Public Notice – All Interested Parties

ENVIRONMENTAL ASSESSMENT FOR THE PROPOSED 2010 HOURS-OF-SERVICE (HOS) OF DRIVERS RULE

Docket No. FMCSA-2004-19608

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U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION

Notice of Proposed Rulemaking

Washington, DC

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Abstract: FMCSA prepares a draft Environmental Assessment for a 2010 Hours of Service (HOS) notice of proposed rulemaking (NPRM) that proposes changes to the HOS regulations issued in 2008. The HOS regulations apply to motor carriers (operators of commercial motor vehicles [CMVs]) and CMV drivers engaged in interstate commerce, and address requirements for driving, duty, and off-duty time; a recovery period; sleeper berth; and requirements for short-haul drivers**.** FMCSA finds that the NPRM warrants a Finding of No Significant Impact and that an Environmental Impact Statement is not needed.

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Abbreviations

µg	microgram
Btu	British thermal unit
CAA	Clean Air Act
CDL	commercial driver's license
CEQ	Council on Environmental Quality
cu ft	cubic foot
CFR	Code of Federal Regulations
cu in	cubic inch
CMV	commercial motor vehicle
CO	carbon monoxide
CO_2e	CO_2 equivalent
DOT	Department of Transportation
DPM	diesel particulate matter
EA	environmental assessment
EPA	U.S. Environmental Protection Agency
FHWA	Federal Highway Administration
FMCSA	Federal Motor Carrier Safety Administration
FR	Federal Register
gal	gallon
GHG	greenhouse gas
HDDV	heavy-duty diesel vehicle
HOS	hours of service
IFR	Interim Final Rule
kg	kilogram
lbs	pounds
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
m^3	cubic meter
mg	milligram
MT	metric ton
NHS	National Highway System
NO	nitric oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPRM	Notice of Proposed Rulemaking
OOIDA	Owner-Operator Independent Drivers Association
PAH	polycyclic aromatic hydrocarbon
Pb	lead
PM	particulate matter
PM_{10}	particulate matter less than 10 micrometer in diameter
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
ppb	parts per billion

ppm	parts per million
POM	polycyclic organic matter
QBtu	quadrillion British thermal units
RIA	Regulatory Impact Analysis
SIP	State Implementation Plan
SO_2	sulfur dioxide
U.S.C.	U.S. Code
VHI	vehicle hours idling
VMT	vehicle-miles traveled
VOC	volatile organic compounds

ENVIRONMENTAL ASSESSMENT FOR THE HOURS-OF-SERVICE (HOS) RULE

SUMMARY

This environmental assessment (EA) provides an analysis of the estimated environmental consequences of the Federal Motor Carrier Safety Administration's (FMCSA's) 2010 Hours-of-Service (HOS) Notice of Proposed Rulemaking (NPRM). The HOS regulations address the number of hours that a commercial motor vehicle (CMV) operator may drive and be on duty, before rest is required. The NPRM would revise the HOS rules. This EA serves as a concise public document that provides sufficient analysis and evidence to decide whether to prepare an environmental impact statement, issue a Finding of No Significant Impact, or withdraw the proposed rule on the basis of its environmental impacts. (See 40 Code of Federal Regulations [CFR] 1508.9). This EA explains the purpose of and need for the proposed action, describes the four alternatives and the affected environment, and assesses the environmental impacts of the preferred Alternatives (Alternative 2 or Alternative 3), and Alternative 4, compared to the No Action Alternative (Alternative 1). This EA also contains a comparative summary of the potential effects of Alternatives 2, 3, and 4 and the No Action Alternative, a statement of the environmental significance of the preferred Alternatives, and supporting information.

This EA was prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321, *et seq*., as amended); the FMCSA's NEPA *Implementing Procedures and Policy for Considering Environmental Impacts* (FMCSA Order 5610.1, March 1, 2004, 69 Federal Register [FR] 9680); the Council on Environmental Quality Regulations (CEQ) regulations implementing NEPA (40 CFR Parts 1500–1508), the U.S. Department of Transportation (DOT) Order 5610.C (September 18, 1979, as amended on July 13, 1982 and July 30, 1985), entitled *Procedures for Considering Environmental Impacts*; and other pertinent environmental regulations, Executive Orders, statutes, and laws for consideration of environmental impacts of FMCSA actions. The agency relies on all authorities noted above to ensure that it actively incorporates environmental considerations into informed decision-making on all of its actions, including rulemaking.

As allowed in 40 CFR 1502.14(e), FMCSA is considering two alternatives equally and the Agency will identify a single preferred alternative after the comment process in the final EA.

In accordance with its procedures for implementing NEPA [FMCSA Order 5610.1, Chapter 2.D.4(c) and Appendix 3], FMCSA prepared this EA to review the potential impacts of its proposed rule. Chapter 2.D.4(c) of FMCSA Order 5610.1 states that EAs will be prepared for:

> "Projects for which environmental assessments are normally completed include new or revised regulations, directives or policy guidance concerning activities that are not categorically excluded and uncertainty [exists] about whether they may have significant environmental effects."

Appendix 3, "FMCSA Regulations Typically Subject to an EA," identifies specific regulations and includes under (8):

> "Regulations that apply to hours of service of drivers."

The proposed rule (the proposed Alternatives, Alternative 2 or Alternative 3 in this EA) would limit drivers to 10 or 11 hours of driving time (the current standard is 11 hours) within a period of 14 consecutive hours from the start of the duty tour, between periods of at least 10 hours off duty. The driving window would routinely be 14 hours, but could be extended to 16 hours twice a week. Duty time in the driving window would be limited to 13 hours. Drivers would be allowed to be on duty for 7 consecutive hours without a break; after 7 hours, drivers would not be allowed to drive unless they had taken an off-duty period of at least a half hour in the previous 7 hours. A period of 34 hours off duty restarts the 60- or 70-hour weekly period in which driving is allowed. This provision, the so-called 34-hour restart, would be retained, subject to several limits: the restart interval would have to include two periods between midnight and 6 a.m., and a driver may begin another 34-hour off duty period no sooner than 168 hours (1 week) after the beginning of the previously designated restart. The driver must also specifically designate any period of 34 or more hours off duty that is to be considered a restart. The sleeper-berth exemption would not be altered, but would be affected by the other provisions. The definition of "on duty" would be revised to allow some time spent in or on the truck to be logged as off duty. The proposed rule would provide flexibility for drivers to take breaks when needed while limiting the hours worked to reduce fatigue and the health impacts associated with long hours.

In accordance with the CEQ regulations (40 CFR 1501.7) for identifying the significant issues related to a proposed action, and FMCSA Order 5610.1, Chapter 2.D.10, "Reducing Paperwork in Preparation of Environmental Documents," this EA focuses on the significant issues and deemphasizes insignificant issues. Through the rulemaking process, and in accordance with CEQ, DOT, and FMCSA environmental guidelines, and other environmental statutes, laws, and Executive Orders for NEPA review and analyses, FMCSA has determined the scope of the environmental issues to be analyzed in detail (significant issues) and the issues that will be briefly reviewed. The areas of consideration are categorized as follows:

- Air Quality and Clean Air Act Requirements
  - Criteria Pollutants and Air Toxics
  - Greenhouse Gas Emissions/Climate Change
- Public Health and Safety
  - Noise
  - Hazardous Materials Transportation
  - Solid Waste Disposal
- Energy Supply
- Truck Parking Supply
- Section 4(f) Historic, Parkland, and Recreational Resources
- Endangered Species
- Wetlands
- Historic Properties
- Environmental Justice

1. Purpose and Need for Action

The following sections introduce and succinctly describe the purpose of and need for the action initiated by the Federal Motor Carrier Safety Administration (FMCSA or the Agency). FMCSA is reviewing provisions of the hours-of-service (HOS) regulations (codified at 49 Code of Federal Regulations [CFR] Part 395), including those that were vacated by the U.S. Court of Appeals for the District of Columbia Circuit (the Court or D.C. Circuit) in 2007 but which were readopted with the issuance of an Interim Final Rule (IFR) in December 2007 and a Final Rule in November 2008. The HOS regulations apply to motor carriers (operators of commercial motor vehicles [CMV]) and CMV drivers, and regulate the number of hours that CMV drivers may drive, the number of hours that CMV drivers may remain on duty before a period of rest is required, the minimum amount of time that must be reserved for rest, and the number of duty hours per week.

This regulatory action pertains only to HOS regulations affecting drivers of property-carrying CMVs. HOS regulations for operators of passenger-carrying CMVs (e.g., buses) are not being reconsidered at this time.

1.1 LEGAL BACKGROUND

HOS for drivers of CMVs have been regulated since December 1937 when the Interstate Commerce Commission promulgated the first HOS rules pursuant to the Motor Carrier Act of 1935. The rules were revised in 1938 and 1962. The 1938 revision limited drivers to 10 hours of driving in 24 hours with at least 8 hours off duty; drivers could be on duty 60 hours in 7 days or 70 hours in 8 days. The 1962 revision dropped the 24-hour requirement, effectively allowing drivers to drive 10 hours and take 8 hours off, then drive again. (See the May 2, 2000, notice of proposed rulemaking [NPRM] for a detailed history of the provisions; 65 Federal Register [FR] 25540.)

FMCSA promulgated revised HOS rules on April 28, 2003 (68 FR 22456), as amended on September 30, 2003 (68 FR 56208–56212), and adopted a compliance date of January 4, 2004. The revised rules were vacated on July 16, 2004, by the D.C. Circuit, in *Public Citizen et al. v. Federal Motor Carrier Safety Administration,* 374 F. 3d 1209 (D.C. Cir. 2004), on the grounds that FMCSA had not considered the effect of the rule on drivers' health; the court also had concerns about several other issues in the 2003 HOS rule including a driving time limit of 11 hours in a tour of duty, rather than 10; allowing more hours on duty in a given week as a result of the restart provision; allowing drivers to split off-duty time in a sleeper berth; and the Agency's failure to consider electronic on-board recorders.

In response to the court action, Congress extended the 2003 rule for a year to afford FMCSA an opportunity to revisit the issues cited by the court. FMCSA then re-proposed the rule as published in 2003 and sought comments (70 FR 3339, January. 24, 2005). On August 25, 2005, FMCSA published a Final Rule that retained the essential provisions of the 2003 rule: 11 hours of driving time, a 14-hour driving window, 10 consecutive hours off duty, and the 34-hour restart provision (70 FR 49978). The rule revised the sleeper-berth provision to require at least 8, but less than 10, consecutive hours in the sleeper berth, providing drivers with the opportunity to obtain 7 to 8 hours of uninterrupted sleep each day. Drivers using the sleeper berth were required to take an additional 2 hours either off duty or in the sleeper berth, a period that is counted against the 14-hour driving window. The 2005 rule also provided an exception for drivers who operate within 150 air-miles of their work-reporting location and who drive CMVs that do not require a commercial driver's license (CDL) to operate. To enable these short-haul carriers to meet unusual scheduling demands, the driver could use a 16-hour driving window twice a week. (See the 2005 Final Rule for a detailed discussion of the changes and a discussion of driver health issues.)

Public Citizen and others challenged the 2005 rule on several grounds, as did the Owner-Operator Independent Drivers Association (OOIDA). On July 24, 2007, the D.C. Circuit rejected OOIDA's arguments, which focused on the sleeper-berth provision, but accepted part of Public Citizen's arguments. The Court concluded that FMCSA did not satisfy the Administrative Procedures Act requirements and vacated the 11-hour driving time and 34-hour restart provisions (*Owner-Operator Independent Drivers Association, Inc. v. Federal Motor Carrier Safety Administration,* 494 F.3d 188 [D.C. Cir. 2007]).[1]

FMCSA published an IFR on December 17, 2007 (72 FR 71247) to prevent disruption of both enforcement of and compliance with the HOS rules while the Agency responded to the issues identified by the Court. The IFR re-adopted both the 11-hour driving limit and the 34-hour restart. In response to the Court's findings, the preamble to the IFR included a detailed explanation of the Agency's time-on-task methodology (72 FR 71252 *et seq.*). On November 19, 2008, FMCSA adopted the provisions of the IFR as a Final Rule (73 FR 69567).

On December 18, 2008, Advocates for Highway and Automotive Safety, Public Citizen, the International Brotherhood of Teamsters, and the Truck Safety Coalition (HOS petitioners) petitioned FMCSA to reconsider the research and crash data justifying the 11-hour driving rule and the 34-hour restart provision. FMCSA denied the petition.[2] On March 9, 2009, the HOS petitioners filed a petition for review of the 2008 rule in the D.C. Circuit and, on August 27, 2009, filed their opening brief. In October 2009, however, the Department of Transportation (DOT), FMCSA, and the HOS petitioners reached a settlement agreement.

FMCSA has decided to review and reconsider the 2008 HOS rule. The 2009 petition for review is in abeyance pending FMCSA's publication of a new NPRM. After considering all the comments, FMCSA will publish a Final Rule by July 26, 2011.

1.2 PURPOSE OF THE ACTION

The purpose of the action is to propose the amendments to the HOS rule discussed in detail in Section 2.2 of this document. The fundamental purpose of the HOS regulations is to limit, to the extent possible, the likelihood that drivers will be fatigued, either when they come on duty or during or at the end of a working period. Fatigue can affect performance well before a person becomes sleepy. As a person becomes fatigued, reaction times slow, concentration becomes more erratic, and judgments are slowed, all of which affect a driver's ability to respond quickly to a hazardous driving situation. Eventually, fatigue reaches a point where the person has trouble

[1] For more information about the history and background of the Interim Final Rule, see 72 FR 71251, Dec. 17, 2007.
[2] Docket No. FMCSA-2004-19608-3525.1, Jan. 16, 2009.

staying awake and might be unable to avoid falling asleep. The proposed rule would provide flexibility for drivers to take breaks when needed, while limiting the hours worked to reduce fatigue and the health impacts associated with long hours.

1.3 NEED FOR THE ACTION

The action is needed to improve safety of CMV operations and protect driver health while affording drivers the flexibility to obtain rest when needed and to adjust their schedules to account for unanticipated events. The action is a necessary step to comply with the terms of the settlement agreement adopted by the parties and accepted by the D.C. Circuit. FMCSA is required to publish a Final Rule by July 26, 2011.

2. Alternatives

This EA considers and assesses the potential environmental consequences of four regulatory alternatives. A summary of the major provisions of each alternative is included in Exhibit 2-1. Alternative 1 (the No Action Alternative) would retain the 2008 rule, while Alternatives 2, 3, and 4 would adopt several revisions to that rule. None of the alternatives analyzed in this EA addresses the HOS exemptions created by the National Highway System (NHS) Act; those exemptions are statutory and cannot be changed by regulatory action. The alternatives and their rationales are described briefly in this section.

As allowed in 40 CFR 1502.14(e), FMCSA is considering two alternatives equally and the Agency will identify a single preferred alternative after the comment process in the final EA.

