified race and ethnicity.

E.4 Potential for Disproportionate Impacts

E.4.1 Summary

All of the proposed Alternatives for the HOS regulations apply equally to all income groups, all races, and all ethnicities. These Alternatives differ from one another in the degree to which they would restrict truck drivers work hours. If a driver is forced to work less as a result of new regulations, this could cause an economic burden.

In order to assess the potential for disproportionate impacts to minority and low income drivers, this analysis examined the demographics of the trucking sector as well as the demographics of the portion of the trucking sector likely to be most impacted by changes in thresholds and enforcement of hours of service limits.

This section of the screening found that none of the populations of truckers that could be most affected by the range of Alternatives are characterized by disproportionate low-income or minority representation. Consequently, minority and low-income populations will not be disproportionately impacted.

E.4.2 Potential Impacts on Low-Income Populations

This section makes several broad comparisons to ensure that disproportionate impacts to low-income populations will not occur.

Low-income individuals are defined by having household incomes below the poverty level.[35] Figure E-1 compares the low income percentage of truckers likely to be impacted by HOS regulations (long-haul private and for-hire truckers) with the low-income percentage of the general U.S. population. This figure indicates that only 3.6% of truckers are low income for combined private and for-hire, long-haul carriers. This is far less than 12.3% of the U.S. population that is low income.

Figure E-1 also shows the low-income portion of for-hire truckload drivers among long-haul, private and for-hire carriers. This is the segment identified in the Regulatory Impact Analysis identified as being more impacted by HOS regulations. This more impacted group has an even smaller portion of low-income population at 2.4%. This disproportionately small incidence of low-income populations among impacted truckers confirms that low-income populations would not be disproportional burdened by any of the Alternatives.

[35] CEQ Environmental Justice Guidance Under the National Environmental Policy Act, December 10, 1997.

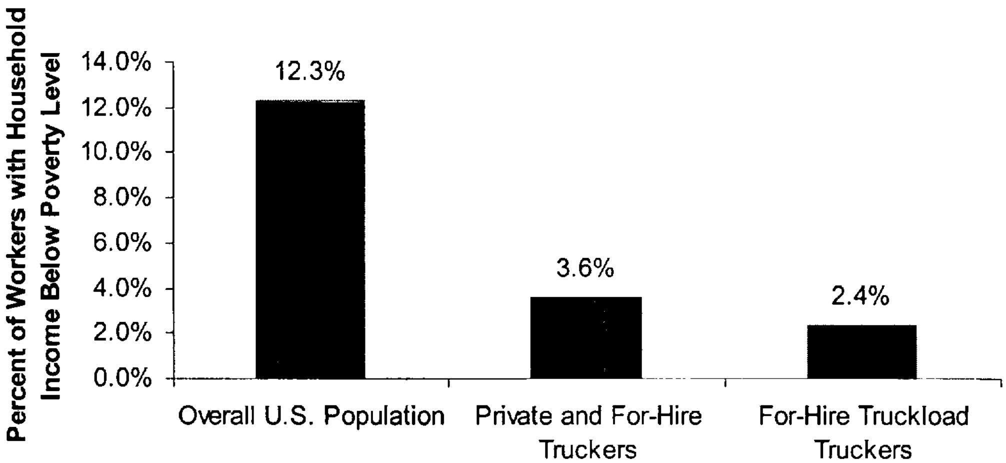

Figure E-1 - Low-income status of U.S. population vs. impacted trucking sectors. Source: U.S. population data comes from the U.S. Census estimates for 1998-1999; trucker household income data comes from the UMTIP Survey, October 1997-Spring 1999; poverty thresholds are from 1998 Health and Human Services Poverty Guidelines.

E.4.3 Potential Impacts on Minority Populations

Minority populations include all individuals that are non-white and non-Hispanic. Figure E-2 below compares the minority percentage of all full-time truckers with the minority percentage of the entire U.S. population. This shows that only 27.1% of truckers have minority status, compared with 30.9% of the overall U.S. population.

Figure E-2 also compares a subset of truckers that are more likely to be impacted by Alternatives. For the purpose of this analysis non-union truckers are used to focus the comparison on the portion of truckers that are more likely to be impacted by changes to hours-of-service regulations.[36] This indicates that the more impacted non-union truckers have a slightly higher minority percentage than the general trucking population. This situation justified a more specific geographic analysis to ensure that this disparity is not more dramatic in some U.S. Regions.

[36] Data that distinguishes truckers by TL and LTL more precisely defines the group that would be most impacted by HOS regulatory changes. However, such data could not be used for the minority analysis because the source of these data (the UMTIP survey) over-represents States with disproportionately low minority residents. For this reason, non-union was used as a proxy since this information. Union status is provided by Bureau of Labor Statistics Current Population Survey, which has more geographically balanced representation. Chapter 6 of the RIA indicates that non-union status is correlated with the TL sector.

