

State of California  
AIR RESOURCES BOARD

**Final Statement of Reasons for Rulemaking,  
Including Summary of Comments and Agency Response**

ADOPTION OF THE REGULATION TO REDUCE GREENHOUSE GAS EMISSIONS  
FROM HEAVY-DUTY VEHICLES

**I. GENERAL**

The California Global Warming Solutions Act of 2006 (AB 32) established requirements for a comprehensive program of regulatory and market mechanisms to achieve real, quantifiable, and cost-effective reductions of greenhouse gas (GHG) emissions. AB 32 requires the Air Resources Board (the Board or ARB) and other state agencies to adopt regulations and other requirements that would reduce statewide GHG emission levels to the equivalent of 1990 levels by 2020. To swiftly address GHG emission reductions in the near-term, AB 32 also directs ARB to identify a list of early action measures to be adopted by the Board by January 1, 2011, and made enforceable by January 1, 2012. AB 32 also requires that discrete early action measures be identified, requiring adoption and implementation by January 1, 2010. In 2007, the Board identified 44 early action measures, of which 9 were identified as discrete early action measures. The rulemaking is one of the discrete early action measures.

The rulemaking was initiated on October 24, 2008, with the release of a notice of public hearing and staff report, entitled "Staff Report: Initial Statement of Reasons for Proposed Rulemaking, Public Hearing to Consider Adoption of the Regulation to Reduce Greenhouse Gas Emissions From Heavy-Duty Vehicles" (Staff Report or ISOR). The Staff Report, which is incorporated by reference herein, describes the ARB's rationale for the regulatory proposal. The proposed new sections, 95300 through 95311, of title 17, California Code of Regulation (CCR), were included as an attachment to the Staff Report. These documents were also posted on the ARB's Internet site for the rulemaking at: <http://www.arb.ca.gov/regact/2008/ghghdv08/ghghdv08.htm> .

The rulemaking will reduce GHG emissions by requiring on-road tractors and trailers operating on California highways to be equipped with technologies that will result in improved fuel efficiency, and thus reduce GHG emissions. The regulation references a federal voluntary program, called the United States Environmental Protection Agency (U.S. EPA) SmartWay Partnership Program (SmartWay program), which is designed to improve the environmental performance associated with the ground freight delivery system in the United States. In particular, the SmartWay program approves technologies, such as aerodynamic equipment and low-rolling resistance tires, and certifies tractors and trailers that incorporate these technologies. The rulemaking requires the use of SmartWay certified tractors and trailers, and SmartWay approved aerodynamic technologies and low-rolling resistance tires.

On December 11, 2008, the Board conducted a public hearing to consider staff's proposal as described in the Staff Report. At the hearing, staff proposed to adopt new requirements for heavy-duty vehicles to reduce GHG emissions through fuel efficiency improvements. Additionally, staff proposed various editorial corrections and several modifications to the originally proposed regulation. After consideration of the written comments received during the 45-day public comment period prior to the hearing and the testimony received at the hearing, the Board acted in Resolution 08-44 to adopt the proposed regulation.

Resolution 08-44 approved staff's originally proposed regulation as well as the suggested modifications provided at the Board Hearing. In addition, Resolution 08-44 directed the Executive Officer to modify the regulatory language or take other steps to ensure the requirements specified in section 95303(a), title 17, CCR, for certification of tractors will take effect only if the U.S. EPA modifies the existing SmartWay certified tractor certification requirements to establish new performance-based test requirements that will provide for comparable GHG emission reductions for similar certified SmartWay tractors from different manufacturers.

Furthermore, in accordance with section 11346.8 of the Government Code, the Board in Resolution 08-44 directed the Executive Officer to incorporate the modifications to the proposed regulatory text approved by the Board, with such other conforming modifications as may be appropriate, and to make the modified text available to the public for a period of at least fifteen days. The Executive Officer was then directed either to adopt the amendments with such additional modifications as may be appropriate in light of the comments received, or to present the regulations to the Board for further consideration if warranted in light of the comments.

On August 17, 2009, U.S. EPA provided interim SmartWay tractor certification requirements for tractor manufacturers, which established both design and performance-based requirements by allowing new tractor models to be certified if the fuel efficiency of the new tractor model meets or exceeds the fuel efficiency of at least one current SmartWay certified tractor model from any manufacturer. Because a performance-based standard for U.S. EPA SmartWay certified tractors was established, the tractor component of the rulemaking was retained.

The revised regulation, which included the new U.S. EPA interim performance-based requirements for tractors and other modifications since the originally proposed regulatory text of October 24, 2008, was made available to the public through an issuance of a "Notice of Public Availability of Modified Text and Availability of Additional Documents" on September 17, 2009, with a comment period of 15 days. Several written comments were received during the 15-day comment periods.

This Final Statement of Reasons (FSOR) updates the Staff Report by identifying and providing the rationale for the modifications made to the originally proposed regulatory

text. The FSOR also contains a summary of the comments received on the regulatory text during the formal regulatory process and ARB's responses to those comments.

**Fiscal Impacts.** The Board has determined that this regulatory action will not create costs or savings, as defined in Government Code section 11346.5(a)(5) and 11346.5(a)(6), in federal funding to the state; or costs or mandate to any local agency or school district whether or not reimbursable by the state pursuant to Government Code, title 2, division 4, part 7 (commencing with section 17500) or other non-discretionary costs or savings to local agencies. The Board has determined that the regulatory action will create costs to a state agency in the form of costs to ARB to implement and enforce the regulation and to contract with the California Highway Patrol, air quality management districts and air pollution control districts for enforcement. No costs or savings affecting other state agencies were identified.

The Board has determined that this regulatory action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states, or on representative private persons.

In accordance with Government Code section 11346.3, the Board has determined that this regulatory action will affect the creation or elimination of jobs within the State of California, the creation of new businesses or the elimination of existing businesses within the State of California, or the expansion of businesses currently doing business within the State of California.

The Board has also determined, pursuant to section 4, title 1, CCR, that this regulatory action will affect small businesses use own or operate heavy-duty tractors pulling 53-foot or longer trailers affected by the regulation.

In accordance with Government Code sections 11346.3(c) and 11346.5(a)(11), the Board has found that the reporting requirements of the regulation that apply to businesses are necessary for the health, safety, and welfare of the people of the State of California.

**Consideration of Alternatives.** The regulatory language proposed in the rulemaking was the result of extensive discussions and meetings involving staff and motor carriers, warehouse and logistics companies, equipment manufacturers, associations, and other interested parties. In the Staff Report, ARB evaluated and ultimately rejected two potential alternatives: (1) no action and (2) expand the applicability of the requirements to other types of trucks and trailers.

The first alternative to the proposal was to not adopt a regulation to require the use of SmartWay technologies on affected heavy-duty trucks but rather to rely on tractor and trailer owners to voluntarily install SmartWay technologies. Although SmartWay technologies have been available for several years, most truck and trailer owners have not installed them despite available fuel savings. ARB believes the incorporation of

aerodynamic technologies on box-type trailers will not happen in a timely manner without regulatory impetus. Real and quantifiable near-term GHG reduction benefits would be lost if the regulation is not implemented. As a result, ARB rejected the "No Action" option.

The second alternative to the proposal was to expand the applicability of the requirements beyond 53-foot and longer box-type trailers and tractors that pull them to include box-type trailers of various lengths and types, and straight trucks. Expanding the applicability to other types of trucks and trailers is not possible because the current SmartWay program only applies to 53-foot and longer box-type trailers. Expanding the applicability of the rule would require ARB to develop an ARB certification program for tractors and trailers, low rolling resistance tires, and aerodynamic technologies. This cannot be done in the timeframe allotted for this rulemaking, as required for an AB 32 discrete early action measure. Therefore, ARB rejected this alternative.

For the reasons set forth in the Staff Report, in staff's comments and responses at the hearing, and in this FSOR, the Board has further determined that no alternative considered by the agency would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective and less burdensome to affected private persons than the adopted regulation.

## **II. MODIFICATIONS MADE TO THE ORIGINAL PROPOSAL**

### **A. MODIFICATIONS APPROVED AT THE BOARD HEARING AND PROVIDED FOR THE 15-DAY COMMENT PERIOD**

At the hearing, the Board approved the originally proposed regulatory action as well as staff's suggested modifications presented at the hearing. Further, the Board directed the Executive Officer to modify the regulatory language, as appropriate, to include new U.S. EPA performance-based test requirements for tractors that will compare GHG emission reductions for similar certified SmartWay tractors from different manufacturers. The regulatory modifications made to the originally proposed regulatory text released on October 24, 2008 were made available to the public for a 15 day comment period by the issuance of a "Notice of Public Availability of Modified Text and Availability of Additional Documents" on September 17, 2009. The following is a consolidated description of the modifications and clarifications by section.

#### **Applicability (section 95301):**

Language was added to clarify that the regulation applies to specified parties not only when they use certain tractors and trailers in California, but also when they cause the use of that equipment by others within the state. This modification is consistent with the substantive requirements in section 95303 and reflects the fact that some motor carriers, brokers and shippers covered by the regulation could arrange the use of this equipment in the state without using it themselves.

“Refuse trailers” and “livestock trailers” have been added to the list of vehicles for which the requirements of this subarticle do not apply. Both refuse trailers and livestock trailers have been exempted because their design and typical uses are not compatible with the requirements for aerodynamic technologies and low-rolling resistance tires.

Language has been added to clarify that short-haul and local-haul tractors, local-haul trailers, and drayage tractors are exempt from certain provisions of the regulation in accordance with section 95305.

### **Definitions (section 95302):**

The definition of “broker” was changed to improve clarity and to make the definition consistent with other ARB regulations.

A definition for the Diesel On-road and Off-road Reporting System (DOORS) has been added because this system is referred to in section 95307, Optional Trailer Fleet Compliance Schedules.

A definition of “fleet” has been added to improve clarity.

The definition of “authorized emergency vehicle” has been changed to a definition of “emergency vehicle” to improve clarity.

The definitions of “container,” “flatbed trailer,” and “lessee” have been deleted as unnecessary. The terms “container” and “flatbed trailer” do not need to be defined because the terms are not used in the proposed regulation. “Lessee” is a common term that does not need to be separately defined for purposes of this regulation.

Definitions of “livestock trailer” and “refuse trailer” have been added because both vehicles have been added to the list of vehicles exempted from the requirements of this subarticle.

The definitions of “cab side extender,” “curtain-side trailer,” “drop-frame trailer,” “dry-van trailer,” “flow control device,” “front trailer fairing,” “refrigerated-van trailer,” “sleeper cab,” and “trailer side skirt” have been modified to improve clarity.

The definition of “motor carrier” has been modified to reference the definition of “motor carrier” in the California Vehicle Code.

The definition of “owner” has been modified and expanded to provide greater clarity and additional details about which parties are responsible for ensuring that vehicles, including leased vehicles and federal government vehicles, comply with the regulation’s requirements.

The definition of “short-haul tractor” has been modified so the term refers only to tractors that travel less than 50,000 miles per year, and new definitions were added for “local-haul tractor” and “local-haul trailer” to describe tractors and trailers that travel within a 100 mile radius of their local haul base. The definition of “short-haul trailer” was deleted because the term has been replaced by “local-haul trailer.”

A definition of “trailer” has been added to improve clarity.

The term “U.S. EPA Approved SmartWay Technology” has been changed to “U.S. EPA Verified SmartWay Technology” and the term “U.S. EPA SmartWay Partnership Program” has been changed to “U.S. EPA SmartWay Transport Partnership Program” to be consistent with the program’s current terminology. Other minor modifications were made to these definitions, including an update of the U.S. EPA contact information.

Definitions for “compliant trailer,” “compliance year,” “conformance,” “delayed compliance trailer,” and “early compliance trailer” have been added to clarify the provisions of the Optional Trailer Fleet Compliance Schedules.

Definitions for “California-based broker” and “California-based shipper” have been added to clarify the applicability of this subarticle.

The definition of “dispatch” has been modified to improve clarity.

### **Requirements and Compliance Deadlines (section 95303) and Refrigerated Fleet Compliance Provision (section 95308):**

Subsection 95303(b), Trailer Requirements, has been restructured to specify the tire and aerodynamic technology requirements in separate subsections, and to delete an option that identified specific aerodynamic equipment that could be installed on dry-van trailers and refrigerated-van trailers for compliance. ARB deleted this language because the regulation establishes performance standards of 5% fuel savings for dry-van trailers and 4% fuel savings for refrigerated-van trailers, which makes specifying the aerodynamic equipment required to meet these standards unnecessary and potentially limiting.

In subsection 95303(b)(3), the compliance schedule requirements for a refrigerated-van trailer that is a model year 2003 through 2008 trailer equipped with a 2003 or subsequent model year transport refrigeration unit, has been added. These requirements were previously part of referenced subsection 95308. As a result of this restructuring of the regulation, subsection 95308 is no longer necessary and has been deleted. The subsequent subsections (formerly 95309 through 95312) are renumbered as 95308, 95309, 95310, and 95311, respectively.

Subsection 95303(c)(2) specifies the information a driver must provide to an authorized enforcement official. This subsection has been modified to improve clarity, and to

specify that the vehicle odometer reading is only required if the vehicle is an exempt short-haul tractor.

Subsection 95303(e)(3) is no longer necessary and has been deleted. It referenced the requirements of subsection 95308 which are now contained in subsection (b).

Subsections 95303(f), Requirements for California-based Brokers, and 95303(g), Requirements for Motor Carriers, have been modified to clarify that the requirements only apply to tractors and trailers dispatched for travel on California highways.

Subsection 95303(h), Requirements for California-Based Shippers, has been modified to clarify that a California-based shipper must not ship freight from its California facility or facilities in non-compliant tractors and trailers.

### **Exemptions (section 95305)**

Previously, the term “short-haul” was used to describe both tractors that travel less than 50,000 miles per year and those that travel within a 100 mile radius from their local haul base. It also was used to describe trailers that are restricted in travel within a 100 mile radius of their local haul base. To clarify the regulation, ARB redefined “short-haul” tractor as a tractor that travels less than 50,000 miles per year, and added the terms “local-haul” tractor and “local-haul” trailer to describe those tractors and trailers that are restricted in travel within a 100 mile radius. Changes have been made throughout section 95305 and 95306 to reflect this change in nomenclature.

Subsection (a) has been modified to reference the specific subsections from which a short-haul tractor is exempt, and to delete the listing of the criteria that define a short haul tractor since these criteria are identified in the definition of “short-haul tractor.”

A new subsection (b) has been added to identify the specific subsections from which a local-haul tractor is exempt, and those subsections with which it still must comply.

Subsection (b) has been renumbered to subsection (c) and has been modified to identify the specific subsections from which a local-haul trailer is exempt and those subsections with which it still must comply.

Subsection (c) has been renumbered to subsection (d) and has been modified for clarity.

A new subsection (e) has been added to identify the specific subsections from which a 53-foot or longer box-type trailer is exempted from when being pulled by a local-haul tractor.

A new subsection (f) has been added to identify the specific subsections a 2011 or subsequent model year sleeper cab HD tractor is exempted from when pulling a local-haul trailer.

## **Short-Haul Tractor and Short-Haul Trailer Exemption Requirements (section 95306)**

As discussed above, changes have been made throughout section 95306 to reflect the redefinition of “short-haul” tractors and trailers as “short-haul” tractors and “local-haul” tractors and trailers.

Subsection (a) has been modified to remove Executive Officer approval criteria from the short-haul and local-haul tractor and trailer exemption requirements. Approval is granted automatically as long as all requirements specified in section 95306 are met.

Subsections (b) through (e) have been modified to make the owner contact information required consistent with the information required in section 95307, Optional Fleet Compliance Schedules.

Subsection (f), the requirement to provide a map of the local-haul base location, originally thought to be a useful compliance tool, has been determined to be unnecessary and was deleted.

Subsection (g) has been renumbered as subsection (f) and has been modified to clearly identify the information required to be submitted to the Executive Officer. The statements required to be submitted have also been modified to reflect the removal of Executive Officer approval criteria from the exemption requirements.

New subsection (g) has been added to clarify how long the exemption will be in effect for owners of local-haul tractors or trailers; and to require owners to notify the Executive Officer of reported information changes.

Subsection (h), which defined the exemption period for all short-haul tractors and trailers as one year from the date of the approval letter, has been deleted.

New subsections (h) and (i) clarify that owners of local-haul tractors or trailers, and owners of short-haul tractors, are required to notify the Executive Officer and update applicable tractor and trailer fleet list information when these vehicles are removed from local or short haul service. The requirements state that this notification must occur prior to the vehicle’s change in ownership or prior to traveling on California highways, whichever comes first. The reason for this language is to ensure the exempt status of these vehicles is removed expeditiously. Also, in new subsection (i), a provision was added that does not allow a short-haul tractor that was dropped from an owner’s short-haul fleet to be added back into the fleet sooner than 3 years from the removal date. This language was added to prevent circumvention of the rule by opting in and out of the short-haul exemption fleet.

New subsection (j) has been added to clarify the length of time an exemption is in effect for an owner of a short-haul tractor.

Subsection (i) has been renumbered as subsection (k) and has been modified to clarify that drivers must, upon demand, provide the information specified in this subsection for exempt local-haul trailers.

New subsection (l) has been added to provide enforcement personnel the authority to directly view the odometer of HD tractors when enforcing the short-haul exemption 50,000 annual miles travelled requirement.

New subsections (m) through (o) have been added to clarify that exceeding the applicable limits for short-haul tractors (50,000 miles per year) and local-haul tractors and trailers (travel within a 100 mile radius of the vehicle's local-haul base) are violations of this subarticle.

### **Optional Trailer Fleet Compliance Schedules (section 95307)**

Section 95307 has been restructured for clarity and to allow for referencing of the requirements defined in the introductory eight paragraphs. The information contained in these paragraphs has been either deleted from this subarticle because it was redundant, transferred to new subsection (a) Trailer Fleet Compliance Schedule Applicability, transferred to section 95302 Definitions, or transferred to new subsections (f)(19) and (f)(20). To accommodate new subsection (a), subsections (a), (b), (c), (d), and (e) have been renumbered to subsections (b), (c), (d), (e), and (f), respectively.

In subsection (a), which has been renumbered as subsection (b), Large Fleet Compliance Schedule, and subsection (b), which has been renumbered as subsection (c), Small Fleet Compliance Schedule, the large and small fleet compliance threshold dates have been changed from December 31 to January 1. Also, for clarity the term "conformance" has replaced the term "compliance" where applicable. In addition, the requirement for the fleet owner to provide evidentiary documentation for early compliance trailers has been deleted, since information identifying the early compliance trailer is required as part of the trailer fleet list. Also, the requirements defining the maximum allowable number of delayed compliance trailers has been deleted and replaced with requirements defining the maximum allowable number of early compliance trailers. This change has been made because it is simpler for the fleet owner to determine the number of early compliance trailers, than to calculate the number of delayed compliance trailers. Finally, in subsections (b)(2) and (c)(2), the requirement for the fleet owner to provide a copy of the registration for each trailer listed on the trailer fleet list has been determined to be unnecessary and deleted.

In subsection (c), which has been renumbered as subsection (d), General Compliance Plan Components, the information required to be submitted in the trailer fleet list, subsection (d)(2), has been modified as follows:

- For clarity, the address information required to be provided has been specifically listed.

- New subsection (L) has been added requiring the DOORS (Diesel Off-road Online Reporting System) identification number of the owner's corporate parent to be submitted.
- Subsection (K) has been renumbered to subsection (M) and clarifies that owners that elect to participate in the large fleet compliance schedule are required to report all trailers that will operate in California, while owners that elect to participate in the small fleet compliance schedule are required to list all trailers that will operate both inside and outside California. Previously, small fleet owners were required only to list trailers that will operate in California. This change has been made to improve the enforceability of the small fleet compliance provisions.
- Subsection (N) identifies the information required to be submitted for each trailer participating in an optional compliance plan. Vehicle identification number, registration type, county of registration, exemption status, and California operating status were added to improve enforceability of the regulation. The information listed that is required for each refrigerated-van trailer listed in the trailer fleet list has been reduced from eight to two items: transport refrigeration unit (TRU) model year and TRU engine model year. ARB determined the six deleted information requirements were unnecessary to ensure compliance.

Subsection (c)(3), which has been renumbered as subsection (d)(3), has been modified to clarify which trailers are to be included in the compliance plan base list.

Subsection (c)(4), which has been renumbered as subsection (d)(4), has been modified to reflect terminology changes (compliance to conformance) and to clarify how the annual conformance commitment list is to be determined by the trailer owner. The requirement specifying how the trailers shall be listed has been deleted because it was determined by ARB to be unnecessary and overly prescriptive.

In subsection (d), which has been renumbered as subsection (e), Calculation Methodology, the calculation methodology has been modified. Equation 2 has been modified and renumbered to equation 3, and a new equation 2 has been added. These changes were made to remove trailers that will not travel on California highways from the calculation of the small fleet compliance plan base number. Equation 3 has been modified and renumbered to equation 5. The new equation 5 is used to calculate the maximum allowable number of early compliance trailers, rather than the maximum allowable delayed compliance trailers. As mentioned earlier, this change has been made because it is simpler for the fleet owner to calculate the number of early compliance trailers, than to calculate the number of delayed compliance trailers.

In subsection (e), which has been renumbered as subsection (f), General Requirements for all Compliance Schedules, requirements have been added or modified that:

- update the information to be provided as part of the trailer fleet list for clarity and to accommodate trailers based in Mexico and Canada,

- clarify that an owner participating in the small fleet compliance schedule may only operate a trailer in California that is included in the owner's trailer fleet list, unless the trailer is acquired after the compliance plan due date and is compliant with the equipment requirements of the regulation,
- allow a trailer owner to remove a trailer identified in the compliance plan base list and re-designate it as a local-haul trailer,
- allow compliance plan revisions for owners whose companies are affected by a merger, acquisition, split or other changed circumstance affecting operations,
- do not allow compliance plan participation for owners of affected businesses (i.e. motor carriers) that form after the compliance plan submission due date,
- clarify that the Executive Officer may make public the non-confidential information submitted pursuant to the optional fleet compliance plan requirements,
- clarify that the Executive Officer may terminate a fleet's participation in a compliance schedule if the fleet is found in violation of this subarticle,
- clarify the scenarios in which an owner participating in the large fleet compliance schedule may operate a trailer subject to the requirements of this subarticle, and
- clearly state that any violation of the requirements of subsection 95307 is a violation of this subarticle.

## **B. MODIFICATIONS MADE SUBSEQUENT TO THE 15-DAY PUBLIC COMMENT PERIOD**

After the 15-day comment period, ARB has made several nonsubstantive changes to the regulation as summarized below. Each of these modifications constitutes a nonsubstantial change to the regulatory text because, as described in greater detail below, each modification clarifies the text without materially altering the requirements, rights, responsibilities, conditions or prescriptions in the regulation as last circulated for public comment on September 17, 2009. In addition to the specific modifications described below, the regulatory text was modified to correct formatting and punctuation errors, none of which altered the meaning of the text. At several locations in the text where a list of requirements appeared without punctuation, semicolons were added after each item in the list and the word "and" was added before the final item in the list for consistency purposes. In each case where this was done, the regulatory text already made clear that the list was inclusive and that all items in the list had to be completed or provided as part of the requirement.

1. Section 95302
  - (a) Deleted definitions (25) “Front trailer fairing” and (50) “Trailer side skirt” and renumbered the remaining definitions. This change does not material alter the substance of the regulation because neither of the deleted terms were used anywhere in the modified text of the regulation.
  - (b) Deleted a stray letter that was inadvertently left in the text when the word “either” was marked for deletion from the definition for “Short-Haul Tractor” as part of the September 17, 2009 modifications circulated for public comment.
2. Sections 95300, 95301, 95302, 95303, 95306, and 95307  
The phrases “on California highways”, “on a California highway”, “on a highway within California”, “on a highway in California”, and “on highways in California” were used interchangeably in the September 17, 2009 text. For improved consistency and clarity, the phrase “on a highway within California” was substituted for each occurrence.
3. Sections 95303, 95306, and 95307  
The phrases “contact person’s name”, “name of contact”, and “contact’s name” were interchangeably used to designate “contact person’s name” for the fleet owner, the motor carrier or the broker. For improved consistency and clarity, these phrases were replaced with the phrase “contact person’s name.” Similarly, the term “contact’s title” was changed to “contact person’s title.”
4. Section 95306(n) and (o)  
Replaced the phrase “in an area” with the phrase “at a location” to improve clarity of the text. The phrase is used to identify a location that is farther than 100 miles away from the local-haul base for application of one of the regulation’s exemptions.

### **III. SUMMARY OF COMMENTS MADE DURING THE 45-DAY COMMENT PERIOD AND AT THE BOARD HEARING; AND AGENCY RESPONSES**

Written comments were received during the 45-day comment period in response to the October 24, 2008 public hearing notice, and written and oral comments were presented at the board hearing. It should be noted that this rulemaking was presented to the Board jointly with another heavy-duty vehicle regulation, Regulation to Reduce Emissions of Diesel Particulate Matter, Oxides of Nitrogen and Other Criteria Pollutants, and Greenhouse Gases from In-Use Heavy-Duty Diesel-Fueled Vehicles” (Truck and Bus Regulation). Written and oral comments provided for both rulemakings were carefully examined to determine whether they related to this rulemaking only, the Truck and Bus Regulation only, or both. This FSOR only addresses the relevant comments related to the GHG rulemaking.

Listed below are the organizations and individuals that provided comments during the 45-day comment period.

<b>Written Commentor (45-day Period)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Alford, Charlie	Alford Distributing Company	Alford
Altrichter, Kirk	Gorden Trucking, Inc.	GTI
Anderson, Mike	Mendicino County Board of Supervisors	MendicinoCo
Anonymous	None	Anonymous
Berry, Bob	None	Berry
Blubaugh, Timothy A.	Engine Manufacturers Association	EMA
Bowans, Jim	None	Bowans
Brian, Tom	None	Brian
Broad, Barry	California Teamsters Public Affairs Council	CTPAC
Burke, Rob	None	Burke
Burroughs, John	None	Burroughs
Bush, Kevin	None	Bush
Carey, Steve	National Trailer Dealers Association	NTDA
Charette, Larry	Silver Valley Propane	SVP
Cortie, Steve	None	Cortie
Costales, Ric	Siskiyou County	SiskiyouCo
Cox, Andy	Mike Campbell & Associates	MCA
Crum, Michael	Mike Crum Trucking	MCT
D., R.	None	R.D.
Davies, Les	None	Davies
DeVecchi, Randy	Industrial Drayage, Inc.	IDI
Denvir, Peter	None	Denvir
DiSalvo, Sal	None	DiSalvo
Doggett, Mike	None	Doggett
Eaton, Tom	None	Eaton
Elliff, Budd	None	Elliff
Ellington, Ty	Anza Gas Service, Inc.	AGSI
Faulkner, Ron	Faulkner Trucking, Inc.	FTI
Fitzgerald, Kathy	None	Fitzgerald
Fleck, Jonathan	Deflektor	Deflektor
Ford, Jim	C.R. England, Inc.	CREI
Fortier, Tim	None	Fortier
Frank, Susan	Submitted on behalf on the following organizations and individuals: Wafaa Aborashed, Bay Area Healthy 880 Communities – San Leandro; Don Anair, Union of Concerned Scientists;	MULTIPLE

<b>Written Commentor (45-day Period)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
	<p>Tina Andolina, Planning and Conservation League;  Diane Bailey, Natural Resources Defense Council;  Nidia Bautista, Coalition for Clean Air;  Brian Beveridge, West Oakland Environmental Indicators Project;  Rajiv Bhatia, MD, MPH;  Mara Burstein, Environment Now;  Patricia Castellanos, Los Angeles Alliance for a New Economy;  Tom Frantz, Association of Irrigated Residents;  Catherine Garoupa, Madera Coalition for Community Justice;  Elina Green, MPH, Long Beach Alliance for Children with Asthma;  Dede Greybeck, RN;  Kevin Hamilton &amp; Dr. David Pepper, Medical Advocates for Healthy Air;  Allyson Holman, Merced/Mariposa County Asthma Coalition;  Bonnie Holmes-Gen &amp; Linda Weiner, American Lung Association of California;  Andy Katz, Breathe California;  Lisa Kayser-Grant, Moms Clean Air Network;  Marylia Kelley, Tri-Valley Cares;  Dr. Michael Kelly, San Diego Regional Asthma Coalition;  Anne Lamb, Regional Asthma Management and Prevention &amp; Community Action to Fight Asthma;  Isaac Lieberman;  Angelo Logan, East Yard Communities for Environmental Justice;  Bill Magavern, Sierra Club;  Nury Martinez, Pacoima Beautiful;  Brent Newell, Center on Race, Poverty &amp; the Environment;  Jill Ratner, Rose Foundation for Communities and the Environment;</p>	

<b>Written Commentor (45-day Period)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
	Betsy Reifsnider, Catholic Charities, Diocese of Stockton; Sarah Sharpe, Fresno Metro Ministry; Jim Stewart, Earth Day Los Angeles; Madelyn Weiss, MD; Ed Welch, Save the Air in Nevada County; Ryan Wiggins, EndOil; Joy Williams, Environmental Health Coalition; Barbara Young, MA, Sonoma County Asthma Coalition;	
Gates, Cecil	Crown Fence Company	CFC
Gill, Rachelle	None	Gill
Goliti, Rob	None	Goliti
Grewal, Randy	None	Grewal
Groves Jr, William	None	Groves
Hall, Ron	C.R. England, Inc.	CREI2
Heilman, Ted	None	Heilman
Hobbs, Tony	Baker Trucking, Inc.	BTI
Hoffman, Curt	None	Hoffman
Howe, G.	D & H Transportation	DHT
Iaconis, Samuel	Sammy's Transportation, Inc.	STI
Ingram, Bill	None	Ingram
Jenkins, Larry	None	Jenkins
Jones, Gary	None	Jones1
Jones, Guy	None	Jones2
Keppel, Charles	None	Keppel
Klenske, Terry	Dalton Trucking, Inc.	DTI
Krauss, Kenneth	None	Krauss
Kustin, Camille	Environmental Defense Fund	EDF
Lawley, Rodney	None	Lawley
Liese, Valerie	Jack Jones Trucking, Inc.	JJTI
Lloyd, Kenny	None	Lloyd
Long, Larry and Dianne	L & D Transportion	LDT
Luiz, Tony	T&L Trucking LLC	TLTLLC
Malchow, Randal	None	Malchow
Mason, Bob	None	Mason
McGinnis, Patrick	None	McGinnis
Morton, Jim	Morton Trucking	MT
Murray, Michael	Glen County Board of Supervisors	GlenCo
Nard, Nancy	None	Nard

<b>Written Commentor (45-day Period)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Neal, Danny	None	Neal
Nelthorpe, Ron	None	Nelthorpe
Nielsen, Donald	Nielsen Trucking Co.	NTC
O'Sullivan, Dennis	Blue Star Gas Garberville Company	BSGGC
Panella, Matt	None	Panella
Perrigue, Grover	None	Perrigue
Phillips, Andrew	None	Phillips1
Phillips, John	None	Phillips2
Rader, Eric	None	Rader
Rasmussen, Karen	Arizona Trucking Association	AZTA
Renner, Mike	Rock Hard Transportation, Inc.	RHTI
Rose Padel, Deanne	None	RosePadel
Ross, Karen	None	Ross
Sambucetti, Don	None	Sambucetti1
Sambucetti, John	None	Sambucetti2
Sanders, Kit	None	Sanders
Sargent, Marie	None	Sargent
Sauer, Eric	California Trucking Association	CTA1
Schrap, Matt	California Trucking Association	CTA2
Senecal, Patty	International Warehouse Logistics Association	IWLA
Shallenberger, John	None	Shallenberger
Shuemake, Mike	Central Valley Trailer Repair, Inc.	CVTRI
Simon, Roger M.	Pioneer Trailer Sales	PTS
Smith, Frank	None	Smith
Smith, William N.	Smith Trucking, LLC	STLLC
Spainhoward, John	None	Spainhoward
Stallings, Rod	Rod's Truck Repair, Inc.	RTRI
Tata, Rajiv	Truck Trailer Manufacturer Association	TTMA
Taylor, Cheryl	Avenal Chimes Newspaper	ACN
Torres Jr., Joe	None	Torres
Torres, Chris	F & L Farms Trucking, Inc.	FLFTI
Tunnell, Michael	American Trucking Associations	ATA
Upfold, William	None	Upfold
Van Wingerden, June	None	VanWingerden
Vasconi, Andrew	None	Vasconi
Vercruyssen, Rene	None	Vercruyssen
Williamson, Daniel	None	Williamson
Wood, Richard	SOLUS-Solutions and Technologies LLC	SOLUS
Wright, C. Edmund	None	Wright
Yandell, John	Yandell Truckaway, Inc.	YTI

<b>Written Commentor (45-day Period)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Zinn, Richard	Rich Zinn Trucking	RZT

Additional written comments were received on the day of the public hearing from the following commentors.

<b>Written Commentor (Submitted at Hearing)</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Allen, David	Allenco Consulting Group	ACG
Banks, Sharon	Cascade Sierra Solutions	CSS
Fleck, Johnathan	Deflektor	Deflektor
Ganduglia, Jim	Agrium US Inc.	Agruim
Gaussoin, Gary	Silver Eagle Manufacturing Company	Silver Eagle
Kayes, David	Daimler Trucks North America	Daimler
Marsom, Matthew	Public Health Institute	PHI
Smith, Andrew	Advanced Transit Dynamics, Inc.	ATDynamics
Smith, Neil	Con-way Freight	Con-way
Tichelman, Robert	Windyne	Windyne

At the December 11, 2008 public hearing, oral testimony was presented by the following commentors.

<b>Oral Commentor at Hearing</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Acott, Andy	Laydon Composites	Laydon
Allen, David	Allenco Consulting	ACG
Anair, Don	Union of Concerned Scientists	UCS
Arriola, Anna	None	Arriola
Bailey, Diane	Natural Resources Defense Council	NRDC
Banks, Sharon	Cascade Sierra Solutions	CSS
Broad, Barry	California Teamsters Public Affairs Council	CTPAC
Cohen, Brian	None	Cohen
Collier, Michael	C.C. Mathes, Inc.	CDMI
Cox, Andy	Mike Campbell & Associates	MCA
Delbar, Michael	County of Mendocino	MendocinoCo
Diaz, Charles	Charles Diaz Trucking, Inc.	CDTI
Drisker, Tiana	Communities for Better Environment	CBE

<b>Oral Commentor at Hearing</b>	<b>Affiliation</b>	<b>Abbreviation</b>
Faulkner, Ron	Faulkner Trucking, Inc.	FTI
Fleck, John	Deflektor	Deflektor
Ganduglia, Jim	Ganduglia Trucking/Agrium US Inc.	Agrium
Gaussoin, Gary	Silver Eagle Manufacturing Co.	Silver Eagle
Goliti, Rob	Air Carrier	Goliti
Graham, Sean	Freight Wing, Inc.	Freight Wing
Hall, Ron	C.R. England, Inc.	CREI2
Hansen, Jacqui	Breathe California	Breathe
Holmes-Gen, Bonnie	American Lung Association	ALA
Kayes, David	Daimler Trucks North America	Daimler
Lopez, Felipe	Consejo de Federaciones de Estados Mexicanas	Lopez
Magavern, Bill	Sierra Club	Sierra
Marsom, Matthew	Public Health Insitute	PHI
Matheson, Mark	Matheson Trucking	Matheson
McDaniel, Michael	Continental Tire	Continental
Miller, Dan	Save Mart Supermarket	SMS
Nunes, Albert J.	A.C. Trucking	ACT
Paparian, Michael	California Pollution Control Financing Authority	CPCFA
Rees, Brian	California Poultry Foundation	CPF
Reifsnider, Betsy	Stockton Diocese	Diocese
Rose, Kathy	Nose Cone Manufacturing Co.	Nose Cone
Schrap, Matthew	California Trucking Association	CTA2
Senecal, Patty	International Warehousing & Logistics Association	IWLA
Shumake, Mike	Central Valley Trailer Repair	CVTRI
Simpson, Charlie	E.M. Tharp, Inc.	Tharp
Smith, Andrew	ATDynamics	ATDynamics
Smith, Neal	Con-Way Freight	Con-Way
Tichelman, Robert	Windyne	Windyne
Trump, Paul	Mike Campbell & Associates	MCA2
Tunnell, Michael	American Trucking Association	ATA
Yandell, John	Yandell Truckaway	YTI

Set forth below is a summary of each comment regarding the regulatory action as well as the agency response, including the explanation of how the regulation was changed to accommodate the comment or of the reasons for making no change to the regulation. Comments not involving objections or recommendations specifically directed toward the rulemaking or to the procedures followed by ARB in this rulemaking are not included.

The comments summarized below are divided into 13 subsections: (A) General Comments, (B) Scope of the Regulation, (C) U.S. EPA SmartWay Program, (D) Standards and Test Procedures, (E) Technology, (F) Safety, (G) Economic Impact, (H) Financial Assistance/Incentives, (I) Emission Inventory, (J) Outreach, (K) Implementation and Phase-in Schedule, (L) Compliance and Enforcement, and (M) Miscellaneous.

## **A. General Comments**

- 1. Comment:** The proposed regulation should not be adopted because the current economic situation is poor and truck owners do not have the financial means to comply with the requirements. It should be delayed and reviewed again at a later date when the economy can support such a program. (Doggett, DHT, DTI, Groves, Hoffman, JJTI, Malchow, Sargent, Shallenberger, VanWingerden, Vercruyssen, Williamson)

The state is already in bad shape. This regulation will cause more unemployment and financial hardship, especially to small businesses, in this state. (Burroughs, Bush, Denvir, Fitzgerald, Hoffman, Jones2, Krauss, Nard, Neal, MT, PTS, TLTLLC)

The proposed regulation places a significant economic risk on the State and jeopardizes future viability in almost every industry. Your responsibility is not only to the health of the people and our environment but also to their financial welfare. (Vasconi)

We are in a financial crisis. Do we want to strap small businesses and run them out of business, cause the State to lose the kind of revenue that you're talking about here, in a time when we need to worry about the coffers of the State? (ACG, Agrium)

The proposed regulation is a sure way to add to the closure and bankruptcy woes. We need to continue research and find additional ways to clean up the air. It is not timely given the economy. (Jones1)

The proposed standards are too aggressive. The economy is slumbering and will become comatose if we do not incentivize instead of penalize. (Torres)

**Agency Response:** The California Global Warming Solutions Act of 2006 (AB32) was enacted to address the immediate need to mitigate climate change and its harmful effects. Unmitigated, climate change is expected to have significant societal and ecological impacts including, but not limited to, increased health care, fire fighting, and flood prevention costs, increased public exposure to toxic air contaminants, and the destruction of existing environmental resources. Therefore, it is critical that we act now in order to avoid more serious consequences that we would otherwise encounter in the

future due to our inaction. Many measures will be adopted pursuant to AB32 in the coming years, but this regulation in particular is one that has been designated as a discrete early action item, which means it must set forth requirements that are enforceable starting January 1, 2010. Because of this statutory mandate and the urgent need to begin reducing greenhouse gas emissions at this time, this regulation cannot be delayed. That said, while the primary goal of this regulation is to combat climate change and its harmful effects by reducing greenhouse gas emissions, the measure is also expected to reduce energy costs and stimulate the economy. By requiring tractors and trailers to become more efficient, this regulation is expected to reduce long-term costs for the freight transportation industry. The cost of fuel is a significant expenditure in this industry and even modest efficiency improvements will result in very substantial fuel savings. ARB realizes the capital costs needed for compliance may be difficult for many fleets in this current economic climate. As such, to help ease these costs, the regulation provides gradual compliance phase-in options for 2010 and older model year trailers, the group of vehicles expected to require the largest capital investment to bring into compliance. In addition, ARB has also been working to make financial assistance programs available to those businesses affected by this regulation. A summary of some available financial assistance and grant programs may be found in Section I of the Staff Report. See also agency responses in section H, Financial Assistance/Incentives, for more information about available financial assistance resources and the current economic climate.

- 2. Comment:** Please consider a flexible and attainable policy that will not hurt the business environment. Consider a more manageable approach to support businesses. (BSGGC, Cortie, Panella, RTRI, TLTLLC)

**Agency Response:** See agency response to comment #1. In addition, the regulation incorporates flexibility for businesses through the optional fleet compliance plans. These plans allow fleets to choose to delay some of their up-front costs and phase-in compliance over several years (4 years for small fleets with less than 21 trailers, and 5 years for large fleets with 21 or more trailers; large fleets may get an additional year if they meet certain early compliance requirements).

- 3. Comment:** All the issues associated with the proposed regulation have not been considered. The Board should look at all aspects of the proposed regulation, including the impact on the supply chain, the state and local economy, and unemployment rates, as well as the long term ramifications. The proposed regulation will devastate the trucking industry and their vendors and suppliers. The Board should make decisions that will be beneficial to all involved and allow businesses to continue doing business in the State. (FTI)

**Agency Response:** As stated in the Staff Report: Initial Statement of Reasons for Proposed Rulemaking (Staff Report), The California Global

Warming Solutions Act of 2006 (AB 32) requires that climate change regulations must consider the impacts on the economy of the state. The consideration should include, but not be limited to, the impacts of the regulations on jobs and businesses, and California business competitiveness. In its analysis, ARB determined that, over the course of an 11-year equipment lifespan, from 2010 to 2020, affected stakeholders should realize an approximate net savings of \$8.6 billion in 2008-dollar values. While there will be modest up-front costs associated with the regulation before the fuel savings occur, ARB anticipates that with the optional compliance phase-in programs incorporated in the regulation, businesses will be able to defer some of the costs of retrofits over a several year period. In addition, for those smaller businesses that may have difficulty financing these upgrades, financial assistance will be available to assist them. A summary of some available financial assistance and grant programs may be found in Section I of the Staff Report. See also agency responses in section H, Financial Assistance/Incentives, for more information about available financial assistance resources and the current economic climate

The regulation will also likely increase demand for aerodynamic devices and low-rolling resistance tires, which may result in the creation or expansion of businesses involved in the manufacturing, distributing, and marketing of these devices.