2.1 Alternative 1: No Action Alternative

Alternative 1 would retain the 2008 HOS rule; that is, make no changes to the current HOS regulations. The existing exemptions to the current HOS regulations would remain in effect.

The 2008 rule is divided into daily and multi-day provisions, which can be expressed as follows:

- Following at least 10 consecutive hours off duty, operators (i.e., CMV drivers) may drive up to 11 hours within a period of 14 consecutive hours from the start of the duty tour.
- Short-haul operators of vehicles for which a commercial driver's license is not required (generally those less than 26,000 lbs gross vehicle weight or weight rating) who remain within a 150-mile radius of their normal work-reporting location, may keep timecards in lieu of logbooks and may be on duty up to 16 consecutive hours 2 days during a 7-day work week.
- Operators may drive within a window of 60 hours on duty in 7 consecutive days or 70 hours in 8 consecutive days, depending on the kind of operation of the employing motor carrier.
- If a sleeper berth is used, the 10-hour break may be split into two periods. One period of at least 8 consecutive hours must be in the sleeper berth, and a separate period of at least 2 consecutive hours may be in the sleeper berth or off duty. The 11-hour limit on driving time within a 14-hour driving window applies to drivers who use sleeper berths, but special compliance calculations are included in the regulations.
- Operators who take at least 34 consecutive hours of off-duty time may begin a new "weekly" driving window of 60 hours on duty in 7 consecutive days or 70 hours on duty in 8 consecutive days (i.e., the 7- or 8-day "clock" is restarted by a 34-hour off-duty period).

2.2 Alternative 2

This alternative differs from Alternative 1 as follows:

- Following at least 10 consecutive hours off duty, operators would be limited to 10 (rather than 11) hours of driving within a period of 14 consecutive hours from the start of the duty tour.
- Operators could be on duty for only 13 hours within a driving window of 14 hours (or 16 hours, as described below).
- Twice a week, operators may extend the driving window to 16 hours. The extension does not increase the allowed driving or on-duty time. Thus, operators using an extension to the full 16 hours must take at least 3 hours off duty during the day to extend the window to 16 hours.
- Operators may not drive if more than 7 hours has passed since a rest break of at least 30 minutes.
- The off-duty time required to restart the 60- or 70-hour "clock" must include at least two periods between midnight and 6:00 a.m. As a result, the nominal 34-hour restart might actually be longer than 34 hours. A driver may begin another restart period no sooner than 168 hours (7 days) after the beginning of the last restart. The driver must specifically designate any period of 34 hours (or more) that is considered a restart.

2.3 ALTERNATIVE 3

This alternative differs from Alternative 2 only in the amount of driving time allowed within a 13-hour duty period and a 14- to 16-hour driving window. Alternative 3 would allow 11 hours, or 1 more hour than Alternative 2.

2.4 ALTERNATIVE 4

This alternative differs from Alternative 2 only in the amount of driving time allowed within a 13-hour duty period and a 14- to 16-hour driving window. Alternative 4 would allow only 9 hours, or 1 hour less than Alternative 2.

2.5 SUMMARY COMPARISON OF ALTERNATIVES

Under Alternative 1 (the No Action Alternative), no change would be made to the requirements that have been in effect since 2005. Alternative 2 would reduce the hours of driving from 11 to 10 within a consecutive 14-hour daily on-duty period and would continue to allow the use of a so-called 34-hour restart (which might in fact require more than 34 hours off duty). This alternative would result in a minor mode shift from truck transport to rail transport, and a decrease in the incidence of fatigue-related crashes and associated costs. The analysis of the effects of the alternatives and associated CMV safety and fatigue-related crash incidence for long-haul operations is included in the *2010 Hours of Service Rules Regulatory Impact Analysis* (RIA) (FMCSA 2010a). The methodology for the safety analysis is described in Chapter 4 of the RIA.

Alternative 2 would decrease crashes for long-haul operations by an estimated 1.78% compared to the No Action Alternative, with an associated decrease in cost of crash incidents of $390 million to $1.01 billion per year. Alternative 2 also would result in improvements in driver health estimated to range in value from −$110 million (a net cost) to $1.48 billion. These benefits would be offset by increased annual operational costs of $1.03 billion. The resulting net benefits of Alternative 2 were estimated to range from −$750 million (a net cost) to $1.46 billion (FMCSA 2010a).

Exhibit 2-1 presents a summary of the regulatory requirements associated with each alternative.

Exhibit 2-1. Summary Comparison of the Regulatory Requirements of the Alternatives

Provisions of Alternatives	Alternative 1: No-Action Alternative	Alternative 2	Alternative 3	Alternative 4
Maximum Driving Time Limits	Following a break of at least 10 consecutive hours, operators may drive up to 11 hours within a period of 14 consecutive hours from the start of the driving window.	Following a break of at least 10 consecutive hours, operators are limited to 10 (rather than 11) hours of driving within a period of 14 consecutive hours from the start of the driving window. Driving window may be extended to 16 hours twice a week.	Same as Alternative 2, but operators are allowed to drive 11 hours instead of 10.	Same as Alternative 2, but operators are allowed to drive only 9 hours instead of 10.
Non-commercial Driver's License (CDL) 150-mile Exception	Operators of vehicles for which a CDL is not required who remain within a 150-mile radius of their normal work-reporting location, are not required to prepare logbooks and may be on duty up to 16 consecutive hours 2 days during a 7-day work week.	No change.	No change.	No change.
13 Hour On-duty Maximum	No provision; most drivers can remain on duty indefinitely.	Operators may be on duty for only 13 hours within the 14- or 16-hour driving window.	Same as Alternative 2.	Same as Alternative 2.
Sleeper-berth Provision	If a sleeper berth is used, the 10-hour break may be split into two periods; one of at least 8 consecutive hours in the sleeper berth and another of 2 consecutive hours either off duty or in the sleeper berth. The duty periods preceding and following each of these two periods must sum to no more than 14 hours.	No change.	No change.	No change.

Exhibit 2-1. Summary Comparison of the Regulatory Requirements of the Alternatives

Provisions of Alternatives	Alternative 1: No-Action Alternative	Alternative 2	Alternative 3	Alternative 4
Multi-day Provisions				
16-Hour Extension	Allowed twice a week for drivers operating vehicles that do not require a CDL within a 150-mile radius	Twice a week, all CMV drivers may extend the driving window to 16 hours and must be released from duty at the end of any duty period beyond 14 hours. The extension of the driving window does not increase the driving time or on-duty time. Thus, operators using an extension must take at least 3 hours off duty during the day to extend the window to 16 hours.	Same as Alternative 2.	Same as Alternative 2.
Driving Break	No provision.	Operators may not drive if more than 7 hours has passed since a break of at least 30 minutes.	Same as Alternative 2.	Same as Alternative 2.
34-Hour Restart	Operators who take at least 34 consecutive hours off duty may begin a new "weekly" driving window, i.e., operators may drive until they have been on duty 60 hours in 7 consecutive days or 70 hours in 8 consecutive days.	The so-called 34-hour restart must include at least two periods between midnight and 6:00 a.m. As a result, the minimum restart in some cases may be longer than 34 hours. A driver may begin another restart no sooner than 168 hours (7 days) after the beginning of the last restart. The driver must designate if any period of 34 or more hours off duty that he/she wishes to consider a restart.	Same as Alternative 2.	Same as Alternative 2.

Note: CDL = commercial driver's license

3. Affected Environment

Chapter 3 describes the environmental resources that Alternatives 2, 3, and 4 could affect, at a level of detail commensurate with the magnitude of the impact. FMCSA reviewed the No Action Alternative and Alternatives 2, 3, and 4 to identify the various potentially affected resource areas and define the scope of the analysis presented in this EA, in accordance with Council of Environmental Quality (CEQ) regulations implementing NEPA (40 CFR 1501.7) and FMCSA Order 5610.1, Chapter 2.D.10, "Reducing Paperwork in Preparation of Environmental Documents."

To define the resource areas that warrant a detailed analysis, FMCSA reviewed the potential for the action alternatives to adversely affect a resource area such that a notable change would result compared to the conditions associated with the No Action Alternative. FMCSA's review found that the implementation of Alternatives 2, 3, and 4 could change the way in which the affected trucking industry and associated facilities interact with the environment. In relation to the No Action Alternative, the action alternatives would alter the hours that long-haul truck drivers could operate before taking mandatory breaks and rest periods. FMCSA analyzed the alternatives in an RIA (FMCSA 2010a) and determined that the action alternatives would:

- Affect the number of vehicle miles traveled (VMT) and vehicle hours of idling (VHI) by long-haul CMVs;
- 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
- Reduce the number of fatal and injury crash incidents resulting from tired, drowsy, or fatigued drivers.

As presented in the Summary, FMCSA found that the action alternatives could have minor effects on some of the resource areas in relation to the No Action Alternative. In addition to the required areas of consideration, FMCSA included several other areas to create a broader picture of the potential impacts of this rulemaking. The resource areas examined and analyzed include:

- Air Quality and Clean Air Act (CAA) Requirements
  - Criteria Pollutants and Air Toxics
  - Greenhouse Gas Emissions/Climate Change
- Public Health and Safety
  - Noise and Vibration
  - Hazardous Materials Transportation
  - Solid Waste Disposal
- Energy Supply
- Truck Parking Supply
- Section 4(f) Historic, Parkland, and Recreational Resources

- Endangered Species
- Wetlands
- Historic Properties
- Environmental Justice

Sections 3.1 through 3.9 describe the affected environment for each of these resource areas.

3.1 Air Quality and Clean Air Act Requirements

The following subsections present the regulatory background associated with the discussion of air quality presented in this EA, and then discuss the existing conditions associated with the alternatives. Included are summaries of the National Ambient Air Quality Standards (NAAQS); air toxics regulated under the CAA; greenhouse gas (GHG) emissions and climate change; and current operating conditions for CMVs affected by the rule in the context of air quality.

3.1.1 Regulatory Background

The principal Federal legislation that addresses air quality is the CAA of 1970 (as amended in 1977 and 1990). The purpose of the CAA is to preserve air quality and to protect public health, welfare, and the environment from the effects of air pollution.

3.1.2 National Ambient Air Quality Standards

Under the authority of the CAA and amendments, the U.S. Environmental Protection Agency (EPA) established a set of NAAQS for “criteria” pollutants, as follows: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone, particulate matter (PM) less than 10 micrometers in diameter (PM_{10}), PM less than 2.5 micrometers in diameter ($PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). The NAAQS include “primary” standards and “secondary” standards. Primary standards are intended to protect public health with an ample margin of safety. Secondary standards are set at levels designed to protect public welfare by accounting for the effects of air pollution on vegetation, soil, materials, visibility, and other aspects of the general welfare. Exhibit 3-1 below provides information about the the NAAQS.

The health effects of the six Federal criteria pollutants are briefly summarized below. (This section is adapted from the information at http://www.epa.gov/oar/oaqps/greenbk/index.html.)

- *CO* is a colorless, odorless, and poisonous gas produced by incomplete burning of carbon in fuels. Motor vehicles (primarily automobiles) are the largest source of CO emissions nationally. When it enters the bloodstream, CO reduces the delivery of oxygen to the body’s organs and tissues. Health threats are most serious for those who suffer from cardiovascular disease, particularly those with angina or peripheral vascular disease.
- *Lead* exposure can occur through multiple pathways, including inhalation of air and ingestion of lead in food, water, soil, or dust. Excessive lead exposure can cause seizures, mental retardation, and behavioral disorders, and even low doses of lead can lead to central nervous system damage. Because of the prohibition of lead as an additive in

motor vehicle fuels, highway transportation sources are no longer a major source of lead pollution.

Exhibit 3-1. NAAQS for Criteria Pollutants

Pollutant	Type of Standard	Standard Value	Averaging Period
Carbon monoxide	Primary	35 ppm (40 mg/m^3)	1-hour average[a]
	Primary	9 ppm (10 mg/m^3)	8-hour average[a]
Lead[b]	Primary and Secondary	1.5 µg/m^3 (1978 standard)	Calendar quarterly average
	Primary and Secondary	0.15 µg/m^3 (2008 standard)	Rolling 3-month average
Nitrogen dioxide	Primary	100 ppb (188 µg/m^3)	1-hour average[c]
	Primary and Secondary	53 ppb (100 µg/m^3)	Annual average
Ozone[d]	Primary and Secondary	0.08 ppm (1997 standard)	8-hour average
	Primary and Secondary	0.075 ppm (2008 standard)	8-hour average
Particulate matter (PM_{10})	Primary and Secondary	150 µg/m^3	24-hour average
Particulate matter ($PM_{2.5}$)	Primary and Secondary	35 µg/m^3	24-hour average
	Primary and Secondary	15 µg/m^3	Annual average
Sulfur dioxide[e]	Primary	75 ppb (200 µg/m^3)	1-hour average[f]
	Secondary	0.5 ppm (1300 µg/m^3)	3-hour average

[a] Not to be exceeded more than once per year.
[b] EPA is retaining the 1978 lead standard of 1.5 µg/m^3 until 1 year after EPA has designated nonattainment areas for the 2008 standard. EPA expects to designate nonattainment areas for the 2008 standard by January 2012.
[c] Standard effective January 22, 2010.
[d] The 1-hour standard has been revoked, but some areas have continuing obligations in which the standard may not be exceeded more than once per year. The 1997 ozone 8-hour standard of 0.08 ppm will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition to the 2008 standard of 0.075 ppm. On January 19, 2010 EPA proposed to reduce the 8-hour ozone standard to a level between 0.060 and 0.070 ppm. EPA plans to issue the final standard by August 31, 2010.
[e] On June 2, 2010 EPA revoked the 24-hour primary standard of 0.14 ppm and the annual primary standard of 0.03 ppm.
[f] Standard effective June 2, 2010.

Notes: ppm = parts per million; ppb = parts per billion; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter.

- *NO_2* is a brownish, highly reactive gas, caused largely by oxidation of the primary air pollutant nitric oxide (NO). NO_2 can irritate the lungs, cause bronchitis and pneumonia, and lower resistance to respiratory infections. Nitrogen oxides (NO_2 and NO) are an important precursor both to ozone and acid rain, and can affect both terrestrial and aquatic ecosystems.
- Ozone is a photochemical oxidant and the major component of smog. Ozone is not emitted directly into the air, but is formed through complex chemical reactions between precursor emissions of volatile organic compounds (VOC) and oxides of nitrogen (NO_x) in the presence of sunlight. Heavy-duty diesel vehicles (HDDVs), including large trucks and buses, are a major source of NO_x emissions. The majority of the CMVs affected by the HOS rule are HDDVs. Ground-level ozone causes health problems by damaging lung tissue, reducing lung function, and sensitizing the lungs to other irritants. Exposure to

ozone for several hours at relatively low concentrations has been shown to significantly reduce lung function and induce respiratory inflammation in normal, healthy people during exercise.