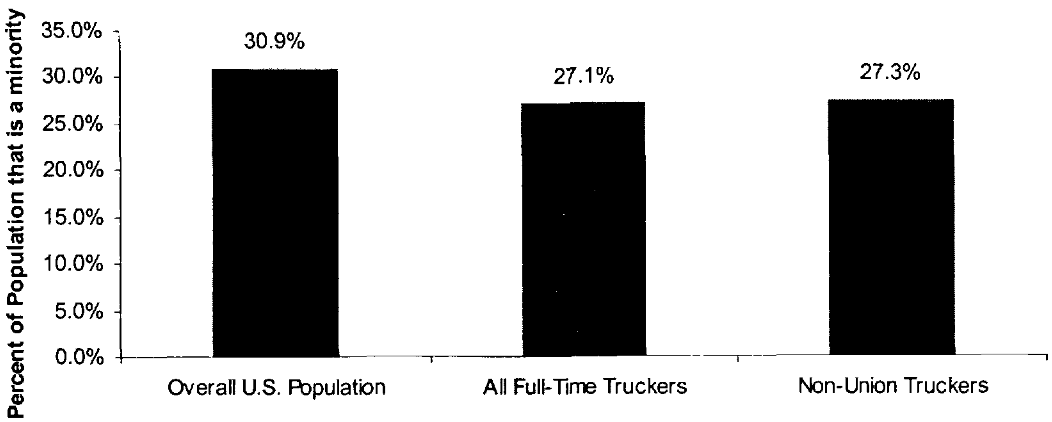

Figure E-2 - Minority percentage of U.S. population vs. trucking employees. Source: U.S. population data come from the 2000 Census; trucker minority data come from the 2000 Bureau of Labor Statistics Current Population Survey.

These regional comparisons (defined as U.S. Census Divisions) are shown in Figure E-3 below. This comparison shows that in two cases, the West North Central Division and the New England Division, non-Union Truckers have a higher proportion of minorities than truckers on the whole. However, both of these cases occur in regions where the trucking population on the whole has disproportionately few minorities. In no case is the minority percentage of non-union tuckers "meaningfully greater"[37] than the minority percentage of all truckers or the minority percentage of the Census Divisions overall population.

[37] The term "meaningfully greater" is used, but not defined in *CEQ Environmental Justice Guidance Under the National Environmental Policy Act.* This term has been interpreted in numerous NEPA documents to mean more than ten percentage points greater.

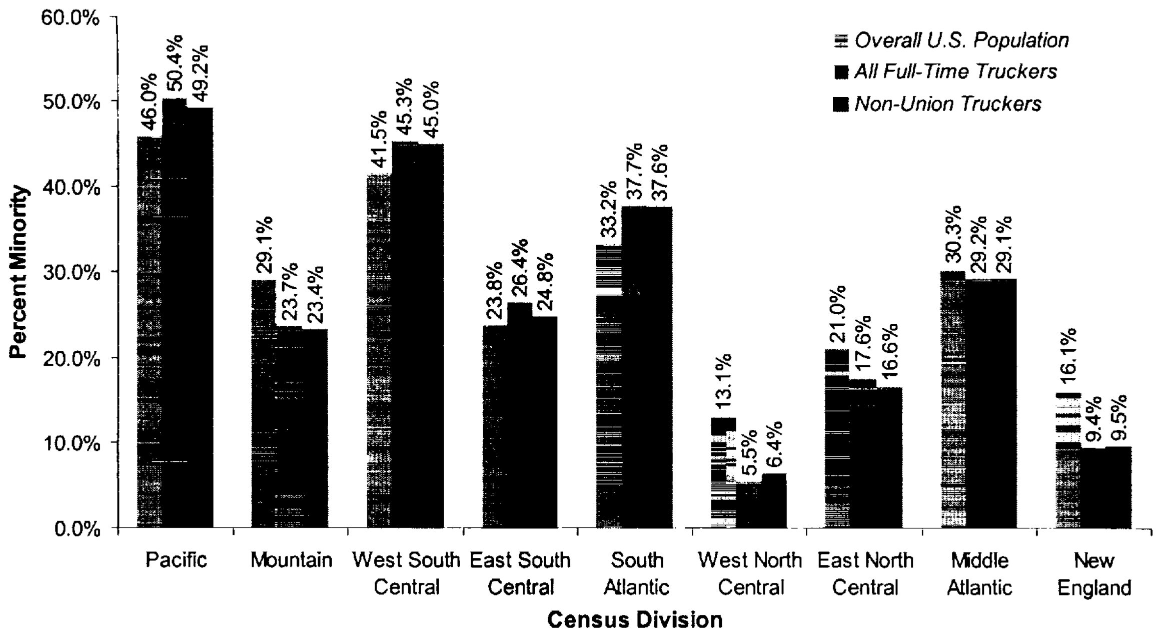

Figure E-3 - Minority percentage of U.S. population vs. trucking employees for U.S. Census Divisions.[38]
Source: U.S. population data come from the 2000 Census; trucker minority data come from the 2000 Bureau of Labor Statistics Current Population Survey.