4. **Comment:** We believe that California does not have the authority to impose these and any other state-specific equipment requirements on interstate vehicles. The interstate and global nature of commerce today requires United States motor carriers to operate equipment compliant with the laws and regulations of all states, Canada, and Mexico. (AZTA)

**Agency Response:** It is true that motor carriers must use equipment that is compliant with the law and regulations of all states and nations where the equipment is being operated. In the United States, individual states are allowed to adopt rules relating to operation of vehicles when there is a legitimate state interest in regulating and the rules do not violate the Commerce Clause of the United States Constitution.

The rulemaking record, including the Staff Report and the Board resolution adopting the regulation, establishes California's strong interest in adopting measures to curb the emissions of greenhouse gases, including through AB 32 early action items such as this one. This regulation and others developed by ARB under authority of AB 32 represent an exercise of the state's police powers to protect public health, traditionally a function of states.

This measure only regulates tractors and trailers that are operating within California. It does not directly regulate or discriminate against interstate commerce, substantially impede the flow of interstate commerce, or have an

effect that favors in-state economic interests over out-of-state interests. In addition, the regulation's indirect effects on interstate commerce are incidental and minor, particularly when compared to the public health benefits that will be achieved as a result of the measure's implementation and the fact that the cost to vehicle owners of installing and maintaining the equipment will typically be recouped in a few years through fuel savings. The regulation is also designed to give operators ample time to decide what equipment they will operate in California and to bring that equipment into compliance on a reasonable schedule. Considering all of this, ARB does not believe the regulation violates the Commerce Clause under the balancing test used by the courts to analyze state regulations affecting interstate commerce.

ARB also notes that the regulation does not introduce a new state standard or certification program, but relies on an existing federal certification program that is known to and has been utilized by equipment manufacturers and makes use of equipment certified under that program mandatory in California.

5. **Comment:** Having to dedicate a fleet or portion of a fleet to one state's requirements is extremely costly and inefficient. In today's economic environment, the regulation imposes unacceptable costs on the businesses least able to absorb these increases. (AZTA)

**Agency Response:** The regulation does not mandate how fleets from outside California may choose to comply, as long as they meet the requirements when operating in California. However, the regulation does offer optional compliance schedules that will allow fleets time to phase-in compliance, thereby deferring much of the up-front costs over several years. In addition, complying with this regulation will save fleets money, over time. As stated in agency response to comment #3, ARB's analysis determined that, over the course of an 11-year equipment lifespan, from 2010 to 2020, affected stakeholders should realize an approximate net savings of \$8.6 billion in 2008 dollar values. ARB further determined that individual fleets will, on average, recoup the costs to comply over a 2.3-year period (based on a trailer-to-tractor ratio of 2.5-to-1 and an estimated fuel cost of \$3.14 per gallon).

6. **Comment:** ARB should consider the developing national landscape of fuel efficiency requirements and GHG emission standards for heavy-duty vehicles. Reducing GHG emissions from products like commercial vehicles – which fundamentally operate in interstate commerce and must be manufactured to be sold and operated in all states – would be most effectively accomplished under a harmonized set of regulations across the United States. ARB should work with interested stakeholders, including United States Department of Transportation (DOT) and the United States Environmental Protection Agency (U.S. EPA), to develop performance-based standards, and use those as a basis of an integrated program to effectively reduce fuel consumed by the commercial trucking industry. (EMA)

**Agency Response:** AB 32 requires ARB to develop and implement the regulation in California, beginning January 1, 2010. That timeframe cannot be delayed until a federal rulemaking is developed and implemented. That being said, ARB is collaborating with the U.S. EPA as they enhance the SmartWay program standards, which are the basis for this regulation's standards.

7. **Comment:** We respectfully request that the Board vote "no" on the proposed regulation because we oppose a rule that mandates unproven and costly technologies. (AZTA)

**Agency Response:** The regulation's technology requirements are based upon the U.S. EPA SmartWay program. This program uses established test methods, demonstrating the benefits of U.S. EPA's verified SmartWay technologies. Thus, owners can be confident in the benefits of the verified technologies and have the option of choosing any vehicle or technology that SmartWay has certified or verified to meet the minimum performance standard required by this rule. While there is some initial, modest up-front cost associated with the regulation before fuel gains occur, ARB has determined that, over the course of an 11-year equipment lifespan, from 2010 to 2020, affected stakeholders should realize an approximate net savings of \$8.6 billion in 2008 dollar values.

8. **Comment:** California and its government agencies are insensitive and blind to the concerns of the trucking industry and the needs of the people. (Doggett, Elliff, Keppel, Lloyd, LDT, MT, Taylor)

**Agency Response:** ARB is not insensitive or blind to the concerns of the trucking industry and the needs of the people. Required under California's regulatory processes, ARB analyzes both the economic impact and benefits on the affected business industry and the citizens of California. Throughout the process of developing the regulation, ARB sought input from representatives of the trucking industry, as well as other stakeholder groups who will be impacted by the regulation. ARB has incorporated as much flexibility in the regulation as is feasible (in terms of offering optional phase-in opportunities) while still meeting the goals of AB 32.

9. **Comment:** The United Nations Intergovernmental Panel on Climate Change Technical Paper VI, the technical basis for global warming, is not sufficient justification for the proposed regulation. The words used in the paper, "likely," "high confidence," and "assume," are not the most convincing words of science. (Lloyd)

**Agency Response:** The basis for the regulation is the California Global Warming Solutions Act of 2006 (AB 32), which was passed by the legislature and signed into law by Governor Schwarzenegger. It set into law a requirement

to reduce greenhouse gas emissions in California to 1990 levels by the year 2020. To accomplish this, it directed ARB to develop discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases by 2020. The current regulation is one of the identified discrete early action measures. It is beyond the scope of this regulation to address the veracity of words used in the above-mentioned United Nations document.

- 10. Comment:** The regulations will not bring global carbon dioxide levels down by any significant level. That process is occurring naturally, and must be given more time to occur. (Jones2)

**Agency Response:** As stated previously, AB 32 set into law a requirement to reduce greenhouse gas emissions in California to 1990 levels by the year 2020. To accomplish this, it directed ARB to develop discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from sources or categories of sources of greenhouse gases by 2020. The regulation is one of many measures developed by ARB to meet the requirements of AB 32, either as discrete early action measures, or through various measures identified in the scoping plan. Thus, while any one measure may not reduce global carbon dioxide levels significantly to reverse climate change, the combined impact of all the proposed measures is designed to achieve the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions from a wide range of sources by the year 2020.

- 11. Comment:** We would like to see a “level playing field” for California-based companies in relation to out-of-state competitors. (ACT, CPF, Matheson, Goliti)

**Agency Response:** The regulation requires all affected fleets (tractor-trailers with 53-foot or longer box-type trailers) that travel long haul on California highways, regardless of their state or country of origin, to comply with its requirements. Thus, the regulation will not give out-of-state carriers that do business in California undue advantage over California-based companies.

- 12. Comment:** These rules are late in the making and take too long to implement. I urge quick passage, fast and full implementation of these rules. (Cohen)

**Agency Response:** As one of the discrete early action measures mandated by AB 32, the regulation must become enforceable by January 1, 2010. Implementation for new (2011 and newer model year) tractors and trailers will begin on January 1, 2010, while implementation for pre-2011 model year tractors and trailers will be phased in over several years, to allow fleets time to

comply while still achieving the targeted greenhouse gas emission savings by 2020.

- 13. Comment:** We have several trailers running across the nation with all different types of aerodynamics on them. We think it's a great thing. But we would like to see you not make it unilateral across the trucking industry, because aerodynamics don't always benefit all driving situations. (Matheson)

**Agency Response:** This regulation does not impose requirements unilaterally across the trucking industry, but rather targets long-haul tractors (that pull 53-foot and longer box-type trailers), because these vehicles are more likely to benefit from using aerodynamic devices. On average, long-haul tractor-trailers tend to travel at high enough speeds to realize significant fuel efficiency savings from using aerodynamic devices. The regulation also provides exemptions for equipment that operate locally or infrequently that will not benefit from the technology and will not benefit the goals of reducing greenhouse gases. Fleets have the option to select the devices that best meet their needs and circumstances from among the devices verified by the SmartWay program. As more equipment manufacturers submit applications to have their devices verified by SmartWay, ARB anticipates that fleets will have even more equipment options from which to choose.

- 14. Comment:** We object to being subjected to multiple rules (TRU, HDVGHG, Truck and Bus) impacting tractors and trailers (CDMI, MCA2, Mendocino Co, Goliti)

**Agency Response:** ARB recognizes that some carriers will be impacted by multiple rules promulgated by ARB. For that reason the regulation provides optional compliance phase-in opportunities. Specifically, rather than bring their entire trailer fleet into compliance on January 1, 2013, fleets may opt for the large fleet compliance phase-in or the small fleet compliance phase-in, both of which provide additional time to bring fleets into compliance. In addition, for fleets with refrigerated-van trailers with model years 2003 through 2008 transport refrigeration units (TRUs), additional time to comply is provided due to the impact of the Airborne Toxic Control Measure (ATCM) for TRU and TRU generator sets.

- 15. Comment:** Truckers purchase new tractors and trailers that comply with regulations established by the government. Now, you want us to shoulder the burden of extra equipment for retrofit even though the equipment when purchased already complied with the applicable regulations. (JJTI)

**Agency Response:** For 2010 and older model year tractors, the regulation only requires the use of SmartWay verified low-rolling-resistance tires starting January 1, 2012. ARB believes this requirement provides sufficient lead time for most fleets to exhaust the usefulness of their existing tires before having to

switch to SmartWay verified models. Therefore, ARB expects the incremental cost of this requirement to be small and primarily attributed to the cost difference between a SmartWay verified tire and a standard tire. Staff consulted with many fleets during the development of this regulation, and based on the responses of those that had experience with SmartWay verified tires, the incremental cost of purchasing such tires ranged between \$0 and \$50 per tire. However, despite the additional cost of SmartWay verified tire models, the general consensus was that the investment was worthwhile due to the fuel savings that were realized.

For 2010 and older model year box-type trailers, the regulation requires the retrofit of such trailers with SmartWay verified aerodynamic devices, in addition to SmartWay verified tires, before January 1, 2013, or in accordance with one of the optional trailer fleet compliance schedules. This is because 1) SmartWay verified aerodynamic retrofits are available for trailers at reasonable cost and 2) box-type trailers can be used for many years without being replaced, so natural turnover of these trailers cannot be relied upon to obtain the greenhouse gas reductions needed to fulfill the goals of AB 32. Although retrofitting such trailers will require a substantial capital investment from affected fleets, ARB expects the technologies required by this regulation to pay for themselves over time through fuel savings. And since the optional trailer fleet compliance schedules allow fleets to gradually phase in compliance over several years, participating fleets will be able to reinvest the money they save from early retrofits into retrofits for trailers that are scheduled for later compliance years.

- 16. Comment:** California is too far ahead of the rest of the country on its regulatory requirements. As a result, it will be difficult for the trucking industry to comply with these requirements. (Brian)

**Agency Response:** ARB acknowledges that ARB often takes a leading role in the nation in developing regulations to curtail air pollution and protect the health and welfare of the people of California. At the same time, ARB has incorporated as much flexibility in the regulation as possible (within the constraints of AB 32) to allow the trucking industry time to comply. The regulation provides optional compliance phase-in opportunities. Specifically, rather than bring their entire trailer fleet into compliance on January 1, 2013, fleets may opt for the large fleet compliance phase-in or the small fleet compliance phase-in, both of which provide additional time to bring fleets into compliance. In addition, for fleets with refrigerated-van trailers with model years 2003 through 2008 and transport refrigeration units (TRUs) with 2003 or later model years, additional time to comply is provided due to the impact of the Airborne Toxic Control Measure (ATCM) for TRU and TRU generator sets.

- 17. Comment:** In lieu of the proposed regulation, it would be more reasonable to test individual trucks to see how much pollution is emitted and then create

programs that will assist owners of polluting equipment to make the needed changes. (LDT)

**Agency Response:** The regulation, based upon the AB 32 mandate to reduce California's greenhouse gas emissions to 1990 levels by the year 2020, is part of an extensive program to reduce carbon dioxide emissions in California from all sources. In developing this regulation ARB was required by AB 32 to consider how to achieve "the maximum technologically feasible and cost-effective reductions in greenhouse gas emissions." Therefore, this regulation is designed to improve the fuel efficiency of all affected tractors and trailers through the use of aerodynamic technologies and low rolling resistance tires to reduce their CO2 emissions from current levels. In regards to the commenter's suggestion about testing individual trucks, ARB does not believe such testing is necessary because SmartWay verified low-rolling-resistance tires and aerodynamic technologies are expected to significantly reduce the greenhouse gas emissions and improve the fuel economy of any long-haul combination vehicle regardless of its baseline emission level. Regarding the commenter's suggestion about creating programs to assist owners, there are a number of financial assistance programs that are currently available. Please see section I of the Staff Report and agency response to comment #111 for more information about financial assistance and grant programs.

- 18. Comment:** The way the truck rules and the Transport Refrigeration Unit (TRU) rules are dealt with has been unfair and without regard to the actual technology available when the rules are made and voted on. (Heilman)

**Agency Response:** ARB is uncertain about how this comment specifically pertains to the regulation, but will respond to the comment nevertheless. As illustrated in the Staff Report, ARB investigated the types of aerodynamic technologies and low rolling resistance tires certified or verified by the SmartWay program and has determined that there are numerous technologies available to meet the requirements. Thus, technologies needed to comply with the regulation are available in the marketplace today and ARB expects an even greater selection of technologies when implementation of the regulation begins.

- 19. Comment:** ATA's efforts to achieve these goals are captured in our sustainable plan entitled *Strategies for Reducing the Trucking Industry's Carbon Footprint*. The recommendations set out real solutions for the trucking industry that are achievable today to reduce greenhouse gases. The six key recommendations set out in the report are as follows:
- Enact a national 65 mph speed limit and govern maximum truck speeds at 65 mph;
  - Decrease idling;
  - Reduce highway congestion through highway infrastructure improvements;
  - Increase fuel efficiency through U.S. EPA's SmartWay Program;

- Promote the use of more productive truck combinations; and
- Support national fuel economy standards for medium- and heavy-duty trucks.

(ATA, Con-way)

**Agency Response:** ARB commends the commenters for their proactive plan and encourages them to pursue each of the six key strategic recommendations. Any efforts taken to reduce greenhouse gases produced by the trucking industry beyond the requirement of this regulation can only enhance the effectiveness of the regulation and the requirements of AB 32.

## B. Scope of the Regulation

20. **Comment:** We identified in recent analysis that making full use of these products could improve the emission reductions by 50 percent. According to staff estimates, 50 percent increases in the regulation would result in 3.5 million metric tons of greenhouse gas emission reductions in 2020 – a significant improvement. All of these are cost effective. They can be achieved with today’s technology. We estimated over \$30,000 in net cost savings with these technologies with payback periods as short as two years. We ask that the Board resolve to come back to this issue in one year’s time to get additional reductions and specifically to look at tractor-trailer combinations that have not been included in the proposal and also for new trucks and trailers not affected by the regulation. (UCS)

The Board should direct staff to return in 6 months time with further recommendations to reduce global warming emissions from heavy-duty trucks, which is not limited to the requirements of the SmartWay program. Staff should include an evaluation of the emission reductions possible from more stringent standards for new tractors, trailers, and straight trucks, such as requiring a full suite of aerodynamic and tire technologies on these vehicles. (MULTIPLE)

We urge you to adopt this regulation today, but a more aggressive standard is possible with the technology that’s on the market today. (UCS, Sierra)

**Agency Response:** The regulation requires new and existing 53-foot box-type trailers and the tractors that pull them to be equipped with SmartWay approved aerodynamic and tire technologies when operating on California highways. These technologies are verified through the SmartWay Program to meet performance and fuel efficiency requirements for long-haul tractors and trailers. The requirements mirror those of the current SmartWay Program, applying to 53-foot box-type dry-van trailers and tractors that pull them. In addition, the regulation extends these requirements to apply to another type of box-type trailers, 53-foot refrigerated van trailers, because these trailers are similar to dry-van trailers, thereby allowing the dry-van SmartWay verified aerodynamic

equipment (except front trailer fairings) and tires to be applied to refrigerated van trailers without modification. Expanding the required use of the technologies to include even more types of trailers as suggested by the commenters, however, would require an additional verification program beyond the scope of the SmartWay verification program that would have to take into account performance, fuel efficiency and other factors. A new technology verification program would be necessary because these types of trailers are substantially different from dry-van trailers. Such a program does not exist at this time and would require substantial resources and time to develop.

In addition, the commenter suggested the application of the full suite of technologies to tractor-trailers. The full suite of technologies entails all the types of trailer aerodynamic technologies (front trailer fairings, skirts, and rear trailer fairings), a SmartWay certified tractor, and low-rolling resistance tires. The regulation requires the latter two items as well as a combination of technologies which meet a minimum percentage fuel savings, rather than all of the available technologies. Requiring the full suite of technologies on the trailer was not part of staff's proposal to the Board because some of the technologies may be too restrictive or impractical for certain types of box-type trailers at this time. In addition, requiring every available type of technology may unreasonably limit the flexibility of fleets to apply technologies that would achieve maximum fuel savings without hindering operational needs.

- 21. Comment:** To increase the level of emission reductions achieved through this proposed regulation, the Board should apply tire requirements to all tractor-trailers, not just tractors pulling van trailers and remove the 100-mile range limit exemption. Including these two changes would increase overall benefits by 20 percent or more and not conflict with SmartWay program requirements. (EDF, MULTIPLE)

Expand the tire requirements to additional tractor and trailer types. (UCS)

**Agency Response:** Because this regulation was designated as a discrete early action measure under AB 32, ARB did not have time to evaluate the impact of the requirements on other vehicle types. For the equipment requirements of the regulation, ARB relied solely upon the existing U.S. EPA SmartWay program, which currently only addresses the use of efficiency technologies on combination vehicles composed of a tractor and a 53-foot van trailer. In order to expand the regulation to include other tractor-trailer combinations, a separate rulemaking process would be necessary, and the owners of these other types of combination vehicles would have to be notified. That way, it would give these owners an opportunity to make ARB aware of any potential issues or problems the requirements could cause for their particular combination vehicle type. This process is necessary to ensure that ARB develops a regulation that is both feasible and effective.

ARB concurs that the 100-mile range exemption limit for tire requirements on affected tractors and trailers be removed because the tire requirements are cost effective and reduce GHG emissions when applied to locally operated tractors and trailers. This modification was suggested at the Board Hearing and approved. It has been noticed to the public as part of the Notice of Public Availability of Modified Text (15-day Notice).

- 22. Comment:** An extremely common truck trip is between Los Angeles and Bakersfield, a 115 mile trip that features only 25 miles at freeway speeds since trucks can only go 35 miles per hour over the Grapevine before descending into or emerging from congested Los Angeles traffic. A 100 mile radius would close off Bakersfield to all but side skirt-equipped trucks despite the fact that only a small proportion of travel would occur at freeway speeds. For example, a truck making a round trip to Bakersfield only once each day of the year would accrue over 80,000 annual miles, but spend less than 25 percent of its mileage at freeway speeds. Due to these mileage limitations, CTA is requesting that ARB increase the short haul radius exemption to 150 miles. This will help carriers achieve maximum efficiency benefits within the state. (CTA)

The mileage and territory limitations on the short haul exemption are still too restrictive. The mileage restrictions appear to be based upon an assumption that trucks and trailers work five, ten hour days. In fact, trucks and trailers typically work seven-day weeks with service hours reaching up to 20 hours per day, when multiple drivers are used. For example, grocery trucks regularly total 150,000 miles per year within a 150 mile radius and a trucking making a round trip to Bakersfield from Los Angeles only once each day of the year would accrue over 80,000 annual miles, but spend less than 25 percent of its mileage at freeway speeds. CTA recommends that ARB set the exemption standard for tractors at 100,000 miles per year or 150 mile radius. (CTA2)

The mileage requirement for the short-haul exemption should be increased to 200 miles to protect California carriers. The current short-haul exemption is too narrow to incorporate fuel-efficiency gains in urban congestion areas. A truck trip from Los Angeles to Bakersfield, San Francisco or San Diego is more than 100 miles, which means that the truck making this trip would be required to be compliant. However, the projected fuel efficiency gained by the proposed rule needs to be weighed against the urban congestion of the four trade corridors in California. (IWLA)

**Agency Response:** Since aerodynamic equipment functions optimally at highway speeds, the regulation contains exemptions for trucks that operate primarily within a local area with mostly urban driving, or for trucks with low annual mileage. These exempted trucks, defined as local-haul or short-haul trucks, must operate exclusively within a 100 mile radius from their local haul base or drive less than 50,000 miles per year, respectively. The 100 mile radius distance is calculated in a straight line (i.e., "as the crow flies") rather

than by the distance on the road. The straight line distance between Bakersfield and Los Angeles is about 100 miles; therefore a truck traveling between these two cities may be exempt from the requirements, depending on the starting and ending destinations.

The commenters did not provide data to substantiate their claims of mileage and driving speeds. However, assuming the information is correct, the required aerodynamic improvements will still provide substantial fuel savings. First, a truck that operates 80,000 annual miles with 25 percent of its mileage at freeway speeds will have about 20,000 annual miles at freeway speeds. Assuming a fuel economy of 6 miles per gallon, a 7 percent increase in fuel efficiency (using a compliant day cab and refrigerated trailer) will be achieved due to the requirements, which will result in an annual savings of almost 220 gallons of fuel. Second, if a vehicle operates for 20 hours per day with multiple drivers, a large portion of those driving hours will occur during the night or mid-day when urban congestion is at a minimum and vehicles can operate at highway speeds. This will result in the percent of operating time at highway speeds being significantly higher than 25 percent, thereby resulting in even greater fuel savings. Note that while aerodynamic equipment provides the greatest fuel economy benefit at highway speeds, data show that some fuel savings will be achieved at lower cruise speeds as well.

The primary purpose of allowing a short-haul or local-haul exemption is to exempt vehicles that will only marginally benefit from aerodynamic equipment, where the use of them will not be cost effective. Increasing the annual mileage limit or the distance from the home base is unnecessary because it would exempt many trucks that will benefit from the requirements.

- 23. Comment:** Trailers should have their own short haul exemption mileage and territory standards because a trailer may be used only for short haul purposes but may be pulled by a tractor that must be compliant because of mileage or territorial radius standards. CTA recommends that ARB set the exemption standard for trailers at 100,000 miles per year or 150 mile radius. (CTA2)

**Agency Response:** The regulation contains an exemption for trailers that are used for local haul purposes (i.e., operate only within a 100 mile radius of their local base) but does not include a mileage exemption. Since trailers do not have odometers to record mileage, an annual mileage limit was not proposed. See also agency response to comment #22.

- 24. Comment:** The mileage radius of the 53-foot short haul trailer exemption should be increased to 150 miles to mirror the U.S. DOT short haul radius. (YTI)

**Agency Response:** ARB is uncertain as to which specific U.S. DOT short-haul definition the commenter is referring to since a reference was not given.

However, ARB is aware of a U.S. DOT 150-mile radius definition, but is applicable only for non-commercial driver's licenses. California law requires that all operators of tractors pulling 53-foot box-type trailers possess commercial driver's licenses. Under the Hours of Service regulation of the U.S. DOT, a short haul operator with a commercial driver's license is one that operates within a 100 air-miles of such operator's normal work reporting location (Note that 1 air-mile is equal to 6,076 feet, or 1.15 statute miles.) The provisions under this U.S. DOT regulation specify the maximum driving time and minimum rest time allowable within a certain period of time.

### C. U.S. EPA SmartWay Program

25. **Comment:** The federal SmartWay program was meant as a complete package, not individual components thereof. They rely on 13 different strategies, including idle reduction, improved aerodynamics, improved freight logistics, automatic tire inflation systems, single wide base tires, driver training, low viscosity lubricants, intermodal shipping, longer combination vehicles, reducing highway speed, weight reduction, hybrid power train technology and renewable fuels. The California ARB is ignoring many of the strategies that can be utilized to increase fuel efficiency and reduce pollution that contributes to climate change. The US EPA estimates that improved aerodynamics for trucks and trailers could reduce 20 metric tons (MT) of CO<sub>2</sub> annually. While that number is large, it accounts for less than 20% of the total decrease in greenhouse gases through the ARB's SmartWay recommended strategies that can be used to promote fuel economy. Not included in the ARB's plans are the following CO<sub>2</sub>-reducing methods: improving freight logistics (24 MT), automatic tire inflation (1 MT), singlewide base tires (4 MT), training (8 MT), low viscosity lubricants (5 MT), intermodal shipping (~65% reduction), combination vehicles (34 MT), reduced speed (10MT), weight reduction (3 MT), hybrid power trains (12 MT), and renewable fuels (varies). As you can see, a company that only trains its drivers and improves freight logistics will reduce 50% more GHG than a company employing aerodynamics. Choosing only one aspect of the US EPA's SmartWay program and ignoring the others is entirely ignorant in its reasoning. (MCA)

**Agency Response:** As one of the nine discrete early action items identified by ARB in October 2007 to reduce GHG, the regulation was put on the fast track for development, and earmarked by the Board to be adopted and enforceable by January 1, 2010. The short timeframe for its development necessitated that ARB rely on the existing U.S. EPA SmartWay program to identify enforceable GHG reduction requirements. As such, in establishing the scope of this regulation, ARB limited the regulation to two basic strategies: use of new SmartWay certified tractors and trailers; and use of improved aerodynamics and low-rolling resistance tires for both in-use long-haul heavy-duty tractors and in-use 53-foot box-type trailers. ARB chose these two strategies because they

are commercially available, pay for themselves in a relatively short period of time, and have been verified by the SmartWay program to provide significant GHG emission reductions. Establishing enforceable requirements to address improved freight logistics, training, low-viscosity lubricants, and intermodal shipping would make the regulation much more complex and greatly increase the number of different stakeholders impacted. As such, ARB concluded that it was not feasible to consider these strategies as part of a discrete early action regulation. However, ARB is committed to considering these strategies as part of future rulemakings.

- 26. Comment:** There are other means available to meet the desired fuel efficiencies and therefore the corresponding emission reductions with alternative means of compliance, making use of various tractor and trailer technologies in combinations that suit a particular company's operational characteristics rather than the one size fits all approach being proposed. Rather than unfunded, untested mandates, we ask that ARB allow alternative means of compliance, including consideration that a carrier with the highest SmartWay score possible would be considered in compliance with the proposed rules. (Con-way)

**Agency Response:** The regulation is designed to be the first step in regulating GHG emissions in California from the long-haul trucking industry. The regulation requires the use of low-rolling resistance tires and aerodynamic technologies on those tractor and trailer applications where real, quantifiable GHG emission reductions can be gained. ARB agrees with the commenter that there are other means of reducing GHG emissions from a fleet, and that these should be pursued either voluntarily or under the purview of future rulemakings. However, it was not appropriate to consider these options in the current rulemaking given the short timeframe for its development.

The characterization of the regulation as a "one size fits all approach" is not accurate. During the regulatory development process, staff held numerous meetings and several public workshops where concerned stakeholders informed staff of how the operational characteristics of their fleets would make compliance with the regulation impractical or result in little GHG benefit. Staff also met with U.S. EPA SmartWay program administrators, fleets that are currently using the SmartWay certified and verified technologies, and manufacturers of aerodynamic technologies and low-rolling resistance tires. From the information gathered, ARB identified specific exemptions from the required use of aerodynamic improvements and/or low-rolling resistance tires. These included short haul and local haul fleet applications, drayage tractors and trailers, curtain-side trailers, solid-waste vehicle applications, container chassis applications, and drop frame vans. Also, the regulation allows flexibility in choosing the specific types of SmartWay verified aerodynamic technologies that can be used for compliance when retrofitting a trailer. For example, a company whose operational characteristics require the trailer to access very

steep loading docks may elect to retrofit their trailers with rear trailer fairings rather than trailer side skirts.

The characterization that the requirements of the regulation are untested is not accurate. The GHG emission benefits associated with the use of these technologies has been verified by the U.S. EPA in accordance with industry accepted test methods as required under the SmartWay program.

Although providing funding for compliance is not mandatory, ARB does provide some financial assistance to help owners purchase SmartWay certified tractors and trailers, SmartWay verified aerodynamic equipment and low-rolling resistance tires. Additional financing assistance may be obtained through the U.S. EPA SmartWay program. For additional information about financing, see agency response to comment #145.

- 27. Comment:** I think SmartWay is being underfunded, and it's a bit of a dilemma of a horse to hitch to right now. (Silver Eagle)

**Agency Response:** Much of the work to establish certification and verification of SmartWay technologies has already been accomplished. There are products in the market place approved by the SmartWay program that meet the requirements of this regulation. Congress is considering a bill that would appropriate additional funds to support the SmartWay program. If for any reason U.S. EPA dissolves the SmartWay program in the future, ARB would consider whether to make changes to its regulation to establish a certification/verification program in California to take the place of the federal program.

- 28. Comment:** SmartWay was designed as a system for the EPA, and not as certain pieces that you can pull out of it. (Tharp)

**Agency Response:** The SmartWay program was designed to provide tools and strategies to improve the environmental performance of the freight delivery system in the United States. One of the ways a carrier can improve performance is to use SmartWay certified tractors, SmartWay certified trailers, or to retrofit his or her existing fleet of trailers with SmartWay verified aerodynamic technologies and low-rolling resistance tires. A list of current SmartWay certified and verified tractors, trailers, aerodynamic technologies, and tires is provided by the U.S. EPA and is currently available on their website at <http://www.epa.gov/smartway/transport/what-smartway/verified-technologies.htm#advanced> . The current regulation establishes requirements to use SmartWay certified and verified equipment while traveling in California. ARB believes that it is appropriate to require the use of SmartWay certified and verified equipment without incorporating other aspects of the SmartWay program.

- 29. Comment:** One of the primary reasons for the success of the SmartWay Partnership program is that it allows its partner companies the latitude to adopt fuel-saving technologies and strategies that are tailored to their individual business practices, rather than forcing them to employ generic approaches that may not work in their operations. The SmartWay program provides tools for fleets to evaluate and reduce greenhouse gas emissions. These tools include more than just the aerodynamic devices. There are a host of mechanisms that fleets can look at and evaluate what will work best for them. The HDVGHG regulation in the present case requires specific equipment to be installed on tractors and trailers with inadequate consideration given to operating environment, equipment performance and maintenance, and potential benefits. (ATA, Con-way)

**Agency Response:** The regulation establishes requirements to improve aerodynamics and reduce rolling resistance on that segment of the long-haul trucking industry where it is feasible and practical. During the regulatory development process, staff held numerous meetings and several public workshops where concerned stakeholders informed staff of how the operational characteristics of their fleets would make compliance with the regulation impractical or result in little GHG benefit. Staff also met with representatives of freight carriers whose fleets are currently using the SmartWay certified and verified technologies, and with the manufacturers of aerodynamic technologies and low-rolling resistance tires. From the information gathered, ARB identified specific exemptions from the requirements of the regulation. These included short haul and local haul fleet applications, drayage tractors and trailers, curtain-side trailers, solid-waste vehicle applications, container chassis applications, and drop frame vans. Also, the regulation allows flexibility in choosing the specific types of SmartWay verified aerodynamic technologies that can be used for compliance when retrofitting a trailer. For example, a company whose operational characteristics require the trailer to access very steep loading docks may elect to retrofit their trailers with rear trailer fairings rather than trailer side skirts.

Staff's discussions with fleets that utilize aerodynamic devices on their tractors and trailers revealed that, in general, their tractors and trailers did not require significantly more maintenance than do vehicles without the devices. Most of the fleets indicated that the maintenance needed for tractor fairings was minimal; and although some reported damage to trailer skirts, it was often caused by driver error, loading, and environmental conditions. ARB estimated the cost of maintenance and repair to be, on average, \$120 per year per trailer. However, the fuel savings from installing aerodynamic technologies and low-rolling resistance tires will allow the owner of a tractor-trailer combination to recover maintenance costs (and initial capital costs) over time. More detailed information on the economic benefits of this regulation can be found in Section XII of the Staff Report.

The environmental benefit from this regulation is projected to be 1.0 million metric tons (MMT) of CO<sub>2</sub> equivalent emissions in 2020. Nationwide the benefits are projected to be 6.7 MMT of CO<sub>2</sub> equivalent emissions in 2020. In addition to GHG benefits, reducing aerodynamic drag and rolling resistance will also reduce NO<sub>x</sub> emissions. More detailed information on the environmental benefits of this regulation can be found in Section XI of the Staff Report.

- 30. Comment:** ARB'S proposed program takes two specific aspects of SmartWay – tractor and trailer certification – and mistakenly assumes that those factors, by themselves, will improve the efficiency of all carriers operating in California. ARB should recognize that the ability of shippers and carriers to custom tailor the multitude of factors in SmartWay to their individual needs has made it successful, and ARB should include the flexible use of such multiple factors in its program. If a carrier must purchase vehicles from a limited list, it may no longer have access to the unique specifications that provide it with maximum hauling efficiency, operational efficiency, and a consistent platform for drivers and technicians. ARB forfeits SmartWay's effectiveness by excluding what makes it successful and does not provide a sound basis for improving fuel efficiency. (EMA)

**Agency Response:** The scope of this regulation is focused on mandating aerodynamic technology improvements from the long-haul trucking industry that will result in GHG emission reductions. Specifically, this regulation is designed to reduce the GHG emissions from on-road long-haul heavy-duty tractors pulling 53 foot or longer box-type trailers by requiring both the tractors and trailers to be equipped with aerodynamic technologies and low-rolling resistance tires that improve fuel efficiency. The fuel savings associated with the required technologies has been verified by the SmartWay program using established test methods. To the extent that a carrier uses tractors and trailers that are compliant, the fuel consumption and GHG emissions from those tractors will be reduced. Although this regulation relies on the SmartWay program to certify the GHG emission reductions of compliant tractors and trailers, it was never ARB's intent to broaden the focus of this regulation to encompass all aspects of the SmartWay program.

Regarding the commenter's concern about a carrier having to purchase vehicles from a limited list, a SmartWay certified tractor can be configured for specific applications (e.g. engine-size, transmission) allowing carriers to obtain maximum hauling efficiency. Similarly, SmartWay certified trailers and existing trailers that are retrofitted with SmartWay verified aerodynamic devices can be configured to accommodate the specific needs of the carrier. For example, a SmartWay certified dry-van trailer can meet the requirements by installing verified trailer side skirts, but if ground clearance is a concern for the carrier, a verified rear trailer fairing may be a better option to comply with the requirements.

- 31. Comment:** One of the hallmarks of the SmartWay program, and an element of its success, has been the changing and expanding list of measures and factors that allow shippers and carriers to tailor flexible SmartWay criteria to their unique operations. A voluntary program can be successful with such “continuous improvement” and evolving framework. The same is not true for a regulatory program – where lead-time, stability and certainty are essential elements of success. By linking its HDVGHG regulation to the changing and evolving elements of the SmartWay program, ARB fails to provide the lead-time, stability and regulatory certainty that manufacturers and users require. (EMA)

**Agency Response:** ARB anticipates that the regulation will result in greater use of SmartWay certified tractors and trailers and deployment of SmartWay devices on non-certified vehicles. But the flexibility in the existing SmartWay program that the commenter applauds will not be eliminated by the decision to require use of certified technologies and devices on specified vehicles using California highways. In fact, ARB anticipates the trend noted by the commenter of expanding options and lists of available equipment will continue after the regulation is effective as additional products are certified and approved by U.S. EPA. If anything, greater demand for SmartWay certified products would be expected to increase the number and type of products being developed and marketed. As the list of tractors, trailers, aerodynamic equipment, and tires changes and evolves, those subject to the regulation will have more flexibility and choice in how they elect to comply with the regulation. In short, the regulation’s reliance on the existing SmartWay program means that manufacturers and users can choose from an existing pool of proven and tested technologies that are expected to evolve and expand over time.

ARB has incorporated as much lead-time as possible given the immediacy of the impacts of climate change and AB 32’s direction that discrete early action measures be enforceable by January 1, 2010. Within those constraints, ARB has incorporated opportunities for fleets to phase-in compliance over a period of several years.

- 32. Comment:** The current SmartWay program has an arbitrary list of several models from each manufacturer meeting a simplified set of specifications. As the program grows, it will transition from this to an objective, performance-based certification. EMA is actively working with U.S. EPA to develop a cost-effective, objective, performance-based fuel efficiency measurement method. However, this is a very difficult undertaking, and a robust, repeatable and validated method of measuring fuel efficiency currently does not exist. Without other measures or an appropriate certification method, simply requiring the use of tractors from the SmartWay list may not reduce a carrier’s overall fuel consumption. (EMA)

**Agency Response:** The current list of SmartWay certified tractor models includes the most fuel-efficient tractors offered by individual manufacturers based on an existing test protocol and scientific reasoning. To characterize the current list of SmartWay tractor models as an “arbitrary list” is inaccurate. For each SmartWay certified tractor model, the manufacturer had to provide U.S. EPA with data supporting the manufacturer’s claim that it represents the most fuel efficient of their entire on-road line-up. The data had to be obtained using an industry-accepted method, e.g. computational fluid dynamics (CFD) modeling, wind tunnel testing, or track testing in accordance with *Joint TMC/SAE J1321 Fuel Consumption Test procedure Type II RP J1321 (SAE J1321)*. In addition, each SmartWay certified tractor must have a 2007-or-newer U.S. EPA certified engine, and be equipped with additional aerodynamic features (fuel tank fairings, aerodynamic bumper, integrated roof fairing) and low-rolling resistance tires. Requiring the use of aerodynamic features was based on fuel-savings data from technical literature, including testing and analysis by the Department of Energy (DOE) Consortium for Aerodynamic Drag of Heavy Vehicles led by Lawrence Livermore National Laboratory. Manufacturers of SmartWay certified tractors must only use tires that have demonstrated fuel savings as determined using one of the following industry accepted methods: the *SAE J1321 test protocol* demonstrating a 3% or greater fuel savings or the *SAE J1269 Tire Rolling Resistance Test* demonstrating the tire’s rolling resistance coefficient complies with SmartWay target values.

However, ARB agrees that the approach described above, while established on performance based test methods, is limited in that it can only be used to identify the most fuel efficient models within one vehicle make. That is why the Board directed staff at this regulation’s hearing on December 11-12, 2008 to work with U.S. EPA on developing a protocol under which the performance of all vehicles could be compared with each other. U.S. EPA has recently released an interim performance-based protocol which allows these comparisons, and all new tractors will have to be certified in accordance with this new protocol. ARB believes this new interim protocol is a valid protocol upon which to base SmartWay tractor certifications and is confident that it sufficiently addresses the concerns brought up by the Board.

- 33. Comment:** The SmartWay program was invented to allow personal choice and incentives to the truck owners. Allowing the SmartWay program to operate as it is intended will result in older less efficient equipment gradually retiring with less hardship to truck and trailer operators and our state’s economy. (PTS)

**Agency Response:** The SmartWay program has been in place since 2004, but only a relatively small number of tractors and trailers on the road are SmartWay certified. This is especially true for trailers where less than one half of one percent of the inventory of 53-foot box-type trailers have been retrofitted with aerodynamic technologies. Given the conservative nature of the long-haul transport industry, ARB believes that implementing the regulation which

requires a majority of the California long-haul tractor and trailer inventory to use aerodynamic technologies by 2020, is necessary to achieve the GHG reductions needed to achieve the goals of AB 32. Besides significantly reducing GHG emissions, this regulation will also result in significant cost saving by reducing the amount of fuel trucking companies will need to purchase. Therefore, it is not reasonable to wait for the gradual vehicle turnover when both GHG emission reductions and cost savings can be achieved now by retrofitting the fleet.

- 34. Comment:** We request that ARB not make mandatory the proposed requirements for trailers based on the SmartWay Partnership Program. In the meantime, we suggest that California create additional financial incentives to help persuade companies in adopting the voluntary SmartWay program. (CBTRI, NTDA)

**Agency Response:** See the agency response to comment #25 and #33 for a discussion of the reason for making part of the SmartWay program mandatory. In addition, ARB offers financial assistance for vehicles subject to the regulation through the Providing Loan Assistance for California Equipment (PLACE) Program for On-Road Vehicles. The PLACE Program provides small business owners with competitive rate loans to purchase compliant tractors and trailers.