- *PM* includes dust, dirt, soot, smoke, and liquid droplets directly emitted into the air, and particles formed in the atmosphere by condensation or transformation of emitted gases such as SO_2 and VOCs. HDDVs are a major source of PM emissions. Exposure to high concentrations of PM can affect breathing and respiratory symptoms, aggravate existing respiratory and cardiovascular disease, alter the body's defense systems against foreign materials, damage lung tissue, and cause cancer and premature death.
- *SO_2* results largely from stationary sources. High concentrations of SO_2 affect breathing and can aggravate existing respiratory and cardiovascular disease. SO_2 also is a primary contributor to acidic deposition, or acid rain, which causes acidification of lakes and streams and can damage trees, crops, historic buildings, and statues.

For areas that do not meet the NAAQS (these are designated by EPA as nonattainment areas), the CAA establishes levels and timetables for each region to achieve attainment of the NAAQS. The State must prepare a State Implementation Plan (SIP), which documents how the region will reach its attainment levels by the required date. A SIP includes inventories of emissions within the area and establishes emissions budgets that are designed to bring the area into compliance with the NAAQS. In maintenance areas, SIPs document how the State intends to maintain compliance with NAAQS.

Section 176(c) of the CAA prohibits Federal entities from taking actions in nonattainment or maintenance areas that do not "conform" to the SIP. The purpose of this conformity requirement is to ensure that Federal activities: (1) do not interfere with the budgets in the SIPs; (2) do not cause or contribute to new violations of the NAAQS; and (3) do not impede the ability to attain or maintain the NAAQS. To implement CAA Section 176(c), EPA issued the General Conformity Rule (40 CFR Part 93, Subpart B), which applies to all Federal actions not funded under U.S.C. Title 23 or the Federal Transit Act. (FMCSA actions are not funded by U.S.C. Title 23 or the Federal Transit Act.) The General Conformity Rule established emissions thresholds, or *de minimis* levels, for use in evaluating the conformity of a project. If the net emissions increases due to the project are less than these thresholds, the project is presumed to conform and no further conformity evaluation is required. If the emissions increases exceed any of these thresholds, a conformity determination is required. The conformity determination can entail air quality modeling studies, consultation with EPA and state air quality agencies, and commitments to revise the SIP or to implement measures to mitigate air quality impacts.

The General Conformity Rule contains several exemptions applicable to Federal actions, which the conformity regulations define as "any activity engaged in by a department, agency, or instrumentality of the Federal Government, or any activity that a department, agency or instrumentality of the Federal Government supports in any way, provides financial assistance for, licenses, permits, or approves, other than activities [subject to transportation conformity]." 40 CFR 93.152. The General Conformity Rule defines emissions as "direct" or "indirect." 40 CFR 93.152. Actions that do not meet the definitions of direct or indirect emissions are exempt from the General Conformity Rule. "Direct emissions" are those that occur at the same time and place as the Federal action. In the case of the HOS rule, the Federal action is a rulemaking and no emissions occur at the same time and place as the Federal action; thus the proposed action has no direct emissions. The definition of “indirect emissions” contains four criteria, all of which must be met. As stated in 40 CFR 93.152, indirect emissions means those emissions of a criteria pollutant or its precursors:

1. That are caused or initiated by the Federal action and originate in the same nonattainment or maintenance area but occur at a different time or place as the action;
2. That are reasonably foreseeable;
3. That the agency can practically control; and
4. For which the agency has continuing program responsibility.

For the purposes of this definition, even if a Federal licensing, rulemaking, or other approving action is a required initial step for a subsequent activity that causes emissions, such initial steps do not mean that a Federal agency can practically control any resulting emissions.
40 CFR 93.152.

In the case of this rulemaking, FMCSA considers the change in emissions to be an indirect result of the rulemaking action: FMCSA is requiring drivers and motor carriers to take breaks and limit their on-duty time and driving time which, directly, does not require additional emissions releases. Based on our analysis, it is reasonably foreseeable that the proposed action would reduce total CMV mileage and the associated emissions, and would increase total CMV idling and the associated emissions, resulting in a slight net increase in total emissions. Although increased emissions from idling are reasonably foreseeable, under the definition of “indirect emissions” all four criteria of the definition must be met. FMCSA does not believe the emissions of criteria pollutants or their precursors from the publication of this rulemaking meet two of the criteria: that the agency can practically control the emissions and that the agency has continuing program responsibility. FMCSA’s authority limits its ability to require drivers to choose alternatives to idling while taking a rest period. If FMCSA had authority to control CMV emissions, the agency could prohibit idling or require drivers to choose an alternative such as electrified truck stops and auxiliary power units, both of which reduce idling emissions. Because FMCSA lacks this jurisdiction, the proposed action would not meet the definitions of direct or indirect emissions, and consequently is exempt from the CAA General Conformity Rule and a general conformity determination is not required. Nonetheless, FMCSA is evaluating the potential impacts of air emissions for the purposes of NEPA.

3.1.3 Air Toxics

Motor vehicle emissions contribute to ambient levels of air toxics known or suspected to be human or animal carcinogens or which have noncancer health effects. The population experiences an elevated risk of cancer and other noncancer health effects from exposure to air toxics (EPA 1999). In 2001, EPA identified six mobile source-oriented air toxics as being “likely to present the highest health risks to public health and welfare.” (66 FR 17230) These air toxics are: acetaldehyde, acrolein, benzene, 1,3-butadiene, diesel particulate matter (DPM), and formaldehyde. EPA also identified these compounds (except acetaldehyde) plus polycyclic organic matter (POM) and naphthalene as national or regional risk drivers in its 2002 National-scale Air Toxics Assessment that have significant inventory contributions from mobile sources (EPA 2009). This EA does not analyze POM separately, but it can occur as a component of DPM and is addressed under DPM below. Naphthalene is not analyzed separately in this EA; naphthalene is a POM compound and is discussed under DPM.

- *Acetaldehyde* is classified in EPA's Integrated Risk Information System database as a probable human carcinogen, based on nasal tumors in rats, and is considered toxic by the inhalation, oral, and intravenous routes (EPA 1991). The primary non-cancer effects of exposure to acetaldehyde vapors include eye, skin, and respiratory-tract irritation (EPA 1991). EPA is reassessing the cancer and non-cancer risks from inhalation exposure to acetaldehyde.
- *Acrolein* is extremely acrid and is irritating to humans when inhaled, with acute exposure resulting in upper respiratory tract irritation, mucus hypersecretion, and congestion. EPA determined in 2003 that the human carcinogenic potential of acrolein could not be determined because the available data are inadequate (EPA 2003).
- The EPA Integrated Risk Information System database lists *benzene* as a known human carcinogen (causing leukemia) by all routes of exposure, and concludes that exposure is associated with additional health effects, including genetic changes in both humans and animals and increased proliferation of bone marrow cells in mice (EPA 2000). Several adverse non-cancer health effects also have been associated with long-term exposure to benzene, with the most sensitive being depression of the absolute lymphocyte count in blood (EPA 2002d).
- EPA has characterized *1,3-butadiene* as carcinogenic to humans by inhalation (EPA 2002a, 2002c).
- *DPM*, along with diesel exhaust organic gases, is a component of diesel exhaust. DPM particles are very fine, with most smaller than 1 micrometer, and their small size enables inhaled DPM to reach the lungs. Particles typically have a carbon core coated by condensed organic compounds such as POM, which include mutagens and carcinogens. DPM also includes elemental carbon (carbon black or black carbon) particles emitted from diesel engines. An EPA study (EPA 2002b) documented both acute and chronic health effects from exposure to DPM. Acute effects include (1) irritation to the eyes, throat, and bronchus, (2) neurophysiological symptoms including lightheadedness and nausea, and (3) respiratory symptoms (cough and phlegm). There also is evidence for an immunologic effect – the exacerbation of allergenic responses to known allergens and asthma-like symptoms. Studies of chronic effects are inadequate for a definitive evaluation, but chronic exposure has been shown to pose a respiratory hazard. EPA concluded that DPM is likely to be carcinogenic to humans by inhalation, although it has not been classified as a carcinogen (EPA 2002b). EPA found sufficient evidence of non-carcinogenic effects from acute and long-term inhalation exposure of DPM to establish an inhalation reference concentration level[3] of 5 micrograms per cubic meter ($\mu g/m^3$).

[3] A reference concentration level is an estimate, with uncertainty spanning as much as an order of magnitude, of a continuous inhalation exposure to the human population including sensitive subgroups, that is likely to be without appreciable risk of deleterious effects during a lifetime. A reference concentration is not an enforceable standard.

- DPM can contain *POM*, which is generally defined as a large class of organic compounds that have multiple benzene rings and a boiling point greater than 100 degrees Celsius (ºC). EPA classifies many of the compounds included in the POM class as probable human carcinogens based on animal data. Polycyclic aromatic hydrocarbons (PAHs) are a subset of POM containing only hydrogen and carbon atoms. Several PAHs are known or suspected carcinogens.
- Since 1987, EPA has classified *formaldehyde* as a probable human carcinogen based on evidence in humans and in rats, mice, hamsters, and monkeys (EPA 1987). Formaldehyde exposure also causes a range of non-cancer health effects, including irritation of the eyes (burning and watering), nose, and throat. Effects in humans from repeated exposure include respiratory-tract irritation, chronic bronchitis, and nasal epithelial lesions. Animal studies suggest that formaldehyde might also cause airway inflammation. Several studies suggest that formaldehyde might increase the risk of asthma, particularly in the young (ATSDR 1999, WHO 2002).

EPA has not established NAAQS for air toxics and no regulatory thresholds apply to the total emissions of air toxics associated with the proposed action and its alternatives.

3.1.4 Greenhouse Gas Emissions/Climate Change

Climate change refers to long-term fluctuations in temperature, precipitation, wind, and other elements of Earth's climate system. Atmospheric gases affect Earth's surface temperature by absorbing solar radiation that would otherwise be reflected back into space. The concentration of GHGs is increasing as a result of human activities according to EPA's *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990–2008* (EPA 2010a). Although there are a variety of GHGs, carbon dioxide (CO_2) is the most significant one resulting from human activity. Motor vehicles contribute to CO_2 concentrations, and to concentrations of other GHGs including methane and nitrous oxides.

The impact of an individual GHG on Earth's absorption of radiation is measured as global warming potential. Global warming potential values can be used to express the quantity of a GHG in terms of its CO_2-equivalent (CO_2e). Rather than assessing the individual contribution from each GHG, FMCSA considered CO_2e when assessing the effect of the action alternatives on GHG emissions. The total 2008 U.S. GHG emissions from medium- and heavy-duty trucks in terms of CO_2e is made up of 96.9 percent CO_2, 2.9 percent hydrofluorocarbons, 0.2 percent nitrous oxide, and 0.02 percent methane (EPA 2010a, Table 2-15).

U.S. GHG emissions have been increasing over time, but total emissions have been nearly level since 2005 (EPA 2010a). Exhibit 3-2 shows total U.S. GHG emissions and GHG emissions from transportation sources since 1990. Transportation sources account for approximately 32 percent of the total U.S. CO_2e emissions from fossil fuel combustion (EPA 2010a, Table ES-2). Freight trucks were responsible for 21 percent of total transportation GHG emissions in 2008 (EPA 2010a).

Exhibit 3-2. U.S. Greenhouse Gas Emissions (million tons CO_2)

Emission Sources	1990	1995	2000	2005	2006	2007	2008
Transportation Sources	1,485.8	1,608.0	1,809.5	1,895.3	1,876.7	1,893.7	1,785.3
Total Fossil Fuel Combustion	4,735.7	5,029.5	5,593.4	5,753.3	5,652.8	5,757.0	5,572.8
Transportation Sources Percent of Total Fossil Fuel Combustion	31.37%	31.97%	32.35%	32.94%	33.20%	32.89%	32.04%

Source: EPA (2010a), Table ES-2.

3.1.5 HDDV Activity Levels and Contribution to Emissions

The HDDV portion of CMVs is a major source of NO_x emissions nationally and contributes substantially to total national mobile source emissions of PM_{10} and SO_2, as shown in Exhibit 3-3. HDDVs are responsible for more than 17 percent of all U.S. NO_x emissions and more than 31 percent of NO_x emissions from mobile sources. HDDVs also contribute more than 23 percent of mobile source PM_{10} emissions and more than 10 percent of mobile source SO_2 emissions.

Exhibit 3-3. Contribution of Heavy-duty Diesel Vehicles to National Criteria Air Pollutant Emission Totals, 2001

HDDV Emissions as a Percentage of:	NO_x	PM_{10}	CO	VOC	SO_2
Total On-Road Vehicle Emissions	47.2%	57.0%	1.5%	4.5%	28.1%
Total Mobile Source Emissions	31.4%	23.3%	1.1%	2.9%	10.5%
Total National Emissions	17.4%	0.5%	0.9%	1.2%	0.5%

Source: EPA, National Emissions Trends.

Exhibit 3-4 presents the contribution from HDDVs to emissions of mobile source air toxics. HDDVs are responsible for approximately 20 percent of on-road vehicle emissions of acetaldehyde, acrolein, and formaldehyde.

Exhibit 3-4. Contribution of Heavy-duty Diesel Vehicles to National Mobile Source Air Toxics Emission Totals, 2010

HDDV Emissions as a Percentage of:	Benzene	1,3-Butadiene	Acetaldehyde	Acrolein	Formaldehyde
Total On-Road Vehicle Emissions	1.10%	5.36%	18.17%	20.91%	22.07%
Total Mobile Source Emissions	0.92%	4.44%	14.26%	16.77%	17.22%
Total National Emissions	0.45%	1.91%	5.94%	1.73%	4.76%

Source: EPA (2007b).

Note: Diesel particulate matter (DPM) emissions data were not available for this comparison.

The air quality baseline encompasses the total mobile source air pollutant emissions from operation of CMVs affected by the current HOS regulations. FMCSA estimates that 1,472,148

CMVs operating in the United States are affected by the current HOS regulations and that these CMVs traveled approximately 147.2 billion vehicle miles in 2007 and experienced 2,415.36 million hours of vehicle idling per year in 2006 (FMCSA 2010a). The methodology for developing the VMT estimates is described in the *2010 Hours of Service Rules Regulatory Impact Analysis* (FMCSA 2010a). The vehicle idling values were derived using the 2002 vehicle idling value of 2,220 million hours and scaling this value by the Bureau of Labor Statistics-reported growth of 8.8 percent of the population of production workers in the long-distance trucking industry (BLS 2008).

Vehicle activity and emissions were projected to 2012, to represent the first year of complete implementation of the proposed HOS rules. To generate estimates for 2012 vehicle activity for conditions under the No Action Alternative, an annual growth factor of 2.9 percent was applied to baseline data (described above) until 2010, after which the factor was reduced to 2.0 percent. These factors were derived using Federal Highway Administration (FHWA) projections (FHWA 2002b). Exhibit 3-5 summarizes relevant projected 2012 operating data for CMV operations.