E.5 Potential Secondary Environmental Justice Impacts

Freight facilities are often located near communities with relatively high proportions of minority and low income individuals. Consequently, changes to HOS requirements may have disproportionate impacts to minority and low income communities as a result of changes or relocation of such facilities. This is likely to occur in one of two ways:

1) Truck distribution centers and truck stops may either increase or decrease in their activity because of shifts between modes of freight travel. Such shifts would result from changes in the price of truck shipping relative to other modes, principally rail; or

2) Trucking facilities may need to be relocated in order to be spaced more appropriately given shorter travel distances necessitated by new HOS regulations.

The Regulatory Impact Analysis predicts a relatively small mode shift for long haul trucking across all of the Alternatives. The predictions range from a 0.32% reduction in long-haul trucking mode share for the PATT Alternative to a 0.37% increase for the ATA Alternative. Such changes in freight shipping could lead to changes in the community impacts of trucking facilities such as diesel exhaust, traffic congestion, noise, neighborhood continuity, parking, and employment opportunities. Similar changes would have to be considered when new facilities are required to accommodate more frequent rest stops.

[38] Alaska and Hawaii are excluded from all categories of the Pacific Division because trucker race and ethnicity data were not available for these States.

Unfortunately, such secondary impacts and their distributional effects cannot be predicted with any level of accuracy at the national scale. Environmental justice analysis of such impacts could be conducted when specific facilities are proposed for specific locations, but in some cases these would be private facilities and would depend on local zoning and transportation planning processes to ensure compliance with environmental justice regulations.

The Regulatory Impact Analysis predicts that the Alternatives differ substantially in their economic impacts by economic sector. For example, relative to other Alternatives, the PATT Alternative is projected to have a negative economic impact on the service sector employment.[39] This could lead to disproportionate impacts because the service sector has a higher proportion of minority employees relative to other employment sectors.[40] However, for secondary impacts, there is too much uncertainty in drawing conclusions about distributional impacts based on the demographic characteristics of major employment sectors.

E.6 Safety Benefits

Ensuring the fair distribution of negative impacts from government policies, plans, and programs is only one part of environmental justice requirements. Regulations also demand that agencies ensure fair distribution of benefits. For HOS regulations, the principle benefit driving new proposals for is a reduction in injuries and fatalities associated with truck accidents. Since the hours of service regulations will apply equally to minorities and non-minorities, one would expect these benefits would accrue in proportion to the minority presence in the trucking sector. In order to examine this assumption that safety benefits would be proportionately distributed, this section considers whether minority truck driver fatalities occur in proportion to the minority presence in the trucking field.

Hours of service regulations are intended to reduce both the number of fatalities and the number injuries resulting from truck driver fatigue. However, only fatality data are available by minority status, and neither injury data nor fatality data are available by income status. Consequently, this section examines the proportion of all current fatalities from trucking crashes that are minority truckers. Table E-4 shows the results indicating that fatalities are indeed distributed proportionately by minority status.

[39] See Table 11.2 of the Regulatory Impact Assessment.

[40] Bureau of Labor Statistics 2001 Data indicates that the service sector workforce is 17.8% black and 16.6% Hispanic, while the general workforce is 11.3% black and 10.9% Hispanic.

Table E-4 - 2001 Minority and Non-minority Fatalities for Medium and Heavy-duty Truck Crashes. Source: Fatality data come from The National Highway Traffic Safety Administration (NHTSA) Fatality Analysis Reporting System (FARS), 2001; Trucker minority data come from the Current Population Survey, 2000.

Distribution of Potential Hours of Service Safety Benefits	
Crash Fatalities with Race and Ethnicity identified	427 deaths
Medium & Heavy-duty Truck Crash Fatalities identified as Minority	105 deaths
Minority Percent of All Medium and Heavy-Duty Truck Crash Fatalities	**24.6%**
Percent of Truckers that are Minorities	**27.1%**

Data are fairly sparse because 2001 is the first year for which they were reported. Although a limited number of cases, these data suggest that safety enhancements are equally needed by minority and non-minority populations.