- 35. Comment:** SmartWay certification is not adequate for establishing mandatory requirements for trailers. Mandated technologies must meet not only fuel savings standard but also durability, performance, safety, and vocational requirements, elements which are currently not present in the SmartWay certification. Aerodynamic trailer technologies are not mature enough to meet such requirements for a mandatory program; these technologies may be adequate for a voluntary program because truck owners can decide which options make business sense for them and can choose those that do. Staff has failed to understand the differences between the certification standards that are adequate for a voluntary program and those for a mandatory program. Also, staff's knowledge base is not adequate to make judgments about what mandatory combinations of aerodynamic options make sense for all 53-foot or longer trailers that serve California, such as staff's erroneous assumption that the joint potential benefits of different technologies is the sum of individual benefits. CTA recommends that ARB defer aerodynamic trailer upgrade requirements and grandfather the current trailer fleet under the proposed rule. In the interim, ARB should work with U.S. EPA to develop certification criteria that meet the performance, vocational, and safety requirements needed to support a mandatory upgrade program. (CTA2)

**Agency Response:** ARB believes it is appropriate to base the requirements of the regulation on the SmartWay certification and verification program. This regulation requires 53-foot box type trailers pulled by heavy-duty tractors to

either be SmartWay certified trailers or to be retrofitted with SmartWay verified aerodynamic devices that have been demonstrated to meet or exceed a 4% to 5% fuel savings. The SmartWay program establishes industry-accepted test methods for evaluating the fuel savings potential of using aerodynamic technologies and low-rolling resistance tires on both tractors and trailers. ARB believes it is appropriate, and necessary, to rely on the SmartWay program when establishing the requirements in order to ensure GHG reductions are achieved in the timeframe dictated by AB 32. As a discrete early action measure, the regulation must be implemented no later than January 1, 2010; it is therefore necessary to rely on the existing SmartWay program to certify/verify fuel savings performance. Developing an ARB certification and verification program or waiting for the U.S. EPA to develop additional performance certification criteria was not considered as part of this rulemaking because of the additional time it would take to develop and adopt such a program.

The regulation does not mandate the use of specific aerodynamic technologies, such as trailer side skirts or front trailer fairings, but instead requires the trailer owner to install any combination of SmartWay verified aerodynamic technologies that will meet or exceed the fuel savings requirement.

SmartWay certified trailers and verified aerodynamic technologies are currently being designed by manufacturers to stand up to the real-world durability, performance, safety, and vocational needs of tractor and trailer fleets. Several trailer fleets have equipped their trailers with SmartWay verified aerodynamic technologies and are currently pulling these trailers on U.S. and Canadian highways. New and improved versions are being developed in response to fleet experience and needs. This process is happening outside of the requirements of the regulation in response to the increased demand for these products because they offer fuel savings. Summaries of fleet experiences with SmartWay certified trailers and verified technologies can be found in Section IX of the Staff Report.

Manufacturers of aerodynamic technologies have been addressing issues of safety, durability, and vocational use (e.g. steep loading docks, inclement weather). ARB did not consider any of these issues to be significant enough to delay or stop the promulgation of this regulation. This is supported by the fleets that are currently using compliant tractors and trailers on the road today.

#### **D. Standards and Test Procedures**

- 36. Comment:** We object to the greenhouse gas proposal because there actually is no test protocol or guideline for certifying SmartWay vehicles and there is no thorough process for certifying vehicles. (Daimler)

**Agency Response:** There is a protocol in place for certifying SmartWay tractors and SmartWay trailers. The protocol for certifying SmartWay tractors is discussed in the agency response to Comment #32. The process for certifying a SmartWay trailer is discussed in Appendix B of the Staff Report.

37. **Comment:** Only after developing a scientifically rigorous procedure should ARB regulate vehicles based on SmartWay certification. The SmartWay program is not based upon a scientific measure of tractors' aerodynamics or fuel saving capability. A clear, uniform set of test procedures and selection criteria is nonexistent. The selection and number of eligible vehicles for SmartWay certification are determined by individual manufacturers. Manufacturers that have not already participated in the program are not eligible for SmartWay certification. ARB should work with U.S. EPA to develop a rigorous procedure to compare the fuel efficiency of HDVs and to determine SmartWay eligibility as well as with the DOT. (Daimler)

The certification process for aerodynamic technologies should employ a broad set of data and information sources to evaluate and certify cost-effective and operationally practical devices that reduce fuel use and reduce emissions rather than rely on the SmartWay program. The certification should rely upon all aerodynamic technology test procedures of the Society of Automotive Engineers (SAE) and Technology and Maintenance Council (TMC) of the American Trucking Association (ATA) as well as in-use industry data for evaluation and certification of technologies. For example, SAE/TMC Type II test requirements do not account for many factors in testing such as cross-flow or changes in speed, whereas TMC Type IV accounts for these Type II limitations. The SmartWay program has not established a clear set of industry-relative scientific, engineering, and user-based criteria for the certification of aerodynamic technologies. In addition, the SmartWay criteria are highly limited and device specific and will restrict the options available to fleets, stifle competition and innovation, and result in higher costs. (SOLUS)

**Agency Response:** See also agency response #32. As a discrete early action measure, the regulation is designed to be implemented no later than January 1, 2010, relying on the existing SmartWay program to certify/verify fuel savings performance. Developing an ARB certification and verification program or waiting for the U.S. EPA to develop additional performance certification criteria was not considered as part of this rulemaking because of the additional time it would take to develop and adopt such a program.

Despite this, U.S. EPA has recently released new performance-based eligibility criteria for SmartWay certification, which allows for the comparison of vehicle models from different manufacturers. Therefore, all new SmartWay tractor certifications will be based on this new protocol, and some of the previous limitations of the SmartWay certification program have been eliminated. For instance, it is now possible for one manufacturer to certify more than two

tractors as long as the tractors are more efficient than any existing SmartWay certified tractor. In addition, as additional tractors are certified and more data become available, those looking to purchase tractors will be able to compare SmartWay certified models from different manufacturers.

The commenter claims manufacturers that have not previously participated in the SmartWay program are not eligible for SmartWay certification. This claim is false, as U.S. EPA has a protocol in place just for that purpose. (See agency response to comment #32).

- 38. Comment:** The vehicles selected for the SmartWay program were done on a sort of “you know it when you see it” idea of what constitutes an aerodynamic vehicle. It was done in such a way that there is the very real possibility that some vehicles that are more efficient than SmartWay certified vehicles are actually not SmartWay certified and may be barred from pulling the most common trailers on the roads. And, therefore, you run the very real possibility of barring from California roads vehicles based upon no scientific reason. (Daimler)

**Agency Response:** The SmartWay program has established a procedure for designating specific tractor models as SmartWay certified that is based on scientific reasoning. See the agency response to comment #32 for a description of the procedure. Tractors that are more efficient than SmartWay certified tractor models can be certified in accordance with this procedure. All manufacturers are eligible to certify one or more tractor models. New tractor models can be certified at any time.

- 39. Comment:** As an alternative, or perhaps as an interim measure, ARB can require technologies, with rigorous specifications, that have been scientifically demonstrated to improve efficiency. This may start with the U.S. EPA’s list of SmartWay add-on technologies: fuel tank side fairings, cab roof fairings, cab side extenders, aerodynamic mirrors, aerodynamic bumpers, idle reduction technologies, and low rolling resistance tires. (Daimler)

**Agency Response:** The regulation fulfills what the commenter is requesting. In addition to testing showing the tractor meets the performance requirement, SmartWay certified tractors are also required to have certain components, include the components listed by the commenter. Specifically, a SmartWay certified tractor must be equipped with all of the following:

- EPA-certified engine that meets 2007 or newer federal emission standards
- Integrated roof fairing
- Cab side extender fairings
- Side fuel tank fairings
- Aerodynamic mirrors
- Aerodynamic bumper
- Low-rolling resistance tires

- Idle reduction system capability

**40. Comment:** SmartWay really doesn't have a testing protocol. They are trying to develop one. It's based only on test tracks. Temperature, 68 degrees to 86 degrees. So you couldn't prove a product that might be the best thing going at this time of year. (Silver Eagle)

**Agency Response:** See agency response to comment #32.

**41. Comment:** I think you should have rules that regulate for performance, not for methodology, to keep things open. You should allow for proven devices. If people can prove to the Air Resources Board that these things meet your requirements, your performance requirements, you should accept them. (Silver Eagle)

**Agency Response:** The regulation establishes levels of fuel efficiency savings that may be met on the basis of performance – as determined by the U.S. EPA SmartWay program. Due to the short turnaround time associated with the development of this regulation, it was not feasible for ARB to develop our own verification program before the mandated implementation date of January 1, 2010. Thus, the regulation accepts the use of aerodynamic devices that have been SmartWay verified to meet certain performance requirements. As new aerodynamic technologies are verified by the SmartWay program, they may be used to comply with the regulation.

**42. Comment:** What I want to take a look at, and what SmartWay vehemently supports me on, is the fact that the standards that they identified at 6.5 percent are over two and a half years old and are based around older technology that was low in its capabilities at the time it was originally developed... Don't have a bar set so low that the transportation industry will put a two percent belly fairing on, a two percent gap fairing, and a two percent boat tail, meeting their six percent number, leaving very little room to go (grow?). Consider raising the number from 6.5 to 8.5 percent, because once SmartWay gets their testing protocol in place, they're going to raise that number themselves. (Windyne)

**Agency Response:** The regulation standards are based upon the levels established by the U.S. EPA SmartWay program. At the present time, SmartWay has established a minimum aerodynamic fuel efficiency savings of 5% for dry vans and 4% for refrigerated vans (excluding the low rolling resistance tire requirement which adds an additional 1.5% per trailer). If SmartWay increases these standards in the future, ARB will likely propose to incorporate those changes in a subsequent regulation. In the interim, however, as technological advances provide opportunities for greater savings, nothing in the regulation limits fleets from utilizing them and achieving greater fuel efficiency savings.

- 43. Comment:** Currently if you use the 6.5 percent standards and the current products from the marketplace, you're going to have to identify three of those areas to just meet that 6 percent, leaving very little room to add another product and increase the number as it goes by. (Windyne)

**Agency Response:** For a dry-van trailer subject to the regulation, SmartWay specifies a 6.5% fuel efficiency savings, based on a 5% reduction from aerodynamic devices, and an additional 1.5% from low rolling resistance tires. A fleet may select any combination of aerodynamic devices to meet the standard, including several devices that meet or exceed it or a single device, such as the advanced trailer skirts that are estimated to achieve at least a 5% fuel savings. In that case, a fleet has the option to achieve even greater savings by using the most efficient or additional aerodynamic devices.

- 44. Comment:** If the SmartWay efficiency requirements are increased in the future, it would be unfair to the transporters who put this equipment on their trailers. Are you going to then grandfather them in, or are you going to require them to take the stuff off and then meet the new compliance numbers? (Windyne)

**Agency Response:** ARB anticipates that once a fleet brings a trailer into compliance with the regulation using aerodynamic equipment that was SmartWay verified at the time of purchase, they would not be required to replace that equipment on the same trailer, should the standards become more stringent at a later time. Any future changes to this regulation would not force the replacement of installed equipment on a trailer used to meet this rule. However, it may affect the reinstallation of equipment if the original equipment was damaged and needed to be replaced. Note that any future changes to this rule would go through the same public rulemaking process, allowing comments and suggestions by affected stakeholders.

- 45. Comment:** All of the tests that the ARB has used to prove the fuel efficiency of SmartWay technologies were done at 62 MPH. These tests should be thrown out, as the California truck speed limit is 55 MPH over the majority of roads, or change the California truck speed limit to 65 MPH. (MCA)

**Agency Response:** ARB does not believe the SmartWay verification testing for fuel saving technologies is invalid because the testing was done at a vehicle speeds that exceed California's speed limit for heavy-duty tractor trailers. Nor does ARB believe it is necessary to increase the speed limit for heavy-duty tractor trailers from 55 mph to 65 mph. The verification test method, U.S. EPA's SmartWay Interim Test method, defines requirements that allow for the comparison of the performance of fuel savings technologies to a set standard. The regulation requires aerodynamic technologies to meet either a 4% or 5% fuel savings requirement, depending on their application. This verification test method allows maximum speeds of up to 65mph – the actual speeds of the test

vehicles were between 60 and 62 mph. Although the posted speed limit for tractor trailers on California highways is 55 miles per hour (mph), the average speed for tractor trailers that are driven on California highways is somewhat higher. Data collected by the Freeway Performance Measurement System (PeMS), a project headed by the University of California at Berkeley, show that the average vehicle miles traveled (VMT) weighted statewide average tractor trailer speed to be 59.7 mph. For southern California, the average is lower at 57.07 mph. Based on these data, the difference between test vehicle speed and average speed on California highways ranges from 0.3 mph to 5 mph. Regardless of the actual difference between test speeds and the on-road speeds, the primary purpose of this test method is to evaluate the fuel efficiency performance of different aerodynamic technologies under set conditions, not to predict the fuel efficiency benefit from using a specific technology on a specific fleet under real-world conditions. The test method provides the means to meet this goal.

- 46. Comment:** The US EPA’s study of rolling friction vs. aerodynamic drag shows that friction is only overcome by aerodynamics at constant speeds above 50 MPH. Considering the average CA highway speed (48.43 MPH), the aerodynamics do not come into play for trucks driving on California highways. In fact, requiring solely these aerodynamic technologies on all of a fleet’s trailers that extend past a 50-mile radius will make the same trailers that are used for short haul applications lose fuel efficiency, use more fuel, and cause more air pollution. In the end, the ARB’s efforts do not seem well-planned and could easily end up hurting the air quality that the ARB is fighting for. (MCA)

**Agency Response:** ARB agrees with the commenter that at slower speeds the power required to overcome rolling resistance can be greater than the power required to overcome aerodynamic drag. However, ARB does not agree with the commenter that aerodynamic drag does not come into play for tractor trailer rigs that travel on California highways. The commenter states that the average speed on California highways is 48.43 MPH. ARB believes the average speed is actually closer to 57 mph (See agency response to comment #45.) Regardless, ARB believes the regulation’s requirement for the use of aerodynamic technologies will reduce the power required (and fuel consumption rate) to operate tractor trailer rigs, even at much lower speeds.

The power required to maintain constant vehicle speed on a level road is equal to the sum of the power required to overcome the aerodynamic drag plus the rolling resistance experienced at that speed, as shown in this equation:

$$P = \underbrace{\frac{1}{2} \rho_a C_D A V^3}_{\text{Aerodynamic drag}} + \underbrace{\mu MgV}_{\text{Rolling resistance}}$$

Where:

- P = power
- $\rho_a$  = air density
- $C_D$  = aerodynamic drag coefficient
- A = vehicle frontal area
- $\mu$  = tire rolling resistance coefficient
- Mg = vehicle weight
- V = vehicle speed

Figure 1 shows graphically the power (in units of horsepower) required to overcome both aerodynamic drag and rolling resistance on a level road, assuming density of air is 0.75 pounds per cubic foot at sea level,  $C_D$  is 0.6, A is 108 square feet,  $\mu$  is 0.006, Mg is 80,000 pounds and V is 20 to 80 miles per hour (MPH), which are values consistent with a typical Class 8 tractor trailer rig. The commenter stated that U.S. EPA studies shows that rolling friction is overcome by aerodynamics at constant speeds above 50 mph. In the figure, this is graphically shown where the two curves intersect, at 55 mph. As shown, at speeds below 55 mph, rolling resistance requires more power to sustain vehicle speed than aerodynamic drag. However, a tractor trailer rig traveling at any appreciable speeds must always overcome both forces, especially at highway speeds where both forces are significant.

Figure 1: Horsepower Required to Overcome Rolling Resistance and Aero Drag

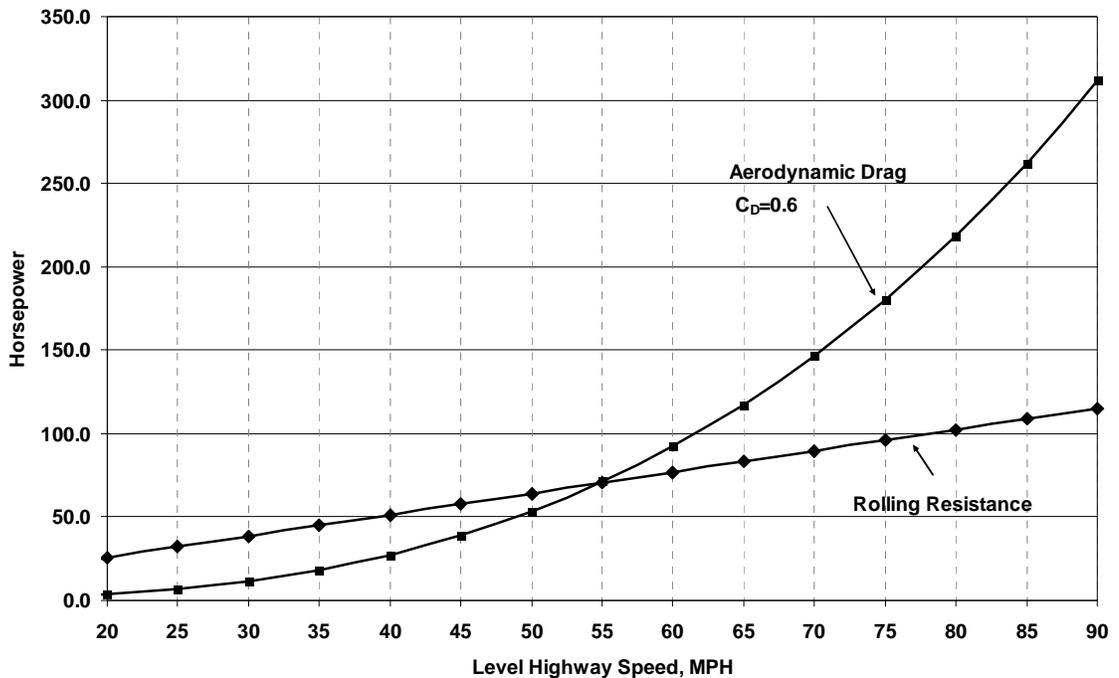
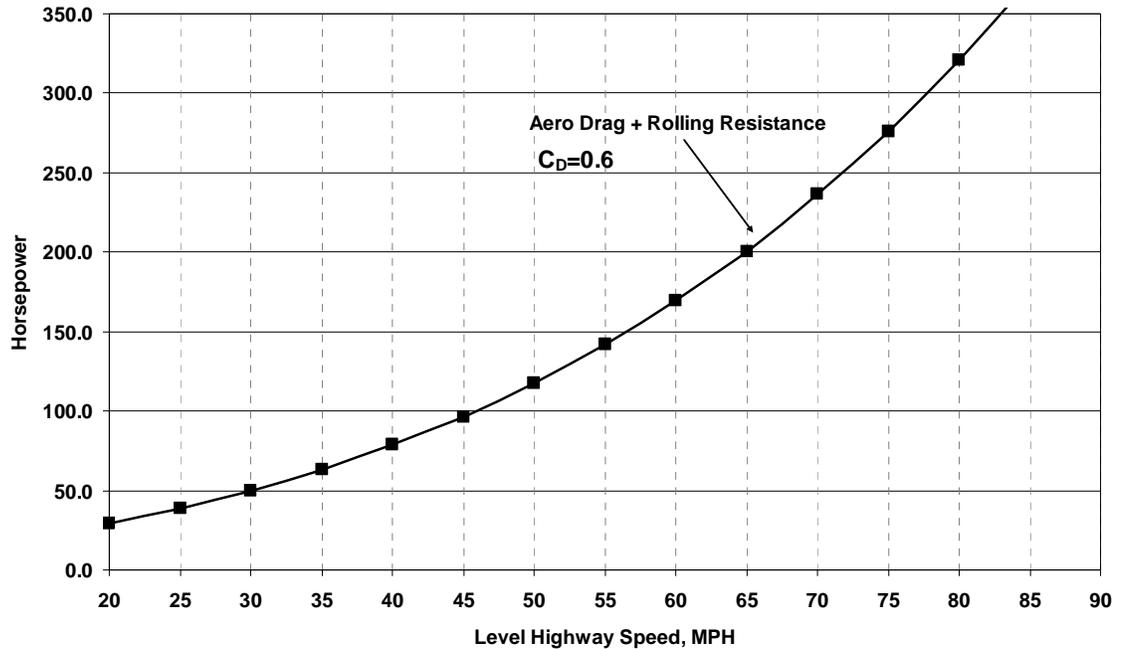


Figure 2 below shows graphically the total power requirements to overcome rolling resistance AND aerodynamic drag. The horsepower requirements of

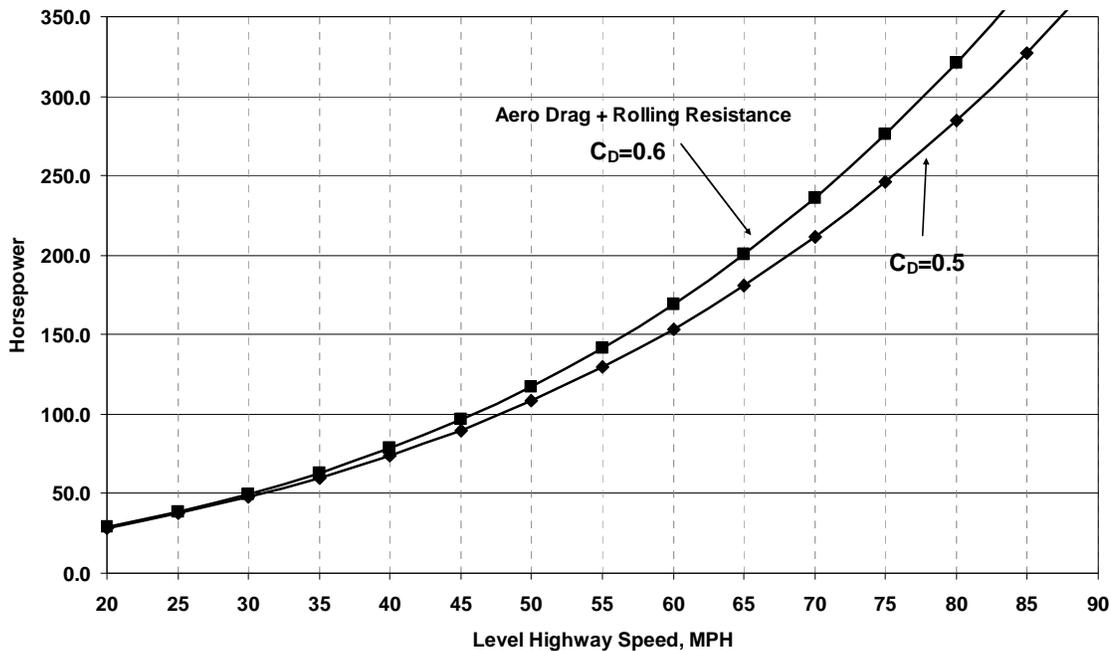
rolling resistance and aerodynamic drag shown above in Figure 1 are added together.

Figure 2: Sum of Horsepower Required to Overcome Rolling Resistance and Aerodynamic Drag



The regulation will require that aerodynamic technologies be installed to reduce aerodynamic drag. Figure 3 below shows the effect of installing technologies that reduce aerodynamic drag, such that the coefficient of drag ( $C_D$ ) for the tractor trailer rig is reduced from 0.6 to 0.5. As shown, the benefit of aerodynamic technologies at low vehicle speeds is minimal. However, even at 48 MPH, there is still a significant benefit gained by using aerodynamic technologies.

Figure 3: Impact of Decreasing Aerodynamic Drag



The regulatory requirements will have a positive impact on the fuel economy of compliant tractor trailer rig that travel in California, resulting in reduced GHG emissions and fuel consumption. However, to the extent a regulated tractor-trailer rig travels at less-than highway speeds, the benefit will be less and the payback on investment will be longer. To address this issue, the regulation provides an exemption for short-haul or local-haul tractors and local-haul trailers. These tractors and trailers either operate exclusively within a 100-mile radius of their local haul base, or travel no more than 50,000 miles per year. As short-haul and local-haul tractor-trailer rigs, they spend a significant percentage of their time traveling on city streets at less than freeway speeds.

47. **Comment:** It is a known fact that the maximum fuel savings benefit for trucks and trailers equipped with aerodynamic efficiency kits occurs at 62 miles per hour. How can carriers be able to achieve the optimum benefit when California's maximum speed for trucks is 55 miles per hour? Is the State prepared to increase the speed limit for trucks to 65 mph so truckers can realize the true benefits of these products? (CTA)

**Agency Response:** The maximum fuel savings benefit associated with the installation of aerodynamic devices does not occur at 62 miles per hour. The faster a vehicle travels, the greater the benefit. A vehicle that travels at 70 MPH will see a greater fuel savings than a vehicle that travels at 55 MPH, but both will see benefits. See agency response to comment #49.

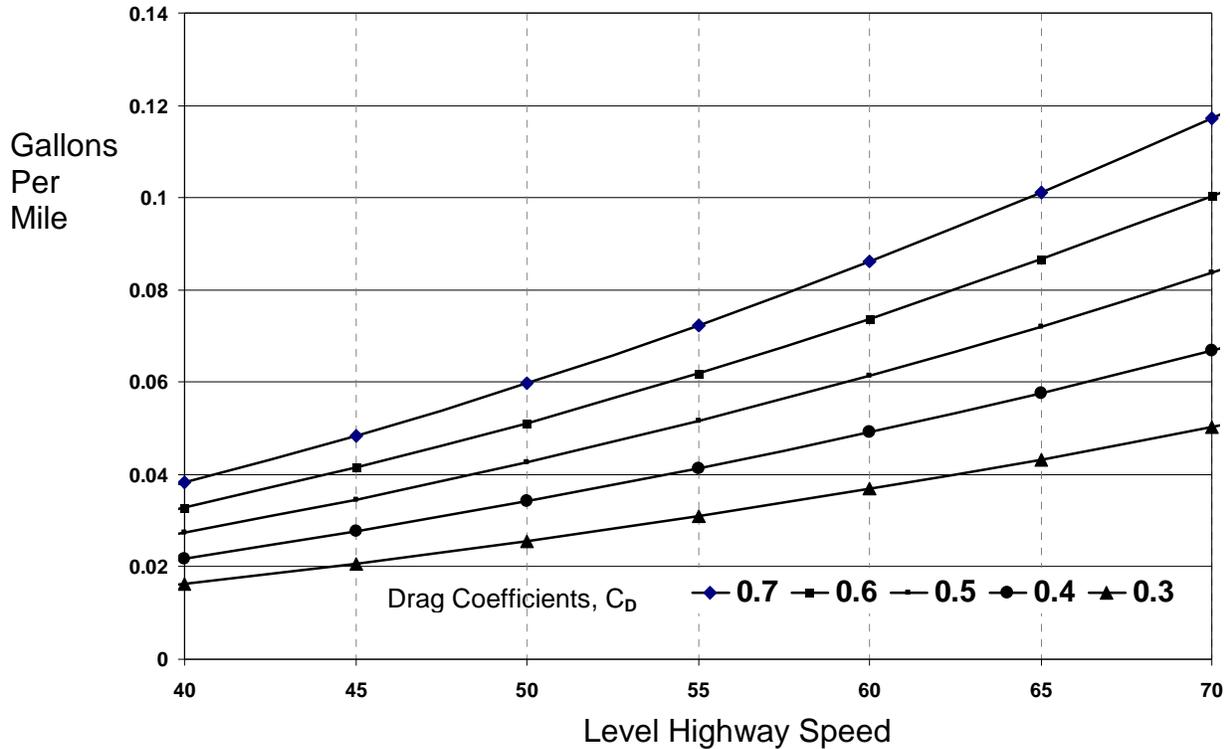
48. **Comment:** The study was based on 62 miles an hour. We as a fleet with 200 tractors average 45.7 miles per hour. We will not offset that additional cost of those fairings and those trailers with any fuel savings. (SMS)

**Agency Response:** See agency response to comment #49.

49. **Comment:** ARB has never conducted any studies on the proposed regulation regarding actual application. The numbers for a federal program are going to display different outcomes than a state whose truck speed limit is 55 MPH. All of the federal testing was performed at speeds of 62 MPH. This 7 MPH reduction could account for more fuel efficiency (and less greenhouse gas emission) than adding any aerodynamics to a trailer. (MCA)

**Agency Response:** ARB agrees with the commenter that the fuel efficiency improvement associated with the application of SmartWay verified aerodynamic technologies will be less for tractor-trailers operating at 55 mph than 62 mph. ARB also agrees that improvement in fuel economy associated with reducing vehicle speed from 62 mph to 55 mph may be greater than the improvement associated with adding aerodynamics. However significant improvements in fuel efficiency can be gained by improving aerodynamics even for vehicles that typically travel at 55 mph. This relationship is shown in Figure 4 below:

Figure 4: Fuel consumption rates to overcome the aerodynamic drag for a typical Class 8 tractor traveling on a level highway as a function of speed, with various aerodynamic drag coefficients



The curves in Figure 4, showing fuel consumption rates, were generated using engine fuel economy information and the following load relation equation associated with aerodynamic drag:

$$P = \frac{1}{2} \rho_a C_D A V^3$$

Aerodynamic drag

where

- P = power needed to overcome aerodynamic drag
- $\rho_a$  = density of air
- C<sub>D</sub> = aerodynamic drag coefficient of the vehicle
- A = frontal area of the vehicle
- V = vehicle speed

The power needed to overcome aerodynamic drag was translated into fuel consumption rate (gallons per mile) by assuming the tractor was operating at a fixed specific fuel consumption of bsfc=0.34 lbs/hp-hr, which is representative of a modern Class 8 tractor-trailer powered by a modern turbocharged engine,

and assuming the same values used for a typical class 8 tractor, as used in the calculation in response to comment #46, at various speeds.

In Figure 4, the vertical axis presents the fuel consumed to overcome aerodynamic drag in gallons per mile travelled. Five estimates of fuel consumption are shown, corresponding to five values of aerodynamic drag coefficients ( $C_D$ ) between 0.7 and 0.3. A typical tractor-trailer has a  $C_D$  of around 0.6.

From the data illustrated in Figure 4, one can estimate the impact of aerodynamics at 55mph and compare it to the impact of lowering the speed from 62 to 55 mph. If a tractor trailer's  $C_D$  is reduced from 0.6 to 0.5 through the application of aerodynamic technologies, the amount of fuel saved from the reduction in aerodynamic drag would be about 10 gallons per thousand miles travelled at 55 mph. This 10 gallon per thousand miles travelled represents the fuel savings benefit of the regulation from the aerodynamic requirements only. Additional savings would be gained through the reduction in rolling resistance from the use of low rolling resistance tires.

If no aerodynamic improvements are made and speed is lowered from 62 mph to 55 mph, the corresponding fuel efficiency improvement would be about 17 gallons per thousand miles travelled. Therefore, as the commenter theorized, lowering speed from 62 to 55 mph has a greater effect on increasing fuel efficiency than adding aerodynamics. However, the data also illustrate in this example that the aerodynamic improvements mandated by the regulation and a reduction of speed would result in an additional fuel savings of 10 gallons per thousand miles (resulting in fuel savings of 27 gallons verses only 17 gallons), a significant fuel efficiency improvement.

- 50. Comment:** Our fleet averages 39-40 miles per hour and we're not seeing anything from these aerodynamics. We did a test with three different phases. The first one was standard operation. Second one was with side skirts. The third one was with low rolling resistance tires. The low rolling resistance tires helped. The side skirts, going from Chino, California to Las Vegas, Nevada, we actually saw a slight reduction in fuel efficiency (with a particular unspecified brand of side skirts). Those were our tests over a month's time. (MCA)

**Agency Response:** From the information provided by the commenter, it is difficult to determine why this fleet experienced a fuel efficiency reduction associated with the application of side-skirts. The commenter states that a slight reduction in fuel economy was experienced on tractor-trailers traveling from Chino Hills to Las Vegas over a month's time. Assuming the majority of the 240 miles travelled between the two cities were on Interstate 15, ARB would expect to see some fuel efficiency gains, even when averaging 39 to 40 miles per hour. Nevertheless, it is inherently difficult to evaluate the

performance of side skirts in a non-test environment because of the number of uncontrolled factors that may influence fuel efficiency, including the variation in driver's habits (e.g. hard acceleration, timing of shifting gears), variations in load, and variations in weather. Another factor that could affect fuel efficiency performance is the specific side skirts installed. If the side skirts were not SmartWay verified technologies, they may not meet the design specifications and verification requirements established by the SmartWay program and may not achieve the same reduction in aerodynamic drag that SmartWay verified technologies have shown through testing.

- 51. Comment:** Due to the potential risk of improperly installed modifications, have standards been set for securing any and all modifications to the affected trailers? (ACG)

**Agency Response:** The regulation establishes the following good operating criteria for the aerodynamic technologies that are required to be installed on box-type trailers:

- The aerodynamic technology must be installed in accordance with the manufacturer's specifications;
- The aerodynamic technology must be securely fastened to the trailer;
- The aerodynamic technology must not be missing any sections;
- The aerodynamic technology must not be used if damaged to such an extent as to compromise aerodynamic effectiveness; and
- The rear trailer aerodynamic technology must be capable of being folded back against the trailer sides or otherwise be readily compacted to allow normal functioning of the doors.

The regulation specifies that a driver cannot operate a tractor-trailer subject to the regulation unless it is in good operating condition, and that a trailer owner must ensure that the trailer is in good operating condition prior to it traveling on a California highway.

- 52. Comment:** With the extra length of aerodynamic modifications, have any studies been performed in regards to the ability of these trailers to move through city streets and county roads? (ACG)

**Agency Response:** The only aerodynamic device that will add extra length to the tractor-trailer when deployed is the rear trailer fairing. ARB has not performed any studies regarding the ability of tractor-trailers to navigate city streets or county roads with deployed rear trailer fairings. However, whether rigid in structure or inflatable, these devices are designed to be compacted against the sides or rear doors of the trailer. ARB believes that should the extra length of a deployed rear trailer fairing become a concern, the driver could retract the device, as needed.

53. **Comment:** Have any real world studies been performed on the effects of modifications on the ability of trailers to access loading docks and ramps? (ACG)

**Agency Response:** While ARB has not performed any studies to evaluate the impact of aerodynamic modifications on the ability of trailers to access loading docks, manufacturers of aerodynamic technologies (side skirts and rear trailer fairings) are acutely aware of these concerns and have developed workable solutions that are incorporated in many of the products available today. For example, side skirt manufacturers are using pliable and durable materials that are designed to deflect and snap back into place when compressed by a steep loading dock ramp. Others can be manually retracted or folded up as necessary, or are designed to automatically retract at slow speeds. Rear trailer fairing manufacturers have designed their products to be compacted against the sides or rear doors of the trailer when approaching loading docks and accessing cargo through the rear trailer doors. Staff spoke with representatives of several fleets that have been using aerodynamic technologies in order to ascertain what their “real-world” experiences have been. Details of these discussions can be found in Appendix E of the Staff Report.

54. **Comment:** Have any technical studies been performed on the impact of these modifications on intermodal transportation, i.e., loading and unloading, securing to rail, etc.? (ACG)

**Agency Response:** ARB has not performed any studies evaluating the impact of side skirts, front trailer fairings or rear trailer fairings on intermodal transportation. Based on the current methods of loading, unloading, and securing 53 foot box-type trailers onto flat cars, the only potential interference issue associated with the use of aerodynamic technologies would be the potential for the forward end of the trailer side skirt to interfere with the forward load point of the trailer when the trailer is lifted onto or off of the flat car. Trailer side skirt manufacturers have addressed this issue by developing SmartWay verified side skirts that either mount well inboard of the forward load point, stop short of the forward load point, or can be manually retracted out of the way.

55. **Comment:** To date, EPA SmartWay program has not tested certain alternative tractor-trailer configurations to determine whether or not they are more or less efficient than SmartWay design specification. Wind tunnel analysis has demonstrated combinations with shorter tractor heights and Nose Cone treated trailers are equally efficient under no wind conditions and are more efficient under cross wind conditions. Until these other configurations are objectively analyzed and compared, there is no basis for making these other applications non-compliant. (Nose Cone)

**Agency Response:** To ensure that fuel saving and GHG emission benefit claims associated with the use of specific tractor/trailer configurations and

technologies are real and verifiable, the regulation establishes performance standards that must be met exclusively through the use of SmartWay certified and verified vehicles and technologies. It is not the role of the U.S. EPA to test specific aerodynamic technologies or tractor and trailer configurations for inclusion in SmartWay. It is the equipment manufacturer's responsibility to test the equipment. For SmartWay purposes, U.S. EPA has established an interim test method that assesses the fuel consumption impact of fuel-saving tractor and trailer components to determine eligibility for inclusion in SmartWay. This interim test method modifies a well-accepted industry test, the SAE J1321 test protocol. U.S. EPA is developing a more comprehensive tractor/trailer emissions test which, when completed, will supersede the interim test method. Until the above described configurations are tested in accordance with the interim test method and the test results are reviewed and approved by the U.S. EPA as meeting the performance requirements established by the SmartWay program, they cannot be used to meet the requirements of this regulation.

- 56. Comment:** The problem with the methodology is track testing. Track testing is deficient when it comes to proving aerodynamic performance. (Nose Cone)

**Agency Response:** The SmartWay program evaluates the aerodynamic performance of a vehicle or aerodynamic-improving technology by quantifying its impact on fuel efficiency. Track testing is an industry accepted method of evaluating the improvement in fuel efficiency. Currently, the U.S. EPA has established a modified version of the SAE J1321 test procedure as the method for quantifying the fuel consumption impact of fuel saving equipment for the purpose of SmartWay verification. The U.S. EPA's modification to the test method reduces variability of ambient effects on testing and helps reduce the potential for voided tests.

- 57. Comment:** With the addition of aerodynamic skirts to the trailer, the effects of the new air flow needs to be studied, including:

- How does the added air flow down the sides and back affect the passenger vehicle traffic
- Does the additional air flow down the sides create a "vacuum" effect behind the trailer
- How do the side skirts affect the handling of the trailer in heavy cross wind situations
- With the trailer skirts installed, in heavy crosswinds, how does it affect passenger vehicles when passing
- Do the trailer skirts increase the likelihood of injury in a right turn accident with a passenger vehicle
- What are the effects on moisture, i.e., rain, snow, with the skirts installed
- Also, the wind and safety issues become even greater when we begin to move toward "doubles."

(ACG)

**Agency Response:** See agency response to comment #58.

- 58. Comment:** In addition to fuel economy testing, it is critically important that aerodynamic technologies be subjected to rigorous wind tunnel testing in accordance with published procedures, guidelines, and criteria established by the SAE and Subsonic Aerodynamic Testing Association. The wind tunnel will isolate the aerodynamic forces from all other forces acting on the vehicle. (SOLUS)

**Agency Response:** ARB agrees with the commenter that evaluating the effects listed in comment #57, and conducting rigorous wind tunnel testing would provide valuable information to the manufacturers of trailers and aerodynamic technologies. However, ARB believes that it is not necessary to require such expensive wind tunnel testing to evaluate safety as part of the regulation since manufacturers have addressed concerns with the use of their products and for several years their products have been on the road and are legal for use on California and U.S. highways. In addition, several trailer manufacturers offer these products for sale to their customers. Currently, there are at least eight companies that offer commercially available SmartWay verified trailer side skirts. ARB staff has spoken with representatives of several fleets that have been using trailer side skirts on their trailers over a period of nine months to more than 2 years. The effects of rain, moisture, snow, wind force, trailer handling, and side impacts have been addressed and further improvements are being made by trailer and aerodynamic technology manufacturers as they develop and market their products. See also agency response to comment #53.

- 59. Comment:** ATA would like ARB's support, in terms of financial and personnel resources, in working with the trucking industry and the U.S. EPA to further develop the evaluation protocols necessary to ensure the expected benefits are real and the performance meets the demands of the trucking industry. (ATA)

**Agency Response:** ARB believes the testing method established by the U.S. EPA SmartWay program is sufficient to quantify the expected benefits from the technologies required by this regulation. SmartWay's test method is based on an industry accepted testing method for determining the fuel economy of trucks. With that said, ARB is willing to work with stakeholders to developing and establishing other testing methods, especially methods that could be used over-the-road during service operation. As with all in-use testing, accounting for the variability of ambient, road, elevation, weight, speed, driver and other conditions make it difficult for fleets to assess the fuel-saving benefit they achieve with the technologies required by this rule.

- 60. Comment:** The proposed regulation should be crafted to allow eventual independence from the SmartWay program. If U.S. EPA does not update

SmartWay standards to reflect technological advancement, then ARB should be able to modify the regulation independently. (ATDynamics)

**Agency Response:** The regulation was identified by the ARB in October 2007 as one of the nine AB 32 discrete early action items to reduce GHGs. As such, these regulations were put on the fast track for development, earmarked by the Board to be adopted and enforceable by January 1, 2010. The short time frame for development necessitated the reliance on the existing U.S. EPA SmartWay program to identify enforceable GHG reduction requirements. The regulatory language does not include language that allows eventual independence from the SmartWay program. However, if ARB determines that such independence is merited, the ARB has the authority to modify the regulation in the future, in an open and public process, and present the modified regulation to the Board for adoption.

- 61. Comment:** Refrigerated trailers should be required to meet the same aerodynamic standard as dry van trailers. Since overwhelmingly the same aerodynamic technologies are available to dry van as to refrigerated trailers, we consider this double standard to be arbitrary. The double standard is not supported by the U.S. EPA SmartWay Partnership's lack of specification for refrigerated trailers, which reflects a neutral position. (ATDynamics)

**Agency Response:** The regulation requires dry van trailers to be retrofitted with aerodynamic equipment that collectively meets or exceeds a 5 percent fuel savings in accordance with test requirements defined by the SmartWay program. Refrigerated van trailers are required to be retrofitted with aerodynamic equipment that collectively meets or exceeds 4 percent fuel savings. The reason for the lesser requirement for refrigerated vans is that fewer aerodynamic options are available for them. Specifically, front trailer fairings are not feasible on refrigerated vans because the transport refrigeration unit is typically installed where the front trailer fairing would be mounted. Similarly, requiring a rear trailer fairing on all refrigerated van trailers would be too restrictive, since current SmartWay approved rear trailer fairing technologies are not compatible with roll-up door trailers.