Exhibit 3-5. Projected 2012 Operating Data for CMV Operations

Vehicle Operating Data	Total
Vehicle miles traveled	167,030,062,140
Vehicle hours idling	2,820,909,062

The total VMT for this analysis includes long hauls greater than 100 miles, and excludes short hauls. Typical work schedules for short-haul truck operators are 5 days per week, 8 to 10 hours per day (FMCSA 2010). Therefore, this analysis assumes that the schedules of short-haul truck operators will not be affected by changes in the HOS rules. For short-haul trucks, only drayage trucks at intermodal facilities are included, as any mode shift from long-haul truck to rail would increase activities at intermodal facilities. Air pollutant emissions were calculated separately for long-haul trucks and drayage trucks because their emission rates are different and the action alternatives affect their VMT differently. Additional information on the air quality analysis is presented in Appendix A.

3.2 PUBLIC HEALTH AND SAFETY

The following sections present the current setting of public health and safety.

3.2.1 Public Health

Under the current rule, drivers are allowed a total of 11 hours of daily driving time. The current rule provides for 10 hours of consecutive off-duty time, giving drivers the opportunity to obtain between 7 and 8 hours of sleep per day.

On issues relating to diesel emissions, FMCSA recognizes that EPA has determined DPM likely to be carcinogenic to humans from inhalation, but has not classified DPM as a carcinogen. See Appendix D for details. On issues relating to DPM, FMCSA cannot determine an actual risk or estimate the societal cost.

Total on-road emissions of CO, VOCs, and PM have declined significantly, more than 50 percent from 1970 to 2000, and are expected to decline an additional 25 to 50 percent by 2020. Total on-road emissions of NO_x have increased from 1970 to 2000; however, EPA projects a greater than 50 percent decrease by 2020 (EPA 2007a).

Regarding noise levels, FMCSA research has shown that neither the Occupational Safety and Health Administration nor FMCSA noise standards are exceeded. FMCSA studies show that vibration levels were close to the International Organization for Standardization’s health risk threshold, but did not consistently exceed the threshold. Changes in CMV cabs, EPA diesel fuel and emission standards, and engine designs are the primary factors that would influence human health.

3.2.2 Public Safety

The safety baseline reflects 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. The baseline also includes the related economic costs of such incidents. FMCSA estimated that, under existing conditions in 2005 when it promulgated its August 2005 HOS final rule, about 7 percent of all truck crashes were fatigue-related (FMCSA 2008). Exhibit 3-6 shows data for large trucks for 2003 through 2008 on average fatal crash and injury crash incidents and property damage only crash incidents.

Exhibit 3-6. Number of Large Truck Crashes by Year

Category	Total Number of Crashes						Average
	2003	2004	2005	2006	2007	2008	
Fatal Crashes	4,335	4,478	4,551[a]	4,350	4,204	3,733	4,275
Total fatalities	5,036	5,235	5,240[a]	5,027	4,822	4,229	4,932
– Truck occupants	726	766	804[a]	805	805	677	764
– Other vehicle occupants	4,645	4,808	4,775[a]	4,602	4,413	3,816	4,510
– Non-vehicle occupants	391	427	465[a]	425	396	401	418
Trucks involved	4,721	4,902	4,951[a]	4,766	4,633	4,066	4,673
– Combination trucks involved	3,523	3,642	3,664[a]	3,508	3,439	2,991	3,461
– Single-unit trucks involved	1,198	1,258	1,274[a]	1,254	1,186	1,060	1,205
Single-vehicle crashes	751	785	850[a]	836	830	741	799
Injury Crashes	85,000	83,000	78,000	77,000	72,000	64,000	76,500
Total injuries	122,000	116,000	114,000	106,000	101,000	90,000	108,167
Trucks involved	89,000	87,000	82,000	80,000	76,000	66,000	80,000
– Combination trucks involved	49,000	47,000	46,000	41,000	41,000	38,000	43,667
– Single-unit trucks involved	40,000	39,000	34,000	39,000	35,000	28,000	35,833

Exhibit 3-6. Number of Large Truck Crashes by Year

Category	Total Number of Crashes						Average
	2003	2004	2005	2006	2007	2008	
Property Damage Only Crashes	347,000	312,000	341,000	287,000	317,000	297,000	316,833
Trucks involved	363,000	324,000	354,000	300,000	333,000	309,000	330,500
– Combination trucks involved	172,000	168,000	177,000	150,000	163,000	149,000	163,167
– Single-unit trucks involved	191,000	156,000	118,000	149,000	170,000	161,000	157,500

Source: Federal Motor Carrier Safety Administration (2010a).

[a] These data for 2005 are taken from the *Large Truck and Bus Crash Facts 2008* report (FMCSA 2010b) and are updates to the data presented in the *Large Truck Crash Facts 2005* report (FMCSA 2007).

Note: Total numbers might vary due to rounding.

3.3 ENERGY SUPPLY

The energy consumption baseline for this analysis is the total energy use by long-haul trucks. FMCSA estimates 1,472,148 CMVs operating in the United States are affected by the current HOS regulations. These CMVs traveled approximately 147.2 billion vehicle miles in 2007 and experienced 2,415.36 million hours of vehicle idling time per year in 2006 (FMCSA 2010a). The total baseline energy consumption (in British thermal units [Btu] per year) was calculated for the CMV fleet from fuel consumption estimates based on the number of VMT and VHI for combination and single-unit long-haul trucks, and the Btu content of diesel fuel. The fuel economy factors (in VMT per gallon and gallons per vehicle hour) that were used to derive the fuel consumption estimates were calculated using EPA's Motor Vehicle Emission Simulator (MOVES2010; EPA 2010b). This model was run for diesel-fueled combination and single-unit long-haul trucks and included running exhaust and extended idling scenarios for combination and single-unit long-haul trucks.

Exhibit 3-7 summarizes 2007 baseline energy consumption from CMV operations under the current HOS regulations.

FMCSA compared the 2007 baseline fuel consumption for the affected CMV operations with total energy consumption of the United States and total energy consumption of the transportation sector of the United States to provide context for fuel consumption by the affected CMV operations. Exhibit 3-8 provides a comparative picture in quadrillion Btu consumed.

Exhibit 3-7. 2007 Baseline Energy Consumption Factors for Affected CMV Operations

Description	Quantity for Alternative [a] (No Action Alternative)
Vehicle Miles Traveled	147,200,000,000
Vehicle Hours Idling	2,415,360,000
Gallons of Diesel Fuel Consumed	28,426,919,629

Exhibit 3-7. 2007 Baseline Energy Consumption Factors for Affected CMV Operations

Description	Quantity for Alternative [a] (No Action Alternative)
Barrels of Diesel Fuel Consumed	676,831,420
Million Btu (MMBtu)	3,951,341,828
Quadrillion Btu (QBtu)	3.95

[a] Vehicle hours idling data are from 2006.

Notes: MMBtu = million British thermal units; QBtu = quadrillion British thermal units.

Exhibit 3-8. Affected CMV Operation Energy Consumption as a Percentage of U.S. Energy Consumption

Energy Consumer	Annual Energy Consumption (QBtu)	Percentage of Total Energy Consumption
Affected CMV Operations	3.95	3.89%
Total Energy Consumption United States Transportation Sector	29.13[a]	28.69%
Total United States Energy Consumption	101.55[a]	100%

[a] U.S. Energy Information Administration (2008).

Notes: CMV = commercial motor vehicle; QBtu = quadrillion British thermal units.

3.4 TRUCK PARKING SUPPLY

When drivers take a driving break or go off duty they must seek a place to park. To the extent that the HOS regulations lead to an increase in the number of CMVs operating, the demand for truck parking could increase. If parking demand increases, induced development of land for additional parking could occur as parking providers attempt to expand the supply of truck parking. The area of potential induced development consists of existing highway rest areas and truck stops 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 daily and weekly driving/on-duty hours, as discussed earlier in this document. This rest period might take place at almost any location, such as 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 highways and, in some cases, State highways for automobile and CMV drivers to park, sometimes for many hours. Rest areas might or might not include service areas. FHWA studies indicate that existing shortages of rest areas in some States (1996, 2002a) could be exacerbated if the number of CMVs operating increases under any of the alternatives. Therefore, the potential that the action alternatives could induce expansion of rest areas or construction of additional rest areas, with associated land-use effects and potential impacts on historic properties, wetlands, and habitat for endangered species, 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* (FHWA 2002a). The study reported FHWA research on parking spaces at public rest areas, commercial truck stops, and travel plazas. The FHWA reported that there are an estimated 315,850 parking spaces at 1,771 public rest areas and 5,153 commercial truck stops and travel plazas on 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.

The FHWA compared the supply of both public and non-public parking spaces to the demand for each category of parking, as well as the total supply and demand for each State (except Hawaii, which was not included in the study). Public and commercial spaces were evaluated separately because truck drivers 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 12 States have overall shortages. Appendix B presents detailed information on the State-by-State adequacy of parking facilities.

Additional research did not identify a more recent study of the existing demand for public and non-public parking spaces that covered all of the continental United States. Therefore, the 2002 FHWA report data were used for the analyses in this EA.

3.5 Section 4(f) Historic, Parkland, and Recreational Resources

Section 4(f) of the DOT Act of 1966 (now codified, as amended, at 49 U.S.C.303) requires agencies within DOT to make special efforts to preserve the natural beauty of public parks, recreation lands, and historic sites. If a transportation program requires the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites, the program must include all possible planning to minimize harm to the property.

3.6 Endangered Species

The Endangered Species Act of 1973 (16 U.S.C. § 1531 *et seq.*) requires all Federal departments and agencies to seek to conserve endangered species and threatened species. The Secretary of the Interior was directed to create lists of endangered and threatened species. Endangered species designation is conferred on any plant or animal species that is in danger of extinction within the foreseeable future throughout all or a significant portion of its range. Critical habitat for an endangered or a threatened species is defined as specific areas within the geographical area occupied by the species at the time it is listed that contain the physical or biological features essential to conservation of the species and that might require special management considerations or protection. Critical habitat also includes specific areas outside the geographic area occupied by the species at the time it is listed that are essential to conservation of the species.

A key provision of the Endangered Species Act for Federal activities is Section 7, Consultation. Every Federal agency must consult with the Secretary of the Interior and the U.S. Fish and Wildlife Service to ensure that any agency action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat of such species.

3.7 WETLANDS

Executive Order 11990 (42 FR 26961, 1977), *Protection of Wetlands*, requires Federal agencies to provide leadership on and work toward minimizing the destruction, loss, and degradation of wetlands. The Order also requires agencies to preserve and enhance the natural and beneficial values of wetlands while discharging their responsibilities for acquiring, managing, using, and disposing of Federal lands. Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers is responsible for issuing Federal permits for the discharge of dredged and fill material into the waters of the United States, including wetlands. Activities that are regulated under Section 404 include fills for development, water resource projects (e.g., dams or levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry.

3.8 HISTORIC PROPERTIES

The National Historic Preservation Act (16 U.S.C. 470f and 470h-2(a)) establishes a national policy to preserve, restore, and maintain historic and cultural resources. The Act establishes the National Register of Historic Places as the mechanism to designate public or privately owned properties for protection. Section 106 of the Act requires Federal agencies to “take into account” the effect of a project on any property included in or eligible for inclusion in the National Register. Section 106 prescribes the following for consideration of historic properties under NEPA: early coordination, inclusion of historic preservation issues, and actions categorically excluded under NEPA (see 36 CFR Part 800).

The Federal Interstate Highway System became eligible for protection under Section 106 on its fiftieth anniversary in 2007. The FHWA has since developed a list of nationally and exceptionally significant features in the system that include historic and notable tunnels, bridges, highway segments, and other features that could be impacted by CMV crashes. FMCSA now assesses such potential impacts on these significant highway features as part of its rulemaking procedures.

3.9 ENVIRONMENTAL JUSTICE

Executive Order 12898 (59 FR 7629, 1994), *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs Federal agencies to identify and consider disproportionately high and adverse human health or environmental effects of their actions on minority and low-income communities, and to provide opportunities for community input in the NEPA process, including input on potential effects and mitigation measures. CEQ is responsible for overseeing the Federal government’s compliance with Executive Order 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. DOT and EPA have also drafted guidelines for integrating environmental justice requirements into the decision-making process.

Executive Order 12898 provides definitions of the terms “minority” and “low income” in the context of environmental justice analysis. Minority individuals are members of the following population groups: America 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.

4. Environmental Consequences

Chapter 4 presents an analysis of the environmental consequences associated with each alternative, in accordance with NEPA, the CEQ NEPA implementing regulations (40 CFR 1500), FMCSA's Order 5610.1 implementing NEPA (69 FR 9680), and DOT Order 5610.1C. The analysis of the anticipated beneficial or adverse direct, indirect, and cumulative environmental impacts forms the basis for comparison among each alternative in accordance with NEPA (40 CFR 1508.7 and 1508.8). The resource areas that were examined and analyzed include:

- Air Quality and CAA Requirements
  - Criteria and Air Toxic Pollutants
  - Greenhouse Gas Emissions/Climate Change
- Public Health and Safety
  - Noise and Vibration
  - Hazardous Materials Transportation
  - Solid Waste Disposal
- Energy Supply
- Truck Parking Supply
- Section 4(f) Historic, Parkland, and Recreational Resources
- Endangered Species
- Wetlands
- Historic Properties
- Environmental Justice

Sections 4.1 through 4.9 describe the environmental consequences for each of these resource areas.

4.1 Air Quality and Clean Air Act Requirements

FMCSA estimated the effects of each alternative on emissions of criteria air pollutants, air toxics, and GHGs, as detailed in Appendix A. As discussed in Section 3.1, the criteria pollutants FMCSA considered in the analysis are NO_x, CO, SO_2, $PM_{2.5}$, and PM_{10}, as well as VOCs. This analysis considers six priority air toxics: DPM, benzene, 1,3-butadiene, formaldehyde, acetaldehyde, and acrolein. CO_2 was also evaluated for its potential effects on a global scale as a GHG. Calendar year 2012, the first full year of implementation of the proposed HOS rule, was used as the initial analysis year for comparison among the alternatives. Emissions for 2015 and 2020 were also estimated to provide an indication of trends over time. Alternatives 2, 3, and 4 were compared to the No Action Alternative (Alternative 1).

The local air quality effects of air pollutant emissions cannot be predicted accurately on a national scale because the effects depend on local conditions. Without knowing the location, topography, time of day, ambient pollutant concentrations, and meteorological conditions (e.g., temperature, sunlight, wind conditions) under which these emissions occur, their potential impacts on air quality are speculative. Therefore, FMCSA used the total nationwide CMV emissions of each pollutant as an indicator of its relative impact.