- 62. Comment:** In Table IX-2 of the ISOR, the fuel savings ranges are given for different types of trailer aerodynamic devices. While using the range of fuel savings may be appropriate for side skirts and front trailer fairings, in the case of rear trailer fairings, the range of fuel savings (1% to 5.1%) is more than four times larger than its lower bound. It would be useful when describing fuel savings ranges to subdivide rear trailer fairings into long rear trailer fairings and short rear trailer fairings. (ATDynamics)

**Agency Response:** The categorization of aerodynamic devices provided in the Staff Report was based upon information obtained from the U.S. EPA SmartWay staff prior to the drafting of the Staff Report. Since that time,

SmartWay has grouped their list of verified aerodynamic technologies into the following categories: trailer gap reducers (estimated fuel savings 1% or greater); trailer boat tails (estimated fuel savings 1% or greater); trailer side skirts (estimated fuel savings 4% or greater); advanced trailer end fairing (estimated fuel savings 5%); and advanced trailer skirts (estimated fuel savings 7%). Thus, as proposed by the commenter, SmartWay has differentiated between long rear trailer fairings and short rear trailer fairings.

- 63. Comment:** The rear trailer should be subject to 23 CFR 658.16, “Exclusions from Length and Width Determinations,” under the purview of the DOT, Federal Highway Administration. The proposed regulation’s “Good Operating Condition Criteria for U.S. EPA Certified SmartWay Trailer Aerodynamic Technologies” (95304(b)) should include a provision to the effect that, “The rear trailer aerodynamic technology must be determined by the Federal Highway Administration to be excluded from the length measurements for commercial motor vehicles.” (ATDynamics)

**Agency Response:** The good operating condition criteria for trailer aerodynamic technologies defines what an in-field inspector can do to evaluate the condition of a technology as it relates to its aerodynamic effectiveness. For rear trailer aerodynamic technologies, it also defines a criterion to ensure the technology does not interfere with the operation of the rear door. Although ARB agrees with the commenter that the length exemption is needed for operation on highways, ARB elected not to include the provision as suggested by the commenter in the “Good Operating Condition Criteria for U.S. EPA Certified SmartWay Trailer Aerodynamic Technologies” section because it is not directly related to aerodynamic effectiveness or operation of the trailer and ARB does not have enforcement authority to regulate trailer length. However, ARB recommends that the commenter bring this issue to the U.S.EPA SmartWay Program staff, they may decide to request proof of length exemption prior to certifying rear trailer devices.

- 64. Comment:** Encourage continued innovation in the proposed regulatory language and formulate a process for inclusion of new technologies. Do not stifle new technologies by limiting the language to include only advocated technologies. Wheel covers have been overlooked in the past for economic reasons, which is about to change with our new aerodynamic wheel covers made of lightweight fabric. (Deflektor)

**Agency Response:** The GHG regulation does allow for the inclusion of new technologies. However, new technologies, like the commenter’s wheel covers, must be verified by U.S EPA in accordance with the *Interim Test Method for Verifying Fuel-Saving Components for SmartWay: Modifications to SAE J1321*, EPA-420-F-09-046 (Interim Test Method). We encourage the commenter to contact the U.S. EPA regarding the SmartWay verification of their product.

## E. Technology

65. **Comment:** The regulation that you speak to... does not deal with this specific area, the wheels. The wheels are standard on everything, regardless of the configuration. They're on all of those things that you eliminate....This product... has been found to save one quarter of one percent per wheel cover. I believe it is the least amount of investment for the highest payback than any of the technologies that are being discussed right now. (Deflektor)

**Agency Response:** The aerodynamic technologies that meet the requirements of the regulation have been verified by the SmartWay program to meet certain fuel efficiency savings standards. If the commenter, or any other manufacturer, wishes their device to meet the aerodynamic requirements of this regulation, they may apply to the U.S. EPA for verification of their device.

66. **Comment:** I would suggest that you work on results instead of methodology, because a methodology approach provides a barrier to technology. For instance, we have a product that goes against the idea of closing the gap, because it actually can create suction on the front of the trailer just like the suction on the back of the trailer and help pull it forward. So those rules don't work very well. (Silver Eagle)

**Agency Response:** The technology requirements in the regulation are based on results rather than methodology, as verified by the SmartWay program. The regulation requires the use of aerodynamic technologies, which have been defined to include both fairings and flow control devices. If the commenter, or any other manufacturer, wishes their device to meet the aerodynamic requirements of this regulation, they may apply to the U.S. EPA for verification of their device.

67. **Comment:** You should also allow removable devices for aerodynamics. (Silver Eagle)

**Agency Response:** The regulation does not specify that aerodynamic devices must be permanently installed as opposed to being removable. As long as aerodynamic devices are SmartWay verified, installed according to manufacturer specifications, securely fastened to the trailer, and in good operating condition when operating in California, they can be used to meet the requirements of the regulation.

68. **Comment:** In California, only less than 30 percent of trucks are made for the line-haul service. A whole different class of tires works on regional, urban or intrastate trucks. If we put the current approved SmartWay tires, and all of the manufacturers at the current tires approved, they will not work well on the service. So what will happen, fleets will get 30 and 40 percent less mileage on

tires, which is certainly a tremendous cost to the fleet and it's also an environmental problem of another sort. We're recommending that the standards be moved to regional and urban tires, a whole different standard – so that you could have a broad range of tires. (Continental)

**Agency Response:** The requirement for low rolling resistance tires contained in the regulation is based upon the specifications of the SmartWay program, which apply to line haul trucks. As stated on the SmartWay website, “Based upon data provided by tire manufacturers and EPA testing and research, EPA determined that certain tire models can provide a reduction in NOx emissions and an estimated fuel savings of 3% or greater, relative to the ‘best selling’ new tires for line haul trucks, when used on all five axles on long haul class 8 trucks.” The options offered include both dual tires and single wide tires. Since the regulation applies to long haul tractor-trailers, those who comply with the tire requirements should realize fuel savings benefits over time. Moreover, even those who travel more regionally but exceed the short haul requirements of the regulation should realize some fuel savings benefits since they travel at least some of the time at highway speeds. If and as U.S. EPA expands or changes their tire requirements to incorporate alternative applications such as regional or urban tires that meet their fuel savings requirements, they may be used to comply with this regulation.

69. **Comment:** There's no provision in the bill for retreads. Eighty-some percent of fleets retread for economic considerations. It cuts a fleet's costs... and reduces the impact of waste tires on the environment. (Continental)

**Agency Response:** The regulation does not specifically exclude or include retread tires; however, retread tires will be considered compliant with the regulation as long as the casings are SmartWay verified. Regarding tires that will be replaced by SmartWay verified tires, those tires will continue to have a commercial value and use with other types of trailers and tractors that are unaffected by this regulation. Thus, ARB determined that there will not be an environmental impact since these tires can be used in other fleet operations.

70. **Comment:** I'm a proud SmartWay carrier. We have done things they have asked us to do, in low resistance tires (super singles), all kinds of different fairings, but have we seen any benefit of it? Our company has not seen the benefit. (ACT)

**Agency Response:** The aerodynamic devices and low rolling resistance tires referenced in the regulation have been verified by the SmartWay program to achieve certain minimum fuel efficiency savings. The SmartWay program utilizes industry accepted test methods to evaluate the fuel savings potential from using aerodynamic devices and low rolling resistance tires on both tractors and trailers. Examples of the types of devices and minimum fuel savings attributed to them include the following: trailer gap reducers (1% fuel savings

or greater), trailer boat tails (1% or greater), trailer side skirts (4% or greater), advanced trailer end fairing (5%), advanced trailer skirts (7%), low rolling resistance tires (3% or better for all tires on tractor-trailer). There are currently several different technologies available within most of these categories that are verified by the SmartWay program to meet or exceed these fuel savings requirements. In order to comply with the regulation fleets may select any individual or combination of aerodynamic technologies, along with the low rolling resistance tires. The commenter did not state which method or what was used to calculate their fuel economy, so ARB has no way of determining why their fleet did not see any benefits. There are many environmental factors, such as ambient conditions, speed, load, driver and other factors that have significant effects on a tractor's fuel economy. Those factors, if working against the fuel economy of the truck, will mask any benefits achieved by having the technologies required by this regulation.

- 71. Comment:** While aero devices may help a small number of our customers achieve greater fuel economy, most would see no improvement, while incurring higher maintenance costs and higher acquisition costs. ARB used numbers provided by manufacturers of these devices without taking into account the unique California transportation industry's real-world challenges, which include lower speed limits and heavy congestion on our roadways. (CVTRI)

**Agency Response:** The fuel economy information used by ARB in its analysis was derived from testing conducted according to established U.S. EPA SmartWay test procedures. These procedures must be conducted under controlled conditions that eliminate mitigating variables in order to allow one to more accurately measure the true fuel efficiency benefits of the technologies being tested. While on-road testing may appear to achieve different results, these results can be misleading, since they will be influenced by such factors as wind velocity, ambient temperature, weather conditions, season, driver behavior, topography, other road conditions, etc.

ARB has considered the challenges of the California transportation industry, by including full or partial exemptions for short haul and local haul fleets. In addition, although the speed limit for tractor-trailers in California is 55 miles per hour, California Department of Transportation data on actual speeds travelled reveals their vehicle miles travelled weighted average median speeds is 59.7 miles per hour. Thus, while there certainly are circumstances in California where tractor trailer rigs travel at lower speeds with little benefits from the aerodynamic technology, on average they do travel at speeds high enough to benefit from the requirements of this regulation.

While there are some up-front acquisition costs associated with aerodynamic technologies, ARB estimates that the fuel efficiency savings achieved will offer payback within, on average, 2.3 years (for fleets with a trailer-to-tractor ratio of

2.5-to-1). This also includes ARB estimates that average annual maintenance costs will be approximately \$143 for tractors and \$120 for trailers.

- 72. Comment:** We question ARB's assumptions about payback on the investment in various trailer technologies. We already use low rolling resistance tires. The assumed fuel savings are much higher than we experienced in real-world operation. The purchase and installation costs assumed were substantially less than we experienced. And the miles run and cost of fuel are both much lower than the assumptive modeling. (Con-Way)

**Agency Response:** See the agency response to comment # 70 and #71.

- 73. Comment:** The following recommendations should be incorporated into the proposed regulation to allow trucking companies greater flexibility to direct their financial resources to reduce GHG emissions. The Board should direct staff to perform a more rigorous evaluation of the compliance technologies to ensure that they perform satisfactorily and that actual costs and benefits are considered. A report documenting this evaluation should be submitted to the Board for further consideration no later than December 31, 2009. ATA surveyed its fleet maintenance managers in November 2008 and found that the trucking fleets have very limited experience with the technologies ARB is proposing to mandate. (ATA, Con-Way)

**Agency Response:** ARB's evaluation of the performance of the compliance technologies in this regulation relies on the U.S. EPA SmartWay program, which utilizes industry-accepted test methods to evaluate the fuel savings potential from using aerodynamic devices and low rolling resistance tires on both tractors and trailers. In terms of the costs and benefits associated with these technologies, ARB performed a rigorous evaluation during the development of this rule that was presented at workshops and outlined in the Staff Report. Staff also contacted several fleets that have been using these technologies to understand the real-world experience (Summaries of fleet experiences with SmartWay certified trailers and verified technologies can be found in Section IX of the Staff Report). The information collected was used in ARB's determination of cost and maintenance of the technologies required under this regulation. ARB is unaware and the commenter did not provide any details regarding additional information that would be available to conduct a more rigorous evaluation of the technologies. Further, ARB acknowledges that trucking fleets, as a whole, have limited experience with the technologies, which is one of the reasons why implementation of this regulation will generate significant GHG emission reductions.

- 74. Comment:** Putting fairings on our 53-foot trailers reduces our access to our stores. In stores where we have pits, those fairings will not clear the pits. We will be forced to dispose of or replace the 53-foot trailers with smaller trailers,

thereby increasing our loads on the road, increasing our greenhouse gas emissions. (SMS)

We've seen problems with low ground clearance and we've pulled the devices off because they get damaged. (Matheson)

The fairings on these trailers are not going to stay on. They might take a side impact, but when you back into a pit dock, you're going to drag them off. I have two and a half feet of clearance from the bottom of the trailer to the cement on my tractors and trailers. That SmartWay fairing is not going to stay on there in the front when I reverse or back in or pull out of the dock. Sideways it may give. Front and back is not going to give. (FTI)

**Agency Response:** Manufacturers of aerodynamic technologies have designed trailer side skirts to address the issue of low clearance, particularly when navigating in steep pits. Several alternatives, including using more flexible materials and offering a retractable skirt, are currently available. Thus, rather than downsize their trailers to avoid complying with this regulation and increase their loads on the highway, fleets may purchase SmartWay verified skirts that are also designed to withstand steep grades without being damaged.

75. **Comment:** We look at some of the numbers the staff has shown on long haul and the efficiency of aerodynamics. As a regional short-haul carrier, we cannot justify the costs on the trailing equipment. (YTI)

**Agency Response:** The regulation provides a short-haul exemption for tractors that do not exceed 50,000 miles per year and the trailers they pull. Those owners will be able to register as short-haul, and will not have to comply with either the aerodynamic or tire requirements of the regulation. In addition, the regulation provides a partial exemption for fleets that do not travel outside of a 100 mile radius from their base of operation (local haul). Those fleets will only be required to install low rolling resistance tires, but not aerodynamic equipment, in order to comply with the regulation. For those fleets that exceed either of these two options, ARB anticipates that they will, over time, achieve sufficient benefits from using the required technologies to realize a cost savings.

76. **Comment:** With aerodynamics it's not a one size fits all. We have trucks that run in stop and go traffic. Aerodynamics don't help them a bit. (Matheson)

**Agency Response:** See response to comment #75.

77. **Comment:** These fairings that are being proposed to go on the rear of trailers will increase that trailer's length by four feet. How is that going to be reconciled with the overall length rule in the state of California? And is there any kind of provision for those of us that haul 57-foot trailers already that aren't allowed to

proceed past that overall length? Are those of us who haul 57-footers going to go out of business when everyone else can still be hauling a 57-footer with these fairings? (CDMI)

**Agency Response:** The regulation does not specifically require the use of a rear trailer fairing in order to comply with its aerodynamic technology requirements. The regulation requires that dry vans and refrigerated vans meet a 5% and 4% improvement in fuel efficiency, respectively. There are a number of trailer side skirts that have been verified by SmartWay to meet or exceed the fuel efficiency savings required by this regulation that will not impact the overall length of trailers. Specifically, at the time of this writing there are four different trailer side skirts that have been verified to meet or exceed a 4% or greater fuel savings, and an additional 9 advanced trailer skirts that have been verified to achieve an estimated fuel savings of 5% or better.

ARB is exploring the possibility of modifying the California Vehicle Code to eliminate rear trailer fairings from the calculation of trailer length. If approved and implemented, 57-foot trailers would be able to operate on California highways with trailer rear trailer fairings and not be cited for exceeding the California length limitation. See also agency response to #93.

- 78. Comment:** ARB should not implement the proposed regulation but rather adopt it as a voluntary program for the trucking industry. Further testing and analysis need to be performed before such a drastic measure should be made mandatory. There is not sufficient data available on the technologies during real world operations and what the true costs and benefits of the technologies will be. Instead of the combination of technologies mandated in the proposed regulation, it may be that alternative combinations of technologies will achieve the best balance of weight savings, fuel savings and GHG reductions for particular types of trailers and cargo. (TTMA)

There are insufficient data available to demonstrate how the various aerodynamic technologies perform in the real-world California short-haul operations and thus not enough data to support a regulatory mandate. ARB should follow U.S. EPA's lead and adopt a voluntary standard that is real, additional, quantifiable, permanent, verifiable, and enforceable. This will prevent ARB from overestimating GHG reductions and focus on new equipment purchases instead of on the in-use fleet. (IWLA)

GTI is concerned with the direction that California is taking. We feel that the transportation sector has borne more than its share of costs due to the new engine standards in 2004, 2007 and 2010. We feel that letting the market determine implementation of aerodynamic devices or fuel efficient tires, versus legislation to mandate these items, is the most effective manner for implementation. The required technology is not proven and in the real world,

the results will differ greatly from the costs and benefits that ARB is using to make their case. (GTI)

**Agency Response:** ARB cannot adopt a voluntary program in place of the regulation because this regulation is one of the discrete early action measures mandated by AB 32. AB 32 calls for the reduction of GHG emissions to 1990 levels by the year 2020, a reduction of about 25 percent. In addition, as a discrete early action measure, this regulation must become enforceable by January 1, 2010, and must support the goal of achieving the maximum technologically feasible and cost-effective reductions in GHG emissions by 2020. Relying exclusively on voluntary actions would not ensure that California meets these requirements.

Due to the short time frame to develop and implement this regulation, ARB must rely on the U.S. EPA SmartWay program, which was already in place prior to the development of this regulation, to verify and certify the aerodynamic and tire technologies that meet the requirements. With regard to the comments on the need for establishing benefits with testing and analysis and the request for flexibility in using various technologies, please see agency response to comment # 26.

As described in the Staff Report, staff interviewed a number of existing fleets that had used aerodynamic and tire technologies in “real world” applications. Although some of the fleets were not able to isolate the benefits that were achieved from using these technologies exclusively, those who could isolate the benefits attributed an estimated 3 to 6 percent improvement in fuel economy with trailer side skirts – a significant improvement according to these fleet representatives. As stated in the agency responses to comment #3, ARB’s analysis determined that, over the course of an 11-year equipment lifespan, from 2010 to 2020, affected stakeholders should realize an approximate net savings of \$8.6 billion in 2008 dollar values. ARB further determined that individual fleets will, on average, recoup the costs to comply over a 2.3-year period (based on a trailer-to-tractor ratio of 2.5-to-1 and an estimated fuel cost of \$3.14 per gallon). Although the requirements will result in cost savings for fleets over the equipment useful life, ARB also understands the upfront cost and the cost of other regulations that will have an impact on the trucking industry. Please see agency response to comment #16 regarding the need for developing regulations applicable to the trucking industry and the flexibility provided to help the industry comply.

- 79. Comment:** The TRU rule is a perfect example of a rule that was put together in haste without enough real world testing. In that rule the available technology was not available to meet the requirements of the rule and in some cases are still not available. Do not take the word of vendors using tests that prove only that one product is superior to another in a particular situation. The real world of transportation is too diverse to say that one fix will work for all aspects of the

industry. Please send this rule back to staff and urge them to work with industry to achieve the goals you have set. (CVTRI)

**Agency Response:** Despite the fact that AB 32 required this regulation be developed and enforceable by January 1, 2010, the technologies that can be used to comply with the regulation are all certified or verified to meet the standards established by the SmartWay program, and are therefore ready to be used. As new technologies become available, manufacturers must complete specific test procedures (e.g., SAE J1321) and apply to the U.S. EPA for either verification or certification of their vehicles or equipment before they can be used by fleets to meet the requirements of this regulation. At the present time SmartWay has verified 21 different aerodynamic technologies that fleets can utilize, including trailer gap reducers, trailer boat tails, trailer side skirts, advanced trailer end fairings, and advanced trailer skirts. ARB anticipates that with the large and small fleet compliance plans which allow fleets to phase-in compliance over several years, manufacturers will be able to respond to demand and ramp up production as demand increases over time (see also agency response to comment #84).

- 80. Comment:** The SmartWay equipment does not have a track record for fuel savings. Over the years, industry has already tried these components and has discovered the expense of repairing the fiberglass damage inherent with the lower fairing placement far outweighed any fuel savings realized. (Fitzgerald)

**Agency Response:** The equipment certified or verified by the SmartWay program has been shown through accepted test procedures to achieve specific fuel savings, as described on the SmartWay website. As described in the Staff Report, among the fleets that staff interviewed who currently use trailer side skirt technologies, the vast majority reported having very few incidents of damage to the side skirts; among the minority who experienced damage, all were minor (and were often caused by driver error).

The performance and durability of side skirts has been improving relative to the products used by industry “over the years” as manufacturers develop newer, more flexible products. ARB anticipates that the availability of such options will only increase with time, fueled by increasing competition in the marketplace. There are already skirts that are far more flexible, resistant to breakage, as well as those that retract either manually or mechanically, to prevent problems when navigating steep inclines.

- 81. Comment:** The emission reductions of the technology mandated by the proposed regulation are questionable because few fleets have used the required technology. In addition, the selection of technologies is arbitrary; it is difficult to understand the rationale behind the selection of certain types of equipment and not others, given the lack of data and experience with these technologies. There are far less costly and more reliable ways to reduce fuel

use and emission, including reductions in truck speed. Most fleets have learned that the single most significant factor in fuel use is driver technique and behavior. Effective driver training programs can do as much to improve fuel efficiency as any of the technologies outlined by ARB. (AZTA)

**Agency Response:** Although ARB agrees that there are other approaches that fleets can take to reduce GHG emissions, ARB disagrees with the statement that the technologies required by this regulation are questionable because few fleets have used them. While the number of fleets using them may be limited, U.S. EPA has evaluated the testing of aerodynamic technologies using established test protocols and has verified the fuel efficiency savings associated with them. Moreover, the selection of technologies is not arbitrary, but rather based upon those that have been certified or verified by SmartWay to provide specific fuel efficiency savings. As additional aerodynamic technologies and low rolling resistance tires are verified by SmartWay to achieve verified fuel efficiency savings, they may be used to comply with the regulation. While ARB agrees that driver technique and behavior is a significant contributor to fuel efficiency, it is not something that ARB can mandate or enforce. ARB encourages fleets to add this technique to their strategy to improving fuel efficiency beyond what is required by this regulation. Such action would result in further emission reductions and cost savings for the fleet.

- 82. Comment:** Some of the technologies required for compliance are not yet ready to be used. (Brian)

**Agency Response:** ARB disagrees with this statement. The technologies that can be used to comply with the regulation are all certified or verified to meet the standards established by the SmartWay program, and are therefore ready to be used. As new technologies become available, manufacturers must complete specific test procedures and apply to the U.S. EPA for either verification or certification of their vehicles or equipment before they can be used by fleets to meet the requirements of this regulation.

- 83. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. SmartWay does not test for or certify durability. The technologies are so new that there is no good data on maintenance costs from damage to side skirts. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** It is true that SmartWay does not test or certify durability. Among the aerodynamic technologies, the most vulnerable components to damage are the trailer side skirts. As discussed in the Staff Report page 40 and in Appendix E, staff discussed the issue of durability of the technologies with fleets who have already installed trailer skirts on their equipments. The

majority of the fleets reported having very few incidents of minor damage to the skirts which were mainly caused by driver error, while some were caused by unavoidable accidents. Fleets reported that when damage occurred to skirts, they were often able to repair minor damages themselves, or they were able to easily replace the panels. ARB believes that such incidents will be minimized as drivers and warehouse personnel get familiar with the technologies. In addition, aerodynamic equipment manufacturers are continuously taking steps to improve their products susceptibility to damage by improving the design and materials of the components. For example, some have changed from skirts made of aluminum to a new version that uses high density polyethylene which is strong, but also flexible enough to withstand damage. Some have developed retractable skirts that are pneumatically controlled and that deploy at 35 miles per hour and retract when speed drops below 35 miles per hour, reducing the chances of getting damaged at loading docks and in urban operations.

ARB believes that no annual scheduled maintenance is needed for tractor and trailer aerodynamics other than checking and tightening loose fasteners. However, in calculating the cost-effectiveness of the regulation, ARB included costs incurred to maintain tractor and trailer aerodynamics in order to be conservative because the equipments may get damaged due to accidents. As discussed on page 61 of the Staff Report, ARB included an annual maintenance cost of \$143 for the fuel tank skirts based on the repair and replacement of a fiberglass panel for one out of ten tractors. For trailer maintenance and repair, ARB included an average cost of \$120 per year per trailer. This amount was estimated by averaging \$170 (about 10 percent of the cost of a trailer skirt) reported by one fleet that used trailers skirts in harsh environments of snow and ice; and \$75 per year per trailer from a 2.5 year maintenance study of 20 trailers. ARB believes that these are very conservative and reasonable estimates and the cost-effectiveness analysis reflects a conservative evaluation of the program costs and claimed benefits.

- 84. Comment:** ARB should not create a mandatory upgrade program based upon the faith that appropriate aerodynamic technologies will be developed in the future and that the small, poorly capitalized companies that manufacture aerodynamic technologies will have the ability to cover the costs of warranty and liability claims. (CTA2)

**Agency Response:** The technology requirements contained in the regulation are not based on faith that appropriate aerodynamic technologies will be developed in the future, but rather on the specific technologies verified by the SmartWay program to provide fuel efficiency savings. There are currently, at the time of this writing, 21 different verified technologies listed on the SmartWay website that may be used by fleets to comply with this regulation.

While many of the manufacturers that provide aerodynamic technologies are small companies, some have licensed their technologies to larger companies

such as Carrier Corporation, which is a part of United Technologies Corporation.

ARB has no authority to require manufacturers to cover the costs of warranty and liability claims. It is up to individual customers to make informed purchases and to ensure that they have appropriate liability coverage for their equipment.

- 85. Comment:** Con-way disputes the accuracy of the fuel savings associated with tractor skirts projected by ARB, as they are based on projections that do not take into account the increase in vehicle weight that will result from their installation. Con-way conducted a two year comparison test with a fleet of ten tractors to evaluate the fuel mileage performance of tractors equipped with full skirts versus those equipped with half or no skirts. On average, the test trucks achieved 0.12 miles per gallon, or 2 percent, better fuel efficiency with half or no skirts versus full skirts during the test period. While no wind tunnel testing was performed, we believe that the improved performance of trucks with half or no skirts versus those with full skirts was primarily due to a reduction in vehicle weight once the skirts were reduced or removed. In addition, full skirts cover the tractor's fuel tank, which causes heat retention, increasing the temperature of the fuel and reducing its British thermal unit output. In the winter, full side skirts collect more ice and snow build-up, which further increases the weight of the tractor and further reduces fuel mileage performance. Since the test program, Con-way Truckload has primarily operated tractors with half or no side skirts throughout its fleet and these units have consistently outperformed tractors with full skirts. The company currently operates 200 tractors with full skirts and these units are consistently the lowest performing trucks in its fleet by 0.19 miles per gallon, or 3.2 percent, for the past 12 months. ARB's projection as to the return on investment of this technology is inaccurate. (Con-way)

**Agency Response:** To be clear, the commenter's use of the term "skirts" is, in this case, not referring to trailer side skirts, but rather the tractor's fuel tank fairings. Discussions with fleets that have used fuel tank fairings show improvements in fuel economy and no negative impacts (see Staff Report, Appendix E: Fleet Summaries, summary of phone meetings with B & B Trucking, Inc., Cascade Transport, Inc., and Hiner Transport). One fleet, which has been using fuel tank fairings since 1999, noted at least a 0.1 miles per gallon savings at 65 miles per hour. Two other fleets did not isolate the fuel economy benefits of the tractor fuel tank fairings alone but noted a significant overall benefit with the combination of several tractor and trailer aerodynamics. The fuel economy benefits were observed even with the added weight of aerodynamic equipment, because the testing was conducted on trucks with tractor fuel tank fairings and other equipment installed.

The commenter did not provide the actual test data or a test plan to show how the testing was performed. Therefore, ARB was unable to analyze the data or provide an explanation for the lack of fuel economy benefit. Information such

as the type and amount of driving by the skirted and non-skirted tractors, the load on the trucks, the types of trailers being pulled, and maintenance records would be invaluable for analyzing the test program and explaining the results.

- 86. Comment:** Con-way disputes the accuracy of the fuel savings associated with trailer skirts projected by ARB, as they are based on projections that do not take into account the increase in vehicle weight that will result from their installation. Con-way Truckload has not experienced the improvement in fuel economy projected by ARB in its use of trailers equipped with side skirts. The Company operates over 8,000 53-foot dry van trailers, approximately 400 of which were equipped with side skirts up until last year. The fuel economy observed in the field was less than 3 percent at high speeds in excess of 60 miles per hour and none at speeds of less than 45 miles per hour. The skirts added hundreds of pounds of extra weight to the trailer and also had the tendency to collect snow and ice in the winter. This results in reduced fuel efficiency and limiting their loading capacity. Skirts were frequently damaged, resulting in higher repair and replacement costs. Also skirts prevented sliding the trailer tandem and prevented the trailer from being lifted onto railroad cars. As a result of these issues, after two years of operation on 400 trailers, Con-way Truckload has determined that it simply is not cost-effective from a return on investment perspective to install and operate them on its trailer fleet. ARB's projection as to the return on investment of this technology is inaccurate. (Con-way)

**Agency Response:** The commenter's claim of little or no benefit from trailer side skirts is contrary to the claims made by trucking fleets that staff contacted during the development of this regulation. Of the six fleets staff contacted that use trailer side skirts, four noted about a 2 to 3 percent fuel economy benefit at high speed cruise. One fleet observed a six percent increase in fuel economy and another observed a 10 percent increase (Staff Report, Appendix E). These fuel economy benefits were observed over a period of time ranging from six months to two years, depending on the fleet. The commenter's fleet of trailers achieved fuel economy increases also within this range. Factors that may influence fuel economy include operator driving habits, vehicle duty cycle, the loaded weight of the trailer, other aerodynamic devices, and environmental conditions. While side skirts are SmartWay verified to achieve an estimated four percent or better fuel economy increase, real world use may obtain slightly different results depending on these factors.

The commenter also noted that trailer skirts may collect snow and ice in the winter. Skirt manufacturers contend that the current materials from which their skirts are constructed tend to prevent ice buildup, but if it does build up, the ice can be easily scraped off. In addition, the commenter stated that the skirts were frequently damaged. Skirt manufacturers have addressed this concern by using durable thermoplastics for all or at least the lower part of trailer skirts such that they will bend and flex without permanent damage when they contact

an obstacle. Also, one manufacturer produces a retractable skirt that can be flipped up to avoid a deep-angled dock or to access tool boxes or spare tires on the underside of the trailer. Finally, the commenter stated that skirts prevent sliding the trailer tandem and prevent the trailer from being lifted onto railroad cars. Some skirt manufacturers have addressed the former issue of the sliding tandem by stopping the trailer skirt at the rear tandem or by having the skirt slaved to the trailer tandem and sliding with it. The latter issue of a trailer on a flatcar is addressed by skirt manufacturers that provide an optional package for a trailer to be placed on the flatcar without damage. Trailer owners should review the skirt models from different manufacturers to choose the product that best fits their needs in daily operation.

Also, staff did meet with Conway representatives during the rulemaking process to solicit fleet experience and data. Although Conway did mention that most of the trailer skirts they tested sustained some type of road damage, they did not provide any specifics, such as damage rates, types of damage, severity of damage, and repair costs. Therefore, ARB was unable to fully assess Conway's claims. In addition, the trailer skirts that Conway tested were first generation trailer skirts. The trailer skirts that are currently available are much less susceptible to damage than those tested by Conway. See also agency response to comment #83 regarding trailer skirts for more information.

- 87. Comment:** Our company tested low rolling resistance tires and side skirts on a trailer to realize true fuel efficiencies of technologies. Using the Turnpike System, the constants were the driver, truck, trailer, route (Chino, CA to Las Vegas, NV), average load weight and all factors measured by Turnpike's GPS system. The variables were the tires and side skirts. The results were as follows: Phase 1 (no side skirts or low rolling resistance tires) achieved an average fuel consumption of 6.13 miles per gallon; Phase 2 (side skirts only) achieved an average fuel consumption of 6.12 miles per gallon; Phase 3 (side skirts and low rolling resistance tires) achieved an average fuel consumption of 6.32 miles per gallon (an increase of 3.24 percent).

Conclusions: 1) The assertions made by the US EPA, ARB and side skirt companies regarding the benefits of adding this aerodynamic technology to a trailer appear to be contraindicative of our findings. The side skirts we tested, overall, have no positive effects on a long haul tractor trailer. These findings suggest that the side skirts may actually hinder fuel efficiency for tractor trailers. 2) The tires that are certified by the US EPA's SmartWay program have a definite positive effect on the overall fuel efficiency of the tractor trailer that we utilized in this study. These findings suggest that the low rolling resistance tires can help fuel efficiency. (MCA)

**Agency Response:** The data provided are difficult to analyze given the lack of detailed information. The commenter did not indicate the duration of the test program, how many test runs were completed, and what types of vehicle speeds were encountered during the route. Also, the actual test results were

not shared with ARB to analyze. Thus, ARB is unable to ascertain, based on the comment provided, why no fuel economy benefit was observed with the use of side skirts. In its discussions with other fleet operators, ARB was consistently told by companies using side skirts that they observed a noticeable fuel economy benefit. See section E of the Staff Report and agency response to comment #86 for further information about staff's discussions of these fleets. See also agency response to comment #50 for a more detailed discussion regarding this topic.

- 88. Comment:** There have been significant operational problems reported with the aerodynamic technologies that are currently available. Some of these issues concern specific transportation vocations; others are related to freight movement infrastructure. For example, trailers with side skirts cannot be loaded onto railcars without the side skirts being damaged; trailers with side skirts cannot use tapered or steeply ramped loading docks without sustaining damage, docks at a large number of facilities originally constructed to handle 40-foot trailers. Side skirts have been found to be easily damaged in normal usage such as crossing roadways and railroad tracks and block access to equipment such as tool boxes and spare tire racks that are commonly stored under the trailer body. (CTA2)

**Agency Response:** See agency response to comment #86.

- 89. Comment:** Trailer skirting is ineffective and reduces payload. Rate of speed is essential for aerodynamics such as trailer skirting to be effective. Trailer skirting adds 150 to 300 pounds of weight to the trailer and the skirts do not provide fuel economy in urban settings at lower rates of speed. The higher weight will provide less fuel economy and increase the carbon footprint for trucks. (IWLA)

**Agency Response:** The maximum aerodynamic benefits of trailer skirts are achieved during steady-state highway driving. However, operating the vehicle at lower cruise speeds has shown lower benefits as well. At urban speeds, trailer skirts may only provide nominal fuel economy benefits. As a result, the regulation provides an exemption for trucks driven locally, primarily within the city, and for low-use vehicles, which will likely be driven primarily in the city. These local haul and short haul trucks would have low fuel economy benefits at a high cost and thus, the regulation includes exemption provisions for these trucks. See also agency response to comment #94 regarding the weight of the aerodynamic equipment.

- 90. Comment:** While belly fairings will reduce drag and improve fuel economy, we have the following concerns. First, in a sliding tandem axle when the tandem is moved to comply with bridge weight laws, the fuel economy benefit, on some fairings, is lost because the distance between the tail end of the fairing and the front tire of a tandem-axle trailer is greater than 1-6 inches for optimal fuel

economy. We are then left with carrying extra weight on a trailer. Also, the 200-500 pound weight gain by installing a belly fairing will reduce hauling capacity. (GTI)

**Agency Response:** While it is true that aerodynamic equipment provides the greatest fuel economy benefit under optimal conditions, more modest benefits can usually be obtained under less than optimal circumstances. In the case where the sliding tandem axle is moved back, which creates a greater distance between the fairing and this axle, the trailer skirt coverage will still be significant and provide partial fuel economy benefits. In addition, at least one skirt manufacturer has addressed this issue by having the skirt slaved to the trailer tandem and sliding with it. In the case of the trailer skirt consisting of panels, an additional panel may be added, if appropriate, to increase skirt coverage and maximize fuel economy benefit. See agency response to comment #86 regarding trailer side skirts. See also agency response to comment #94 regarding the weight of the aerodynamic equipment.

91. **Comment:** Most trucking companies have had little or no experience with retrofitted trailer skirts and fairings, even less with these items as original equipment enhancements. How will retrofitted trailer skirts and fairings hold up under normal wear-and-tear? How often will they need to be replaced during the average useful life of a trailer? (For example, the average age of trailers in revenue operation throughout the United States today is about 7.5 years, depending upon type and utilization.) How will retrofits affect trailer warranties? (AZTA)

**Agency Response:** As discussed in the Staff Report, the majority of the interviewed fleets that have used aerodynamic technologies stated little additional maintenance or few damage issues. In the winter, some drivers noted ice buildup but they were easily able to remove the ice from the skirts. Side skirt manufacturers, aware of the need for increased resistance to dents and impact, are using flexible thermoplastic materials for the entire or lower portion of the side skirts such that the material retains its shape when impacted, especially at low speeds. One manufacturer has also designed retractable side skirts to avoid any impact at all with angled docks or elevated railroad tracks. In addition, discussions with fleets show that many cases of side skirt damage were caused by driver error. Thus, driver education would also help minimize damage incidents.

The warranty of the aerodynamic technologies will vary by manufacturer and by product type. For example, one manufacturer of trailer skirts will warrant its trailer skirts for 5 years while another manufacturer warrants them for 1 year. Another manufacturer of trailer skirts expects a 10 year service life in normal operation. Still another manufacturer has partnered with a major manufacturer of refrigeration units for trailers and tractors to provide its services and warranty on aerodynamic devices. A comparison of the various verified SmartWay

technologies will aid truck owners in choosing the best technology or combination of technologies. The impact of trailer retrofits on trailer warranties is a matter to be addressed with individual trailer manufacturers and dealers.

- 92. Comment:** According to ARB's own research, more than one million trailer retrofit devices will be needed to meet the requirements of the proposed regulation. Yet we are aware of only two manufacturing entities that currently produce these devices. How will ARB ensure sufficient manufacturing capacity to produce these devices within the deadlines envisioned by the regulation? (AZTA)

**Agency Response:** With regard to the number of manufacturers that produce trailer retrofit equipment, the Staff Report, published in October 2008, identified four companies that manufactured SmartWay verified trailer side skirts as well as three other companies that produced front trailer fairings and another company that produced rear trailer fairings. As of September 2009, according to the SmartWay website, the number of companies with SmartWay verified trailer side skirts, front trailer fairings, and rear trailer fairings grew to nine, four, and four respectively.

While the Staff Report identified more than one million impacted trailers, these trailers will not be required to be retrofitted all at once. If a fleet owner chooses to participate in an optional implementation schedule, only a certain percentage of impacted trailers will be affected each year, beginning in 2010. For example, in 2010, a large fleet will only be required to retrofit five percent of its trailer fleet to comply with the requirements. Such flexibility not only allows fleets to spread the cost of implementation over several years but also to recover this cost through fuel savings generated by impacted trailers. The phase-in schedule will also spread the number of retrofit equipment required for the entire trailer fleet over many years.

- 93. Comment:** The only available aerodynamic equipment for compliance would add another 3 feet to the overall length of the vehicle, resulting in a total of 76 feet for the overall vehicle and exceeding the 65 foot length restriction for state and local highways. (Upfold)

**Agency Response:** (Note: The commenter stated that adding the 3-foot aerodynamic device to the truck would total 76 feet, which implies that the truck without the aerodynamic device is 73 feet. 73 feet is greater than the 65 foot length restriction and thus will already be in violation of the length restriction. Therefore, ARB assumes that the commenter inadvertently stated 76 feet but meant 66 feet instead.)

The federal government sets certain vehicle length provisions that are applicable on the National System of Interstate and Defense Highways (National Network, or NN) and its applicable Terminal Access (TA) routes. These provisions allow vehicles to exceed the State's own length limitations in

order to allow for the use of 53-foot trailers. The provisions also exclude, from vehicle length determinations, the additional length added by rear trailer fairings that meet certain safety standards, as determined by U.S. DOT. Therefore, rear trailer fairings that comply with these standards are not counted towards vehicle length on NN and TA routes.

However, it is true that a trailer equipped with a rear trailer fairing could cause a combination vehicle to exceed the 65-foot length limit currently in force on California Legal routes. Therefore, ARB is pursuing legislation that would exclude the additional length from length determinations on California Legal routes as well.

Lastly, the regulation does not specifically require the use of rear trailer fairings in order to comply. There are other technologies available, such as trailer skirts. See agency response to comment #77 regarding alternative aerodynamic technologies.

- 94. Comment:** Current California and federal laws do not allow a weight or length tolerance to accommodate the trailer equipment. Carriers that comply with the proposed ARB regulation are at risk for violating the state and federal weight and length restrictions. (AZTA)

**Agency Response:** At this time, federal and state laws do not provide an exemption for the weight of trailer aerodynamic equipment. Therefore, trucks retrofitted with aerodynamic equipment must not exceed the maximum legal weight limit of 80,000 pounds gross vehicle weight. The weight of the trailer equipment will not likely affect motor carriers that haul cargo with less than the maximum weight capacity; however, motor carriers that carry cargo at the maximum weight capacity must consider the trailer equipment weight when determining how much cargo the truck may carry (i.e., weight-limited load).

See agency responses to comments #77 and #93 regarding vehicle length restrictions.

- 95. Comment:** The fuel economy improvement of using a nose fairing will vary greatly based upon the gap between the back of the tractor and the front of the trailer. If this gap is kept to a minimum and the tractor already carries the full aerodynamic package, it will provide nominal improvement, if any. Finally, the nose fairing adds 50 to 150 pound weight gain, reducing the cargo hauling capacity. (GTI)

**Agency Response:** This regulation does not require that fleets utilize any particular aerodynamic technology, but rather leaves the choice to the fleet owner. ARB agrees that there may be circumstances when a trailer gap reducer (nose fairing) may not offer as much fuel economy improvement as in other circumstances, depending on the configuration of the tractor-trailer. In

those situations, a fleet may select one or more other technologies in order to meet the 5 percent (or 4%) reduction required by this regulation. Nevertheless, several trailer front fairings have been verified by SmartWay to achieve a one percent or greater improvement in fuel economy. The testing required for verification specifies that the tractor must be equipped with features typical of line haul combination trucks, including a high roof fairing, side cab extender fairings, and aerodynamic profile. Thus, even with these tractor features, trailer gap reducers will still be effective in maintaining smoother air flow around the vehicle and reducing aerodynamic drag. See the agency response to comment #94 regarding the weight of the aerodynamic equipment.

- 96. Comment:** Reducing the vortex behind a trailer will improve the truck fuel economy; however, the boat tail designs that we have seen or evaluated are not easy or easy enough to employ. They will take man-hours each and every day. (GTI)

**Agency Response:** In September 2009, there were four rear trailer fairing technologies verified through the SmartWay program. One rear trailer fairing can be opened in about six seconds and closed in about eight seconds while allowing drivers to swing trailer doors around to the sides of the trailer in the usual way for full cargo access. Another type of rear trailer fairing requires a couple of minutes to open and close to allow full access for the trailer doors. Therefore, the use of the rear trailer fairing should only add between a few seconds and a few minutes to load and unload, depending on the technology; these technologies will not require an overly burdensome amount of man-hours each day to deploy and retract the devices. Trailer owners should review the rear trailer fairings verified through the SmartWay program and determine the best technology to meet their operation's needs.

- 97. Comment:** Test track results may show the fuel economy of a particular tire at a particular speed, however, when the same tire is used for an over-the road test, the results will vary greatly. First, low-rolling resistance tires diminish the traction of the tire, which equates to greater stopping distances and more accidents. There is a balance between rolling resistance and fuel economy that needs to be maintained and considered by application. Second, while wide-base tires will cost the same as two single tires, the longevity of the tread and the casing are half that of a set of single tires. Wide-base tires also require a different wheel. Therefore, the transition cost from eight single tires to four wide- base tires could cost from \$3,000 to \$5,000 per piece of instrument. Finally, the rubber for a low-rolling resistant tire is harder and will not handle impacts as well as softer rubber composition and therefore will result in more failures on the road. (GTI)

**Agency Response:** As discussed in the Staff Report, the development of low-rolling resistance tires began largely in response to the 1975 Energy Policy Conservation Act, and since 1980, the tire and rubber industry has responded

by reducing the rolling resistance of tires by more than 50 percent. Thus, reducing the rolling resistance of tires is not a new concept but has been researched and developed over several decades. Requiring the use of the lowest rolling resistance tires through the SmartWay program will achieve additional fuel reductions compared to conventional tires. One of the test methods for the verification of SmartWay low-rolling resistance tires, SAE J1321 fuel consumption test, requires testing on a test track at defined speeds. While only limited vehicle speeds are tested, the test cycle broadly represents real-world driving.

The regulation requires the use of SmartWay verified low-rolling resistance tires. Vehicle owners may choose to use SmartWay verified dual tires or single wide tires (single wide tires replace the double tire on each end of a drive or trailer axle) to comply with this requirement. The main advantage of using SmartWay verified dual tires over single wide tires is that no modification to the vehicle needs to be made. The Staff Report lists four manufacturers that produce SmartWay verified dual tires. Anticipating that fleets will utilize this less costly option to comply with the requirements, the cost analysis included only the cost for the use of SmartWay verified dual tires.

Tire manufacturers have made improvements to both the SmartWay verified tire casing and tread design over the years. Today's technology may perform and last as long as conventional tires such that stopping distances and handling impacts are not any different from conventional tires. In fact, low-rolling resistance tire casings are subjected to less heat and fatigue, thereby improving the likelihood that the casings of SmartWay tires will be good candidates for multiple retreading and thus may have a longer overall life than conventional tires.

## **F. Safety**

- 98. Comment:** While belly fairings will reduce drag and improve fuel economy, the fairings will drag on the ground and be damaged when backing in or pulling out of an angled dock, depending on the make and model of the fairings, as well as being damaged due to road debris, curbs, etc. A damaged trailer cannot be moved and would require a road call to repair or tow the trailer. (GTI)

**Agency Response:** The SmartWay program verifies two categories of trailer side skirts (sometimes called belly fairings), one of which is estimated to achieve a four percent or greater fuel savings and the other a five percent or greater fuel savings. The latter category incorporates advanced designs and/or increased side coverage to further reduce aerodynamic drag as compared to the four percent fuel savings category. Currently verified side skirts are made of aluminum or thermoplastic materials and may be constructed of a single panel or of modular panels for each side. Side skirt manufacturers, aware of

the need for increased resistance to dents and impact, are using flexible thermoplastic material for the entire or lower portion of the side skirts such that the material retains its shape when impacted, especially at low speeds. One manufacturer has also designed retractable side skirts to avoid any impact at all with angled docks or other steep inclines. In addition, discussions with fleets show that many cases of side skirt damage were caused by driver error. Thus, driver education would also help minimize damage incidents.

If, however, the side skirt is damaged, the truck driver will have to assess whether the vehicle is safe to drive back to its home or local base for repair or whether a road call is necessary to repair or tow the trailer. The regulation requires that aerodynamic technologies be securely fastened to the trailer, must not be used with missing sections, and must not be used if damaged to such an extent as to compromise their effectiveness. Thus, if there is damage, the driver must determine the extent of the damage, and if the skirt is only dented or slightly cracked but not broken off, it may be safe to drive. If serious damage occurs to the side skirt, a road call may be necessary to repair or tow the trailer.

- 99. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. SmartWay does not test for or certify safety. ARB must factor in the public safety consequences of requiring the mounting of equipment whose safety has not been certified. Also, the insurance costs associated with having to install equipment that has no safety certification need to be taken into account. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** The regulation specifies that any aerodynamic technology used on a tractor or trailer must be in good operating condition such that they be securely fastened to the tractor or trailer and not be used with any missing sections. In addition, the technology must be installed according to the manufacturer's specifications. Trailer owners and vehicle drivers are required to ensure that these good operating conditions are met before a vehicle is operated on California highways.

While it is true that the SmartWay program does not test for or certify safety, the aerodynamic devices are exterior components placed on the vehicle and do not impact the engine or any combustible component, and thus do not cause any imminent damage to the vehicle. The main concerns are if a component falls off or cracks, or if an accident occurs. Such occurrences should be treated the same as if any tractor-trailer exterior component failure happens. For example, for safety purposes, broken components may be detached and placed within the trailer or tractor cab and the vehicle brought to a repair shop or to its home base for repairs. Discussions with fleets that have utilized the aerodynamic components reported very few incidents of damage and any damage incidents that did occur were minor. Some incidents were caused by

driver error, which can be prevented, or at least minimized, through driver education and experience.

- 100. Comment:** What are the potential safety consequences of trailer retrofits that may become disconnected and fall off? (AZTA)

**Agency Response:** The regulations specify that any aerodynamic technologies used on the trailer must be in good operating condition such that they must be securely fastened to the trailer and not be used with missing sections. Trailer owners and vehicle drivers are required to ensure that these good operating conditions are met before a vehicle is operated on California highways.

If an accident occurs and the aerodynamic technology is damaged, the truck driver will have to assess, based on the extent and type of damage, whether the vehicle is safe to drive back to its home or local base for repair. Also, some sectional skirt fairings are hinged with removable pins, and the damaged section can be taken down and stored inside the trailer while the vehicle is driven back to its home or local base for repair. If the skirt fairing is only dented but not broken off, the tractor-trailer may be safe to drive. If serious damage occurs to the side skirt or other parts of the trailer, a road call may be necessary to repair or tow the trailer.

- 101. Comment:** In addition, nose fairing damage will occur easily when parked because at drop yards and customer locations, trailers are parked head to tail in fairly close proximity to one another. A damaged trailer cannot be moved, requiring either a road call to repair the damage or possibly towing the trailer. (GTI)

Our customers sometimes tear up our nose cones. (Matheson)

**Agency Response:** The regulation requires existing applicable trailers to be retrofitted with aerodynamic equipment to meet a minimum percent fuel savings: five percent for a dry van trailer and four percent for a refrigerated van trailer. The SmartWay program has verified various trailer front fairings, side skirts, and rear trailer fairings to achieve certain fuel savings. Some of the verified technologies may achieve five percent or greater fuel savings and thus may be used alone to meet the fuel savings requirements. Front front fairings, such as the nose fairing, are verified to achieve an estimated one percent or greater fuel savings and must be used in combination with other technologies to meet the requirements.

To comply with these fuel savings requirements, the trailer owner has the option to choose which aerodynamic technologies would work best in its day to day operation. For example, if trailer front fairings (e.g., nose cones) are not convenient for the user, the owner may choose to use advanced side skirts

alone, to comply with the requirements. In addition, driver education in operating a vehicle with aerodynamic technologies may help minimize driver error and trailer damage.

- 102. Comment:** With the number of accidents at truck stops and customers increasing each year, the extended length of the trailer, in some cases, will cause more trailer swing accidents. Finally, a trailer with a damaged boat tail cannot be moved, requiring a road call to repair the damage or a possible tow of the trailer. (GTI)

**Agency Response:** The rear trailer fairing (also known as a boat tail) is used to streamline the air flow behind the trailer to minimize turbulence and may extend several feet beyond the length of the trailer. Some rear trailer fairings are designed to retract against the trailer doors when not in operation or when the doors are to be opened. To minimize incidental damage at truck stops or other areas where trailer movement is difficult, the rear trailer fairing could be retracted and then redeployed prior to highway use. In addition, as with the use of any new technology, education of drivers on the use of the rear trailer fairing according to the manufacturer's specification will lessen incidences of damage.

If the rear trailer fairing is damaged, the truck driver will have to make the assessment whether the vehicle is safe to drive back to its home or local base for repair. For example, if the fairing is only dented but not broken off, it may be safe to drive. If serious damage occurs to the fairing, a road call may be necessary to repair or tow the trailer.

## **G. Economic Impact**

- 103. Comment:** We have an economy that's based on natural resources, primarily agricultural and timber. These are seasonal activities. And we cannot, despite your staff's claims, simply pass on the cost of these regulations to our consumers. We are completely dependent on heavy-duty diesel equipment for the delivery of goods in and out of Mendocino County. And just like the rest of the State of California, we are struggling. And these proposed rules for both on- and off-road diesel equipment will absolutely cripple our economy. We request the Board complete a detailed economic impact analysis for rural counties. (MendocinoCo)

The proposed regulation should not be adopted until an economic impact on rural communities has been fully addressed and mitigated. (GlenCo, MendocinoCo, SiskiyouCo)

**Agency Response:** Despite the fact that rural counties as well as the State of California and the nation are experiencing difficult economic times that impact the trucking industry, implementation of the regulation cannot be delayed

because it is one of the discrete early action measures mandated by AB 32. AB 32 specifies that the regulation must become enforceable by January 1, 2010. Implementation for new (2011 and newer model year) tractors and trailers begins on January 1, 2010, while implementation for pre-2011 model year tractors and trailers will be phased in over several years, to allow fleets time to comply while still achieving the targeted GHG emission savings by 2020. In addition, while compliance with this regulation will require an initial capital cost, it is expected that a cost savings will ultimately result due to the increase in heavy-duty vehicle fuel efficiency and the resultant usage of less fuel.

AB 32 also requires that all climate change regulations must consider their impacts on the economy of the state, including impacts on jobs, businesses, business competitiveness, as well as impacts on local communities. The results of that analysis were presented in the Staff Report. While it did not specifically address rural communities as a discrete entity separate from the remainder of the state, it did provide an overall picture of the economic impacts on the economy of the state as a whole, which determined that the regulation will provide an overall cost savings to the state of \$8.6 billion over the course of the 11-year period ending in 2020.

**104. Comment:** I'm concerned about the notion that we're going to be able to pass the cost on to consumers. (Goliti, Agrium, CTA2)

**Agency Response:** As stated in the Staff Report, the cost analysis for this regulation was computed based upon an 11-year equipment lifespan, from 2010 to 2020. Over that time span, ARB estimates a net savings of approximately \$8.6 billion to the affected stakeholders in 2008 dollar values. The net savings will be realized by truck operators because of improved fuel economy. Ultimately, the substantial operating cost savings seen by the truck haulers should result in lower costs to ship goods and result in lower cost for consumers. ARB calculated the savings based upon the projected retail price per gallon of ultra low sulfur diesel fuel of \$3.14 in 2010 to \$3.69 in 2020.

Also as stated in the Staff Report, businesses that own only trailers and no tractors may not be able to recover the cost of retrofitting their trailers through fuel savings. Since this regulation applies to all long-haul tractors and trailers that operate in California, regardless of where the vehicles are registered, ARB believes the upfront investment cost to comply will be recovered by haulers by passing it on to their customers, who will in turn increase the cost of their merchandise to the consumer. However, ARB estimates that the average cost to retrofit a trailer, amortized over the 11-year time span, would only be \$30 per month<sup>1</sup>, which is negligible when divided among all the merchandise transported in an average trailer over the course of one month.

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<sup>1</sup> Estimate based on an average price to retrofit a trailer with aerodynamic equipment and low rolling resistance tires of \$2900, and a 6% interest rate.

**105. Comment:** I don't believe we can pass along the costs to shippers. (YTI)

**Agency Response:** See response to Comment #104.

**106. Comment:** The trucking industry is feeling the full effects of the current economic crisis. Many companies are struggling to stay alive. Adding non-discretionary costs to that already difficult enterprise in the midst of the current crisis doesn't make good sense, especially since the analysis that justifies the rule on the basis of projected savings is suspect. What is coming to be known as the "Great Crash of 2008" is beginning to present itself as an economic chasm of uncertain depth and length. CTA requests that ARB take some time to better assess the economic climate and delay implementation of this rule until a more robust analysis has been accomplished. In the interim, staff should be asked to redo its analysis using cost and savings values that are more reflective of reality. (CTA, ACG)

**Agency Response:** The implementation of the regulation does not begin immediately during this economic downturn. Rather, the requirements are spread over a number of years. The first deadline, in 2010, applies only to new 2011 and later model year tractors and trailers. Companies that are struggling financially will not be impacted since they will not likely be making new equipment purchases. The next deadline is in 2012 when all tractors must use low-rolling resistance tires. Some models of these tires cost the same as conventional tires and thus, this requirement may not cause any financial hardship for businesses. It is not until 2013 when in-use trailers (2010 and earlier model year) must comply with the requirements.

To provide flexibility, trailer owners have the option to participate in phase-in schedules rather than meeting the 2013 trailer deadline. The phase-in options were crafted to spread the cost of implementation over several years and gives smaller fleets that have less financial resources and purchasing power slightly more time for implementation. If an owner-operator chooses to participate in the phase-in option, they would not be required to retrofit their 2010 and older model year trailer until 2014. For an affected trailer fleet of 20 or fewer trailers (small fleet), the required percentages for the phase-in option are 25 percent in 2013, 50 percent in 2014, 75 percent in 2015 and 100 percent in 2016. For a larger affected trailer fleet, the phase-in option begins in 2010 at 5 percent, requiring full compliance by 2015. By 2016, all affected trailers that use the phase-in options will be in compliance. (Note that 2003 to 2008 model year refrigerated trailers with 2003 or newer TRUs have an even more delayed schedule because another regulation has concurrent requirements.) It should be noted that aerodynamic devices and low rolling-resistance tires are expected to reduce operating costs due to fuel savings and thus, over the long term, will be financially beneficial to the businesses.

As described in the “Costs and Economic Impact” chapter of the Staff Report, ARB used reasonable and realistic cost and saving values. The estimated capital and installation costs for aerodynamic devices and fuel efficient tires, and the incremental cost of SmartWay certified tractors and trailers were obtained from equipment (aerodynamic device, tire, tractor, and trailer) manufacturers and fleets that have already adopted the technologies. Although many fleets indicated that no major maintenance was needed other than inspection and tightening loose fasteners, ARB nonetheless considered maintenance costs of the tractor and trailer aerodynamic devices to take care of damages that may occur due to driver errors and accidents. The maintenance cost estimates were again obtained from manufacturers and the fleets that were using the technologies. ARB also considered administrative costs to account for costs incurred by fleets for record keeping, tracking of California compliant tractors and trailers, inspection costs for shippers, and administrative costs during implementation. The estimated cost savings were based on the average annual miles accrued by a long haul tractor of 125,000 miles and the fuel economy improvements realized by the aerodynamic technologies and fuel efficient tires which range from 7 percent for an in-use tractor pulling a refrigerated van trailer to 10 percent for a SmartWay certified tractor pulling a SmartWay certified dry van trailer. These fuel efficiency improvements were based on SAE J1321 test protocol, modeling, and industry input and the technologies have to meet these performance levels in order to be certified or verified by U.S EPA SmartWay Program. Furthermore, only 75 to 85 percent of the VMT was assumed to be accrued at highway speeds benefiting from these improvements. ARB believes that these are very conservative and reasonable estimates and the cost-effectiveness analysis reflects a conservative evaluation of the program costs and claimed benefits. See also response to comment #83.

- 107. Comment:** We want to address the probable impact on the State revenue. The State of California is at its core a revenue generating organization. All programs must create a revenue stream to remain effective, or they become a burden and ineffective. Instituting multiple costly programs on one segment of business in California is not only disastrous to that business, but can wreak financial havoc on the State.

Extrapolating data available from marketing and economic institutes, we produced a most likely model that 10% (15,500) of the trucking businesses will cease to operate due to an inability to fund the mandatory changes. We calculated what the State of California’s approximate revenue loss across multiple agencies would be.

- a. Income taxes based on a two driver one office worker company - \$231,000
- b. DMV fees, 2 tractors with 2/5 trailers per tractor - \$5,525,000
- c. DOT fees, 2 tractors with 2/5 trailers per tractor - \$4,600,000

- d. State sales tax based on paying \$2,000 per company annum - \$31,000,000
- e. Fuel tax revenue based on paying \$1500 per company in annual taxes - \$23,250,000  
(ACG)

**Agency Response:** The commenter did not provide any details on how the cost estimates above were determined or how the information conflicts with ARB estimates on the cost to businesses or to the industry. In addition, ARB cannot comment about businesses ceasing operations, because so many factors are involved in the success or failure of businesses. What ARB can say is that while the regulation will require substantial capital outlay from affected fleets, the regulation will improve the overall efficiency of the industry, which, in the end, is good for the industry and the economy. This regulation is also expected to stimulate innovation and growth in such industries that manufacture and distribute technologies that improve fuel efficiency. But more importantly, the primary reason for this regulation's immediacy is that the cost of inaction is expected to far exceed the cost of prevention. Global warming poses a serious threat to the economic well-being, public health, natural resources, and environment of California. It is this threat that spurred the development and enactment of AB 32.

However, ARB does recognize the severity of current economic conditions in California. Therefore, ARB developed the optional trailer fleet compliance schedules which allow fleets to spread the cost of compliance over several years. See agency response to comment #186 for more information regarding the optional trailer fleet compliance schedules. In addition, there are several financial assistance programs available to help truck and trailer owners with the purchase of cleaner trucks and equipment. See agency responses to comments #145 and #148 for more information on financial assistance programs.

**108. Comment:** An ATA survey of fleet maintenance managers in November 2008 found that the trucking fleets have very limited experience with the technologies ARB is proposing to mandate, and wide variations in the fuel economy improvements and costs of the technologies were also reported. Given these limitations, it is insufficient to base the projected benefits and costs of these technologies on a single scenario that may or may not reflect the operations of the affected fleets. For example, estimated cost savings are based on an assumed average long-haul mileage accrual rate of 125,000 miles per year. The Truck & Bus Regulation, however, estimates average accrual rates for these vehicles ranging from 75,000 to 85,000 miles per year. Additional analyses are needed to determine how sensitive benefit and cost estimates are to changes in operating speeds, annual mileage, fuel costs, capital and maintenance costs, and other factors. Other areas where additional information is needed include: (1) an assessment of the manufacturing and

distribution capabilities for the required technologies is needed; (2) affected trailers are not owned by trucking companies, but are instead owned by shippers; and (3) the impact of the proposed regulation on individual businesses with multi-year scenarios characterizing the timing and level of financing required for individual businesses. (ATA, Con-way)

**Agency Response:** During the rulemaking process, ARB staff contacted several fleets who have already adopted the technologies required by this regulation to find out about their experience with the technologies. As reported in Appendix E of the Staff Report, the majority of these fleets reported positive experience with the technologies and expressed their desire to purchase more of these technologies and install them on more of their trailers. However ARB understands that different fleets will realize different benefits from the technologies depending on how and where they operate the vehicles which include factors such as speed, annual miles per year, road conditions, weather conditions, and area of operation, to mention a few. For example, the benefits from the technologies required by this regulation were evaluated at speeds of 60 to 62 miles per hour. Since aerodynamic drag varies with the square of the speed, the higher the speed of the vehicle, the higher is the fuel savings realized and vice versa if the speeds are lower (see also agency response to comment #46).

Also as discussed in agency response to comment #157, the Truck and Bus rule estimates of average annual mileage accrual rates include the mileage accrued by all tractors including short haul, seasonal tractors, and long haul tractors. Therefore, it should be expected to be less than the average mileage accrual rate for long haul tractors which for the purposes of this regulation is assumed to be 125,000 miles per year. The table below shows how changes in mileage accrual rates and fuel cost affect the fuel savings and payback periods. Specifically the table shows fuel savings and payback periods at accrual rates of  $\pm 25$  percent of the assumed average of 125,000 miles and fuel prices dropping from \$3.14 to \$2.82 per gallon. The results indicate that even at lower accrual rates and reduced fuel costs the fuel savings are significant enough to result in a favorable payback period. ARB believes that although fuel prices fluctuate periodically, the trend is always towards increasing prices, which will result in a much better payback period than that shown in the table.

Average Annual Miles	Fuel Savings gallons/year	Savings	Payback Months	Savings	Payback Months
		@3.14/gallon		@\$2.82/gallon	
156,250	2,266	\$7,114	8.4	\$6,389	9.4
125,000	1,813	\$5,691	10.5	\$5,111	11.7
93,750	1,359	\$4,268	14.1	\$3,833	15.7

Assumptions: SmartWay certified tractor-trailer combination; Incremental cost: \$5,000; Fuel savings: 10 percent; Tractor-to-trailer ratio: 1:1  
Baseline fuel economy: 5.8 miles per gallon  
VMT at highway speed: 84 percent  
Projected fuel cost for 2010: \$3.14 per gallon from Transportation Energy Forecasts for the 2007 Integrated Energy Policy Report, California Energy Commission.  
Fuel cost: \$2.82 per gallon is California diesel fuel cost for the week of September 21, 2009. (Energy Information Administration, Department of Energy)

As discussed in the Staff Report, businesses that own only trailers but not the tractors may not be able to directly recover the cost of retrofitting the trailers, and therefore, they may need to recover the investment by paying less to tractor owners who receive the direct fuel economy benefit or by passing it to customers by temporarily increasing the cost of their merchandise.

ARB also analyzed the impact of the regulation on typical individual businesses such as owner-operators. For a typical owner-operator, the cost of compliance ranges from \$250, if the owner-operator owns only a tractor and thus only needs to install low rolling resistance tires, to approximately \$9,000 for an owner-operator who owns one to two tractors (1.5 average) and 2 trailers (Staff Report, page 63) and replaces them with brand new SmartWay certified tractors and trailers. For such businesses the payback period is less than 2 years.

Many of the companies that manufacture trailer aerodynamic devices are small companies. As discussed in the Staff Report, page 42, staff contacted many of the manufacturing companies to assess their production capability to meet the demand for the technologies. Some of them indicated that they will have the capability to meet upcoming demand for their devices in their existing facilities by increasing the number of shifts they operate or by purchasing additional production equipment to increase the number of production lines. Others indicated that they have licensed their technology to other larger companies that have nationwide dealer and manufacturing networks. For example, Freight Wing, Inc. has partnered with Carrier (a unit of United Technologies Corporation) to sell, distribute, and install trailer fairings. Furthermore, the regulation provides an extended 6-year phase-in compliance plan for large fleets beginning in 2010 and a 4-year phase-in compliance plan for small fleets beginning in 2013. The compliance phase-in years are so spread out over many years that they significantly alleviate the surge in demand of retrofit technologies that would have occurred if full compliance were required during

the first 2-3 years beginning in 2010. Thus, ARB believes that there will be sufficient quantities of aerodynamic retrofit devices to meet the demand when compliance begins in 2010. In discussions with tire manufacturers, the added demand for SmartWay tires does not pose a product availability problem. Also, refer to Staff Report pages 32, 42, and 46 for a discussion of product availability of the required technologies.

- 109. Comment:** Undoubtedly many objections will be voiced regarding the cost of the SmartWay program, its rewards and payback time based upon fuel consumption. These are valid points, due to the current financial state of our economy; the amount of freight being transported has seen a decline. Major carriers are beginning layoffs and load counts are down. (ACG)

**Agency Response:** See agency responses to comment #106 and #124.

- 110. Comment:** The Staff Report's cost/benefit analysis relies on incomplete data. It is unreasonable to approve a regulation whose implementation and benefits are unknown and dependent on future occurrences which may or may not happen. More testing and analysis is required before placing such a significant financial burden on the businesses shipping and carrying goods to and from California. (CBTRI, NTDA)

**Agency Response:** The Staff Report provides a complete cost analysis of the cost and benefits of the regulation. This cost analysis predicts the cost of compliance for a tractor and trailer, as well as the fuel savings and emission reductions that will occur as a result of compliance. The assumptions used in the cost analysis were based on the best available data. Expectations for future changes noted in the Staff Report (i.e., prices dropping because of economies of scale and additional technology manufacturers entering the marketplace) will decrease the price of technologies used in the cost analysis and thus, should make implementation of the regulation even more practical. However, these expectations do not need to be realized to support the regulation since they were not used in the cost analysis. Regarding the comment that more testing and analysis is needed, please see agency response to comment #7.

- 111. Comment:** Combined with the SmartWay program, each tractor trailer combination could cost \$29,000 - \$30,000 to retrofit to meet compliance requirements. Companies with multiple trucks and the industry standard 2.5 trailers per tractor, the cost quickly reaches in excess of \$100,000 just to comply with the first stage. Load counts are down, costs up and money from lenders scarce; this will cause untold financial damage to the trucking industry. (ACG)

**Agency Response:** The cost that the commenter is referring is the cost imposed by the Truck and Bus regulation. It is beyond the scope of this

regulation to respond to comments on the Truck and Bus regulation. However, this regulation is a cost savings regulation. Fleets will recover their expenses back from fuel savings in approximately 1 year for a tractor-to-trailer ratio of 1 to 2.3 years for a tractor to trailer ratio of 2.5. In addition, the compliance plan phase-in years are spread out over six years such that they provide fleets the flexibility to spread out the costs of compliance over several years. Also, see agency responses to comments #145 and #148 for more information on financial assistance programs.

- 112. Comment:** Use of a real interest rate of 5 percent to calculate the annualized cost of equipment purchases and replacement in the Initial Statement of Reasons was misleading. The real interest rates trucking companies are likely to face will be much higher, reflecting the loan industry's view of the riskiness of lending to them. Trucking companies often face rates of 15 to 20 percent under normal economic conditions. If the staff's analysis is repeated using more reasonable assumptions of higher interest rates, lower fuel savings and lower fuel costs, the likely analytical outcome is a measure that will produce a net loss, not a net savings. (CTA)

**Agency Response:** The estimated capital costs and operating cost savings reported in the Staff Report reflect the economic impacts of the regulation on the whole trucking industry affected by the regulation rather than an individual business. Therefore, when the cost-benefit analysis of the regulation is performed on the whole affected industry, ARB believes that it is appropriate and also a standard practice to use the real interest rate which accounts for the time value of money (nominal interest rate minus inflation rate) and brings the money back into present value. Nonetheless, ARB agrees that some truckers who are not creditworthy may have higher capital cost due to high interest rates. To see the effect of higher interest rates on the payback period, ARB conducted sensitivity analyses using 5, 15, and 20 percent annual interest rates. ARB's findings are that savings from fuel use are significant enough to make a good business case even at interest rates higher than 5 percent. For example, a business that purchases a new SmartWay certified tractor and trailer at the incremental cost of approximately \$5,000 (Table XII-1 of the Staff Report) with borrowed money at an interest rate of 5 percent and a loan period of 4 years would recover the cost in approximately 12 months from fuel savings. If the interest rate is increased to 15 or 20 percent, then the payback period would increase by 3 to 5 months, which is slightly longer than that with a 5 percent interest rate, but still a favorable payback period.

- 113. Comment:** The economic climate has changed significantly in the state and the nation since AB 32 was passed. We are here to argue about the timing of this issue. (CPF, YTI)

**Agency Response:** ARB agrees that the economic climate has changed significantly for the worse in the state and the nation since AB 32 was passed.

However, the serious challenges that we face as a state, nation and planet due to the impact of global warming continue to loom over our future. AB 32 requires ARB to take actions to reduce GHG emission in California to 1990 levels by the year 2020, by implementing an array of regulatory actions. As one of the discrete early action measures, this regulation cannot be delayed. ARB has incorporated delayed phase-in opportunities into the implementation section of this regulation, which will provide fleets with flexibility to spread out the costs of compliance over several years. Specifically, large fleets of trailers that choose to participate in the optional Large Fleet Compliance Phase-In, will have 6 years to bring all their trailers into compliance (5% the first year, 15% the second year, 30% the third year, 50% the fourth year, 75% the fifth year, and 100% the sixth year). The first phase-in deadline is January 1, 2011; subsequent deadlines take place each year thereafter until January 1, 2016. Small fleets may choose the Small Fleet Compliance Phase-In for their trailers, over a four year period beginning January 1, 2014, and ending January 1, 2017 (the annual required percentages that must be retrofitted are 25%, 50%, 75% and 100%). Small fleets may also choose to follow the same compliance option as large fleets. These phase-in options provide fleets with the ability to spread out the costs of compliance over several years.

- 114. Comment:** Today, to try to ask carriers and other people in the business to retrofit, repower, replace, and do so simultaneously with the trailer equipment is an economic burden that I don't think is prudent. (YTI)

**Agency Response:** While it is beyond the scope of this document to address the impacts of the Truck and Bus Regulation, ARB considered the impacts of multiple regulations on fleets when developing the compliance strategy for this regulation. For that reason, fleets are offered the opportunity to participate in an optional compliance phase-in as described in the response to comment #113. In addition, ARB offers financial assistance to help address some of the financial burden, as described in the responses to comments #145 and #148.

- 115. Comment:** We want to follow the regulation. We need the money to do that. I can't qualify for any grants. If this goes through, I don't have any choice but to fold up – and put 47 employees out of work. (FTI)

**Agency Response:** ARB appreciates the commenter's desire to comply with the regulation and acknowledges the severity of the current economic climate. While there are no grants available to assist with complying with the regulation, ARB does offer a loan guarantee program as described in the agency response to comment #148. Additional financing information can be obtained through the U.S. EPA SmartWay program. It should also be emphasized that in the long run, trucking companies such as FTI will save money with the installation of the aerodynamic technologies required by the regulation. See agency response to comment #126.

**116. Comment:** This new regulation, timing, speed, could not be the worst. Our customers and investors are pushing our margin to their lowest point. This new regulation is an additional cost that is unbearable at this time. (CDTI)

**Agency Response:** Several provisions in the regulation should ease the financial burden for companies, such as phase-in schedules for regulatory implementation, recovery of the initial upfront technology costs through truck fuel savings over time, and loan assistance programs. See agency response to comment #126.

**117. Comment:** What happens in the trucking industry is overnight these trucking companies will convert employee drivers to independent contractors, generally misclassifying them, in order to avoid having to comply. So trucking companies like Rogers, that have 30 truck drivers, will have to comply. But a trucking company that's working 135 owner-operators, no employees, he won't have to comply at the same time. What you're going to do is actually contribute to furthering the underground economy in this industry. What needs to happen is that you need to make sure that the carriers that actually employ these people, whether they're employee drivers or they're owner-operators, are on the hook to comply. And you don't create perverse incentives in the marketplace to undermine your regulations. (CTPAC)

**Agency Response:** The regulations apply to all tractors that pull 53-foot or longer box-type trailers and the trailers they pull, unless they are exempted as short-haul or local-haul equipment. All requirements apply alike to both equipment operated by employee drivers and owner-operators except for the 2010 and older model year trailer phase-in options. The phase-in options were crafted to provide flexibility to spread the cost of implementation over several years, giving smaller fleets that have less financial resources and purchasing power slightly more time for implementation. If an owner-operator with one trailer chooses to participate in the phase-in option, they would be required to retrofit their 2010 and older model year trailer by 2014. For an affected trailer fleet of 20 or less trailers, the required percentages for the phase-in option are 25 percent in 2013, 50 percent in 2014, 75 percent in 2015 and 100 percent in 2016. For a larger affected trailer fleet, the phase-in option begins in 2010 at 5 percent, requiring full compliance by 2015. By 2016, all affected trailers that use the phase-in options will be in compliance. (Note that 2003 to 2008 model year refrigerated trailers with TRUs have a delayed schedule because another regulation has concurrent requirements.) It should be noted that aerodynamic devices and low rolling-resistance tires are expected to reduce operating costs due to fuel savings and thus, in the long term, will be financially beneficial to the business.

**118. Comment:** I think your payback results are a little exaggerated. All these tests are run at highway speeds. And of course a vehicle has an average speed that's lower than that. And then if you take a 100,000 mile truck, if you divide

by 2.5 on the trailers, you get 40,000 miles. So be conservative on your payback calculations. (Silver Eagle)

**Agency Response:** The Staff Report accounted for an average truck's typical driving pattern and for a 2.5 trailer to tractor ratio. The fuel savings were estimated to be about \$3,700 to \$5,400 per year for a compliant tractor-trailer combination. This fuel savings accounted for 85 percent of the VMT at highway speeds that would benefit fully from the aerodynamic devices. The remaining 15 percent of VMT was not included in the aerodynamic fuel benefit. In addition, for a tractor-trailer, it stated that the owner would be able to recover the initial costs in less than 1.5 years, and that for an owner who had more trailers than tractors, it would require additional time for the payback of the initial capital costs.

**119. Comment:** This is a multi-million dollar mandate without significant benefits for us or the citizens of California at a time when trucking companies and all other businesses are dealing with the most challenging economic environment since the great depression. (Con-way)

**Agency Response:** The projected air quality benefits of the regulation are significant. From 2010 to 2020, a projected cumulative reduction of almost 8 million metric tons of CO<sub>2</sub>-equivalent emissions in California is expected from compliant trucks.

Several provisions in the regulation should ease the financial burden for companies such as phase-in schedules for regulatory implementation, recovery of the initial upfront technology costs through truck fuel savings over time, and loan assistance programs. See agency response to comment #126.

**120. Comment:** The Initial Statement of Reasons analysis of impacts of the GHG regulation is misleading and not reflective of the economic benefits or circumstances trucking companies are likely to face in complying with the rules. The assumptions that ARB staff use in their analysis support conclusions that seriously underestimate the difficulties that companies will face in making equipment investments and benefiting from those investments. (CTA)

**Agency Response:** To obtain the cost of the technology, data were collected from technology manufacturers, fleets that have used the technologies, and the U.S. EPA SmartWay program. The low, average, and high costs for tractor and trailer modifications and for annual maintenance were provided in the cost analysis found in the Initial Statement of Reasons (Staff Report). On average, the incremental cost estimate of purchasing a SmartWay certified tractor and a compliant dry-van trailer is approximately \$5,000. The primary cost benefit from these investments is the fuel savings from operating a compliant vehicle. The expected truck fuel efficiency gain in this example, would be 10 percent due to the aerodynamic and tire improvements. These are the fuel savings

estimates obtained from the SmartWay program to which the equipment or technology has been verified. Many of the fleets interviewed (Appendix E of the Staff Report) noted fuel savings that were within the range of those for which the product was verified through the SmartWay program. The assumptions and estimations used in the cost analysis were the best available data to calculate the cost and benefit of the requirements.

- 121. Comment:** The Initial Statement of Reasons states: “The fuel savings due to the proposed requirements would allow the owner to recover the initial capital and maintenance costs for both the tractor and trailer in less than 1.5 years.” However, the average truck owner has 2.5 trailers. This means it will take 2.5 times longer to recover costs because one tractor cannot pull each of the 2.5 trailers the equivalent of 125,000 miles per year. (CTA)

**Agency Response:** The Staff Report as well as staff’s presentation at the public hearing acknowledge that if an owner has more trailers than tractors, it would require additional time to recover the initial capital costs. The estimated average cost for a 2.5 to 1 trailer-to-tractor ratio which includes a SmartWay certified sleeper cab tractor and 2.5 compliant dry-van trailers is stated to be \$9,200 (Staff Report, page 60, Table XII-1). Such a tractor-trailer combination would achieve a 10 percent fuel efficiency improvement and therefore, would realize approximately \$5,400 per year in fuel savings at fuel prices of \$3.14 per gallon (Staff Report, page 63, Table XII-3). Thus, it would take approximately 2 years to recover the initial cost.

- 122. Comment:** Use of a “projected diesel fuel cost of \$3.14 per gallon” is misleading. Oil prices have crashed since the Initial Statement of Reasons analysis so the assumption of \$3.21 is too high. The current OPEC target price of \$70 per barrel crude is equivalent to \$2.31 per gallon diesel and it may be too high. Lower fuel costs make for lower savings and lower cost-effectiveness. (CTA)

**Agency Response:** The \$3.14 projected diesel fuel cost was a projection of fuel cost in 2010 by the California Energy Commission. If \$2.31 is used instead of \$3.14 to calculate the annual fuel savings for a compliant tractor-trailer, the fuel savings would be approximately \$4,000. The payback period would be less than 1.5 years for a tractor-trailer and less than 2.5 years for a 2.5 to 1 trailer to tractor ratio. These payback periods are still reasonable and cost-effective for the implementation of the regulation.

- 123. Comment:** The simplistic “addition” of projected savings of individual pieces of tested equipment is misleading. The ARB staff’s fuel savings estimate of 10 percent is not supported by empirical data because there has been no SmartWay testing that summarizes the joint effect of adding various measures. Lower savings will further lengthen time to recover costs and reduce the

general cost effectiveness of the measure. The analysis should use a lower percentage of fuel savings. (CTA)

**Agency Response:** In the Cost and Economic Impact Section of the Staff Report, Table XII-3 identifies the annual operating cost savings for the regulation. Affected tractor-trailers will observe an estimated 7 to 10 percent fuel savings, depending on the required modifications. The fuel savings associated with the use of low rolling resistance tires for the tractor and trailer is about 3 percent, while the remaining savings (4%-7%) is attributable to the aerodynamic devices. The fuel savings realized using low-rolling resistance tires should not overlap with the savings realized using aerodynamic devices, since the mechanisms which result in the vehicles being more fuel efficient are different for the two types of technologies. Therefore, these savings can be simply added together.

Fuel savings estimates for the design features of a SmartWay tractor were developed using a combination of U.S. EPA testing and modeling results, review of the technical literature, and technical input from industry experts including truck manufactures. The estimated benefits of these additional features are 1 percent from fuel tank fairing, 1 percent from aerodynamic mirrors and bumpers, and up to 4 percent from a base aerodynamic profiled tractor model with roof fairings and cab side extenders relative to a conventional classic tractor. Based on testing and modeling, industry experts including truck manufactures estimate that a SmartWay certified tractor can improve fuel efficiency by approximately 2 to 3 percent due to aerodynamic improvements (excluding tires) relative to an average moderately aero profiled tractor with roof fairings and cab side extenders. In estimating the cost savings from using a SmartWay certified tractor, ARB used a total of 3.5 percent improvement including 1.5 percent improvement from using low rolling resistance tires on the tractor only.

For dry van trailers equipped with a front trailer fairing and side skirts, the estimated fuel savings were based from testing the trailer with side skirts separately and both components together. For example, Freight Wing's test<sup>2</sup> of the side skirts alone and in combination with front trailer fairings under the modified SAE J1321 test protocol showed approximately 4 percent and 6 percent fuel savings improvement, respectively, at a highway speed of 65 miles per hour. Note that the improvement from the combined effect is higher than the 5 percent improvement ARB used to estimate the cost savings from a dry van trailer. The U.S. EPA also conducted tests to evaluate the combined effect

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<sup>2</sup> Freight Wing, 2007. Freight Wing, Inc. Technology, Test Results and Benefits Summary. 2007.

of the various trailer aerodynamic devices and low rolling resistance tires<sup>3</sup>. One of U.S. EPA's tests evaluated the combined effect of trailer aerodynamics (side skirts, front trailer fairings, and an inflatable boat tail) and single wide tires under the modified SAE J1321 test protocol. The test results showed that the combined effect of the three trailer aerodynamic components alone (without the single wide tires) improved the fuel efficiency by 5 percent and 12.6 percent at highway speeds of 55 miles per hour and 65 miles per hour, respectively. In another test<sup>4</sup>, the U.S. EPA demonstrated that the combined effect of a trailer side skirt and front trailer fairing improved fuel efficiency by 6.6 percent at highway speeds of 65 miles per hour. Thus, ARB's use of fuel efficiency improvements of 10 percent for a SmartWay certified tractor and trailer with side skirts and front trailer fairings, and the use of low rolling resistance tires on both the tractor and the trailer is not simplistic addition but based on tests, modeling, and input from the industry. Therefore, the fuel savings in the Staff Report are not overestimated for the tractor and trailer. Furthermore, it should be noted that unlike many regulations that do not have a cost savings, this regulation will result in fuel savings such that an owner can recover his/her initial costs.

**124. Comment:** One way or another there are emissions reductions associated with this economic downturn. VMT and fuel use is down, and that means that emissions are down. Coupled with the fact that people are going out of business, people are getting laid off, and people are losing their benefits, it makes for a very unique situation. (CTA2)

**Agency Response:** The current economic downturn may cause less freight transport, resulting in emission reductions in the short term. However, the economic downturn cannot be relied upon as the sole means of emission reductions needed to reach the goals of AB 32 by 2020. The regulation has been shown to be technologically feasible and cost-effective, projected to reduced GHG emissions by 1 MMT (CO<sub>2</sub>-equivalent) and 1.4 tons per day of NO<sub>x</sub> in 2020 statewide. Therefore, the regulation is appropriate to reduce GHG and other pollutants despite the economic downturn.