4.1.1 Truck and Rail Activity Levels

The analysis considered the effects of each alternative on VMT, VHI, and a mode shift[4] of freight from long-haul truck to rail as projected by the RIA. A mode shift could occur because the action alternatives (Alternatives 2 through 4), by reducing driving hours, could reduce the productivity of individual drivers. To move the same amount of freight, trucking companies would have to hire more drivers. Hiring more drivers would increase labor costs and would put upward pressure on truck shipping rates, and as a result some freight customers might seek to reduce their shipping costs by switching their freight shipments to rail. A mode shift would decrease long-haul truck VMT, VHI, and emissions; would increase emissions from rail locomotives; and would increase VMT, VHI, and emissions from drayage trucks that would be needed to transport freight on short hauls between rail terminals and customers.

Long-haul VMT under the No Action Alternative (Alternative 1) would be greater than long-haul VMT under any of the action alternatives (Alternatives 2 through 4), while rail ton-miles and drayage activity (VMT and VHI) would be lower under the No Action Alternative than under the action alternatives. Appendix A contains a complete description of the differences between the No Action Alternative and the action alternatives, and the emission calculations.

Under Alternative 2 compared to the No Action Alternative, long-haul VMT would be 0.49 percent less (818 million miles less in 2012, 868 million miles less in 2015, and 959 million miles less in 2020). Under Alternative 2 compared to the No Action Alternative, rail activity would increase by 13.084 billion rail ton-miles in 2012, 13.891 billion rail ton-miles in 2015, and 15.348 billion rail ton-miles in 2020. Similarly, under Alternative 2 compared to the No Action Alternative, drayage activity would increase by 65.4 million VMT and 1.636 million VHI in 2012; 69.5 million VMT and 1.736 million VHI in 2015; and 76.7 million VMT and 1.919 million VHI in 2020. Under Alternative 2 compared to the No Action Alternative, crashes would decrease by 1.74 percent, and emissions from the traffic and congestion associated with the crashes also would decrease.

Under Alternative 3 compared to the No Action Alternative, long-haul VMT would be 0.23 percent less (386 million miles less in 2012, 410 million miles less in 2015, and 453 million miles less in 2020). Rail activity would increase by 6.179 billion rail ton-miles in 2012, 6.560 billion rail ton-miles in 2015, and 7.248 billion rail ton-miles in 2020. Drayage activity would increase by 30.9 million VMT and 772,000 VHI in 2012; 32.8 million VMT and 820,000 VHI in 2015; and 36.2 million VMT and 906,000 VHI in 2020. Crashes would decrease by 1.15 percent, and emissions from the traffic and congestion associated with the crashes also would decrease.

Under Alternative 4 compared to the No Action Alternative, long-haul VMT would be 1.09 percent less (1.821 billion miles less in 2012; 1.933 billion miles less in 2015; and 2.136 billion miles less in 2020). Rail activity would increase by 29.130 billion rail ton-miles in 2012, 30.926 billion rail ton-miles in 2015, and 34.170 billion rail ton-miles in 2020. Drayage activity would increase by 146 million VMT and 3.641 million VHI in 2012; 154.6 million VMT and 3.866

[4] The term “mode shift” is used to refer to a change in transportation modes used to move goods, for example, rail instead of truck.

million VHI in 2015; and 170.8 million VMT and 4.271 million VHI in 2020. Crashes would decrease by 3.29 percent, and emissions from the traffic and congestion associated with the crashes also would decrease.

4.1.2 Criteria Pollutants

Exhibit 4-1 presents the relative impact of criteria air pollutants under each action alternative (Alternatives 2 through 4) compared to the No Action Alternative (Alternative 1). Appendix A presents the complete analysis, including source data and calculations.

Exhibit 4-1. Change in Criteria Air Pollutant Emissions from Affected CMVs Compared to the No Action Alternative (Alternative 1) (metric tons per year)

Pollutant	Year	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4
CO	2012	–	5,855	1,634	15,091
	2015	–	6,447	1,847	16,530
	2020	–	7,390	2,172	18,848
NO_x	2012	–	17,864	5,581	44,968
	2015	–	19,034	6,011	47,797
	2020	–	20,495	6,448	51,510
$PM_{2.5}$	2012	–	125	38	315
	2015	–	116	39	288
	2020	–	96	35	233
PM_{10}	2012	–	128	39	324
	2015	–	120	40	296
	2020	–	99	36	239
SO_2	2012	–	-2	-3	-1
	2015	–	-2	-2	-1
	2020	–	-1	-2	1
VOC	2012	–	3,792	1,122	9,660
	2015	–	3,970	1,173	10,118
	2020	–	4,301	1,264	10,972

Notes: CMV = commercial motor vehicle; NO_x = nitrogen oxides; CO = carbon monoxide; SO_2 = sulfur dioxide; $PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} particulate matter less than 10 microns; and VOCs = volatile organic compounds.

Emissions of all pollutants would be higher under all action alternatives compared to the No Action Alternative in 2012, 2015, and 2020, except for SO_2 for which emissions would be nearly unchanged. The largest increase in all criteria pollutants would occur under Alternative 4. Alternative 3 would result in the smallest increase in emissions (over Alternative 1) for all criteria air pollutants. The potential emission changes from Alternative 2 relative to Alternative 1 are only slightly greater than those from Alternative 3. The potential increase in emissions of criteria pollutants could result in an increase of the health-related effects discussed in Section 3.1.2.

The potential contribution of each source type to total emissions changes is presented in detail in Appendix A. For all action alternatives (Alternatives 2 through 4) relative to the No Action Alternative (Alternative 1), increases in long-haul truck idling and rail ton-miles account for overall emissions increases for all pollutants (except SO_2), more than compensating for decreases in long-haul VMT. For SO_2, reduced emissions from long-haul VMT and CMV-crash related traffic congestion approximately balance with increases in emissions from long-haul idling and rail.

The magnitude of the emission changes increases between analysis years (i.e., from 2012 to 2015, and from 2015 to 2020) because of the projected increase in freight activity driven by nationwide economic growth trends. PM_{10} and $PM_{2.5}$ are an exception because emission factors (the PM emission rates per VMT or VHI) are expected to decrease more rapidly than truck and rail activity is expected to increase.

4.1.3 Air Toxics

Exhibit 4-2 compares the relative impact of air toxics under each action alternative (Alternatives 2 through 4) relative to the No Action Alternative (Alternative 1). Appendix A presents the complete analysis, including source data and calculations. Emissions of all air toxics would be higher under all action alternatives compared to the No Action Alternative in 2012, 2015, and 2020. The largest increase in all air toxics would occur under Alternative 4. Alternative 3 would result in the smallest increase in air toxic emissions (over Alternative 1). Relative to Alternative 1, the emission changes that would result from Alternative 2 are only slightly greater than those from Alternative 3. The potential increase in emissions of air toxics would result in an increase of the health-related effects discussed in Section 3.1.3.

The contribution of each source type to the total emissions changes is presented in Appendix A. For all action alternatives (Alternatives 2 through 4) relative to the No Action Alternative (Alternative 1), increases in long-haul idling and rail ton-miles account for overall emissions increases for all air toxics, more than compensating for decreases in long-haul VMT.

The magnitude of the emission changes increases between analysis years (i.e., from 2012 to 2015, and from 2015 to 2020) because of the projected increase in freight activity driven by nationwide economic growth trends. DPM is an exception because emission factors (the DPM emission rates per VMT or VHI) are expected to decrease more rapidly than truck and rail activity is expected to increase.

4.1.4 Climate Change

Implementation of the action alternatives (Alternatives 2 through 4) would result in a relatively small increase in GHG emissions compared to the No Action Alternative (Alternative 1) (see Exhibit 4-3). Appendix A presents the complete analysis, including source data and calculations. Emissions of GHGs would be higher under all action alternatives (Alternatives 2 through 4) compared to the No Action Alternative in 2012, 2015, and 2020. Alternative 4 would result in the greatest GHG emissions increase compared to Alternative 1, while Alternative 3 would result in the lowest GHG emissions increase compared to Alternative 1. The potential emission

Exhibit 4-2. Change in Air Toxic Emissions from Affected CMVs Compared to the No Action Alternative (Alternative 1) (metric tons per year)

Pollutant	Year	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4
Acetaldehyde	2012	–	112	33	285
	2015	–	118	35	301
	2020	–	131	39	332
Acrolein	2012	–	14	4	35
	2015	–	14	4	37
	2020	–	16	5	41
Benzene	2012	–	39	11	101
	2015	–	42	12	107
	2020	–	46	14	117
1,3-butadiene	2012	–	23	7	60
	2015	–	25	7	63
	2020	–	27	8	70
DPM	2012	–	130	40	329
	2015	–	122	42	300
	2020	–	101	37	244
Formaldehyde	2012	–	301	89	767
	2015	–	319	95	812
	2020	–	352	105	895

Notes: CMV = commercial motor vehicle; DPM = diesel particulate matter.

changes as a result of Alternative 2 relative to Alternative 1 are small compared to those under Alternative 4. This increase in GHG emissions could result in an increase in the impacts of global warming discussed in Section 3.1.4; however, the magnitude of the total GHG emissions change is relatively small. The contribution of each source type to the total emissions changes is presented in Appendix A. The changes predicted in CO_2 emissions for the action alternatives in Exhibit 4-3 represent between 0.004 and 0.07 percent of annual national highway CO_2 emissions (EIA 2009), a relatively insignificant quantity. From this analysis, FMCSA concludes that impacts from GHG emissions would not be significant.

Exhibit 4-3. Change in Greenhouse Gas Emissions from Affected CMVs Compared to the No Action Alternative (Alternative 1) (metric tons per year)

Pollutant	Year	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4
CO_2e	2012	–	354,366	57,121	989,507
	2015	–	376,171	60,974	1,049,784
	2020	–	416,292	68,122	1,160,590

Notes: CMV = commercial motor vehicle; CO_2e = CO_2-equivalent.

4.2 PUBLIC HEALTH AND SAFETY

The following sections present the potential impacts on public health and safety.

4.2.1 Public Health

FMCSA reviewed the potential for impacts on public health, including the driver health impacts on CMV operators, under the action alternatives. For the general public, FMCSA reviewed the effects of the action alternatives on overall public health as it relates to safety, as presented in Section 4.2.3.

For CMV operators, FMCSA reviewed the effects of the action alternatives on driver health, specifically on exposure to DPM, noise, and vibration, as well as fatigue. The analysis focuses on DPM because it is the primary risk driver among air toxics emitted by CMVs.

Under the No Action Alternative and under Alternatives 2, 3, and 4, during off-duty time, when drivers would spend the night in their sleeper berth idling at a rest area or travel plaza, the potential for exposure to DPM would persist. Although FMCSA is aware that DPM might pose a cancer risk, the agency acknowledges that no definitive link has been established. Without a definitive link, it is impossible to determine the actual risk or estimate the societal costs of DPM to CMV drivers' health (See Appendix D for additional information). As shown in Exhibits 4-1 and 4-2, implementation of the action alternatives (Alternatives 2 through 4) would increase the emissions of $PM_{2.5}$ and DPM mainly due to increased vehicle idling; therefore there would be an increase in the acute and chronic effects associated with DPM as described in Section 3.1.3. The increases in $PM_{2.5}$ emissions under the action alternatives (Alternatives 2 through 4) over the No Action Alternative result from the difference in long-haul truck idling and rail freight transport. See Appendix A for details of the emissions for each analysis year.

The analysis presented in Section 4.1 on air quality indicates that the potential annual DPM concentrations along a freeway segment or truck stop/travel plaza would be below any recommended concentration action levels. EPA estimates that DPM emissions are decreasing (starting in the 1990) and will continue to decrease (until 2030), and that the potential health risk to CMV drivers has been and would continue to be reduced in the coming years. EPA models for total on-road emissions have shown that emissions of $PM_{2.5}$, which includes most DPM, have declined more than 50 percent from 1970 to 2000, and are projected to decline an additional 25 percent by 2020. Therefore, under each alternative, CMV drivers would be exposed to lower DPM and PM concentrations than they were in the early 1990s and any health risk associated with DPM would continue to diminish with the most recent changes in emission standards for diesel fuel and engines (EPA 2007a).

Climate change has the potential to affect public health. The potential climate change impacts of the action alternatives are assessed through a comparison of the GHG emissions under each alternative, as shown in Exhibit 4-3. The changes predicted in CO_2 emissions for the action alternatives in Exhibit 4-3 represent between 0.004 and 0.07 percent of annual national highway CO_2 emissions (EIA 2009), a relatively insignificant quantity. The minor changes in emissions relative to the No Action Alternative indicate that the potential impacts of the action alternatives on climate change would be insignificant.

4.2.2 Noise and Vibration

FMCSA's review of the noise level that a CMV driver would experience under Alternative 1 (No Action), 2, 3, or 4 indicates that OSHA or FMCSA standards would not be exceeded. Therefore, the noise levels CMV drivers would experience would not increase their risk of hearing loss. FMCSA's review of CMV vibration data revealed that, on average, vibration was close to the International Standards Organization's health risk threshold, but vibration did not consistently exceed the threshold. Changes in CMV cab design, the composition of diesel fuel, and engine designs appear to have greatly reduced any potential health risks associated with CMV driving. FMCSA research and review of available studies indicate that noise and vibration at levels that CMV drivers would experience under Alternatives 1, 2, 3, and 4 do not pose a significant impact on human health.

For Alternatives 2, 3, and 4, the expected decrease in long-haul truck VMT and increase in drayage VMT would represent only a small proportion of existing traffic volumes on the roads, and consequently would not have a discernible effect on noise levels along roadways.

For Alternatives 2, 3, and 4, the expected decrease in large long-haul truck crashes (see Section 4.2.3) would result in slight noise-related benefits due to the decrease in noise associated with crashes, such as noise from emergency vehicles, remediation, and collisions resulting from CMV crashes.

4.2.3 Safety

Implementation of Alternative 2 would reduce the number (relative to the No Action Alternative) of fatigue-related large truck crashes involving long-haul operators for the following reasons:

- a decrease in the maximum allowed daily driving hours from 11 to 10;
- allowing operators to be on duty for only 13 hours within the driving window of 14 hours or 16 hours (the latter is allowed only twice a week);
- not allowing operators to drive if more than 7 hours has elapsed since a rest break of at least 30 minutes; and
- requiring at least two periods between midnight and 6:00 a.m. in the 34-hour period of off-duty time required prior to a restart.

These limits are conducive to a fairly consistent rest and sleep pattern and would help alleviate fatigue. Alleviating fatigue, in turn, would be expected to decrease the number of crashes by long-haul operators as compared to the No Action Alternative.