**125. Comment:** Have any cost analyses of installation time of SmartWay modifications been performed by the Mitchell Manual? (ACG)

**Agency Response:** The cost analysis of SmartWay equipment installation time was not performed by Mitchell Manual. Rather, the installation costs used

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<sup>3</sup> Bachman, Leon J., Anthony Erb, Cheryl Bynum. Effect of Single Wide Tires and Trailer Aerodynamics on Fuel Economy and NO<sub>x</sub> Emissions of Class 8 Line-Haul Tractor-Trailers. Society of Automotive Engineers 2005-01-3551

<sup>4</sup> Bachman, L. J., A. Erb, C. Bynum, B. Shoffner, H. De La Fuente, C. Ensfield. Fuel Economy Improvements and NO<sub>x</sub> Reduction by Reduction of Parasitic Losses: Effect of Engine Design. Society of Automotive Engineers, 2006-01-3474

in the Staff Report were gathered from a variety of sources. First, fleets identified in Appendix E and other fleets with experience in the installation of aerodynamic components provided installation times. In addition, aerodynamic equipment manufacturers provided the installation time required for each verified component. The SmartWay website was also another source of information. Finally, fleet newsletters that discussed aerodynamic equipment provided additional information. The information obtained from these reliable sources were used to calculate the installation time used in the cost analysis.

- 126. Comment:** The proposed regulation will significantly and unreasonably increase the cost of transporting goods in the state. The proposed regulation is too much and too expensive for truck owners to comply with. (Alford, Anonymous, Bowans, Eaton, Ingram, Perrigue, Rader, R.D., Sambucetti2, TLTLLC, Wright)

**Agency Response:** The cost of compliance with the regulation will not be unreasonable or too expensive for truck owners to comply with, for the following reasons. First, the total cost of compliance for a truck fleet will be spread over several years in order to ease the financial burden. Tractor aerodynamic requirements apply only to new 2011 and later model year tractors beginning in 2010, and low rolling resistance tires are required on older tractors two years later. Trailer aerodynamic and tire requirements begin in 2010 only for new 2011 and later model trailers. Trailer owners have the flexibility to comply with the 2010 and older trailer requirements over a period of six years. Second, unlike many other regulations, the requirements will actually result in a fuel savings from compliant trucks. An average of 7 to 10 percent fuel savings is expected on a compliant tractor-trailer combination, which translates to approximately \$4,000 to \$5,700 per year on a truck with average long-haul mileage (for assumptions, see the Staff Report, page ES6). Depending on the ratio of tractors to trailers, the owner may be able to recover the initial cost in less than 1.5 years to several years. Thereafter, the owner will actually save money in fuel when operating the compliant tractor-trailer, compared to a non-compliant tractor-trailer. Finally, some financial assistance and grant programs are available to assist tractor and trailer owners, such as the ARB Providing Loan Assistance for California Equipment Program and the U.S. EPA SmartWay Clean Diesel Fuel Finance Program.

- 127. Comment:** The proposed regulation will put companies out of business and should not be passed. (DiSalvo, Doggett, Eaton, Ellington, Gill, Hobbs, IDI, Jenkins, MCT, NTC, Panella, Phillips1, Phillips2, RZT, Rader, Renner, RosePadel, Sambucetti1, Sanders, Smith, STI, STLLC, SVP, TLTLLC, Wright, VanWingerden)

**Agency Response:** See agency response to comment #126.

**128. Comment:** The proposed regulation will be cost prohibitive for trucking companies to adopt and will have severely negative economic impacts at a time when trucking companies and all other businesses are dealing with the most challenging economic environment since the Great Depression. It is simply impractical to presume that Con-way and other companies will be able to pass the added costs of implementing these technologies on to their customers, particularly during the current economic climate. Many carriers may choose to stop providing service to and from California, as it will be very expensive, if not cost prohibitive, for them to implement the technologies mandated by the proposed regulation. In order to comply with the proposed regulation, Con-way will be forced to re-direct resources away from proven fuel saving technologies and strategies to other technologies which simply do not work in its operation. (Con-way)

**Agency Response:** There are several provisions in the regulation that should ease the financial burden for companies such as phase-in schedules for regulatory implementation, recovery of the initial upfront technology costs through truck fuel savings over time, and loan assistance programs. See agency responses to comment #126 for cost concerns and to comments #85 and #86 for technological feasibility concerns.

**129. Comment:** From an economic perspective, emission levels and timelines for compliance in the proposed changes would force expensive carrier equipment upgrades, the costs for which when passed along through this supply chain would constitute unsustainable increases for all parties, causing irreparable harm to the California trucking and agricultural industries. (Agrium, FTI)

If the proposed regulation was initiated in its current form, cost increases for companies with economic strength to stay compliant would rise 6% to 8% each year between 2010 through 2022, as compared to the current 2% to 3.5% annual increases. Companies without the economic strength to make the proposed changes would have even more severe rate increases. (Agrium)

**Agency Response:** The regulation contains provisions to ease the financial burden for companies. The estimated cost for upgrading existing tractors with low rolling resistance tires is negligible to \$500. For existing trailers, the estimated cost is about \$2,900 per trailer. Flexibility provided in the regulation allows trailer owners to spread the implementation of the requirements over several years, from four to six years depending on the size of the applicable trailer fleet. Since compliant tractor-trailer combinations will realize a 7 to 10 percent fuel savings, one major benefit of these phase-in schedules is that the operating cost savings from complying vehicles in the first phase-in year can be used to pay for the second and later phase-in compliance years. While it is possible that the cost of regulatory implementation during the initial years may be passed to the consumer, it will not likely be a permanent cost as compliant

trucks will cost less to operate due to fuel savings. Also see agency response to comment #126.

The second commenter noted that the regulation will result in a 6 to 8 percent cost increase for companies due to the changes to Title 17. However, the data provided by the commenter were for the Truck and Bus regulation (i.e., power equipment cost percentage and fleet modernization percentage) and not for the GHG rule. These two regulations were concurrently brought before the Board and approved with modifications at the December 2009 hearing and the commenter may have confused these comments intended for the Truck and Bus regulation.

- 130. Comment:** As a result of the high cost of compliance, many carriers will stop sending trucks to California and refuse to deliver into the State to avoid the additional costs to comply with the proposed regulations. (Anonymous, Bowans, FTI, Mason, Upfold)

This will cause unreasonable price hikes of goods and services of products coming into the state from other places. (FTI)

To recover costs for regulatory compliance, it's feasible that some fleets could start implementing a "California surcharge" that will result in higher costs of goods to California consumers. (CREI2)

**Agency Response:** The estimated compliance costs for a tractor-trailer range from \$2,900 to \$5,000. As a result of the technology changes to the vehicle, an average of 7 to 10 percent fuel savings is expected on a compliant tractor-trailer combination, which translates to approximately \$3,700 to \$5,400 per year on an average long-haul truck (for assumptions, see the Staff Report, page ES6). Depending on the ratio of tractors to trailers, the owner may be able to recover the initial cost in less than 1.5 years to several years.

In addition, flexibility provided in the regulation allows trailer owners to spread the implementation of the requirements over a period of 6 years, from four to six years depending on the size of the applicable trailer fleet. One major benefit of these phase-in schedules is that the operating cost savings achieved in the first phase-in year can be used to pay for the second and later phase-in compliance year costs. While it is possible that the cost of compliance during the initial years may be passed along to the consumer, it will not likely be a permanent cost as compliant trucks will cost less to operate due to the fuel savings. See agency response to comment #126.

- 131. Comment:** ARB is assuming that fleets operating occasionally in California will be able to segregate their equipment, both tractor and trailer, and install upgrades to only that subset. This assumption is false because fleets that operate only partially in California will require full fleet implementation for the

following reasons: 1) freight destined for California originates out of virtually every part of the nation, 2) trans-loading at the California border onto California compliant equipment is not an option with most of the food products that we haul, and 3) even if compliant equipment could be positioned in advance, the lack of isolated trailer pools in most one-way trucking applications prohibits reserving compliant equipment for California destined loads. We urge ARB to consider the far reaching impact of these regulations for carriers that operate only partially in California. We are concerned about the implementation and maintenance costs for full fleet implementation. (CREI2)

Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. There is no analysis of the costs and loss of efficiencies that will be borne by companies who would have to create and dispatch a separate fleet of compliant trailers for their California business. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2, ACG)

**Agency Response:** In Section VI of the Staff Report, the impacted fleet operating on California highways is estimated at about 436,000 tractors and 1,090,000 trailers in 2010. The full lifetime capital cost of implementation of the regulation is estimated at \$8.5 billion. Included in this cost is an annual administrative cost of \$3.50 per affected tractor and \$5.00 for affected trailer to account for record keeping, tracking of California compliant tractors/trailers, and other administrative costs during the first five years of implementation as well as an annual maintenance cost of \$143 per tractor and \$120 per trailer.

At a 7 to 10 percent fuel savings for compliant vehicles, the lifetime savings of the regulation will be about \$17.1 billion resulting in a net cost savings of \$8.6 billion over the life of the regulation. These costs and savings assume that an interstate company will only modify the portion of its fleet that travels on California highways since a company may choose to dedicate a certain fleet of tractors and trailers to transport freight to and from California. If companies choose to bring additional equipment into compliance to enhance operational flexibility, they should also obtain even greater savings over the useful life of the compliant equipment. For companies that only have a portion of their business in California, they may choose to create a sub-fleet of compliant trailers, although full fleet implementation may offer benefits such as lower operating costs due to fuel savings, and purchasing power for aerodynamic equipment and low-rolling resistance tires resulting in lower aerodynamic equipment and tire prices for its fleet.

**132. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. The rule will put California registered trucking companies at a competitive disadvantage vis-à-vis out-of-state trucking companies because it will take the lower mileage California

companies significantly longer to recover their costs. The cost-effective analysis must include an estimate of the number of California registered companies that will be forced out of business by the rule as well as the impact of that loss to the state. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** As stated in the Staff Report, in 2010, affected California interstate and intrastate trucks are estimated to be less than 10 percent of the total number of affected trucks. The remaining affected trucks are neighboring out-of-state and non-neighboring out-of-state trucks. Although California trucks make up less than 10 percent of the total number of trucks, in 2010, the VMT by California trucks will be about 34 percent of the total VMT by trucks in California. Thus, California trucks are substantial contributors to the overall truck emission inventory in California, and regulating these trucks is an important component of California's emission control program. For a response regarding whether ARB's cost estimates are realistic, please see agency response to comment #106.

To aid businesses whose primary economic effect is in California, some financial assistance programs are available to assist tractor and trailer owners, such as the ARB Providing Loan Assistance for California Equipment Program. One of the qualifications to participate in this loan assistance program is that recipient companies must operate in California a minimum of 51 percent of their total annual mileage. See agency response to comment #126.

- 133. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. Companies that own trailers but no or few tractors will have no way of recovering their costs since any savings will only accrue to the tractor owner. Moreover, the actual presence and amount of savings will depend upon factors, such as speed at which a trailer is hauled, that are beyond a trailer owner's ability to use to base charges for the use of their equipment. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** Businesses that own only trailers but no tractors may not be able to directly recover the cost of retrofitting their trailers through fuel savings. It should be noted, however, that the tractor pulling a compliant trailer will achieve a noticeable fuel savings, the extent of the fuel savings depending on the drive cycle of the truck. Trucks that will not benefit greatly from the aerodynamic equipment will likely only be those that operate local haul or short haul, and trailers that are used for such purposes are exempt from the requirements. A trailer owner may recover its compliance costs by charging a higher fee for the lease of the equipment (that would be offset by the lessor through a reduction in tractor fuel usage). Additionally, some financial

assistance is available to assist tractor and trailer owners, such as the ARB Providing Loan Assistance for California Equipment Program and the U.S. EPA SmartWay Clean Diesel Finance Program. See also responses to comments #104 and #108.

- 134. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. There is no test evidence from SmartWay that the individual aerodynamic benefits of SmartWay technologies can be simply added together. Thus, there is no scientific basis for staff's projected savings percentages. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** See response to comment #123.

- 135. Comment:** My leased truck cannot be modified to comply with the proposed regulation during its lease term. When the truck is paid for in 2010, its value will not be worth the estimated \$30,000 required for upgrade. In this current poor economic state, funds will not be available to comply with the proposed regulation. (Upfold)

**Agency Response:** Although the commenter was responding to the Truck and Bus regulation, ARB is responding to the cost the owner will face when complying with the GHG regulation. Based on the information provided, the commenter owns one truck that is a 2009 or older model year truck and no trailer. Based on this assumption the cost to comply with the regulation will be negligible to \$500.

- 136. Comment:** The proposed regulation has not considered the following added cost of the usage of single wide tires: wheel damage due to a tire blow out (\$900 for new wheel and tire), service call for a repair truck (\$200), damage done to equipment before operating on the road, and increased potential of accidents. (Upfold)

**Agency Response:** The regulation does not exclusively require the use of single wide tires. Rather, the low-rolling resistance tire requirement can be met by the use of either SmartWay verified dual tires or single wide tires. Using a single wide tire and rim instead of the dual wheel configuration weighs less, thus allowing for greater freight capacity. Single wide tires also provide excellent low-rolling resistance and fuel economy. However, the major disadvantage is that if the single wide tire becomes deflated or destroyed, driving the truck to a service location is difficult without risking damage to the rim. A service call for a repair truck may be necessary. If the commentor is concerned about this issue, compliance with the low-rolling resistance tire requirement can be met with the use of SmartWay verified dual tires instead of single wide tires.

**137. Comment:** Your estimates on the costs to the economy are far off. The State has no money to subsidize these trucks to comply with the proposed regulation. (Lloyd)

**Agency Response:** The Staff Report identifies various federal, state, and local programs that may provide assistance for owners to comply with the regulation. One such state program, created by Assembly Bill 118, creates a loan guarantee program for vehicle owners to comply with this regulation and other ARB regulations. The loan may be used to purchase complying tractors, trailers, and aerodynamic equipment and tires. Vehicle owners must meet certain criteria in order to qualify for the loan. Also, see agency response to comment #148.

**138. Comment:** The only companies that will be left standing after the regulation takes effect will be the national mega fleets. Large companies will not be financially impacted by the proposed regulation because they can merely send all of their new equipment into California and use their older equipment out of state. Companies that only operate in California have no outlet for the non-compliant equipment. Therefore, ARB will unlevel the playing field and allow the huge companies to monopolize the state. (Lawley)

**Agency Response:** The regulation applies to all affected trucks traveling on California highways and is not biased towards out-of-state versus in-state fleets or “mega” fleets versus smaller fleets. All long-haul fleets, regardless of size, will be required to comply with the requirements, resulting in improved fuel efficiency. In addition, the regulation does not require vehicle owners to dispose of non-compliant vehicles, but rather to retrofit them with aerodynamic devices and low rolling-resistance tires.

To provide flexibility for fleets, optional phase-in schedules are provided for trailers, as opposed to requiring all affected trailers to comply by a certain date. Small fleets (20 and less trailers) have added flexibility through a later implementation and phase-in schedule (beginning in 2013, instead of 2010 for large fleets.) This allows added time to generate needed capital to bring trailers into compliance. In addition, unlike many other regulations, compliance with the regulation will save fleets money through less fuel usage over time. In addition, California incentive programs are geared toward helping California businesses obtain loans for compliance with regulations, and are targeted at “small businesses” (less than 100 employees, less than \$10 million annual revenues) rather than the large businesses. Moreover, only vehicles that operate a majority of the time on California highways qualify for the programs. These and other provisions should ensure that small fleets and California fleets continue to be competitive.

**139. Comment:** The proposed regulation will cause depreciation in the value of trailers. Prospective buyers of equipment will reduce the equipment purchase price to compensate for the retrofits that the Board will require, resulting in a loss of value to the seller. The net result will be that the obsolete pieces of equipment will be kept on the road, in which the Board will have invested much needed capital in an obsolete piece of equipment. The sellers of the equipment will have to increase freight rates to compensate for the loss in trade-in value. (CREI1)

The value of my customer's trade-ins has already dropped thousands of dollars with just the threat of this regulation. If it passes, the used truck market will evaporate in California leaving my customers scrambling to stay in the business. (Fitzgerald)

This regulation would make my equipment unsalable in California. (Spainhoward)

Mandating SmartWay type equipment will further devalue used trailers in this poor economy. Trailers will be virtually useless if they don't meet the new requirements. (PTS)

**Agency Response:** Certain provisions in the regulations will minimize sudden changes to the value of the equipment. First, to spread the cost of compliance over several years, optional trailer phase-in schedules are provided, as opposed to requiring all affected tractors and trailers to comply by a certain date. The large trailer fleet schedule begins in 2011, requiring only five percent compliance by January 1, 2011; full compliance will be required by January 1, 2016. The small trailer fleet schedule begins by January 1, 2013 and ends by January 1, 2017. Another benefit of the phase-in schedules is that operating cost savings from vehicles brought into compliance in the early phase-in years can be used to pay for the costs of compliance during subsequent. Second, the retrofit modifications should add monetary value to equipment brought into compliance because aerodynamic devices are value-added items that result in lower fuel usage for the vehicle. Finally, equipment that is used for local haul or short haul is exempted from the provisions. Therefore, non-complying trailers can still be sold into the local or short haul market, without affecting their value.

**140. Comment:** Cost-effectiveness deals with several aspects, including the initial cost of the aerodynamic technologies, the costs of maintaining these devices in service, the repair costs due to possible damage while in service and downtime losses during repairs. The costs may also include the added weight to the trailers which would reduce the overall payload capacity and in turn result in additional trucks and trailers on the highways in order to transport the same amount of cargo that is currently being transported, thereby potentially negating fuel savings and GHG reductions while increasing the potential for more motor vehicle collisions. (TTMA)

**Agency Response:** ARB's cost-effectiveness analysis included the initial cost of the aerodynamic technologies and the increased maintenance and repair costs when the aerodynamic devices are damaged. The cost increase for a compliant sleeper tractor and trailer ranges from \$3,000 to \$7,300, with an average of \$5,000. The estimated increased cost for maintenance and repair for a compliant sleeper tractor and trailer ranges from \$105 to \$399, with an average of \$263.

The cost of downtime losses during repairs was not included in the calculations. Most of the fleets indicated that maintenance and repair needed for tractor fairings was minimal, and subsequently, the down time should be minimal as well. Damage to trailer side skirts, however, may occur and result in some vehicle downtime to repair the component. Some of the fleets contacted by ARB staff indicated that they had extra skirt panels and components in stock so that this downtime was minimized.

Regarding the comment that the added weight of aerodynamic devices will reduce the overall payload capacity of trailers thereby negating the fuel savings and GHG benefits achieved, ARB asserts that the added weight contributed by the aerodynamic equipment is relatively insignificant relative to the overall weight of a truck's payload. For example, as stated in the Staff Report, the average weight of a set of side skirts is between 150 and 350 pounds. Moreover, ARB's cost effectiveness calculations were based on 5 percent fuel savings, when in actuality several of the aerodynamic technologies verified by the SmartWay program achieve 7% fuel efficiency savings, which will more than offset the minimal impact caused by the weight of the skirts for those vehicles that operate at maximum payload capacity.

- 141. Comment:** The fact that ARB proposed to mandate aerodynamic technologies on all 53-foot or longer box-type trailers that operate in the State of California, and not just on those domiciled within the State, would create an extreme and irrational burden on interstate commerce. The effect on interstate commerce of this proposed regulation would as a practical matter be to mandate installation of all of these technologies on the vast majority of trailers in use throughout the country regardless of the views of the governing agencies in other states on the issues that ARB is seeking to address. A study of the cost-effectiveness of this proposal should therefore also include the nationwide effects on interstate commerce. (TTMA)

**Agency Response:** ARB's economic analysis of the measure did in fact include the compliance costs for tractors and trailers that are registered in other states but used on California highways. The compliance costs or other burdens associated with these requirements are neither extreme nor irrational. As with California-registered vehicles, a out-of-state fleet with a 1:1 ratio of tractors to

trailers that are used on California highways is expected to entirely recoup compliance costs in an average of less than 1.5 years through fuel savings.

While ARB agrees that the regulation will force the owners of vehicles registered in other states to bring those vehicles into compliance if they are going to be used in California, ARB does not agree that the vast majority of trailers will be affected. The regulation provides for compliance schedules that will allow trailer owners to spread compliance obligations and costs out to avoid hardships.

With this regulation, ARB does not directly regulate or discriminate against interstate commerce, substantially impede the flow of interstate commerce, or have an effect that favors in-state economic interests over out-of-state interests. In addition, the regulation's indirect effects on interstate commerce are incidental and minor, particularly when compared to the public health benefits that will be achieved as a result of the measure's implementation. The regulation is also designed to give operators ample time to decide what equipment they will operate in California and to bring that equipment into compliance on a reasonable schedule. Considering all of this, ARB does not believe the regulation violates the Commerce Clause under the balancing test used by the courts to analyze state regulations affecting interstate commerce.

- 142. Comment:** The Staff Report states that the projected cost to comply with the proposed trailer requirements is approximately \$2,900 per trailer with an additional \$120 annual cost for maintenance. We question the veracity of these figures. In the Report itself, staff notes that the fleets they chose to interview reported side skirts alone costing as much as \$2,600. Compliance would also require low-rolling resistance tires and either front or rear trailer fairings. (CBTRI, NTDA)

**Agency Response:** In the Staff Report, a range of cost estimates was provided for compliance with the regulation, ranging from \$1,900 to \$4,200, with an average cost of \$2,900. The cost estimates include side skirts, either rear or front fairings, low-rolling resistance tires, and installation. The most variable component of the costs was that of the trailer side skirts, due to the range of material used and different designs and options. In discussions with fleets that were interviewed (Appendix E of Staff Report), the cost of side skirts ranged from \$1,000 to \$2,699. These and other product prices were used to calculate the low, average, and high cost estimates used in the Staff Report.

- 143. Comment:** In the discussion of costs and user concerns many conclusions seem to be based on a small sampling of anecdotal evidence. Also, there appear to be a great many statements that begin, "staff anticipates that..." It is clear that the staff is counting on numerous instances of future improvements and developments to be carried by the private sector in order to make this regulation viable. (CBTRI, NTDA)

**Agency Response:** As of the date of the Staff Report, numerous product offerings were commercially available that were SmartWay verified, which may be used to comply with the regulation. There were SmartWay certified tractors from six different companies, four models of SmartWay verified side skirts, three models of SmartWay verified front trailer fairings, and one model of SmartWay verified rear trailer fairings. Staff held private meetings with over ten companies that used at least one type of aerodynamic technology and most found the technology mature and reasonable in cost. Some fleets even reported that they were planning to install side skirts on all of their trailers, after successfully testing the skirts on a limited number. Therefore, the technological feasibility of the required aerodynamic products is sound as of the date of the Staff Report and does not depend on any further improvements or developments to meet the requirements of this regulation.

- 144. Comment:** The cost burden of replacing power units and retrofitting the trailers simultaneously is a cost that cannot be justified. We have over three trailers for every one power unit. These trailers are used as a “mobile” warehouse while the customer unloads the trailers over a period of days. These trailers sometimes make only one or two trips per week. Our trailers do not travel enough miles to justify a savings in fuel because of their limited time on the road. Companies with excess trailing equipment will be unfairly burdened by a cost that cannot be justified. If the law is to have new trailers be manufactured with SmartWay technology, we would support that. But retrofitting older trailers is not a prudent business decision. (YTI)

**Agency Response:** In response to the comment regarding the affects of multiple rules, please see agency response to comment #14 and #166. The regulation aims to reduce GHG emissions by improving the fuel efficiency of long-haul tractors and trailers. From 2010 to 2020, a cumulative projected reduction of almost 8 million metric tons of carbon dioxide equivalent emissions in California is expected from compliant trucks. These emission reductions come at an average cost of about \$2,100 per new SmartWay certified sleeper cab tractor and \$2,900 per trailer. In the regulation, older model tractors are only required to use low-rolling resistance tires but not to be retrofitted with aerodynamic equipment; the cost of the tire upgrade ranges between negligible and \$500 per tractor. However, trailers will be required to use both low-rolling resistance tires and be retrofitted with aerodynamic equipment, unless the trailer is exempted (used within 100 miles of its local base) or is pulled by an exempted local haul or short haul tractor. Unlike most other ARB regulations, compliance with the regulation will result in a fuel savings, which will ultimately payback the initial upfront equipment costs. For the average long-haul mileage accrual rate of 125,000 miles per year, the Staff Report states that the fuel savings would be approximately \$3,700 to \$5,400 per year at fuel prices of \$3.14 per gallon for a compliant tractor-trailer combination.

In the case of the commenter, the total compliance cost per unit of one older model tractor and three trailers is about \$9,200. The fuel savings will be at the lower end of the stated \$3,700 to \$5,400 savings range because the tractor will not be a more fuel efficient model, only requiring the use of low rolling resistance tires. Even at \$3,700 annual fuel savings, the commenter may still recover the initial cost in less than 3 years, making this an affordable regulation.

## H. Financial Assistance/Incentives

**145. Comment:** Even though many of the improvements have significant fuel savings, the reality is that many companies do not have the credit available to qualify. Even large companies have a hard time borrowing money as of late. In addition, more work is needed to assure that incentives are distributed to various trucking vocations to achieve compliance. Not all trucks are the same and for some vocations, the grant is not enough. The industry needs extended terms and easy access to financing to help them during these dire economic times. (CSS)

**Agency Response:** ARB agrees that the recent downturn in the economy has made obtaining financing more challenging for fleets, and although there is evidence that conditions have improved since this comment was submitted, fleets may still face challenges in obtaining financing to upgrade their equipment. However, as economic conditions improve further, financing will become more accessible. Moreover, since the optional phase-in plans will provide fleets with extra time to comply, ARB anticipates that more financing will become available to them as the economy continues to strengthen.

The comment pertaining to the issue of distributing incentives to various trucking vocations does not apply to this regulation since the regulation only applies to long-haul tractor-trailer configurations.

Potential sources of funding to assist fleets in complying with the regulation include the U.S. EPA SmartWay Finance Center, the SmartWay Clean Diesel Finance Program, and the ARB Providing Loan Assistance for California Equipment (PLACE) Program. See agency response to comment # 148 for additional information about PLACE. Fleets may also find financing administered through their local states; some states and nonprofit organizations (including the commenter, Cascade Sierra Solutions) have received grant funding to offer financing for SmartWay upgrades, and additional grant funds may be made available to them in the future.

**146. Comment:** The following recommendation should be incorporated into the proposed regulation to allow trucking companies greater flexibility to direct their financial resources to reduce GHG emissions. The Board should direct staff to include provisions in all existing and future on-road vehicle incentive and loan

programs which allow companies doing a portion of their business in California to apply for and leverage state funds. Current incentive and loan programs require a vast majority, if not all, of the vehicle's operation to be in California in order to qualify. Yet the vast majority of affected equipment is based outside the state and will require large capital expenditures to comply. (ATA, Con-way)

**Agency Response:** As stated by the commenters, there is an ARB incentive program (the PLACE loan program) available to some fleets to assist them in complying with this regulation. See agency response to comment # 148 for additional information about PLACE. The commenters are correct in stating that in order to obtain California funds through the PLACE loan program, fleets must travel a majority of their annual mileage (at least 51%) in California.

Comments about developing new incentive programs or modifying existing incentive programs would require legislative changes and therefore are beyond the scope of this regulation

- 147. Comment:** A majority of the trucks hauling freight into and from California are not based in the state, meaning that the bulk of the \$10.4 billion cost will be borne by non-domicile long-haul carriers. All but a small percentage of these trucks and trailers are operated by small businesses with fewer than 20 trucks. These small carriers will likely not have the capital resources to comply. Yet, those limited funds allocated by California to retrofit equipment are largely not available to non-domiciled fleets. (AZTA)

**Agency Response:** The PLACE loan program is not exclusively offered to California-domiciled fleets. Rather, applicants must have their primary economic effect in California (51% or more of their total annual mileage generated in California). In addition, qualified borrowers must be small businesses (less than 100 employees, less than \$10 million annual revenues), and have no more than 20 heavy-duty tractors in their fleet. Thus, the fleets described by the commenter might in fact be eligible for PLACE loans.

Other resources that offer funding opportunities to fleets nationwide include the U.S. EPA SmartWay Finance Center and other state or nonprofit-administered programs. Cascade Sierra Solutions, a grant recipient of the SmartWay Clean Diesel Finance Program, offers loans to assist fleets in complying with the regulation.

- 148. Comment:** We are pleased to see ARB maximize the potential of this initiative by enlarging funding and broadening access available to fleets that are prepared to make initial capital investment in SmartWay-approved technologies. ARB should provide financial assistance and grant programs to the greatest possible extent. (ATDynamics)

**Agency Response:** ARB offers the Providing Loan Assistance for California Equipment (PLACE) program for new, used and retrofitted aerodynamic equipment that has been SmartWay certified or verified. The program targets borrowers that do not fit within conventional loan standards and are “nearly bankable,” meaning they fall just outside lenders’ standard loan criteria or are unable to obtain a loan due to today’s more conservative credit climate. The funding is available through California Capital Access Program (CALCAP) participating lenders located statewide. Qualified borrowers must be small businesses (less than 100 employees, less than \$10 million annual revenues), have no more than 20 heavy-duty tractors, and the company must have their primary economic effect in California (51% or more of their total annual mileage generated in California). Additional information about the PLACE program is available through the ARB website <http://www.arb.ca.gov/ba/loan/on-road/on-road.htm>

- 149. Comment:** The State has talked about grants to offset some of the cost to upgrade existing equipment. However, trucking companies of our size do not qualify. We own 35 power units and over 50 trailers. We are all for clean air. What we need is the funding to do this. (FTI)

**Agency Response:** There are currently no grants available through ARB to help offset some of the cost of equipment upgrades to comply with the regulation. In addition, based on the information provided by the commenter, their fleet would not qualify for financing through the PLACE program since they exceed the fleet size limitation of not more than 20 heavy-duty tractors. Other resources that offer funding opportunities to fleets nationwide include the U.S. EPA SmartWay Finance Center, and other state or nonprofit-administered programs. Cascade Sierra Solutions, a grant recipient of the SmartWay Clean Diesel Finance Program, offers loans to assist fleets in complying with the regulation.

However, although there are up-front capitol costs to purchase and install aerodynamic technologies and low rolling resistance tires, this regulation will, over time, save money as described in response to comments #71 and #108 is that the costs are paid for within less than 2.3 years (trailer-to-tractor ratio of 2 to 1), as well as reduce our dependence on foreign oil. In fact, from 2010 to 2020, ARB has estimated the benefits of this regulation to include: a net savings of 8.6 billion dollars; a reduction of approximately 8 million metric tons of carbon dioxide emissions in California and approximately 52 million metric tons of carbon dioxide emissions nationwide; savings of 750 million gallons of diesel fuel from operations within California and approximately 5 billion gallons of diesel from nationwide operations

- 150. Comment:** We cannot comply with the proposed regulation if we do not get loans that will even match grant funds. We cannot buy new equipment or retrofit the old if our shippers are not moving product. (JJTI)

**Agency Response:** See agency response to comment #148 for a description of the PLACE loan program. Other resources that offer funding opportunities to fleets nationwide include the U.S. EPA SmartWay Finance Center and other state or nonprofit-administered programs. Cascade Sierra Solutions, a grant recipient of the SmartWay Clean Diesel Finance Program, offers loans to assist fleets nationwide in complying with the regulation.

- 151. Comment:** Any incentive or subsidy program must not operate to create a subprime lending scheme or create competitive disadvantages for motor carriers. First, the subsidy program should not discriminate on the basis of fleet size. This will tend to limit such a program to providing subsidies to large motor carriers using one-truck owner operators to the disadvantage of other deserving motor carriers. Second, the program must be based on sound commercial underwriting standards. The vast majority of one-truck owner-operators are economical marginal and at high risk for default. If the State guarantees loans to these owners where the lenders share no risk in the event of default and the loan terms are not reasonable, then the program will fail in a scandalous way. (CTPAC)

**Agency Response:** The ARB's incentive programs, Carl Moyer grant program and loan guarantee program, are governed by existing statutes, which provide a legal framework for these programs. ARB, working within the legislative intent of the governing statutes, strives to create incentive programs that would maximize the air quality benefits and the number of fleets that could be assisted, while minimizing potential negative impacts on businesses and market competitiveness. For example, the Carl Moyer program provides grant for fleets to obtain cleaner vehicles and equipment primarily on the basis of how cost effective a project is without regard to fleet size. The ARB's heavy-duty vehicle loan guarantee program does have fleet size restriction; only fleets with 20 or fewer vehicles are eligible. However, this criterion was included based on ARB's interpretation of statutory requirements (Health and Safety Code, Section 44274.7(c)(1)) and based on inputs received from the public.

The ARB's heavy-duty vehicle loan guarantee program is implemented through the California Pollution Control Financing Authority's (CPCFA) California Capital Access Program (CalCAP). Under CalCAP, participating lenders, banks and credit unions, evaluate loan applications based on their own established underwriting standards. The ARB does not specify or impose any loan underwriting standards on participating lenders. The ARB, through this program, does provide a loan guarantee for the loan applications that were independently approved by the participating lenders.

Even though the State is providing funds to help guarantee loans for fleet owners outside normal lending criteria, the State is putting only 14% of the loan amount into a loan loss reserve account for each participating lender to be paid

out in case of loan defaults. Therefore, there is a built-in constraint on how many loan defaults the reserve can sustain for each lender. Through this mechanism, as well as through the CPCFA's monitoring of the loans enrolled under this program, participating lenders do not have an incentive to engage in risky behavior. This way, loans can be provided to borrowers that fall just outside of conventional underwriting standards but not for those with the riskiest credit profiles. The ARB has confidence in the soundness and integrity of the CalCAP's loan guarantee program. CalCAP has achieved a historical fund leveraging ratio of about seven-to-one with a loan default rate of about 4 percent. For ARB and for the fleet owners, this means that the total dollar amount of loans made with lender funds will be at least seven times greater than the funds ARB contributes to the program while maintaining low default rates for these loans.

**152. Comment:** The Board should come up with a plan that would promote buyouts of older equipment, grants, low interest loans, tax incentives, and other measures to mitigate the burden on the trucking companies, businesses, and the California public. (TLTLLC)

**Agency Response:** The ARB PLACE loan program provides financial assistance for qualified fleets to comply with the regulation. See agency response to comment #148 for a description of the PLACE loan program.

Comments about developing new incentive programs or modifying existing incentive programs would require legislative changes and therefore are beyond the scope of this regulation.

## I. Emission Inventory

**153. Comment:** The mileage restrictions in the Initial Statement of Reasons appear to be based upon an assumption that trucks and trailers work five ten-hour days. In fact, trucks and trailers typically work seven-day weeks with service hours reaching up to 20 hours per day, when multiple drivers are used. For example, grocery trucks regularly total 150,000 miles per year within a 150 mile radius. (CTA)

**Agency Response:** ARB's estimate of the 50,000 mile limit for the short haul exemption is based on a five days per week, 50 weeks per year, and 200 miles per day (roundtrip with trip length of 100 miles or a 200-mile one way trip) operation<sup>5</sup>. ARB believes that a tractor that accrues more than 200 miles per day is more likely to be driven a significant portion of its mileage at highway speeds, thereby benefiting from aerodynamic treatments. As in the

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<sup>5</sup> Staff assumed a tractor downtime of approximately 10 business days per year on average for maintenance and other unforeseen situations when the truck remains inoperable.

commenter's example, if a truck is operated for longer service hours and longer trips, and accrues approximately 150,000 miles per year, then it is even more likely to be operated at highway speeds since a significant portion of its travel would occur on less congested highways during off-peak hours, benefiting from improvements in aerodynamic drag and tire rolling resistance. See also agency response to comments #22, 23, and 24.

- 154. Comment:** We question the estimates used in the analysis for the number of trailers likely to be affected by the proposed regulation. As the report indicates, "for trailers, no database exists that provide a complete inventory on the total number of box-type trailers that would be impacted by the proposed rule." Staff then simply chose to estimate a ratio for the number of trailers to tractors and extrapolate a figure. (CBTRI, NTDA)

**Agency Response:** ARB looked at various data sources including trailer registration data by state provided by the United States Department of Transportation Federal Highway Administration (FHWA), Polk data base, trailer registration data from the California Department of Motor Vehicles, and other published data from sources such as *Commercial Carrier Journal*. All of these data sources provide the total number of registered trailers operating throughout the nation during a given calendar year. However, they do not tell how many of these trailers operate during a given year in the state of California. In the absence of any other data, ARB estimated the number of trailers operating in California indirectly using the industry average trailer-to-tractor ratio and the number of tractors that operate in California. As discussed on page 14 of the Staff Report, the trailer-to-tractor ratio was determined using data provided in a *Commercial Carrier Journal* article about the top 250 carriers in the nation. The number of tractors that operate in California was based on inventory developed for the purposes of the Truck and Bus rule, which is the most up to date inventory of on-road heavy-duty vehicles operating in California.

- 155. Comment:** The data for the emission benefit in the Staff Report is incomplete. The analysis for vehicle usage takes estimated VMT and assumes that a very high percentage of those miles are at highway speed. The test procedure for measuring the fuel efficiency improvement for aerodynamic devices is conducted on a test track at speeds of 60 to 62 miles per hour. Thus, ARB calculated the benefits of this proposal for vehicles traveling 60 to 62 miles per hour; yet the speed limit for trucks in California is 55 miles per hour, assuming traffic conditions allow for traveling at the speed limit. We question whether the Staff Report data is reflective of the real world conditions typically experienced in the State of California. It appears that the report's analysis clearly overstates the monetary benefit that would actually be experienced. (CBTRI, NTDA)

**Agency Response:** ARB is aware that the legal speed limit for trucks in California is 55 miles per hour. However, speeds at which vehicles are

operated in the real world are different than the legal speed limit. In estimating the average speed for trucks that are driven on California highways, staff relied on data collected by the Freeway Performance Measurement System (PeMS), a project conducted by University of California at Berkeley, with the cooperation of the California Department of Transportation, California Partners for Advanced Transit and Highways, and Berkeley Transportation Systems. ARB calculated a vehicle miles weighted statewide average median truck speed of 59.7 miles per hour. Therefore, ARB's estimation of the monetary as well as the emission benefits from this regulation does not overestimate the benefits as claimed by the commenter. See also agency response to comment #156 regarding ARB response to the percent of operation at highway speeds.

**156. Comment:** The data for the emission benefit in the Staff Report is incomplete. The report indicates that the VMT data the staff were able to obtain cannot be directly applied to the fuel efficiency improvements they show as VMT is accrued at various speeds, while the fuel efficient improvements are determined at speeds of approximately 60 miles per hour. The report then clearly states, "...the speed-VMT distribution of the impacted tractors and fuel efficiency improvements at different speeds are needed in order to accurately quantify the GHG emission benefits. However, such data were not available and there staff estimated the GHG benefits using only the VMT accrued at highway speeds, without taking into account benefits that occur at lower speeds." Trucks traveling at higher rates of speed are likely to obtain much greater fuel savings from the proposed aerodynamic equipment than while traveling at lower speeds. (CBTRI, NTDA)

**Agency Response:** Since aerodynamic drag is proportional to the square of the speed, it is true that a truck with aerodynamic treatment traveling at speeds higher than 60 miles per hour is likely to obtain greater fuel savings than those determined at 60 miles per hour. It is also true that the same truck will get less fuel savings when it is traveling at speeds lower than 60 miles per hour. A more accurate estimate of the emission benefits could have been obtained if the speed distribution by VMT for long haul tractors was available. However, to ARB staff's knowledge, no such data is available. Therefore, ARB estimated the emission benefits assuming that 75 percent (85 percent for non-neighboring out-of-state tractors) of the VMT is accrued at highway speeds. As referenced in the Staff Report, this is consistent with assumptions made by other experts in the trucking industry.

**157. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. In the analysis, the ratio of trailers to tractors is at least 2.5 to 1. Thus, a tractor that travels 100,000 miles will average only 40,000 miles per trailer per year. However, ARB data developed for the private fleet rule shows that the average California registered Class 8 tractor travels less than 40,000 miles per year. This means that the typical California registered trailer will travel no more than 16,000 miles per

year. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** ARB analyzed the heavy-duty truck inventory data developed for the Truck and Bus Rule and found that the average annual mileage accrual rate of California registered tractors is approximately 51,000 miles. However, this estimate is much lower than the annual miles accrued by long haul tractors. This is to be expected since the inventory data developed for the Truck and Bus rule for California registered tractors includes all tractors including short haul, old model year tractors that operate seasonally or occasionally for a very short period of time of the year, and tractors that operate as long haul. Since the regulation applies only to long haul tractors, it is appropriate to use the mileage accrued by long haul tractors rather than the averaged estimate developed for the Truck and Bus rule.

In a fleet survey conducted by ARB staff (refer to Staff Report, Appendix E, Fleet Summaries), annual mileage accrual rates reported by fleets operating long haul tractors ranged from 120,000 to 250,000 miles per year for tractors and 80,000 to 100,000 miles for trailers. However, in estimating the cost-effectiveness for California registered tractors, ARB assumed a more conservative estimate mileage accrual rate of 125,000 miles per year for a new tractor and 74,000 miles for an older model year tractor. Furthermore, as discussed in Appendix C of the Staff Report, only 75 percent of this mileage was assumed to be accrued at highway speeds and only 23 percent of the California registered tractor-trailer combinations were assumed to operate in long haul service. ARB believes that these assumptions are conservative and ensure that the cost-effectiveness analysis in the Staff Report reflects a realistic evaluation of the costs and claimed benefits of the regulation.

- 158. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. The fuel savings associated with SmartWay aerodynamic technologies assume a speed of 62.5 miles per hour. However, Caltrans data for I-5, the main North-South truck route, show that the average speed for four and five axle truck and trailer combinations is less than 60 miles per hour and the median speed is about 55 miles per hour. Moreover, many tractors are governed to go no more than 55 miles per hour, the posted speed for trucks. There is nothing in ARB's calculations that takes these facts into consideration. Instead, ARB staff dismisses trucking companies' claims that they observe the posted limits. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** See also response to comment #155. ARB can not comment on the commenter's claim that Caltrans data for I-5 show average

speeds of less than 60 miles per hour and a median speed of about 55 miles per hour, since the commenter did not provide any reference to enable ARB to verify the claims. Furthermore, the commenter does not provide any study or reference on the statistics of the governed speed and the number of long haul tractors with governed speed. ARB is aware of some fleets that operate tractors with governed speed. However, as indicated by some fleets that operate long haul tractors (Appendix E of the Staff Report), the governed speed is in the range of 65 miles per hour or more rather than the 55 miles per hour claimed by the commenter. Thus, ARB does not believe it is appropriate to apply any corrections to the costs and benefits analysis to take into account tractors with speed governed at or below 55 miles per hour.

- 159. Comment:** Trucks accessing California shipper warehouses operating in urban setting at lower road speeds do not achieve the stated emission emissions in the staff report. The staff report used the U.S. EPA SmartWay modeling at 62.5 miles per hour whereas the speed limit in California for a truck is 55 miles per hour. The stated emission benefits are overestimated and provide inaccurate assumptions of the truck rate of speed and topography and of driving in urban congestion. This violates AB 32's requirements for reductions to be real, additional, quantifiable, permanent, verifiable and enforceable. (IWLA)

**Agency Response:** Please see agency responses to comments 155, 156, and 158. In calculating the benefits of the regulation, ARB considered only the VMT that is accrued at highway speeds by including only 75 to 85 percent of the total VMT. This means that 15 to 25 percent of the total VMT has been excluded assuming that it occurs at speeds lower than highway speeds and in urban settings.

## J. Outreach

- 160. Comment:** We hope ARB will continue vigorous outreach to truck owners to ensure incentive programs are understood and accessible. Ensuring owners are aware of the multiple funding sources that can be leveraged to assist individual truck and fleet owners, will maximize compliance with the rule and minimize the economic impact on owners and business. (PHI)

**Agency Response:** ARB is committed to providing outreach to stakeholders within the trucking industry. Prior to the Board Hearing, numerous workshops and meetings were held in which the proposed rulemaking and financial incentive options were discussed. In section XII of the Staff Report, a summary of the current financial assistance and grant programs provided information to stakeholders on financing options. Since the time of the Board Hearing, outreach including meetings, fact sheets, and presentations at trucking conferences has been extensive to inform stakeholders of the impending

regulatory requirements, in which incentive and financial programs were also discussed. In addition, a new ARB website has been launched to allow truck owners to easily understand the regulatory requirements applicable specifically to them and the financial options available. During the implementation of the regulation, ARB will continue to provide outreach to affected stakeholders to ensure that they are aware of available incentive programs and regulatory requirements.

- 161. Comment:** ARB has not included sole operators of trucks to be involved on its committees and has chosen to ignore our pleas from the beginning. Individual drivers have no control over the rules under which they must operate. (LDT)

**Agency Response:** ARB staff conducted numerous outreach efforts to inform affected parties regarding the regulation and to obtain stakeholder comments and feedback. During 2008, ARB jointly conducted thirty-five public workshops statewide in 9 different locations in conjunction with another regulatory proposal, the Truck and Bus Rule. In addition, public workshops were held in San Diego/Otay Mesa with Spanish interpreters. During these public workshops, sole owner/operators of trucks as well as other interested parties provided oral comments to ARB staff. These comments were taken into consideration as the regulatory proposal was developed. For example, the optional trailer compliance phase-in schedule for small fleets gives additional time for an owner operator to retrofit its existing trailer. During the rulemaking process, there was no formation of any type of committee and thus owner operators were not excluded. ARB will continue to provide outreach during the regulatory implementation to affected stakeholders, including owner operators, through ARB's website, email service (listserv), toll free hotline at (866) 6DIESEL, fact sheets, workshops, and training sessions.

- 162. Comment:** ARB should work with industry to put in place a plan that does not cause viable businesses in this state to either close or relocate to Arizona or Nevada. Use a plan proven to work. For example, look at the United Kingdom model. They changed the face of the trucking industry through peer pressure. They have a program where a truck is tagged with a colored band so that everyone can see it is a gross polluter and in 5 years the worst offenders are now gone. (Ross)

**Agency Response:** The regulation adopted by ARB applies to all trucks and trailers that operate in California. Therefore, trucking businesses that choose to leave California will not be provided business advantage by leaving the state because of this rule. In addition, companies that comply with the requirements will have visible aerodynamic equipment showing the public that they are doing their part in protecting the environment.

- 163.** More work with the trucking industry needs to take place to develop a better regulation. (Berry)

**Agency Response:** During the regulatory development, ARB staff conducted numerous outreach efforts to inform affected parties regarding the regulation and to obtain stakeholder comments and feedback. During 2008, ARB jointly conducted thirty-five workshops statewide in 9 different locations in conjunction with another regulatory proposal, the Truck and Bus Rule. In addition, public workshops were held in San Diego/Otay Mesa, conducted with Spanish interpreters. ARB staff contacted more than 60 industry associations, representing the trucking, logistics, manufacturing, wholesale and retail industries as well as individual industry members to inform them of the regulation and invite them to provide comments. ARB staff also conducted several presentations and off-site meetings targeted at specific stakeholder groups including owner operators, drivers, motor carriers, warehouse and logistics companies, brokers, tractor and trailer manufacturers of aerodynamic technologies and equipment. During the implementation of the regulation, ARB will continue to provide outreach to affected stakeholders through ARB's website, email service (listserv), toll free hotline at (866) 6DIESEL, fact sheets, public workshops and training sessions.

#### **K. Implementation and Phase-in Schedule**

**164. Comment:** The proposed implementation schedule is too short because it will be too costly. A longer timeframe is needed. (Burke, CFC, Fortier, FLFTI, Grewal, Ingram, Nard, Nelthorpe, Phillips2, Rader, RZT, YTI)

**Agency Response:** The implementation schedule for this regulation was developed to provide maximum flexibility and ability to phase-in compliance over time, while still holding to the time constraints imposed by AB 32. As such, large fleets of trailers that choose to participate in the optional Large Fleet Compliance Phase-In will have 6 years to bring all their trailers into compliance (5% the first year, 15% the second year, 30% the third year, 50% the fourth year, 75% the fifth year, and 100% the sixth year). The first phase-in deadline is January 1, 2011; subsequent deadlines take place each year thereafter until January 1, 2016. Small fleets may choose the Small Fleet Compliance Phase-In for their trailers, over a four year period beginning January 1, 2014, and ending January 1, 2017 (the annual required percentages that must be retrofitted are 25%, 50%, 75% and 100%). Small fleets may also choose to follow the same compliance option as large fleets. These phase-in options provide fleets flexibility and the ability to spread out the costs of compliance over several years. Also, see agency response to comment #166.

**165. Comment:** Similar to the early compliance option, a worthwhile option would be to reward fleets for going above and beyond the proposed 5% and 4% fuel savings requirements, for dry van and refrigerated van trailers, respectively. As with the early compliance option, the fully-equipped trailer could be used to

meet an optional 10% fuel savings requirement, which in turn allows the delay of the retrofit of another trailer for a given number of years, though not extending into 2016. A fully-equipped aerodynamic trailer would substantially outperform its peers; there is no better tool than competition to encourage early adoption. (ATDynamics)

**Agency Response:** A 10 percent fuel savings requirement would necessitate the use of an advanced rear trailer fairing; only one technology in this category has been verified to date. In addition, while the commenter's proposal may allow additional flexibility for fleets to earn credit, such an option would exceed the requirements of the SmartWay program, upon which the regulation is based. For these reasons, ARB did not propose a 10 percent fuel savings compliance option. Over time, as the U.S. EPA SmartWay program expands its requirements and more efficient technologies become available, ARB may consider modifying the regulation to achieve greater benefits. Until that time, however, fleets may decide to voluntarily improve their fuel efficiency to reach a 10 percent fuel savings.

- 166. Comment:** Industry does not have enough funds to comply with multiple rules, the off-road regulation as well as the current on-road regulations. Extend the implementation schedule to lessen the financial impact. (Davies)

**Agency Response:** The regulation already provides vehicle owners with more than one compliance option that extends implementation and spreads the financial impact over several years. First, optional phase-in schedules are provided for trailer retrofit requirements in lieu of the full compliance requirement by January 1, 2013. These phase-in schedules spread the cost of implementation over either four or six years, depending on the size of the trailer fleet. While large fleets will need to bring a small percentage (5%) of their trailers into compliance by January 1, 2011 and additional percentages for each subsequent year, final compliance will not be required until January 1, 2016. Similarly for small trailer fleets the first compliance deadline will require 25 percent compliance by January 1, 2014 and an additional 25 percent each subsequent year until January 1, 2017. Also, certain model year refrigerated trailers subject to the Airborne Toxic Control Measure for In-Use Diesel-Fueled Transport Refrigeration Units are allowed additional years for compliance, until January 1, 2018, 2019 or 2020, depending on model year. It should be noted that fuel savings will be realized when a compliant vehicle is driven, which translates into an operational cost savings to the owner. As a result of the phase-in schedule, this cost savings may, in turn, be used by the owner to pay for the upfront costs of other retrofits. Financial assistance for obtaining loans may also be available to eligible businesses. See agency response to comments #145 and #148 for additional information on financial assistance.

- 167. Comment:** There's enough CARB staff and other mechanisms, rather than adding cost onto our side to have to go out and police the equipment. (IWLA)

**Agency Response:** Appendix G of the Staff Report describes the enforcement approach for the regulation. Enforcement authority is given only to ARB enforcement staff, peace officers, and local air pollution control district staff. The responsibility of a California-based shipper is to ship freight from its facilities using only compliant tractors and trailers. Since a California-based shipper is typically not directly responsible for the tractors and trailers used to carry freight from its facility, it will not be directly held liable for tractors and trailers found in violation for the first time. If, however, the violating motor carrier, tractor owner, or trailer owner fails to settle the notice of violation within the permitted time period, ARB will notify the affected shipper that, until the notice of violation is settled, it will be responsible for future violations involving the delinquent motor carrier, tractor owner, or trailer owner. While the shipper is not required to "police" equipment that carries freight from its facility, once notified of a delinquent violation the shipper must take action. It may notify the delinquent violating motor carrier or equipment owner to settle the violation before it can carry freight from the shipper's facility, choose to use a different motor carrier or equipment owner, or other options.

- 168. Comment:** The Board should consider requiring compliance by the larger trucking companies first while allowing smaller companies to use their existing equipment. As larger companies continue to purchase new equipment, smaller companies would be able to purchase their used compliant equipment at a better price. (FTI)

**Agency Response:** The regulation already contains some provisions that will result in smaller companies being able to purchase used compliant equipment from larger companies. First, companies (likely larger companies) that are replacing existing equipment by purchasing new affected 2011 model year tractors and trailers beginning in January 1, 2010 must comply with the regulation. Companies (likely smaller companies) that are not purchasing new equipment in 2010 may continue using their existing equipment and need not comply with the aerodynamic requirements at that time. Larger companies may choose to sell their compliant equipment into the secondary market after a few years of usage, in which case smaller companies can purchase compliant equipment at a lower cost. Second, the optional phase-in schedules for trailer retrofits begin on January 1, 2011 for large trailer fleets but do not begin until January 1, 2014 for small trailer fleets. This time frame will allow larger trailer fleets to sell compliant trailers after a couple of years, in which case smaller trailer fleets may purchase them at a lower cost.

- 169. Comment:** Individual truck owners (owner operators) should not be allowed to avoid compliance until 2017. This will just cause employers using employee drivers to switch to owner-operators to avoid compliance and leave the best trucking companies to comply earlier. (CTPAC)

**Agency Response:** The optional compliance schedule for small trailer fleets is 25 percent by January 1, 2014, 50 percent by 2015, 75 percent by 2016, and 100 percent by 2017. Based on the compliance schedule formula in the regulation, an individual truck owner (who owns one trailer) will be required to bring the trailer into compliance by January 1, 2015, not 2017 as stated by the commenter.

- 170. Comment:** ARB should delay the implementation of the proposed regulation until more products that can lower emissions are tested. There are businesses with products that can lower emissions but cannot afford to have them tested. The product testing process should be more inexpensive. (RTRI)

**Agency Response:** The regulation is based on the U.S. EPA SmartWay program, which certifies tractors and trailers that have been demonstrated to use less fuel and produce lower emissions than their traditional counterparts. As of the publication of the Staff Report, six tractor manufacturers had SmartWay certified tractors, four companies had SmartWay verified trailer side skirts; three companies had SmartWay verified front trailer fairings; and one company had SmartWay verified rear trailer fairings. The number of SmartWay products that may be used to comply with the requirement is substantial and provides sufficient flexibility for equipment owners to choose the appropriate combination of technologies. Furthermore, ARB does not have the authority to set cost rates of test facilities.

- 171. Comment:** Alternative solutions must be looked at to slow this implementation. (CDTI)

**Agency Response:** The implementation schedule was developed during the regulatory process, allowing maximum flexibility for affected equipment owners while still meeting the statutory timeline of AB32. In particular, the optional phase-in schedules span four or six years, depending on fleet size, so that fleets can spread the cost of implementation over those years. See also agency responses to comments #166 and #168.

## **L. Compliance and Enforcement**

- 172. Comment:** If you do not enforce whatever rule you adopt – I don't mean just throw it out there and do it randomly – you're going to create a really bad situation for those of us that have been in business for a long time. Because what's going to be created is I'm going to pay \$125,000 for a truck, \$65,000 for a trailer, and my competitor will spend \$10,000 for a truck and \$5,000 for a trailer. And that's why I hope you have a plan in place, whether it's holding the shippers or receivers liable for carriers like that, because it's going to be very hard to monitor the situation. And if you don't, those of us that have been around for a long time will not be around anymore. (Goliti)

**Agency Response:** The regulation contains enforcement provisions in the newly proposed section 95308, title 17, California Code of Regulations. The Staff Report also discusses the enforcement of the regulation on pages 28-29 and in Appendix G. Enforcement will be carried out primarily by authorized representatives of ARB, but peace officers and authorized representatives of air pollution control districts will also have authority to enforce this rule. A violation may be issued for failure to comply with the tractor or trailer requirements, failure to submit required information, or providing false information. In regards to ARB, in particular, initial enforcement of the regulation will likely occur concurrently with two existing ARB programs, the Heavy-Duty Vehicle Inspection Program and the Periodic Smoke Inspection Program. The Heavy-Duty Vehicle Inspection Program is a roadside inspection program that checks heavy-duty vehicles for excess smoke emissions and for engine and aftertreatment tampering, while the enforcement of the Periodic Smoke Inspection Program consists of fleet audits at truck facilities. Over time, however, as more and more requirements of this regulation become effective, ARB may progressively increase its rule-targeted inspections and actively look for non-compliant vehicles in the field. Moreover, enforcement personnel will also have the authority to conduct comprehensive compliance audits of fleets that elect to participate in one of the optional trailer fleet compliance schedules, so such compliance audits may occur as deemed appropriate. Although shippers will not initially be held responsible for the compliance of their carriers, they may eventually be cited if they continue to use a particular motor carrier that has one or more outstanding violations. ARB believes this strategy will help level the playing field between in-state and out-of-state carriers. Note that any premium that a motor carrier may pay to equip tractors and trailers with efficiency-improving devices will likely be recovered as a result of fuel savings and will save money over the long run.

- 173. Comment:** The following recommendation should be incorporated into the proposed regulation to allow trucking companies greater flexibility to direct their financial resources to reduce GHG emissions. The Board should direct staff to develop an additional compliance option which allows companies to be deemed compliant because of their participation in the federal SmartWay program. Trucking companies should be allowed to include the proven measures being used in the federal SmartWay program to demonstrate compliance and any motor carrier that has been certified under SmartWay should automatically be deemed in full compliance with the proposed regulations. ARB staff should work with U.S. EPA and the trucking industry to come up with such a compliance option so that we can reduce greenhouse gases most effectively without doing things that don't work. (ATA, Con-way)

**Agency Response:** The U.S. EPA SmartWay Program is a federal voluntary program aimed at improving energy efficiency, reducing GHG and air pollutant emissions, and improving energy security of the ground freight movement

system. While the SmartWay Program offers fleets many different strategies to meet its qualifying criteria, simply requiring participation in the program would not satisfy the requirements set forth in, and our commitments made pursuant to, AB32. Firstly, ARB does not believe such an approach would provide sufficient GHG benefit to meet California's commitments. Secondly, ARB believes that the GHG benefit of many of the strategies offered by the SmartWay program are not quantifiable. Therefore, it is inappropriate to allow an option for full compliance simply by participating in the SmartWay Program.

- 174. Comment:** The following recommendation should be incorporated into the proposed regulation to allow trucking companies greater flexibility to direct their financial resources to reduce GHG emissions. The Board should direct staff to add the following credit provisions to the Optional Trailer Fleet Compliance Schedules for those companies that have taken proactive steps to reduce greenhouse gas emissions. First, SmartWay tractors and trailers that are 2010 or older should be eligible to receive early and/or additional compliance credit. These credits could then be accumulated and used to offset trailer requirements under the Optional Trailer Fleet Compliance Schedules. Second, credits should be available to fleets that deploy aerodynamic technologies in excess of the proposed requirements, which can be used to offset trailer requirements under the Optional Trailer Fleet Compliance Schedules. (ATA, Con-way)

**Agency Response:** The requirements already contain early compliance provisions for 2010 and older model year trailers belonging to those who elect to participate in the Optional Large Trailer Fleet Compliance Schedule. However, 2010 and older model year tractors are not eligible because except for tires they are not required to retrofit with aerodynamic devices. ARB did not incorporate the second recommendation because such an option would exceed the tractor and trailer criteria of the SmartWay program, upon which the regulation is based. In addition, applying the technologies on different trailer length and types would require benefit analysis based on test data, so that credits on one type could offset the emissions of non-retrofitted 53-foot trailers. Such data does not exist and would be needed for any consideration. If a fleet chooses, it may voluntarily decide to improve their fuel efficiency beyond the requirements to generate more fuel savings.

- 175. Comment:** The following recommendation should be incorporated into the proposed regulation to allow trucking companies greater flexibility to direct their financial resources to reduce GHG emissions. The Board should direct staff to add the following additional compliance provisions.
- A compliance provision is needed to allow 2011 and later model year sleeper cab tractors that are not SmartWay certified to become compliant with the regulation. The U.S. EPA currently allows only two models of tractors from each manufacturer to be SmartWay certified. Consequently, a tractor may demonstrate fuel efficiency sufficient for SmartWay certification, but because

of program limits, cannot be certified. ARB should work with U.S. EPA to develop these specifications in order to ensure the technologies which comprise a U.S. EPA SmartWay truck and trailer are uniform throughout the country.

- A compliance exception is needed for situations where operational or safety considerations limit or prohibit the application of the required technologies such as operations in sunken docks, extreme cold weather or other factors that compromise the integrity and/or performance of the technologies.
- A compliance provision is needed which allows fleets the ability to bring equipment into shops to be repaired without being cited for noncompliance. A fix-it citation should be incorporated into the regulation to allow operators to safely make the necessary repairs to equipment which has become inadvertently damaged.

(ATA, Con-way)

**Agency Response:** The first compliance provision suggested by the commenter was not added to the regulation because SmartWay certified tractors represent the most fuel efficient model(s) from each manufacturer. The Staff Report identified six major tractor manufacturers that offer SmartWay certified tractors, and thus vehicle owners have a diverse selection when choosing a new 2011 and later model year SmartWay certified tractor. In addition, U.S. EPA has recently released an interim performance-based test protocol for SmartWay tractor certifications that no longer limits certifications to two per manufacturer. See also agency response to comment #32 and #37 for more information on U.S. EPA's new performance-based test protocol.

The second compliance provision suggested by the commenter was not included in the regulations because in discussions with fleets that have used the aerodynamic devices, the vast majority of the fleets reported very few incidents of damage to the aerodynamic equipment (Appendix E of the Staff Report.) In the event of sunken docks or other factors that may damage the aerodynamic technologies, technology manufacturers have addressed this concern by using durable thermoplastics for all or at least the lower part of trailer skirts such that they will bend and flex without permanent damage when they contact an obstacle. Also, one manufacturer produces a retractable skirt that can be flipped up to avoid a deep-angled dock or to access tool boxes or spare tires on the underside of the trailer. The commenter also noted that trailer skirts may be damaged in extreme cold weather (where the side skirts will collect snow and ice.) Skirt manufacturers contend that the current materials from which their skirts are constructed tend to prevent ice buildup. However, if ice does build up, it can easily be scraped off. See also agency response to comment #85.

The regulations specify that any aerodynamic technology used on the trailer must be in good operating condition. If a damaged but drivable vehicle is stopped by an enforcement officer, it will be cited as violating the regulation.

The regulation does not contain a provision for a fix-it citation. However, enforcement discretion will be used on issuing a notice of violation based on the inspection staff's determination if the equipment damage just happened.

- 176. Comment:** There's no way that I believe that your staff or any other enforcement is going to be able to monitor (compliance of all trucks from inside and outside California) and keep those trucks from polluting our air. After we've done all that we can do, it's still incumbent upon your group to monitor and police it, and I don't believe it's possible. (ACT)

**Agency Response:** Enforcement by monitoring compliance on every truck transporting freight on California highways would be resource-intensive and over burdensome. Rather, enforcement of the regulation will consist of conducting roadside inspections by enforcement personnel and audits at fleet facilities. Violators of the requirements may be fined for noncompliance. See also agency responses to comments #172 and #185.

- 177. Comment:** The proposed rule is unenforceable because California can not expect the nation to comply with a trailer concept that is not nationally accepted or commercially viable. Therefore, the reductions do not meet The Global Solutions Act of 2006, Health and Safety Code section 38562(d)(1-2), which requires reductions to be real, additional, quantifiable, permanent, verifiable and enforceable. (IWLA)

**Agency Response:** The purpose of the regulation is not to impose its requirements on the nation, but rather on applicable trucks and trailers that transport freight on California highways. Out-of-state companies that transport freight in 53-foot box-type trailers and the tractors that pull them must comply with the requirements when operating on California highways. ARB enforcement staff is currently conducting inspections on the road or at fleet facilities for two existing ARB programs, the Heavy-Duty Inspection Program and the Periodic Smoke Inspection Program. To enforce the regulation, the same staff will also inspect vehicles for compliance once the regulation is in effect.

- 178. Comment:** IWLA is opposed to having the California warehouse as an enforcement arm for ARB. The proposed rule as defined includes the shippers as the owners of the freight, a distribution center, or a temporary freight storage facility. Our members fit the latter two categories. We are not cargo owners but rather third party logistics providers. ARB is transferring enforcement costs and liability to the California warehouse. The proposed rule places the shipper warehouse into an inappropriate role and creates an untenable relationship between business parties. The warehouse does not actually own the cargo and has no control over cargo movement. ARB should enforce the proposed regulation with their own staff through weigh stations, at the state lines, roadside with the smoke testing teams, or DMV registration. (IWLA)

**Agency Response:** Appendix G of the Staff Report describes the enforcement approach for the regulation. The responsibility of a California-based shipper is to ship freight from its facilities using only compliant tractors and trailers. Since a California-based shipper is typically not directly responsible for the tractors and trailers used to carry freight from its facility, ARB will not hold the shipper liable for tractors and trailers found in violation for the first time. If, however, the violating motor carrier, tractor owner, or trailer owner fails to settle the notice of violation within the permitted time period, ARB will notify the affected shipper that, until the notice of violation is settled, it will be responsible for future violations when using the delinquent motor carrier, tractor owner, or trailer owner. While the shipper is not required to enforce the regulation, once notified of a delinquent violation, the shipper will likely have to take some type of preventative measure to avoid being cited for future violations. It may notify the delinquent violating motor carrier or equipment owner to settle the violation before it can carry freight from the shipper's facility, choose to use a different motor carrier or equipment owner, or explore other options.

- 179. Comment:** ARB has erroneously determined that a warehouse employee is trained and certified in truck or trailer mechanics. Since the trucks or trailers will not have an ARB sticker on them, the shipper warehouse will be required to inspect all equipment. Warehouse employees do not have the knowledge to determine whether a truck is compliant with the proposed regulation and that it is in good working order and thus, the warehouse would have to hire truck mechanics to inspect and document every vehicle that comes into a California shipper warehouse. Some of our distribution centers have at least a hundred dock doors running on two shifts. The cumulative cost of staff time and delays for drivers are unfairly incurred by the warehouse shipper. This additional cost was not part of the staff report and reflected in the economic analysis. We recommend removal of California shippers and warehouses from enforcing this rule and subsequent penalties. (IWLA)

**Agency Response:** The regulation does not require warehouse employees to inspect all equipment that ships freight from the warehouse. Rather, the responsibility of a California-based shipper is to ship freight from its facility using only compliant tractors and trailers. ARB will notify the shipper if a violating motor carrier, tractor owner, or trailer owner that carries freight from its facility fails to settle a notice of violation within the permitted time period. The shipper will then be responsible for future violations when using the delinquent motor carrier, tractor owner, or trailer owner, until the notice of violation is settled. See also agency response to comment #178.

- 180. Comment:** The warehouse shipper, on receipt of a notice of violation, would have to assign staff to document conversations with all motor carriers and cargo interests about the notice of violation. And if for some reason equipment is still loaded out, then the warehouse is part of the penalty process. That

would mean inspection of every single truck and trailer, because we are going to have to document that we talked to them and that they are aware of the rule. The cumulative costs of staff time and driver-delay hourly penalties are unfairly incurred by the warehouse. California shippers and warehouses should not be required to enforce ARB rules. (IWLA)

**Agency Response:** As discussed in Appendix G of the Staff Report, ARB will notify, for informational purposes, all affected California-based shippers involved in a shipment for which a notice of violation was issued to a motor carrier, tractor owner, or trailer owner. However, in the event that a violating motor carrier, tractor owner, or trailer owner does not settle the notice of violation within the permitted time period, a second notification will then be sent to affected shippers to notify them that if they continue to use the violating motor carrier to ship freight in non-compliant vehicles, they can be part of the penalty process for future violations.

The shipper does not need to inspect every single truck or trailer that loads its freight from the warehouse; the shipper only becomes involved in a small subset of these trucks (i.e., violating motor carriers that have missed the penalty deadline.) The shipper does not need to document conversations with the violating motor carriers but rather only to ensure that the motor carrier's non-complying vehicles are not used to ship freight from its facility. To achieve this, the shipper may notify the delinquent violating motor carrier or equipment to settle the violation before it can carry freight from the shipper's facility, choose to use a different motor carrier or equipment owner, or explore other options.

- 181. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. There is no analysis of the economy-wide legal and administrative costs that will be imposed by staff's ill-conceived "joint liability" enforcement approach that will affect all parties, not just those responsible for upgrading the trailers. These costs will affect every party that takes delivery from a 53-foot or longer trailer. Thus, restaurants, small grocery stores and virtually any retail outlet will be subject to ARB fines, whose legitimacy or costs they will have no ability to assess or recover. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** During the informal rulemaking process, the proposal included responsibilities for the receiver of the freight from an affected 53-foot or longer trailer. Due to comments from stakeholders, all the responsibilities of the receiver were deleted from the regulation that was adopted by the Board, as described in the Staff Report.

- 182. Comment:** California trucking businesses that have to comply with the proposed requirements cannot compete with out-of-state trucks not meeting the proposed requirements. (SVP)

Out-of-state trucks will not conform to the proposed requirements as California trucks are required. (DiSalvo, Eaton)

**Agency Response:** Identical requirements apply to both in-state and out-of-state trucks that transport freight on California highways. Enforcement of the regulation for both in-state and out-of-state trucks may occur through a roadside inspection by ARB enforcement personnel, where a vehicle is pulled over and inspected. The inspections performed by ARB enforcement personnel may occur at border crossings, California Highway Patrol weigh stations, fleet facilities, and randomly selected roadside locations. See also agency response to comment #172.

- 183. Comment:** How does ARB ensure that all vehicles will be compliant so we may have a level playing field? How will ARB enforce compliance? (JJTI)

**Agency Response:** See agency response to comment #172.

- 184. Comment:** My concern for the proposed rule is unilateral enforcement to ensure that everyone complies. Shippers and receivers should be held liable for allowing non-certified equipment into their facilities. State vehicle truck inspection facilities should also check for certified equipment as well as through the use of DMV records. (Goliti)

The California Highway Patrol and the Department of Motor Vehicles should be involved in enforcement to ensure a level playing field. (Berry)

**Agency Response:** ARB will enforce the regulation in an equitable manner and at various locations including weigh stations, vehicle inspection facilities, rest stops, and other locations as they see fit. While tractor and trailer owners will hold the primary responsibility for compliance since they are the ones who purchase new vehicles and retrofit existing ones, the regulation also places some responsibility on the driver, motor carrier, California-based broker and California-based shipper. ARB has decided not to hold receivers responsible for the compliance of delivery vehicles since receivers, unless they operate the vehicles themselves, generally do not have any control over the shipping process and, additionally, do not typically see such vehicles until the time their freight is delivered. As with other ARB mobile source programs, the Department of Motor Vehicles will be used both as a source of information and as a tool for blocking registrations of vehicles with unsettled violations. Although the regulation gives the California Highway Patrol the authority to enforce, whether they decide to enforce the regulation or not is at their sole discretion. See also agency response #171.

**185. Comment:** A more liberal compliance should be considered. A more doable schedule is 25 percent of a fleet by 2012, 50 percent by 2016, 75 percent by 2019, and full compliance by 2022. (Berry)

**Agency Response:** The compliance options contained in the regulation were developed to ensure meeting the goals of AB 32 while providing optional phase-in opportunities for fleets that allow them to spread out compliance over several years. The compliance schedule proposed by the commenter would delay full compliance until 2022, which is two years after the required deadline of 2020. The compliance options for large and small fleets of trailers are actually more liberal at the startup than the schedule proposed by the commenter, as detailed in the agency response to comment #113.

## **M. Miscellaneous**

**186. Comment:** Does the aftermarket industry truly have the ability to supply in excess of 200,000 units for retrofit in a timely manner?

**Agency Response:** The regulation contains retrofit requirements for 2010 and earlier model year trailers. The retrofit requirements must be completed by 2013 or optionally can be phased-in over several years. The initial year of compliance requires only a small percentage of trailers to be retrofitted. For example, the optional phase-in schedule for trailer retrofits of fleets with 21 and more trailers begins on January 1, 2011 with 5 percent and slowly ramps up in percentage each subsequent year. The optional phase-in schedule for smaller fleets with less than 21 trailers does not start until January 1, 2014 at 25 percent, requiring full phase-in compliance by January 1, 2017. Spreading the required compliance of retrofitting trailers over several years through the optional phase-in schedules will also spread the demand for the aerodynamic devices over these years. While many of the retrofit technology manufacturers are small and have been in business for only a few years, the phase-in period provides additional time for manufacturers to increase production capability as demand increases. Also, some of these small companies have contract license agreements with larger companies to manufacture and sell their equipments.

**187. Comment:** The regulation exempts some of the higher-polluting trucks operating in California. While the use of trailer skirts and fairings offer little benefit at lower speeds, by exempting many short-haul trucks from the requirements, ARB is unfairly discriminating against long-haul trucks. (AZTA)

**Agency Response:** The definition of a short-haul truck was carefully crafted in such a way that only trucks that will not substantially benefit from the use of aerodynamic devices were excluded. These are trucks that either infrequently operate at highway speeds or generate low mileage. As noted by the

commenter, such trucks would achieve lower fuel savings with aerodynamic equipment and low rolling resistance tires, which in turn translate into lower GHG emission reduction. It is less cost-effective to reduce GHG emissions from short-haul trucks, and consequently, it is appropriate to exclude this category of truck from the regulation.

- 188. Comment:** Diesel trucks and buses should be held to the same air pollution laws that have been applied to automobiles. Farm vehicles should be required to conform to these standards as well. (McGinnis)

**Agency Response:** This comment does not directly apply to the regulation since buses, automobiles, and farm vehicles are not within the scope of the regulation. However, in response to the commenter, trucks and cars have been historically subjected to separate sets of air pollution regulations because they are used and built differently. Individual automobile manufacturers are responsible for all the components of their cars, including the engine, chassis, and transmission; they are also responsible for ensuring that their vehicles comply with applicable regulations. However, for trucks, the engine manufacturer produces an engine that can be placed into a variety of chassis by the truck manufacturer. Air pollution regulations apply to the engine and thus, the engine manufacturer is held responsible for complying with applicable regulations. Farm equipment are subjected to similar emission regulations as heavy-duty diesel trucks, in that the engine is certified to meet certain emission standards, rather than as a whole vehicle/equipment.

- 189. Comment:** Within the proposed regulation, there are provisions that are not logical given the professed goals of the agency. For example, the 53-foot length threshold is arbitrary, as in the exemption for chassis trailers. (TTMA)

**Agency Response:** The regulation is not arbitrary and illogical because the regulation is based on the U.S. EPA SmartWay program. The SmartWay program has established specific technical guidelines for the verification of aerodynamic improvements and low-rolling resistance tires for 53-foot and longer dry-van trailers and of heavy-duty tractors. The regulation parallels these requirements for 53-foot and longer dry-van trailers and heavy-duty tractors within an appropriate implementation schedule. In addition, these requirements were extended to 53-foot and longer refrigerated van trailers because these trailers are most similar to dry-van trailers in that the SmartWay verified aerodynamic equipment (except front fairings) can be applied without modification. Other types of trailers for which SmartWay has not verified equipment for, such as shorter trailers and chassis trailers, are exempted from the regulation. In the future, ARB plans to evaluate the benefits of these technologies for other trailer lengths and types, which may result in a subsequent rulemaking adding these trailers to the program.

**190. Comment:** ATA disagrees with ARB staff's assessment that the conservative nature of the long-haul transport business is a factor in fleets not pursuing retrofitting their entire fleet of trailers. A more plausible explanation is that the competitive nature of the trucking industry forces companies to rely on proven, cost-effective methods which have been thoroughly tested and evaluated. (ATA)

**Agency Response:** In the Alternatives Considered section of the Staff Report, the "No Action" alternative was rejected because ARB assessed that without regulatory intervention, fleets would not voluntarily retrofit their trailers with aerodynamic technologies. ARB's explanation for why this would be the case included the conservative nature of the trucking industry. Regardless of the reasons why fleets have not pursued retrofitting trailers, the reality is that currently most fleets have not voluntarily done so.

As stated in the Staff Report, discussion with most fleets that are currently using side skirts has shown that the technology is mature and cost-effective, and ready for commercial use. Many of these fleets reported that they plan to install side skirts on all of their trailers, while others were uncertain primarily due to the capital needed to retrofit their fleet, while staying competitive with fleets that are not investing in these technologies. ARB has heard numerous times that the trucking industry runs on very thin profit margins and that investing in these technologies would result in increasing their prices to their customers, placing them temporarily at an economic disadvantage. A limited number of fleets have used the front or rear trailer fairings and some expressed skepticism about the ease of using them and potentially damaging the equipment due to misuse. As drivers and operators become more familiar with these technologies, these concerns should be minimized. While the required aerodynamic technologies are not yet in wide-spread use, sufficient experience with these technologies among fleets has shown that they are technologically feasible and effective. In addition, the slow phase-in schedule for the implementation of the regulation will allow adequate time for fleets to choose and to learn about the aerodynamic technologies that can be used most appropriately with in their fleet.

**191. Comment:** Staff's cost-effectiveness calculations have not reflected the reality of the costs that regulated entities are likely to face. Despite a pledge to assess the cumulative impacts of other ARB programs that are or will affect the trucking industry, staff has not included the cost impacts that will be attributable to the low-carbon fuel standard rule or including transportation under the proposed cap-and-trade program. The costs of these other ARB programs and regulations must be included in any cumulative impact analysis. CTA recommends that staff revise its cost-effectiveness analysis to ensure that it reflects a realistic appraisal of the costs of the program versus any claimed benefits. (CTA2)

**Agency Response:** During the public workshops, commenters requested an analysis of the impact of the regulation along with other applicable heavy-duty truck regulations on the trucking industry. ARB analysis showed that the only truck regulation with overlap was the Transport Refrigeration Unit regulation. As a result, the regulation contains a separate optional phase-in schedule for refrigerated trailers that are subjected to both regulations, which allows for delayed compliance with the regulation. The regulations mentioned by the commenter (low-carbon fuel standard rule and cap-and-trade program) have not been adopted nor formally proposed as of the date of the Board Hearing and thus cannot be included in this analysis since the proposed provisions have not been finalized.

#### **IV. SUMMARY OF COMMENTS MADE DURING THE 15-DAY COMMENT PERIOD AND AGENCY RESPONSES**

Written comments were received during the 15-day comment period in response to the September 17, 2009 notice of public availability of modified text and availability of additional documents. Listed below are the organizations and individuals that provided comments pertinent to the changes proposed during the 15-day comment period.

<b><i>Written Commentor (15-day Period)</i></b>	<b><i>Affiliation</i></b>	<b><i>Abbreviation</i></b>
Blubaugh, Timothy	Engine Manufacturers Association	EMA2
Butcher, Steven	Rubber manufacturer's Association	Rubber
Curbo, Rod F.	PACCAR	PACCAR
Gaussoin, Gary	Silver Eagle Manufacturing Co.	Silver Eagle2
James, Thomas M.	Truck Renting and Leasing Associations	TRALA
Jones, William B.	Werner Enterprises	Werner
Kayes, David	Daimler Trucks North America	Daimler2
Lew, Stan	Michelin North America, Inc.	Michelin
Mullett, C. Randall	Con-way, Inc.	Con-way2
Rose, Kathy	Nose Cone Manufacturing Co.	Nose Cone2
Sauer, Eric	California Trucking Association	CTA3
Tavares, Dave	McKinney Trailers and Containers	McKinney
Tunnell, Michael	American Trucking Associations	ATA2
Wood, Richard	SOLUS –Solutions and Technologies LLC	Solus2

Listed below are the individuals that provided comments that were not pertinent to the regulation.

<b>Written Commentor (15-day Period)</b>	<b>Affiliation</b>
Becker, Bill	None
Dodds, John	None
Lange, Bill	None
Rentie, Elmer	None

Set forth below is a summary of each comment regarding the regulatory action as well as the agency response, including the reasons for not making a change to the regulation. Comments not involving objections or recommendations relevant to the modified regulatory text or the additional documents made available by ARB in this rulemaking are not included.

The comments summarized below are divided into 5 subsections: (A) General Comments, (B) Scope of the Regulation, (C) U.S. EPA SmartWay Program, (D) Standards and Test Procedures, and (E) Compliance and Enforcement.

#### **A. General Comments**

- 1. Comment.** The definition of “California-Based Broker” is overly broad. Large companies are often involved in many facets of the transportation process. For example, a company may function as a logistics planner for one customer, haul freight, point-to-point, by truck for another, and function as a third-party broker for another. It is often not accurate to define one company solely as a broker and another solely as a motor carrier. A company that moves freight in 48 states and has a trucking terminal in California but conducts brokerage operations from locations outside of California should not be considered a “California-Based Broker” simply because it conducts other, non-related business operations at a location in California. We suggest that the definition of California-Based Broker be changed to the following: “California-Based Broker” means a broker that conducts brokerage operations out of a business location in California. (Werner)

**Agency Response:** Based on the definition of “Broker,” “California-based Broker,” and “Person” in the regulation, the responsibility for compliance with this regulation will apply to any business entity that brokers freight loads into or out of a facility in California and has a physical business location within the state of California, regardless of what type of business is conducted at the California location. As a result, ARB did not make any changes to the language that defines a “California-based Broker” as proposed by the commenter.

- 2. Comment:** The definition of “Fleet” needs to distinguish between various types of ownership, much like the modified language of “Owner” has done.

For example, a fleet of trailers may be owned by a fleet operator, a leasing company or a combination of the two. The regulation should provide clarifying language for trailer fleets which identifies how ownership and fleet size is to be determined and who is responsible for fleet reporting. This language should also clarify the responsible parties for preparing the lists required in Section 95307(d). These clarifications are especially important in the case of leased equipment which can change hands multiple times within very short periods. (ATA2)

**Agency Response:** The owner as identified by the definition in 95302(a)(39) is the person that is responsible for compliance with all the elements of the regulation. Furthermore, the definition of a “person” provided in 95302(a)(40) ties the definition of “owner” to the definition of “fleet” which is one or more trailers owned by a person or other entity. ARB believes there is no ambiguity in these definitions and therefore no changes were made in response to this comment.

- 3. Comment:** The definition of “Local-haul base” should be modified to include a clarification that, for a leased trailer, the “local-haul base” means the lessee’s location where the local-haul trailer is garaged, maintained and routinely dispatched. (ATA2)

**Agency Response:** The regulation puts the responsibility for complying with the reporting requirements for short-haul and local-haul exemptions (section 95306) directly on the owner of the trailer fleet as defined in subsection 95302(a)(39). If the lessee is identified as the owner of the local-haul fleet then the location identified by the lessee will be the local-haul base of the local-haul fleet. The same applies to the lessor or any other person or business if he/she is identified as the owner of the trailer. Thus, no changes were made in response to this comment.