Implementation of Alternative 3 would keep the maximum allowed daily driving hours the same as under the No Action Alternative – 11 hours. The additional provisions described above, however, including compulsory breaks that would compel rest and the inclusion of two periods from midnight to 6:00 a.m. in the 34-hour restart would help alleviate operator fatigue and would be expected to decrease the number of crashes by long-haul operators. The decrease in the number of crashes under Alternative 3 would be slightly less than expected under Alternative 2 because the maximum allowed daily driving hours are greater for Alternative 3 (11 hours) than for Alternative 2 (10 hours).

Implementation of Alternative 4 would be expected to result in the greatest reduction in the number of large truck crashes of long-haul operators because the maximum allowed daily driving hours would be less (9 hours) than under the No Action Alternative, Alternative 2, and Alternative 3. Furthermore, the provisions related to driving and on-duty hours and the revised 34-hour restart would help decrease operator fatigue levels.

Exhibit 4-4 shows the baseline annual number of large truck crashes involving long-haul operators under the No Action Alternative and the expected annual number under Alternatives 2, 3, and 4. Implementation of Alternatives 2, 3 and 4 would be expected to result in a minor positive impact on public health and safety by decreasing the number of large truck crashes related to fatigue. This expected decrease in crashes would decrease the number of fatal crash incidents and injury crash incidents involving long-haul operators discussed in Section 3.2.2 and presented in Exhibit 3-6.

Exhibit 4-4. Baseline and Expected Number of Annual Crashes by Long-haul Operators

Description	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4
Baseline (Alternative 1) and Annual Number of Crashes under Alternatives. 2–4	251,553	247,076	248,607	242,284
Decrease in Crashes Relative to the No Action Alternative	–	4,374	2,946	9,269
Percent Reduction in Crashes (assumed to be equal to percent reduction in damages)	0.00%	1.78%	1.17%	3.68%

The effects of Alternatives 2, 3, and 4 on crash incidence for long-haul drivers were estimated using the modeling approach detailed in the RIA (FMCSA 2010a). The safety impacts analysis was carried out in two steps. The first step involved estimating the benefits that result from reductions in fatigue risk due to decreases in daily driving time and the change in weekly working time. The changes in crash risks were monetized for Alternatives 2, 3, and 4, using a comprehensive and detailed measure of the average damages from large truck crashes. Next, the crash data under Alternatives 1 (No Action), 2, 3, and 4 were calculated using per crash cost data obtained from the FMCSA Crash Cost Tool and total cost of long-haul truck crashes derived previously. The percent reduction in long-haul crashes was assumed to be equal to the percent reduction in damages under each of action alternative and was used to calculate the expected decrease in crashes under each action alternative. Exhibit 4-4 shows the actual number of crashes under the No Action Alternative in 2007 and the calculated crash incidence under Alternatives 2, 3, and 4. Also shown are the absolute and percentage differences in fatigue-related crashes between the No Action Alternative and the three action alternatives.

The decrease in fatigue-related crashes involving long-haul operators due reducing their daily and overall driving hours under the action alternatives would be partially offset by an increase in crashes in the short term caused by an increased need for new drivers because new drivers pose a higher crash risk than existing drivers, assuming all other factors are equal. In the long run, the effect of this increase in new drivers would be offset to an uncertain degree by the expected slight shift of freight from truck to rail which would reduce total truck VMT.

Alternatives 2, 3, and 4 are projected to decrease fatigue-related accidents relative to the No Action Alternative. Because the number of fatigue-related crashes would decrease, the number of accidents involving all types of cargo would decrease. This decrease would also apply to the number of crashes involving the transport of hazardous materials. Alternatives 2, 3, and 4 are not projected to reduce the number of short-haul fatigue-related accidents, because these alternatives would not reduce the actual driving and duty hours of most short-haul CMV drivers.

4.2.4 Hazardous Materials Transportation

As shown in Exhibit 4-4, Alternatives 2, 3, and 4 are estimated to slightly decrease truck-related crashes involving long-haul operators via a decrease in fatigue-related crashes, relative to Alternative 1 (No Action). These crashes would primarily affect long-haul and regional operations because the regulatory provisions being varied in the alternatives (daily driving limit, maximum on-duty hours, extended driving window, driving break, and the minimum of two periods of rest from midnight to 6:00 a.m. in the 34-hour off-duty period before restart) almost exclusively affect long-haul and regional carriers. These provisions would not specifically address a particular type or class of commodity, but instead would affect all motor carriers engaged in long-haul and regional operations, including those hauling hazardous materials. Accordingly, the number of large truck crashes as a result of long-haul or regional operations involving hazardous material shipments, as well as those crashes involving non-hazardous material shipments, would be expected to be lower under Alternatives 2, 3, or 4 than under the No Action Alternative.

According to the FMCSA's Motor Carrier Management Information System, hazardous material carriers comprise roughly 5 percent of the total number of active motor carriers (MCMIS 2008 as cited in FMCSA 2010). In 2008, trucks carrying hazardous materials comprised 3 percent of all large trucks involved in fatal crashes and only 1 percent of all large trucks involved in non-fatal crashes (FMCSA 2010a). Therefore, hazardous material carriers are slightly underrepresented in large truck crashes, relative to their proportion of the overall motor carrier population. Accordingly, the decrease in the number of hazardous material crashes under the action alternatives would be slightly less than proportionate to the decrease in non-hazardous material crashes. The decrease in the number of hazardous material crashes under the action alternatives would result in a minor positive impact but would not be significant.

Exhibit 4-5 presents annual average numbers of CMV crashes involving various classes of hazardous materials and the estimated quantities of hazardous materials released.

4.2.5 Solid Waste

FMCSA Order 5610.1 requires the agency to examine the impacts of this rulemaking on the generation of solid waste. Actions that increase the generation of solid waste contribute to the growing problem of restricted and limited landfill space and air quality problems through waste incineration. Additional vehicle equipment or the retrofitting of vehicles would not be required under the rule. Compared to the No Action Alternative, Alternatives 2, 3, and 4 could slightly decrease the generation of solid waste due to a slight decrease in the estimated number of large truck-related crashes; such impacts, however, would not be significant.

Exhibit 4-5. CMV Crashes and Hazardous Material Release Estimates

Categories of CMV Crashes	Annual Averages[a]	
By CMV Type		Total Number
− Large Trucks		136,395
− Buses		9,332
− Other CMVs		2,117
All CMVs combined		147,844
Involving a Hazardous Material Vehicle		Total Number
− Large Trucks		1,998
− Buses		2
− Other CMVs		37
All Hazardous Material Vehicle Crashes combined		2,037
Involving a Cargo Release by CMV type and Hazardous Material Class	**Total Number**	**Total Quantity Released**
− Large Trucks	3	437.5 gal (27,017 lbs)
Class 1 (Explosives)	30	57,852.3 gal (58.71 cu ft)
Class 2 (Gases)	136	391,117.69 gal
Class 3 (Flammable/Combustible Liquids)	3	1,829.21 gal (8,971.75 lbs)
Class 4 (Flammable Solids)	10	4,860.27 gal (47,270.63 lbs)
Class 5 (Oxidizing Substances/Organic	4	1,443.88 gal (15,351.67 lbs)
Peroxides)	2	18.88 gal (200.09 cu in)
Class 6 (Toxic/Infectious Substances)	33	20,794.37 gal (2,791.33 lbs)
Class 7 (Radioactive Materials)	12	14,291.07 gal (57,628.73 lbs)
Class 8 (Corrosive Substances)	N/A	N/A
Class 9 (Miscellaneous)	N/A	113.63 cu ft of Class 2
− Buses		hazardous material from one
− Other CMVs		incident; 4,020 gal of Class 3
		hazardous material from two
		incidents
Involving Fuel Tank Spills from Fuel Tanks	No. of Crashes	Total (Avg. release per crash)
− Large Trucks	16,367	1,178,424 gal (72 gal)
− Non-Large Trucks	254	10,160 gal (40 gal)
− Total Trucks	16,621	1,188,584 gal (N/A)

Source: Volpe Center (2007).

[a] Based on 2003, 2004, and 2005 data (the most recent available).

Notes: CMV = commercial motor vehicle; lbs = pounds; cu ft = cubic foot; gal = gallon; cu in = cubic inch; N/A = not applicable.

Although FMCSA has not determined the exact quantities of solid waste that might be generated in a CMV crash, the agency does recognize that crashes generate solid waste from damaged vehicles and vehicle parts, destroyed cargo, clean-up materials, and damaged roadway infrastructure. Crashes of CMVs can generate solid waste from vehicular debris, damaged cargo, and damaged roadway infrastructure. Typical wastes include metals, plastics, rubber, glass, textiles, electronics, and automobile fluids (e.g., coolant, battery acid, and oil). Most metal and rubber components are recycled but the remainder enters the solid waste stream. The amount of damage incurred by a CMV vehicle determines the amount of waste generated. Exhibit 4-6 provides a general calculation of the quantity of solid waste sent to landfills based on the damage sustained by the CMV. CMV damage is represented in the analysis as the percent of vehicles requiring replacement.

Exhibit 4-6. CMV Crashes and Generation of Solid Waste

Trucks		Buses	
Percent of Vehicles Requiring Replacement	Solid Waste (kg) Sent to Landfill	Percent of Vehicles Requiring Replacement	Solid Waste (kg) Sent to Landfill
10%	68	10%	177
20%	137	20%	355
30%	205	30%	532
40%	274	40%	709
50%	342	50%	886
60%	411	60%	1,064
70%	479	70%	1,241
80%	547	80%	1,418
90%	616	90%	1,596
100%	684	100%	1,773

Source: Volpe Center (2007).

Note: kg = kilogram.

4.3 ENERGY SUPPLY IMPACTS

FMCSA estimated the energy consumption impacts of the No Action Alternative and Alternatives 2, 3, and 4, based on an analysis of the number of vehicle-miles traveled and vehicle hours idling, and the mode shift of freight from long-haul truck to rail. As discussed in Section 4.1.1, a mode shift would decrease long-haul truck VMT; would increase fuel usage by rail locomotives; and would increase VMT and VHI from drayage trucks that would be needed to transport freight on short hauls between rail terminals and customers. Energy impacts from all these factors are expressed as changes in gallons of diesel fuel, barrels of diesel fuel, and million Btu (MMBtu) in Exhibit 4-7.

Exhibit 4-7 shows the energy consumption of the alternatives (including No Action) and the change in energy consumption under Alternatives 2, 3, and 4 relative to Alternative 1, based on 2007 data.

Exhibit 4-7. Energy Consumption and Change in Transportation Fuel Energy Consumption by Alternative

Energy Consumption	Alternative 1 (No Action)	Alternative 2	Alternative 3	Alternative 4
Energy Consumption				
Energy Consumption, Diesel Fuel, Gallons	28,426,919,629	28,387,646,027	28,399,596,037	28,355,468,209
Energy Consumption, Diesel Fuel, Barrels	676,831,420	675,896,334	676,180,858	675,130,195
Energy Consumption, MMBtu	3,951,341,828	3,945,882,798	3,947,543,849	3,941,410,081
Change in Energy Consumption Compared to No Action				
Energy Consumption, Diesel Fuel, Gallons	–	−39,273,603	−27,323,592	−71,451,421
Energy Consumption, Diesel Fuel, Barrels	–	−935,086	−650,562	−1,701,224
Energy Consumption, MMBtu	–	−5,459,031	−3,797,979	−9,931,747
Percent Change in Energy Consumption	–	−0.14%	−0.10%	−0.25%

Note: MMBtu = million British thermal units.

Alternatives 2 through 4 would slightly decrease transportation fuel energy consumption compared to the No Action Alternative. As shown in Exhibit 4-7, the action alternatives (Alternatives 2 through 4) would result in an average decrease of between 0.10 percent and 0.25 percent in energy consumption. This energy use reduction is driven by the decrease in long-haul truck VMT. Alternative 4 would result in the largest decrease in energy consumption because it has the largest decrease in VMT despite having the largest increase in long-haul VHI, rail transport, and drayage activity.

From a national energy consumption perspective, the action alternatives (Alternatives 2 through 4) would cause a net decrease in national energy consumption of less than one quarter of 1 percent. These changes are minor compared to the current total energy use by CMVs. Accordingly, FMCSA does not consider these effects to be significant.

4.4 Truck Parking Supply

Alternatives 2, 3, and 4 would result in a slight increase in the demand for truck parking spaces as compared to the No Action Alternative. Mode shift would reduce truck freight demand and thus total VMT. A decrease in total VMT would not necessarily reduce the number of vehicles in operation because Alternatives 2, 3, and 4 would require each driver to drive less as compared to the No Action Alternative. Alternatives 2, 3, and 4 would increase rest time, thereby reducing drivers' productivity. As a result, additional trucks would be required and the industry would need to hire more drivers to meet truck freight demand. With more trucks in operation, and each driver required to take more rest, the demand for parking spaces would increase slightly under

Alternatives 2, 3, and 4 as compared to the No Action Alternative. Alternatives 2, 3, and 4 do not contain provisions that would require construction of additional parking facilities.

According to the June 2002 FHWA study of the supply and demand for public and non-public parking spaces, 12 states had an overall shortage of parking spaces.

FMCSA analyzed the total parking demand and supply on a State-by-State basis to determine the adequacy of truck parking under each alternative. Exhibits 4-8, 4-9, and 4-10 show the results of this analysis for public, non-public, and total parking supply, respectively. In Exhibits 4-8, 4-9, and 4-10, surplus parking is defined as a demand-to-supply ratio of less than 0.9; sufficient parking is defined as a demand-to-supply ratio of 0.9 through 1.1; and a shortage is defined as a demand-to-supply ratio of greater than 1.1. The results showed that Alternatives 2, 3, and 4 would not significantly alter the current parking demand as compared to the No Action Alternative; Alternatives 2, 3, and 4 would each result in an increase in parking demand.

FMCSA then analyzed the land area needed to satisfy the increased parking demand under Alternatives 2, 3, and 4. FMCSA considered the total demand for parking spaces versus the total aggregate supply of public and non-public parking spaces because rest breaks could occur at either rest areas or commercial establishments. Appendix B presents the detailed analysis of truck parking availability. FMCSA assumed that construction of additional parking facilities would not be induced in States where truck parking is projected to be either sufficient or at a surplus. FMCSA also assumed that in States with a shortage of parking, construction of additional parking facilities could be induced over time to meet the increased demand.

Exhibit 4-11 summarizes the potential land area that would be needed to satisfy parking demand in the 15 States experiencing a shortage, assuming an average of 18 spaces per acre (NATSO, 2001). Under Alternative 2, about 458 acres would be needed to satisfy the additional parking demand in these States. Under Alternative 3, about 215 acres would be needed to satisfy the additional demand in the States that would experience shortages. Under Alternative 4, about 1,200 acres would be needed to satisfy the increased demand in these States.

To respond to the increased demand for parking spaces resulting from Alternatives 2, 3, and 4, State governments or private entities could construct new highway rest areas or truck stops or expand existing ones. FMCSA considers it unlikely that State governments or private entities would construct new highway rest areas or expand existing areas in response to the proposed action. In most of the States that are not currently experiencing an overall shortage of parking spaces, the incremental increase in parking demand resulting from Alternatives 2, 3, and 4 would not be sufficient to create a shortage of parking spaces. Therefore for these States, no new construction would be necessary and FMCSA has assumed that no new construction would occur. In States that are currently experiencing an overall shortage of parking spaces, the incremental increase in parking demand resulting from Alternatives 2, 3, and 4 would exacerbate the existing shortage to a small extent. Considering that the States that now experience shortages have not responded by constructing additional parking supply (perhaps due to economic conditions), however, a small increase in demand would more likely result in increased use of the existing inventory of parking spaces rather than new construction.

If new construction does occur in States experiencing a shortage of parking spaces in response to the increase in parking demand, the total land area required to increase the parking supply would be small, as indicated in Exhibit 4-11. Sensitive areas such as wetlands and endangered species habitats would be protected from adverse impacts through existing laws (e.g., the Endangered Species Act) that are designed to protect such areas. Also, construction projects initiated by State transportation departments or local governments, for example, would be subject to review processes in accordance with State laws and local ordinances. Therefore, the potential adverse impacts from an increase in parking demand would be minimal. Potential impacts related to specific statutory and regulatory programs are discussed below in this section.

Exhibit 4-8. Evaluation of Public Parking Demand-to-Supply Ratio: State-by-State Analysis

	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
State	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
Alabama	2.29	Shortage	2.36	Shortage	2.33	Shortage	2.45	Shortage
Alaska	0.05	Surplus	0.06	Surplus	0.06	Surplus	0.06	Surplus
Arizona	1.88	Shortage	1.97	Shortage	1.92	Shortage	2.08	Shortage
Arkansas	5.20	Shortage	5.23	Shortage	5.21	Shortage	5.26	Shortage
California	4.10	Shortage	4.26	Shortage	4.18	Shortage	4.46	Shortage
Colorado	4.55	Shortage	4.76	Shortage	4.65	Shortage	5.03	Shortage
Connecticut	1.71	Shortage	1.83	Shortage	1.77	Shortage	2.00	Shortage
Delaware	2.94	Shortage	3.16	Shortage	3.05	Shortage	3.45	Shortage
Florida	0.99	Sufficient	1.02	Sufficient	1.01	Sufficient	1.06	Sufficient
Georgia	1.88	Shortage	1.94	Shortage	1.91	Shortage	2.01	Shortage
Idaho	3.00	Shortage	3.13	Shortage	3.06	Shortage	3.31	Shortage
Illinois	2.63	Shortage	2.71	Shortage	2.67	Shortage	2.81	Shortage
Indiana	1.77	Shortage	1.82	Shortage	1.79	Shortage	1.88	Shortage
Iowa	0.86	Surplus	0.88	Surplus	0.87	Surplus	0.91	Surplus
Kansas	1.24	Shortage	1.30	Shortage	1.27	Shortage	1.37	Shortage
Kentucky	2.23	Shortage	2.29	Shortage	2.26	Shortage	2.37	Shortage
Louisiana	9.32	Shortage	9.37	Shortage	9.35	Shortage	9.44	Shortage
Maine	1.81	Shortage	1.95	Shortage	1.88	Shortage	2.12	Shortage
Maryland	2.01	Shortage	2.16	Shortage	2.08	Shortage	2.35	Shortage
Massachusetts	6.16	Shortage	6.62	Shortage	6.39	Shortage	7.22	Shortage
Michigan	0.81	Surplus	0.84	Surplus	0.82	Surplus	0.86	Surplus
Minnesota	1.63	Shortage	1.67	Shortage	1.65	Shortage	1.73	Shortage
Mississippi	2.93	Shortage	3.01	Shortage	2.97	Shortage	3.12	Shortage
Missouri	4.28	Shortage	4.40	Shortage	4.34	Shortage	4.55	Shortage
Montana	1.18	Shortage	1.23	Shortage	1.20	Shortage	1.30	Shortage
Nebraska	0.95	Sufficient	1.00	Sufficient	0.98	Sufficient	1.05	Sufficient
Nevada	2.62	Shortage	2.72	Shortage	2.67	Shortage	2.85	Shortage
New Hampshire	0.84	Surplus	0.90	Surplus	0.87	Surplus	0.98	Surplus
New Jersey	0.69	Surplus	0.74	Surplus	0.71	Surplus	0.80	Surplus
New Mexico	15.62	Shortage	16.33	Shortage	15.96	Shortage	17.26	Shortage

Exhibit 4-8. Evaluation of Public Parking Demand-to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
New York	1.43	Shortage	1.54	Shortage	1.48	Shortage	1.68	Shortage
North Carolina	1.98	Shortage	2.04	Shortage	2.01	Shortage	2.11	Shortage
North Dakota	0.72	Surplus	0.76	Surplus	0.74	Surplus	0.80	Surplus
Ohio	2.35	Shortage	2.42	Shortage	2.39	Shortage	2.51	Shortage
Oklahoma	1.41	Shortage	1.41	Shortage	1.41	Shortage	1.42	Shortage
Oregon	1.89	Shortage	1.96	Shortage	1.93	Shortage	2.05	Shortage
Pennsylvania	1.82	Shortage	1.95	Shortage	1.88	Shortage	2.13	Shortage
Rhode Island	0.63	Surplus	0.67	Surplus	0.65	Surplus	0.73	Surplus
South Carolina	1.55	Shortage	1.60	Shortage	1.57	Shortage	1.65	Shortage
South Dakota	0.54	Surplus	0.56	Surplus	0.55	Surplus	0.59	Surplus
Tennessee	1.58	Shortage	1.63	Shortage	1.61	Shortage	1.69	Shortage
Texas	12.70	Shortage	12.77	Shortage	12.73	Shortage	12.86	Shortage
Utah	1.64	Shortage	1.72	Shortage	1.68	Shortage	1.82	Shortage
Vermont	0.15	Surplus	0.16	Surplus	0.16	Surplus	0.18	Surplus
Virginia	2.16	Shortage	2.22	Shortage	2.19	Shortage	2.30	Shortage
Washington	1.79	Shortage	1.86	Shortage	1.82	Shortage	1.95	Shortage
West Virginia	0.92	Sufficient	0.95	Sufficient	0.94	Sufficient	0.99	Sufficient
Wisconsin	0.97	Sufficient	1.00	Sufficient	0.98	Sufficient	1.03	Sufficient
Wyoming	0.56	Surplus	0.58	Surplus	0.57	Surplus	0.61	Surplus

[a] Surplus parking: demand-to-supply ratio is less than 0.9; sufficient parking: demand-to-supply ratio of 0.9 through 1.1; shortage of parking: demand-to-supply ratio of greater than 1.1.

Exhibit 4-9. Evaluation of Non-public Parking Demand- to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
Alabama	0.79	Surplus	0.85	Surplus	0.82	Surplus	0.92	Surplus
Alaska[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	0.43	Surplus	0.49	Surplus	0.46	Surplus	0.57	Surplus
Arkansas	0.79	Surplus	0.83	Surplus	0.81	Surplus	0.87	Surplus
California	2.03	Shortage	2.19	Shortage	2.11	Shortage	2.40	Shortage
Colorado	0.94	Sufficient	1.07	Sufficient	1.00	Sufficient	1.24	Surplus
Connecticut	1.66	Shortage	1.92	Shortage	1.78	Shortage	2.26	Shortage
Delaware	2.14	Shortage	2.48	Shortage	2.31	Shortage	2.92	Shortage
Florida	0.77	Surplus	0.83	Surplus	0.80	Surplus	0.90	Surplus
Georgia	0.64	Surplus	0.68	Surplus	0.66	Surplus	0.74	Surplus

Exhibit 4-9. Evaluation of Non-public Parking Demand- to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
Idaho	1.25	Shortage	1.43	Shortage	1.34	Shortage	1.65	Shortage
Illinois	1.16	Shortage	1.24	Shortage	1.20	Shortage	1.33	Shortage
Indiana	0.99	Sufficient	1.05	Sufficient	1.02	Sufficient	1.14	Sufficient
Iowa	0.44	Surplus	0.47	Surplus	0.46	Surplus	0.51	Surplus
Kansas	0.44	Surplus	0.50	Surplus	0.46	Surplus	0.58	Surplus
Kentucky	1.03	Sufficient	1.10	Sufficient	1.06	Sufficient	1.20	Sufficient
Louisiana	0.75	Surplus	0.79	Surplus	0.77	Surplus	0.83	Surplus
Maine	0.55	Surplus	0.64	Surplus	0.60	Surplus	0.75	Surplus
Maryland	0.87	Surplus	1.00	Surplus	0.93	Surplus	1.18	Surplus
Massachusetts	1.51	Shortage	1.75	Shortage	1.63	Shortage	2.06	Shortage
Michigan	0.69	Surplus	0.74	Surplus	0.71	Surplus	0.79	Surplus
Minnesota	0.65	Surplus	0.69	Surplus	0.67	Surplus	0.74	Surplus
Mississippi	0.60	Surplus	0.64	Surplus	0.62	Surplus	0.70	Surplus
Missouri	0.72	Surplus	0.77	Surplus	0.74	Surplus	0.83	Surplus
Montana	0.50	Surplus	0.57	Surplus	0.54	Surplus	0.66	Surplus
Nebraska	0.30	Surplus	0.34	Surplus	0.32	Surplus	0.39	Surplus
Nevada	0.46	Surplus	0.50	Surplus	0.48	Surplus	0.54	Surplus
New Hampshire	0.35	Surplus	0.40	Surplus	0.38	Surplus	0.48	Surplus
New Jersey	0.41	Surplus	0.47	Surplus	0.44	Surplus	0.56	Surplus
New Mexico	0.65	Surplus	0.74	Surplus	0.69	Surplus	0.85	Surplus
New York	0.87	Surplus	1.00	Surplus	0.93	Surplus	1.18	Surplus
North Carolina	0.58	Surplus	0.62	Surplus	0.60	Surplus	0.68	Surplus
North Dakota	0.31	Surplus	0.36	Surplus	0.33	Surplus	0.41	Surplus
Ohio	0.96	Sufficient	1.03	Sufficient	0.99	Sufficient	1.10	Sufficient
Oklahoma	0.37	Surplus	0.39	Surplus	0.38	Surplus	0.41	Surplus
Oregon	0.67	Surplus	0.72	Surplus	0.70	Surplus	0.79	Surplus
Pennsylvania	0.54	Surplus	0.63	Surplus	0.59	Surplus	0.74	Surplus
Rhode Island	1.35	Shortage	1.56	Shortage	1.45	Shortage	1.84	Shortage
South Carolina	0.50	Surplus	0.53	Surplus	0.51	Surplus	0.58	Surplus
South Dakota	0.50	Surplus	0.57	Surplus	0.53	Surplus	0.66	Surplus
Tennessee	0.63	Surplus	0.68	Surplus	0.66	Surplus	0.74	Surplus
Texas	1.18	Shortage	1.23	Shortage	1.21	Shortage	1.29	Shortage
Utah	0.53	Surplus	0.60	Surplus	0.56	Surplus	0.69	Surplus
Vermont	0.20	Surplus	0.23	Surplus	0.22	Surplus	0.28	Surplus
Virginia	0.80	Surplus	0.85	Surplus	0.82	Surplus	0.93	Surplus
Washington	1.02	Sufficient	1.11	Sufficient	1.06	Sufficient	1.21	Sufficient

Exhibit 4-9. Evaluation of Non-public Parking Demand- to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
West Virginia	0.92	Sufficient	0.98	Sufficient	0.95	Sufficient	1.07	Surplus
Wisconsin	0.35	Surplus	0.38	Surplus	0.37	Surplus	0.41	Surplus
Wyoming	0.39	Surplus	0.44	Surplus	0.41	Surplus	0.51	Surplus

[a] Surplus parking: demand-to-supply ratio is less than 0.9; sufficient parking: demand-to-supply ratio of 0.9 through 1.1; shortage of parking: demand-to-supply ratio of greater than 1.1.

[b] The demand/supply ratio for non-public parking was not evaluated for Alaska. Hawaii is not included in the FHWA study.

Exhibit 4-10. Evaluation of Total Parking Demand-to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
Alabama	0.93	Sufficient	0.99	Sufficient	0.96	Sufficient	1.07	Sufficient
Alaska[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Arizona	0.53	Surplus	0.59	Surplus	0.56	Surplus	0.67	Surplus
Arkansas	0.99	Sufficient	1.02	Sufficient	1.00	Sufficient	1.06	Sufficient
California	2.29	Shortage	2.46	Shortage	2.37	Shortage	2.67	Shortage
Colorado	1.15	Shortage	1.29	Shortage	1.22	Shortage	1.46	Shortage
Connecticut	1.67	Shortage	1.90	Shortage	1.78	Shortage	2.20	Shortage
Delaware	2.28	Shortage	2.60	Shortage	2.44	Shortage	3.01	Shortage
Florida	0.81	Surplus	0.86	Surplus	0.84	Surplus	0.93	Sufficient
Georgia	0.75	Surplus	0.80	Surplus	0.78	Surplus	0.86	Surplus
Idaho	1.44	Shortage	1.62	Shortage	1.53	Shortage	1.84	Shortage
Illinois	1.33	Shortage	1.41	Shortage	1.37	Shortage	1.50	Shortage
Indiana	1.10	Shortage	1.16	Shortage	1.13	Shortage	1.24	Shortage
Iowa	0.50	Surplus	0.52	Surplus	0.51	Surplus	0.56	Surplus
Kansas	0.51	Surplus	0.57	Surplus	0.54	Surplus	0.65	Surplus
Kentucky	1.17	Shortage	1.25	Shortage	1.21	Shortage	1.34	Shortage
Louisiana	0.96	Sufficient	0.99	Sufficient	0.97	Sufficient	1.03	Sufficient
Maine	0.66	Surplus	0.75	Surplus	0.70	Surplus	0.87	Surplus
Maryland	1.00	Sufficient	1.13	Shortage	1.06	Sufficient	1.31	Shortage
Mass.	1.83	Shortage	2.08	Shortage	1.95	Shortage	2.41	Shortage
Michigan	0.72	Surplus	0.76	Surplus	0.74	Surplus	0.81	Surplus
Minnesota	0.75	Surplus	0.80	Surplus	0.77	Surplus	0.85	Surplus
Mississippi	0.73	Surplus	0.78	Surplus	0.76	Surplus	0.84	Surplus

Exhibit 4-10. Evaluation of Total Parking Demand-to-Supply Ratio: State-by-State Analysis

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]	Ratio	Category[a]
Missouri	0.89	Surplus	0.94	Sufficient	0.91	Sufficient	1.00	Sufficient
Montana	0.58	Surplus	0.65	Surplus	0.61	Surplus	0.74	Surplus
Nebraska	0.35	Surplus	0.39	Surplus	0.37	Surplus	0.45	Surplus
Nevada	0.57	Surplus	0.61	Surplus	0.59	Surplus	0.66	Surplus
New Hampshire	0.40	Surplus	0.46	Surplus	0.43	Surplus	0.53	Surplus
New Jersey	0.45	Surplus	0.51	Surplus	0.48	Surplus	0.60	Surplus
New Mexico	0.83	Surplus	0.93	Sufficient	0.88	Surplus	1.05	Sufficient
New York	0.95	Sufficient	1.09	Sufficient	1.02	Sufficient	1.26	Shortage
North Carolina	0.69	Surplus	0.74	Surplus	0.72	Surplus	0.79	Surplus
North Dakota	0.36	Surplus	0.40	Surplus	0.38	Surplus	0.46	Surplus
Ohio	1.12	Shortage	1.18	Shortage	1.15	Shortage	1.26	Shortage
Oklahoma	0.45	Surplus	0.47	Surplus	0.46	Surplus	0.48	Surplus
Oregon	0.79	Surplus	0.84	Surplus	0.81	Surplus	0.91	Sufficient
Pennsylvania	0.65	Surplus	0.74	Surplus	0.69	Surplus	0.86	Surplus
Rhode Island	1.07	Sufficient	1.22	Shortage	1.14	Shortage	1.41	Shortage
South Carolina	0.59	Surplus	0.63	Surplus	0.61	Surplus	0.67	Surplus
South Dakota	0.51	Surplus	0.57	Surplus	0.54	Surplus	0.65	Surplus
Tennessee	0.74	Surplus	0.78	Surplus	0.76	Surplus	0.84	Surplus
Texas	1.49	Shortage	1.54	Shortage	1.52	Shortage	1.61	Shortage
Utah	0.62	Surplus	0.70	Surplus	0.66	Surplus	0.79	Surplus
Vermont	0.19	Surplus	0.21	Surplus	0.20	Surplus	0.25	Surplus
Virginia	0.93	Sufficient	0.99	Sufficient	0.96	Sufficient	1.07	Sufficient
Washington	1.14	Shortage	1.22	Shortage	1.17	Shortage	1.32	Shortage
West Virginia	0.92	Sufficient	0.97	Sufficient	0.95	Sufficient	1.05	Sufficient
Wisconsin	0.41	Surplus	0.44	Surplus	0.43	Surplus	0.47	Surplus
Wyoming	0.42	Surplus	0.47	Surplus	0.44	Surplus	0.53	Surplus

[a] Surplus parking: demand-to-supply ratio is less than 0.9; sufficient parking: demand-to-supply ratio of 0.9 through 1.1; shortage of parking: demand-to-supply ratio of greater than 1.1.

[b] The demand/supply ratio for non-public parking demand/supply ratio was not evaluated for Alaska. Hawaii is not included in the FHWA study.

Exhibit 4-11. Number and Acreage of Additional Highway Truck Parking Spaces Needed for Alternatives for States With Existing Shortages of Parking Spaces

State	Alternative 1: No Action		Alternative 2		Alternative 3		Alternative 4	
	Increased Demand (spaces)	Area (acres)	Increased Demand (spaces)	Area (acres)	Increased Demand (spaces)	Area (acres)	Increased Demand (spaces)	Area (acres)
California	–	–	1,403	77.92	679	37.70	3,212	178.46
Colorado	–	–	393	21.81	190	10.55	899	49.94
Connecticut	–	–	373	20.72	180	10.02	854	47.45
Delaware	–	–	126	6.97	61	3.37	287	15.97
Idaho	–	–	380	21.08	184	10.20	869	48.29
Illinois	–	–	806	44.80	390	21.67	1,847	102.61
Indiana	–	–	1,039	57.74	503	27.93	2,380	132.25
Kentucky	–	–	597	33.17	289	16.05	1,367	75.97
Maryland	–	–	359	19.94	–	–	822	45.67
Massachusetts	–	–	524	29.10	253	14.08	1,199	66.64
New York	–	–	–	–	–	–	2,501	138.96
Ohio	–	–	798	44.34	386	21.45	1,828	101.56
Rhode Island	–	–	–	–	49	2.75	234	13.02
Texas	–	–	1,190	66.12	576	31.99	2,726	151.43
Washington	–	–	252	13.98	122	6.76	576	32.02
TOTAL	**–**	**–**	**8,238**	**457.69**	**3,861**	**214.53**	**21,604**	**1,200.24**

4.4.1 Section 4(f) Historic, Parkland, and Recreational Resources

The potential for impacts on Section 4(f) resources due to the proposed 2010 HOS rule would result from construction of new parking spaces on land containing or adjacent to Section 4(f) resources. As discussed in Section 4.4, Alternatives 2, 3, and 4 could result in a minor increase in the overall need for parking as compared to the No Action Alternative. Although Alternatives 2, 3, and 4 would increase parking demand, the number of parking spaces that actually would be constructed is likely to be less than the increase in demand. The proposed 2010 HOS rule does not specifically require any lands covered by Section 4(f) to be developed; the location of any additional parking facilities would be subject to the jurisdiction of State or local government authorities. The potential for Section 4(f) impacts would depend on the characteristics of the specific locations where the additional parking spaces would be constructed. Moreover, any actions taken by State or local government authorities might be subject to similar protective requirements under State laws or local ordinances. FMCSA cannot determine whether Alternative 2, 3, or 4 would impact lands covered by Section 4(f), nor can FMCSA accurately predict or control which sites states or localities might choose for the development of additional parking facilities. FMCSA believes that any Section 4(f) impacts due to construction of additional parking facilities would be minor.

Under Alternatives 2, 3, and 4, the number of CMV crashes would decrease compared to Alternative 1. Such decreases would reduce impacts on any Section 4(f) land that might be adjacent to, or downstream from, roadways that could experience a CMV crash by reducing spills, clean-up, noise, and other disturbances CMV crashes can cause.

4.4.2 Endangered Species

The potential for impacts on endangered and threatened species due to the proposed 2010 HOS rule would result from the impacts on habitat from air emissions and GHG emissions and from construction of new parking spaces. The potential impacts from changes in air quality and GHG emissions are negligible. Although Alternatives 2, 3, and 4 would increase parking demand, the number of parking spaces that actually would be constructed is likely to be less than the increase in demand. The proposed 2010 HOS rule does not specifically require any areas designated as habitat for endangered or threatened species to be developed. The jurisdictions with responsibility for these areas would be required to analyze impacts on endangered and threatened species in accordance with the Endangered Species Act and other applicable statutes and regulations. Such impacts would depend on the characteristics of the specific locations where the parking spaces would be constructed. As stated above, FMCSA cannot predict or control the sites states and localities might choose to develop for additional parking facilities, although FMCSA does note ample areas are available where construction would not impact endangered or threatened species. FMCSA believes that any impacts on endangered or threatened species due to construction of additional parking would be minor.

Alternatives 2, 3, and 4 would decrease the number of CMV crashes compared to Alternative 1. These decreases would slightly reduce impacts on the habitat of any endangered or threatened species that might be located downstream from or adjacent to roadways that experience a CMV crash by reducing spills, clean-up, noise, and other disturbances CMV crashes can cause.

4.4.3 Wetlands

The potential for impacts on wetlands due to the proposed 2010 HOS rule would result from construction of new parking facilities on land containing or adjacent to wetlands. Although Alternatives 2, 3, and 4 would increase the demand for parking, the number of parking spaces that actually would be constructed is likely to be less than the increase in demand. The proposed 2010 HOS rule does not specifically require any land containing or adjacent to wetland areas to be developed. Any impacts on wetlands would depend on whether the specific locations where the parking spaces would be constructed contain or are near wetlands. Again, FMCSA can neither predict nor control the sites where states and localities might choose to develop additional parking facilities. FMCSA notes, however, ample areas are available where impacts on wetlands could be avoided. FMCSA believes that any impacts on wetlands due to construction of additional parking would be minor.

Alternatives 2, 3, and 4 would decrease the number of CMV crashes compared to the No Action Alternative. These decreases would slightly reduce impacts on any wetland areas that might be adjacent to or downstream from roadways that experience a CMV crash by reducing spills, clean-up, and other disturbances CMV crashes can cause.

4.4.4 Historic Properties

The potential for impacts on historic properties due to the proposed 2010 HOS rule would result from air emissions and from construction of new parking spaces. Although Alternatives 2, 3, and 4 would increase parking demand, the number of parking spaces that actually would be constructed is likely to be less than the increase in demand. Air pollution in the form of “acid rain” increases the degradation of limestone buildings and sculptures. The changes in air emissions from Alternative 2, 3, or 4 would be nominal and would not be expected to cause a significant change in air quality. The potential for impacts on historic properties depends on the characteristics of the specific locations where the parking facilities would be constructed. The potential for impacts on historic properties from the development of additional parking facilities is difficult or impossible for FMCSA to control or predict as the decision to site a parking facility would rest with the State and local jurisdictions. FMCSA notes, however, that the chance that a parking facility would conflict with an historic property is extremely low due to the limited number of historic properties that would be located near sites that might be used for construction of additional parking under Alternatives 2, 3, and 4. FMCSA believes that any impacts on historic properties due to construction of additional parking would be minor.

Alternatives 2, 3, and 4 would decrease the number of CMV crashes compared to the No Action Alternative. Fewer crashes would reduce the impacts on exceptionally significant features of the Federal interstate highway system by reducing infrastructure damage and other disturbances associated with such crashes.

4.5 ENVIRONMENTAL JUSTICE

To perform an environmental justice analysis, FMCSA reviewed the potential impacts as presented in Sections 4.1 through 4.4 and found no disproportionately high and adverse human health or environmental effects. Therefore, no populations afforded protection under Executive Order 12898 would be disproportionately affected.

4.6 CUMULATIVE IMPACTS

The following sections present background information regarding cumulative impacts, the methodology implemented to identify and assess cumulative impacts, and a discussion of the resources potentially affected by cumulative impacts.

In accordance with CEQ’s NEPA Regulations, 40 CFR 1508.7, and FMCSA’s Order 5610.1 on NEPA Implementing Procedures, Ch.1(C)(2), Ch.1(D)(3)(12), FMCSA reviewed the potential impacts of the action alternatives in conjunction with other past, present, and reasonably foreseeable future actions, both Federal and non-Federal, to determine if cumulative impacts could result. FMCSA also relied on the guidance provided in the CEQ handbook entitled *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997). The analysis presented in this EA reviewed the following resources: air quality and public health and safety.

FMCSA identified the actions associated with the Alternatives 2 through 4 that would result in either adverse or beneficial effects and then identified the resources that would be affected by such actions. The analysis of actions and the resources that would be affected are presented in

Sections 4.1 through 4.5. Because the analyses performed in this EA involve impacts that can be regional (impacts on specific nonattainment and maintenance areas) or national (safety on the U.S. transportation network) in scope or both, FMCSA reviewed the effects of the past, present, and reasonably foreseeable future actions at regional, national, or both scales, by resource. For example, FMCSA reviewed cumulative impacts on air quality (NAAQS and air toxics) on a regional level, while cumulative impacts on safety were reviewed on a national level.

The following sections present a discussion of the cumulative impacts on air quality and public health and safety. The discussion of each resource identifies the adverse or beneficial impacts. FMCSA performed a qualitative analysis of the other past, present, and reasonably foreseeable future actions associated with the action alternatives in relation to the No Action Alternative presented in this EA.

4.6.1 Cumulative Impacts on Air Quality

As described in Section 4.1, FMCSA evaluated the levels of emissions associated with the action alternatives in relation to the No Action Alternative. The evaluation included how current and future EPA regulations on emissions and fuel standards would affect future emissions. FMCSA also considered the existing and future State idling regulations. Because total emissions from CMVs would continue to decrease, and any regional or local emissions impacts would be negligible, FMCSA concluded that there would be no significant cumulative air quality impacts.

4.6.2 Cumulative Impacts on Public Health and Safety

As discussed in Section 4.2.3, implementation of Alternatives 2, 3, and 4 would result in a slight decrease in the number of fatigue-related, large-truck crashes. This decrease represents a minor positive impact on public health and safety relative to Alternative 1, the No Action Alternative. When combined with other FMCSA activities, including inspections, safety audits, and other safety initiatives, and with other Federal and non-Federal activities, Alternatives 2, 3, and 4 would be expected to result in a positive cumulative impact on public health and safety.

4.7 COMPARISON OF ALTERNATIVES

FMCSA regulations for implementing NEPA and CEQ NEPA regulations require a comparison of the potential impacts of each alternative. In addition to the comparisons among the alternatives discussed in each section above, Exhibit 4-12 summarizes the impacts for each alternative across each impact area. Impacts are evaluated in terms of the percent change from the status quo (No Action Alternative). “Minor” is defined for this EA as a 0- to 1-percent change from the status quo (0 ± 1 percent). Note that these impacts are measured as a change from the No Action Alternative. As shown in Exhibit 4-12, none of the alternatives would have a significant adverse impact on the human environment, and all would have beneficial impacts on some resource areas. No single alternative stands out as environmentally preferable, when compared to the other alternatives.

Exhibit 4-12. Comparison of Alternatives

Impact Area	Alternative 1: No Action	Alternative 2	Alternative 3	Alternative 4
Air Quality – Criteria Pollutants	No Change	Minor Negative Impact	Minor Negative Impact	Minor Negative Impact
Air Quality – Air Toxics	No Change	Minor Negative Impact	Minor Negative Impact	Minor Negative Impact
Air Quality – Climate Change	No Change	Minor Negative Impact	Minor Negative Impact	Minor Negative Impact
Public Health	No Change	No Impact	No Impact	No Impact
Noise	No Change	No Impact	No Impact	No Impact
Hazardous Materials	No Change	Minor Benefit	Minor Benefit	Minor Benefit
Solid Waste Disposal	No Change	Minor Benefit	Minor Benefit	Minor Benefit
Safety	No Change	Minor Benefit	Minor Benefit	Minor Benefit
Transportation Energy Consumption	No Change	Minor Benefit	Minor Benefit	Minor Benefit
Parking/Land Consumption	No Change	No Impact	No Impact	No Impact
Section 4(f)	No Change	No Impact	No Impact	No Impact
Endangered Species	No Change	No Impact	No Impact	No Impact
Wetlands	No Change	No Impact	No Impact	No Impact
Historic Properties	No Change	No Impact	No Impact	No Impact

5. Conclusions

FMCSA does not anticipate that the preferred alternatives (Alternative 2 or Alternative 3) or Alternative 4 will have a significant enough impact on the environment to necessitate conducting an environmental impact statement. As indicated in the analysis above, several of the changes have the potential to result in minor negative and positive impacts on the environment. The provisions in Alternative 2, Alternative 3, and Alternative 4, however, neither individually nor collectively pose any significant environmental impact. Consequently, FMCSA issues a Finding of No Significant Impact and does not recommend the preparation of an Environmental Impact Statement.

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