- 4. Comment:** Requiring the lessor to insert into the lease contract the language specified in Section 95302 (39)(C), is unnecessary and unduly burdensome to the lessor. Rather than allow the particulars of a lease contract dictate responsibility for compliance obligations, TRLA submits that the registered operator of a leased or rented vehicle – who clearly the party in position to most effectively control compliance-related activities – bears responsibility for compliance with the GHG Regulation. (TRALA)

**Agency Response:** ARB believes the provisions in Section 95302 (39) (C), (D), and (E) regarding compliance responsibilities for leased vehicles is a reasonable and equitable approach that will in many cases make the lessee (or operator) of a leased tractor or trailer responsible for compliance, as the commenter urges. ARB agrees that a lessee that operates a vehicle should bear most of the responsibility for the compliance with the regulation because the operator most directly controls how, when, and where the leased vehicle will operate. However,

the lessor bears some responsibility for compliance, including a role in ensuring that those leasing equipment are notified of the regulatory requirements and given an opportunity to make an informed decision whether to lease equipment that can be used in California. That is the primary purpose of the contractual language that the commenter objects to. ARB also believes it is reasonable and appropriate, in the case of trailers that were leased prior to January 2013, to require that a lessor either permit a lessee to bring the trailer into compliance or exchange the non-compliance trailer for a compliant trailer. Without this provision, a person who has a long-term trailer lease might have no viable way to comply with the regulation. Once these requirements are met, the lessee, not the lessor, is considered the owner of the trailer for purposes of compliance from that point on.

5. **Comment:** The proposed changes to the definition of “owner” would essentially treat all leases alike, whether they are for periods of three days or three years. Placing responsibility for compliance on the registered operator of the vehicle would be more efficient and effective approach. (TRALA)

**Agency Response:** The commenter is correct that the owner definition does not distinguish between the lengths of leases. (The provisions for a leased trailer do vary, however, depending on when the lease was entered into.) Essentially, the regulation does place the responsibility for compliance on the lessee that operates the vehicle, but only when the lessor has included language in the lease agreement to notify the lessee of the regulatory requirements (for trailers that are leased prior to January 2013, other forms of written notice are allowed, but must be combined with steps to allow the lessee to retrofit the leased trailer or exchange it for a compliant trailer).

6. **Comment:** The proposed changes to the definition of “owner” would mandate that in order to remove the default provision of compliance responsibility, a lessor demonstrate that either 1) the lease agreement permits the lessee to modify the trailer to be compliant with the substantive requirements, or 2) the lessor has provided a reasonable method to exchange the trailer for one that is compliant. Requiring such demonstrations (which could necessitate amendments to numerous leases) to overcome application of a default rule presents significant transaction costs without the promise of additional substantial benefits. (TRALA)

**Agency Response:** Neither of the provisions cited by the commenter require the amendment of an existing lease. For trailers that are leased through a lease agreement signed prior to January 1, 2013, responsibility for complying with the regulation shifts to the lessee if the lessor: 1) provides the lessee with actual written notice of the regulation’s requirements, and 2) either demonstrates that the lessee is allowed to make the required modifications in the trailer under the lease agreement, or that the lessor has provided a reasonable method for the lessee to exchange the trailer for one that complies with the regulation. Although

including the specified language in a lease is one way to meet the notification requirement, any actual notice outside the lease agreement will also suffice. If the existing lease agreement prohibits the lessee from modifying the trailer in a way that is required by the regulation, a lessor could either amend the lease agreement to allow such modifications or provide a reasonable method for the lessee to exchange the trailer for another that complies with the regulation.

For trailers leased on or after January 1, 2013, section 95301(E) requires that the lease contain specific language to put the lessee on notice about the regulation's requirements before the compliance obligation shifts from the lessor or lessee. This will allow trailer leasing companies plenty of time to amend applicable lease forms and should not require amendments to existing lease agreements.

7. **Comment:** The definition of "owner" should be modified to clearly provide that the lessor has no liability for any failure of the lessee to comply with the GHG Regulation in situations where the specified language (Section 95302 (39)(C)) is included in the lease. (TRALA)

**Agency Response:** The suggested change in the definition of owner is unnecessary because under the circumstances described by the commenter, the lessor of a tractor would not be considered the "owner" and therefore would have no compliance obligations under the regulation except in the rare circumstance where the lessor was also acting in another capacity that does fall within the regulation (i.e. a driver, a California-based broker, a California-based shipper or a motor carrier). That would not normally be the case. The same is true for lessors of trailers that are leased under an agreement signed on or after January 1, 2013. (Additional requirements apply for trailers leased before this date.)

To the extent the commenter may be referring to civil liability issues other than compliance obligations under the regulation, e.g., contractual liability, such issues are beyond the scope of this regulation.

8. **Comment:** Requiring an explicit provision in order for the lessee to be responsible for compliance is not keeping with the reality of many lease situations. Consider the likely situation in which use of equipment in California is not contemplated by either the lessor or the lessee at the time of the transaction. If equipment is later operated in California without the lessor's knowledge, the lessor could be responsible for lack of compliance. Requiring specific language making explicit reference to the California provisions in order for responsibility to be placed with the operator presents the lessor with unnecessary risks. The GHG regulation should provide for situations in which the language is not included in a lease, and the lessee operates equipment in California without the lessor's knowledge. (TRALA)

**Agency Response:** ARB believes that the lessors of heavy-duty tractors and 53-foot box-type trailers bear some responsibility for ensuring compliance with

the regulation. ARB understands that a lessor cannot always control where a lessee chooses to operate leased equipment. The regulation therefore allows the lessor to shift responsibility for compliance to the lessee by including the lease language set forth in Section 95302 (38)(C) and (E) in a lease agreement where there is the possibility of the lessee operating equipment covered by the regulation on California's highways. ARB believes the language is suitable for various types of lease agreements.

Without this requirement, an operator would be more likely to end up with equipment that could not lawfully be used in California without even knowing that the equipment could not be used in California.

- 9. Comment:** The definition of "owner" potentially imposes compliance obligations on lessors that provide contract maintenance for equipment through Vehicle Maintenance Agreements. This provision should be deleted. Compliance responsibility is more properly imposed upon entities directing operation of the equipment at issue in California, not an entity retained to perform maintenance that has no involvement in the operation. (TRALA)

**Agency Response:** The rules in section 95302(38)(C), (D) and (E) governing compliance responsibility for leased equipment will apply without regard to whether the lessor has a vehicle maintenance agreement with the lessee. A lessor that maintains the leased vehicles can take the steps outlined in those subsections to ensure the lessee shoulders the compliance obligations. Section 95302(38)(A) includes a provision that allows a registered owner to demonstrate that another party is responsible for vehicle maintenance including the modifications required by this regulation, but that subsection expressly states that it does not apply to leased vehicles.

Compliance obligations under the regulation are distinct from possible contractual obligations between private parties. For example, the regulation requires the owner (and other parties) to operate compliant equipment, but another party not directly bound by the regulation may have contractual obligations to the owner to pay for or install required equipment. Except for the limited circumstances described in section 95302(38)(A), such private agreements do not affect which parties ARB will hold responsible for complying.

- 10. Comment:** We suggest changing the definition of "Trailer side skirt" to read as follows: "means a fairing that extends down from the sides or bottom of the trailer to cover part of the open space between the trailer frame and the ground. There are applications, such as Intermodal transport, which require the skirt to be inset for lifting equipment. Intermodal use should not be discouraged by this rule. (Silver Eagle2)

**Agency Response:** ARB is deleting this definition in its entirety because the term no longer appears in the regulation following the modifications dated

September 17, 2009. The deletion of this definition is without material effect because the term does not appear anywhere. The deletion should indirectly address the commenter's concern that the definition was too narrow.

**11. Comment:** A flow control device may be either an add-on or an integrated design element. Thus the definition of "Flow control device" must be modified by adding the words "device or" before "design element". Also, delete the phrase "around an object by changing the air flow". (Solus2)

**Agency Response:** No changes were made in response to this comment because the proposed modifications would not change the meaning of a flow control device as originally defined. A design element can be an add-on device that is not integrated.

## **B. Scope of Regulation**

**12. Comment:** ARB's proposed addition to the Applicability language of the phrase "or caused to be used" exposes companies to the prospect of being cited on the basis of speculation. This potential liability will require companies to incur the additional cost of a defensive legal capability in addition to the costs of compliance already required by the rule. The language is vague and creates the possibility of mistaken violation charges that would be dependent upon the speculations of an inspector. (CTA3)

**Agency Response:** The phrase, "or cause to be used," was added to clarify that the regulation applies to "motor carriers, California-based brokers, and California shippers that use, *or cause to be used*, the following equipment.....HD tractors that pull 53-foot or longer box-type trailers....53-foot or longer box-type trailers that are pulled by HD Tractors." In this context, it is appropriate and necessary to make this distinction since the listed entities may not actually *use* the tractor trailers to haul freight, but instead cause it to be used, i.e. dispatch it for use. It was clear from earlier iterations of the regulation that ARB was including parties that play a role in assigning the use of equipment to particular tasks but do not directly use the equipment. The specific requirements that apply to each category of regulated party -- owners, drivers, California-based brokers, motor carriers, and California-based shippers -- are well defined in Section 95303. It is these requirements that inspectors will use to evaluate compliance with the regulation.

**13. Comment:** New section 95306(i) that provides for a 36 month ineligibility for the short-haul exemption if a tractor is voluntarily removed from an owner's short-haul list appears punitive and has not been justified. At most, a short-haul tractor should be deemed ineligible to return to that status within the 12 month period beginning when the vehicle began its short-haul status. (CTA3)

**Agency Response:** ARB believes it is appropriate to require a 36 month period of ineligibility for a short-haul tractor that has been removed from short-haul

service. The intent was to provide adequate disincentive for owner's of heavy-duty tractors from adding and removing a tractor from the owner's short-haul list as a way of avoiding the requirements of the regulation. For example, let's assume a long-haul HD tractor reaches the 50,000-mile limit 6 months after it was identified as a short-haul tractor. Under the existing language, the owner could then remove the tractor from the short-haul list and add it back in the next day, restarting the 50,000-mile short-haul tractor limit.

The commenter suggests that deeming a tractor removed from the short-haul list ineligible for the remainder of its 12-month period is adequate to prevent this type of regulatory requirement circumvention. ARB disagrees and believes that a 12-month ineligibility period is not adequate disincentive. A HD tractor could continue to operate primarily outside California for several months, with owners willing to take the chance of being found in non-compliance on the few times the HD tractor would enter and leave California during that period. However, if we increase the ineligibility period to 36 months, the increased length of time makes the probability of being found in non-compliance sufficiently greater and provides adequate disincentive for identifying long-haul HD tractors as short-haul tractors to avoid compliance with the regulation.

**14. Comment:** The regulation requires exempt local-haul trailers to have low-rolling resistance (LRR) tires. We supply 53-foot trailers that are used for storage purposes that would qualify as local-haul trailers. The cost of changing all the tires on these trailers to low-rolling resistance tires would be cost prohibitive, while the fuel-saving benefit would be minimal since they remain stationary after delivery. Would it be possible to add an additional local-haul exempt trailer category, "Storage Trailer", which would exempt local haul storage trailers from the LRR tire requirement? Any local-haul storage trailer found on the road with freight would be out of compliance and a citation would be issued. If the trailer is empty and in route to the storage destination (local-haul base) the trailer would be considered in compliance. (McKinney)

**Agency Response:** The commenter supplies trailers that function more like storage units than typical local-haul trailers. ARB recognizes that the cost vs. fuel efficiency benefit associated with requiring storage trailers to replace their existing tires with low-rolling resistance tires is low, but ARB does not believe a modification to the regulatory language is merited at this time for the following reasons. (1) The cost of retrofitting storage trailer tires can be spread out over several years. Dry-van trailers are not required to be in compliance until January 1, 2013. Also, the new tires would last for the life of the trailer resulting in a negligible cost over the life of the trailer; and (2) Lack of low-rolling resistance tires would only be a compliance issue during the delivery of the storage trailer to and from its destination. The storage trailer owner could arrange for a short-haul tractor to pull the trailer. The regulation currently allows an exempt short-haul tractor to pull the storage trailer (i.e. a

trailer without aerodynamic technologies or low-rolling resistance tires) to and from its destinations without threat of violation.

**15. Comment:** An exemption is needed for "Low-use trailers." Many 53-foot trailers which are subject to this regulation fall into an occasional use category (such as specialized trailers, peak stock trailers, etc) or are used for the storage of goods at a location and not for over-the-road transport of cargo (storage trailers). An exemption to the trailer requirements under Subsection 95303(b) is needed for these types of trailers to allow for their continued use. (ATA2)

**Agency Response:** See response to Comment 14.

## **C US EPA SmartWay Program**

**16. Comment:** We recommend the omission of the definitions in the proposed regulation that do and/or may conflict with those developed by the U.S. EPA SmartWay Program. These include but may not be limited to the definitions found in section 95302 definitions (a)(4) "Cab side extender", (26) "Fuel tank fairing", (31) "Integrated sleeper cab roof fairing". (PACCAR)

**Agency Response:** These three terms are used in one paragraph of the regulation, which sets out the requirement to maintain SmartWay devices and tires in good operating condition (see section 95304(a)(1)). ARB does not agree that the definitions need to be deleted from the regulation. While some of the definitions do not precisely match existing definitions used by U.S. EPA, the definitions do not conflict with those used by U.S. EPA, and ARB believes the differences are necessary to add clarity and specificity to these terms.

**17. Comment:** The SmartWay Interim Tractor Requirements do not satisfy the performance-based caveat set by the Board because they require specific design feature be met. The design feature requirements for the SmartWay tractor will limit emerging technologies from entering the marketplace and stifle progress toward greater efficiency. We suggest limiting the regulation to requiring no classic style tractors rather than requiring all tractors to be SmartWay certified until SmartWay completes a more comprehensive test protocol. (Nose Cone2)

**Agency Response:** ARB disagrees with the comment that the interim tractor requirements do not satisfy the Board's direction that the tractor requirements be performance based. The current interim tractor requirements for certifying SmartWay tractors require that manufacturers conduct the industry accepted SAE J1321 test procedure to measure the fuel efficiency of the tractor model. In order to be eligible for SmartWay certification, the tractor model must meet or exceed the fuel efficiency performance of at least one current SmartWay certified tractor model, of any make from any manufacturer. It is true that

there is not a set threshold performance criteria to compare with. However, in order to be designated as SmartWay tractor, there is a minimum fuel efficiency improvement that the new model has to meet which is at least the fuel efficiency of the worst performing existing SmartWay certified tractor of any make. This enables the comparison of SmartWay tractor models across manufacturers.

It is true that in order to be eligible for SmartWay certification, the U.S. EPA requires that the sleeper cab tractor model have certain design features that enhance the fuel efficiency of the vehicle such as aerodynamic styled cab, integrated roof fairings, fuel tank skirts, aerodynamic mirrors and bumpers, and cab side extenders, and low rolling resistance tires. These required design features were developed by the U.S. EPA in consultation with truck manufacturers because they have been tested and resulted in increased tractor fuel efficiency. ARB does not believe that these design features limit emerging technologies from entering the marketplace. If there is a technology that can perform better than the mentioned design features, then that technology can be added on its merits to the SmartWay specifications by working with the U.S. EPA to verify that the technology meets the U.S. EPA's SmartWay specifications.

- 18. Comment:** The SmartWay Interim Test Method Requirements do not satisfy the performance-based caveat set by the Board because they require specific design feature be met. The test method also results in tractor design components being tested in little to no wind conditions and within a short period of time (usually one-day track test). This is not representative of real-world operation of these vehicles. (Nose Cone2)

**Agency Response:** See also response to comment #17. ARB believes the Interim Test Method is appropriate for certification or component verification purposes. It is true that like any other certification test procedure, the test conditions set by the U.S. EPA to test tractor models for SmartWay certification do not include all of the conditions that would be encountered in the real world. To develop a test procedure that would incorporate all the real world conditions is impractical. However, certification or verification test procedures must be standardized and to the extent possible test conditions that significantly impact fuel consumption such as wind speed at test site, maximum vehicle speed, elevation, track surface condition and grade, ambient temperature range during testing, etc. must be controlled or maintained within a specified range to minimize the variability of test results and enable the comparison of the performance of different vehicles and technologies from different manufacturers. ARB believes the Interim Test Method meet these criteria.

- 19. Comment:** Real-world analysis by one the nations largest fleets found trucks with fuel tank fairings to perform 3.2% lower in fuel economy than

trucks with half or no skirts after 12 months of operation. The cause for loss in performance is unknown, but may be due to the heat retention in the fuel tank caused by the skirting. Hot fuel is less volatile producing less energy and lowered fuel economy. This is a legitimate cause for concern that should be understood before a mandate requiring this design feature is set in place. (Nose Cone2)

**Agency Response:** The commenter admits that the cause for loss in performance is unknown but hypothesizes that the cause may have been due to fuel tank skirts. Furthermore, the commenter does not provide any reference for the above mentioned analysis and therefore, ARB can not comment on the commenter's theory that fuel tank skirts result in decreased fuel economy. On the contrary, ARB still believes fuel tanks skirts are an effective means to improve tractor fuel efficiency. Truck manufacturers have been providing fuel tank skirts as an optional design feature for their tractor models for many years now that the majority of the tractors on the road are equipped with this fuel saving aerodynamic technology. Furthermore, the U.S. EPA, which has been working with truck manufacturers for a number of years and has extensively studied the aerodynamics of heavy-duty tractors, has adopted fuel tank skirts as a feature of a SmartWay certified tractor. Moreover, ARB staff has interviewed numerous fleet owners about their tractors and trailers and never has the effectiveness of fuel tank skirts come into question.

**20. Comment:** The requirements for semi-trailers lack EPA verification for non-long haul applications. The savings percentages identified for trailer technologies as verified by the EPA are based on three assumptions; 1) that the tractor pulling the trailer is a sleeper-cab with full aerodynamic package, 2) that the vehicles will operate in the long-haul duty cycle, and, 3) the equipment will not operate in wind conditions that exceed the maximum wind speed required for successful track testing repeatability. Not all fleets affected by this regulation will operate sleeper cabs, in the long-haul duty cycle, and under no wind conditions.

The requirement forces imprudent purchases that lack scientific validation. Not all fleets affected by the regulation operate under the same duty-cycle as that which the verified technologies were tested under. Fleets should have the option to choose the solution that is most cost-effective for their operation. CARB acknowledges that savings for the front trailer fairings may be higher if the tractor is shorter than the full height version. Many fleets affected by this regulation have a variety of tractor configurations and could reach the 5% threshold using the front trailer fairing alone. CARB should allow a waiver for fleets that can submit test performance that proves 5% or more with at least one of the three possible treatments; the three possible treatments being a front treatment, and underside treatment, or a rear treatment. (Nose Cone2)

**Agency Response:** See also agency response to comments #17 and #18. The comment that there are no U.S. EPA verification requirements for semi-trailers in non-long haul applications should be directed to the U.S. EPA. However, the reason for the focus on long-haul operations to reduce GHG emissions from trucks is because the impact of aerodynamic improvements is the greatest on long-haul operations which is often characterized by high speed operation, long trip distances, and high annual miles. For this reason, this regulation does not require any aerodynamic improvements on short-haul and local haul operations and it is up to such fleets to choose the most cost-effective aerodynamic treatment for their operation. Furthermore, the drive cycle used for the Interim Test Method which is normally at highway speeds of 60 to 62 miles per hour is an appropriate drive cycle for long haul operations because such vehicles are operated at those speeds for more than 75 percent of their VMT. Moreover, as discussed earlier, certification and verification test procedures must be standardized and the test conditions controlled to reduce variability of test results and enable fleets to compare the performance of different technologies. Therefore, ARB cannot provide a waiver to use an alternative test procedure that will result in test results that may not be useful for fleets to compare the performance of various technologies.

The commenter also claims that many fleets affected by this regulation have a variety of tractor configurations and could meet the 5 percent fuel savings using the front trailer fairing alone. If such a technology exists, the technology developer has to work with the U.S. EPA and have his component verified for applications on that tractor configuration. Such a technology can then be used as a means for complying with this regulation provided the technology is used on tractor-trailers with a configuration similar to that used for testing. This regulation is based on the U.S. EPA SmartWay program and as such can only use technologies verified by that program.

- 21. Comment:** We suggest eliminating the SmartWay tractor requirement until EPA finalizes a more comprehensive test protocol. The “Interim” test method does not satisfy the performance-based requirement requested by the board and since engine requirements and anti-idle requirements are covered under other CARB regulations doing so will not diminish the intended GHG reductions of the rule. (Nose Cone2)

**Agency Response:** See comments 17, 18, 20, and 23 for a response to the comment that the Interim Test Method does not satisfy the performance-based requirement requested by the board. Also as discussed above, ARB believes that the Interim Test Method which is based on the industry-wide accepted modified SAE J1321 test protocol is an appropriate test method for evaluating the fuel efficiency of tractors and aerodynamic technologies. No changes were made in response to this comment.

**22. Comment:** The process of selecting tractors eligible for SmartWay certification was never subjected to the scrutiny of a rulemaking process and therefore may not be ready for CARB's adoption into its regulatory program. Similarly, the new interim requirements upon which CARB bases its regulation have never been subject to a public rulemaking process. They were adopted over objections from Daimler Trucks North America (DTNA) and others, without comment or explanation from the EPA and without the possibility of public involvement. They include arbitrary and vague limitations. They have never yet been demonstrated to correspond to or correlate with improved fuel efficiency. And in fact, they never will be, because they contain requirements and limitations that have nothing to do with fuel efficiency. In fact, as noted in footnote 1 of the interim requirements, the EPA acknowledges that the new "method is an interim method, in effect until the US Environmental Protection Agency (EPA) finalizes a more comprehensive greenhouse gas emissions test protocol for medium duty and heavy duty commercial on highway vehicles. When the more comprehensive test protocol is finalized, EPA plans to establish new performance-based eligibility criteria for SmartWay certification of Class 8 sleeper-cab tractor-trailers using the new more comprehensive test method.." (See EPA, Interim Requirements to Determine Eligibility of SmartWay Tractors, EPA-420-F-09-045, 2009.) EPA has not completed the work necessary to establish a reliable and fair standard. CARB should not adopt as part of its standard a method not yet proven by EPA to be adequate for a regulation. (Daimler2)

**Agency Response:** ARB has made clear from the beginning of this rulemaking process that the proposed regulation involved the mandatory application in California of a voluntary federal certification program that is still evolving. The U.S. EPA Smartway Transport Partnership Program is a federal certification program under which manufactures can qualify new tractors and trailers, aerodynamic devices and tires as SmartWay certified, indicating that they incorporate or constitute features for improved fuel efficiency, which relates directly to reduced greenhouse gas emissions.

The SmartWay program thus confers a status on certain equipment as promoting fuel efficiency. ARB's regulation uses this status conferred by U.S. EPA to require that certain equipment operated on California highways be SmartWay-certified or use SmartWay-approved devices.

The commenter is correct that U.S. EPA did not conduct a formal rulemaking process in selecting tractors eligible for Smartway certification or for the Interim Requirements. That is because both are elements of a voluntary program, and as such are not subject to the federal rulemaking process. U.S. EPA conducted stakeholder outreach with key stakeholders over several months as part of its developing the definition of a SmartWay certified tractor and the Interim Requirements. ARB understands the outreach included truck manufacturers, engine manufacturers, environmental groups, state groups, ARB and others.

ARB has complied with all procedural requirements of the Administrative Procedure Act proposing, revising and adopting the regulation. The public has had an opportunity to comment on the original proposal and on amendments to the original proposal. The public has also been specifically invited to comment on all aspects of the SmartWay program itself, including the Interim Requirements announced during the course of ARB's rulemaking. In summary, appropriate processes have been followed by ARB and interested parties have had an opportunity to comment on all relevant parts of the regulation, including not only the regulatory language and supporting documents relied on by ARB, but SmartWay documents released by U.S. EPA.

ARB disagrees that the Interim Requirements contain vague or arbitrary limitations that have nothing to do with fuel efficiency. The Interim Requirements establish design requirements and performance requirements based on criteria used to define the initial SmartWay Certified Tractors. When added to a class 8 tractor, the design features are likely to provide certain fuel savings when used in line haul operation compared to a truck without these features. Fuel savings estimates for the design features were developed using a combination of U.S. EPA testing and modeling results, review of the technical literature, and technical input from industry experts including truck manufacturers themselves. Specifically, the features include: sloped hood (not a "classic profile" tractor), high roof sleeper cab with integrated roof fairing and side extender fairings, aerodynamic bumper, aerodynamic mirrors, fairings over the side fuel tanks, idle reduction system capable of providing eight or more hours idle reduction with main engine shut down, low rolling resistance tires, and a 2007 or newer U.S. EPA-certified engine.

The definition of a "classic profile" tractor is well-understood by industry. A review of the truck industry's own sales literature will confirm this. During the initial discussions with stakeholders, U.S. EPA and its stakeholders discussed research that indicated that classic profile tractors -- as generally understood -- are up to 15% less fuel efficient than aerodynamic tractors, on the basis of their inherently poorer aerodynamics, if all else is held equal. On the basis of such an inherently large difference in performance, classic profile trucks were not considered for SmartWay. ARB understands that U.S. EPA does not plan to revisit this issue.

The combined benefits when a SmartWay tractor is pulling a U.S. EPA Certified SmartWay Trailer are expressed as a range -- "from 10% - 20% more fuel efficient than a tractor trailer without these features" -- to account for any uncertainties in the estimates. Stakeholders generally agreed with these estimates during discussions with U.S. EPA. Therefore, establishing the initial design criteria for the tractors was neither arbitrary nor vague, but the result of a lengthy stakeholder process informed by testing, modeling, analysis, and significant input from industry experts.

The performance requirements require that a candidate tractor be track-tested in accordance with the requirements of the Interim Test Method. The Interim Test method requires the candidate tractor demonstrate that it meets or exceeds the fuel efficiency performance of at least one current SmartWay Certified tractor. The current lineup of Smartway Certified tractor models, which form the current baseline for performance comparison, was determined by the tractor manufacturers. Tractor manufacturers identified one or two base models that incorporated the SmartWay design features and were tested in-house using industry-accepted test methods or modeling (e.g. wind tunnel, computational fluid dynamics, and SAE J1321 track testing) to prove they were the most aerodynamic in their fleet.

Therefore, the selection of the base models was not arbitrary or vague either, but was provided by the truck manufacturers themselves based upon their own use of an industry-accepted method. Beyond this, EPA provided an opportunity to manufacturers for a more rigorous demonstration, but the truck manufacturers declined this invitation.

- 23. Comment:** The newly incorporated interim SmartWay standards are not performance-based, not scientific, potentially discriminate against fuel efficient vehicles based solely on their appearance, and hence do not meet the criterion that CARB demanded of such standards. The EPA's new requirements to certify new vehicles as SmartWay-eligible are not solely performance-based and hence leave open the possibility of very efficient vehicles being barred from eligibility. Specifically, those requirements include the statement: "No 'classic-style' tractors (long nose, flat hood, flat, squared-off grill) will be considered eligible even if they meet other requirements." (Id.) In other words, even if a classic-style vehicle proves itself the most fuel efficient vehicle on the road, it is barred from SmartWay-eligibility because of its appearance. A standard of this sort is vague, at best. (For example, the standard does state what length of nose is too long. Is a 125 inch "BBC"<sup>1</sup> too long to be fuel efficient and, if so, why?) A standard of this sort is not scientific. And most importantly, it is not a "performance-based test requirements that will provide for comparable greenhouse gas reductions for similar certified SmartWay tractors from different manufacturers." Consequently, it does not meet CARB's requirements, as specified in Resolution 08-44. (Daimler<sup>2</sup>)

**Agency Response:** ARB disagrees with the commenter and believes the newly incorporated interim SmartWay standards scientifically evaluate the fuel efficiency performance of similar aerodynamic tractors, are performance-based, and hence do meet the criterion the Board demanded of such standards.

The "newly incorporated SmartWay standards" the commenter is referring to are the *Interim Requirements to Determine Eligibility of Smartway Tractors*, EPA-420-F-09-045, (Interim Requirements). U.S. EPA developed the Interim

Requirements earlier this year, after the Board's directed the Executive Officer in Resolution 08-44 to ensure that "the requirements...for certification of tractors will take effect only if the U.S. EPA modifies the existing U.S. EPA Certified SmartWay Tractor certification requirements to establish new performance-based test requirements that will provide for comparable greenhouse gas reductions for similar certified SmartWay tractors from different manufacturers..." The Interim Requirements establish three separate sets of requirements for SmartWay Certification: design requirements, performance requirements, and licensing requirements. Only the design and performance requirements are relevant to this discussion.

The design requirements establish criteria that every SmartWay-eligible tractor must meet before being considered for SmartWay certification. These include a sloped hood with curved features, an integrated roof fairing, cab side extender fairings, aerodynamic side mirrors, aerodynamic bumpers, and low-rolling resistance tires. These design features have been demonstrated to U.S. EPA to improve fuel efficiency through the reduction of aerodynamic drag and rolling resistance. (See agency response to comment #22 for further discussion on the basis for the design features.) Tractor manufacturers evaluated the fuel efficiency of tractor models equipped with these features using industry-accepted test methods, computational fluid dynamics modeling, and wind tunnel testing. As such, incorporation of these design features is a minimum requirement for SmartWay certification eligibility. Only after tractor models have met the design requirements is their fuel efficiency performance to be evaluated.

The performance requirements establish new performance-based test requirements that allow for the comparison of fuel efficiency performance for similar SmartWay-eligible tractors from different manufacturers. These tractors are similar in that they all meet the design requirements. Each tractor must demonstrate that it meets or exceeds the fuel efficiency performance of at least one current SmartWay-certified tractor model, of any make from any manufacturer, in accordance with the Interim Test Method. Consequently, ARB disagrees with the commenter and believes the newly incorporated interim SmartWay standards scientifically evaluate the fuel efficiency performance of similar aerodynamic tractors, are performance-based, and do meet the criterion that Board demanded of such standards.

**24. Comment:** There is a more reasonable alternative to CARB's proposed regulation, and CARB should consider that alternative. CARB should work with the EPA to develop a truly rigorous procedure to compare the fuel efficiency (or greenhouse gas emissions) of heavy-duty vehicles and determine SmartWay eligibility. Daimler Trucks North America (DTNA) recommends that, only after developing a rigorous procedure, should CARB regulate vehicles based upon SmartWay certification. DTNA suggests that CARB also work with the US Department of Transportation on its heavy-duty

vehicle fuel efficiency (and greenhouse gas) measure, as mandated under the Energy Independence and Security Act of 2007. As an alternative, or perhaps as an interim measure, DTNA suggests that CARB require technologies, with rigorous specifications, that have been scientifically demonstrated to improve fuel efficiency. We suggest CARB start with the EPA's list of SmartWay add-on technologies: fuel tank side fairings, cab roof fairings, cab side extenders, aerodynamic mirrors, aerodynamic bumpers, idle reduction technologies, and low rolling resistance tires. However, while a scientific tractor standard is still nonexistent, we recommend CARB refrain from requiring certain tractors. (Daimler2)

**Agency Response:** ARB disagrees with the commenter that an alternative to the regulatory requirements for tractors should be considered. The Interim Requirements, as discussed in the response to Comment 20, scientifically evaluate the performance of candidate SmartWay tractor models. Further, the alternative approach that the commenter suggests is incorporated into the existing Interim Requirements. Candidate SmartWay tractor models are required to incorporate the add-on technologies listed by the commenter. The Interim Requirements then require that the candidate SmartWay tractor demonstrate that it meets or exceeds the fuel efficiency performance of at least one current SmartWay-certified tractor model, of any make from any manufacturer, in accordance with the Interim Test Method.

Regarding the suggestion to work with federal agencies, ARB is working with the U.S. EPA to develop a more comprehensive greenhouse gas emission test protocol for medium and heavy-duty commercial on-highway vehicles. And, ARB has also met with the U.S. DOT regarding its efforts to improve heavy-duty vehicle fuel efficiency.

**25. Comment:** ARB should suspend section 95303(a)(1) of the GHG regulation. The Interim SmartWay Requirements (EPA-420-F-09-45) and Test Method (EPA-420-F-09-046) do not establish new performance-based test requirements as the Board properly required before moving ahead with the implementation of section 95303(a)(1). EPA's SmartWay certification still lacks an objective, verifiable procedure that the Board noted was necessary for its regulatory program. This conclusion is based on the following points:

- a. The Interim Requirements do not modify the existing SmartWay tractor certification requirements. The current list of models that are SmartWay certified will not change for some time, and there is not yet any method by which the performance of those existing tractors can be verified.
- b. The Interim SmartWay Requirements are ultimately subjective and not performance-based. Design elements, e.g. sloped hood, no

“classic-style’ tractors, are still included in the technical specifications.

- c. The Interim SmartWay Test Method will not verifiably measure performance. A new tractor model must demonstrate that it meets or exceeds the fuel efficiency performance of a current SmartWay Certified tractor model. The performance here simply is that the tractor must be better than an unverified, arbitrarily certified model. (EMA2)

**Agency Response:** ARB disagrees with the commenter that section 95303(a)(1) should be suspended based on arguments presented. See responses to comments 17-18, 20, 22 and 23, above.

Regarding point a in the comment, it is true that the interim requirements do not modify the SmartWay Tractor certification requirements for tractors that are already certified. Nothing in the Board’s direction to the Executive Officer on this issue suggested the Board wanted the tractor requirement dropped if existing SmartWay tractors were not de-certified. Rather, the Board wanted to see U.S. EPA adopt a new standard that would be more performance-based. The current list of SmartWay Certified Tractors will remain U.S. EPA Certified SmartWay tractors for the purposes of the SmartWay program and the regulation. Their fuel efficiency performance was verified by U.S. EPA staff as part of the SmartWay certification process. The fuel savings estimate for the existing Smartway tractors was based upon the added features and the aerodynamic profile of the candidate tractor. The quantification itself was based upon U.S. EPA testing, modeling and analysis, a review of technical literature, and input from industry experts. Prior to the Interim Requirements, a manufacturer had to confirm to the U.S. EPA that the candidate tractor model or models were the most fuel-efficient model or models offered in that tractor make. Each manufacturer evaluated the fuel efficiency of its tractor models using industry accepted test methods including the SAE J1321 test procedure, the TMC RP 1109 Type IV Fuel Economy Test procedure, computational fluid dynamics modeling, and wind tunnel testing. Additionally, the candidate tractor models had to be equipped with specified aerodynamic features, low-rolling resistance tires, and an idle reduction system. Thus, the certification process prior to the existence of the new Interim Requirements was not a subjective arbitrary process as the commenter has characterized it to be.

Regarding point b in the comment, the interim requirements do include design requirements and performance requirements. The design requirements are not subjective or arbitrary as the commenter suggests, but are set to ensure candidate tractors incorporate design features that have been demonstrated to U.S EPA to improve fuel efficiency. The performance requirements ensure the candidate tractor is at least as fuel efficient as a current SmartWay certified tractor. See the response to Comment 20 for further discussion.

Regarding point c in the comment, the commenter is accurate in stating that the Interim Test Method is designed to ensure the candidate SmartWay tractor model meets or exceeds the fuel efficiency performance of any currently certified SmartWay tractor. But, to characterize a current SmartWay Certified tractor model as unverified and arbitrary is inaccurate. See response to point a for a discussion of current SmartWay tractor certification requirements.

**26. Comment:** ARB should suspend section 95303(a)(1) of the GHG regulation. The existing SmartWay tractor certification requirements, even with the new Interim Requirements for new models, are inappropriate for a regulatory program. The Interim Requirements and Test Method are part of the continuous improvement and evolving framework that have made the voluntary SmartWay program flourish. That flexible certification method works well for a voluntary program; however, it falls short of the clarity and verifiability needed for a mandatory regulation. (EMA2)

**Agency Response:** ARB disagrees that the requirement in section 95303(a)(1) that sleeper-cab HD tractors of model year 2011 or later should be suspended as inappropriate for a regulatory program. ARB believes the certification method as recently revised by U.S. EPA is clear, and certainly there can be no confusion about which tractors have been certified and which have not, which is what owners, drivers and other parties subject to ARB's regulation need to know for compliance purposes. For further response to the view that the SmartWay program is not suitable for use in the regulation, see responses to comments 22-25, above.

**27. Comment:** ARB should suspend section 95303(a)(1) of the GHG regulation. The tractor certification requirements do not provide adequate due process. The Smartway Interim Requirements and Test Method were developed and published outside the notice and comment structures that would be required for a mandatory program. As such, EPA did not provide public notice that it was proposing the new Interim Requirements. EPA did not provide the public with the opportunity to review and comment on the proposal. And, EPA did not consider any public input before it finalized the requirements. And, presumably, EPA also can unilaterally change the requirements without notice or opportunity to comment. Linking the GHG regulation's requirements to voluntary program that was developed without due process is ignoring the rulemaking requirements in California's Administrative Procedure Act. See Cal. Gov't Code, section 11340 *et seq.* A tractor manufacturer's product may comply with the Regulation only if it is awarded SmartWay certification, which is subjective, flexible, and subject to change without notice. Consequently, the Tractor requirements altogether fail to provide the clarity the Act requires "so that the meaning of regulations will be understood by those persons directly affected by them." See, Cal. Gov't Code, section 11349.1(a)(3). (EMA2)

**Agency Response:** See response to comment 22, above, for a detailed discussion of the process followed by U.S. EPA in designing the SmartWay program and the process followed by ARB in adopting the regulation.

ARB, not U.S. EPA, is adopting this regulation, so the relevant question is whether ARB has proceeded in its rulemaking as required by law. It has. ARB complied with the requirements of the California Administrative Procedure Act (APA) by, among other things, making the original and modified versions of the regulation available for public comment during two periods as required by the APA. It also identified and made available all documents relied upon in the rulemaking, including SmartWay documents. Interested parties and the public generally had ample opportunity to raise questions and concerns about the proposed action, to suggest changes in the regulation, and to voice their objections to the regulation. ARB considered comments received and explained how the comments were incorporated into the proposal or why they were rejected. This process not only met the requirements of any applicable constitutional right to due process, it complied with the letter and spirit of the APA.

As noted in response to comment 22, the U.S. EPA's SmartWay program is evolving and ARB anticipates that the list of SmartWay certified tractors, trailers and technologies will continue to expand. By certifying certain vehicles and equipment as SmartWay approved, the voluntary federal program confers a status that is mandatory under ARB's rule. The APA does not prohibit California agencies from including such "conferred status" requirements in their regulations.

ARB disagrees that the SmartWay tractor standards are subjective or inappropriate for "conferred status" use in ARB's regulation. See responses to comments 17, 18, 22 and 23 for ARB's response on this issue.

## **D Standards and Procedures**

**28. Comment:** It is our understanding that trailer requirements have been modified to split the 5% required aerodynamic improvement from the low-rolling-resistance tire requirement of 1.5% into two parts wherein neither improvement can be counted toward the other. Please clarify that this interpretation is accurate. (Con-way2)

**Agency Response:** The required 5 percent aerodynamic improvement and 1.5 percent tire improvement are not changed in the modified language, but have been modified for clarity purposes. The tire requirements were independent of the aerodynamic requirements in the original language and remained independent in the modified language. The commenter is also correct that neither improvement can be counted towards the other. See also agency response to comment #31. The only thing that is changed in section

95303 (b) is that the modified language removed the language that specified the specific aerodynamic equipments (trailer side skirts, front trailer fairings, and rear trailer fairings) required for compliance, allowing fleets to use any combination of the verified aerodynamic technologies to meet the requirements.

**29. Comment:** We request that the modified language include confirmation that low-rolling-resistance tires that have been recapped are in compliance so long as the tire casing originally qualified as a LRR tire. (Con-way2)

**Agency Response:** Please see agency response to comment #32.

**30. Comment.** The rule seems to have conflicting definitions of short-haul tractors; those that operate less than 50,000 miles annually as well as those that operate within a 100 mile radius. Federal DOT regulations for maintaining duty-logs specify a 100 air-mile radius. This is already well established within the trucking industry and the enforcement community. We request that the modified language specify that tractors qualify as “short haul” if they meet either of these requirements and that the 100 mile radius conform with the Federal statute as air miles. (Con-way2)

**Agency Response:** The modified regulatory language uses the term “short-haul tractor” to refer solely to a tractor that travels less than 50,000 miles per year. A tractor or trailer that operates strictly within a 100-mile radius is now referred to as “local-haul tractor” or “local-haul trailer,” respectively. Since the regulatory requirements on these two types of operations are different, ARB believes the use of the two different terms will help clarify these two distinct types of operation that qualify vehicles for different exemptions under this regulation. Regarding the issue of using air-mile instead of mile for the operating radius of local-haul vehicles, ARB does not believe such a modification is necessary. ARB believes that mile, or statute mile (5,280 feet), is more commonly understood, and most distance measurement tools, such as those found on the internet, display their results in mile rather than air-mile. ARB expects that many of the businesses affected by this rule and authorized enforcement entities will use these tools to determine if vehicles qualify for the local-haul exemption.

**31. Comment.** It is our interpretation that Subsection 95303 (b) now states that trailers no longer have to adopt trailer skirts, nose cones or boat tails as the only approved technology for improving fuel savings by the required 5% and that any combination of EPA SmartWay technologies achieving that goal will qualify the trailer as CARB compliant. Please clarify this interpretation in the modified language. (Con-way2)

**Agency Response:** Subsection 95303(b) requires trailers to use U.S. EPA verified SmartWay tires and any combination of U.S. EPA SmartWay verified

aerodynamic technologies verified to meet or exceed 5 percent fuel savings for a dry van and 4 percent for a refrigerated van trailer. To be compliant the combination of technologies can only be SmartWay verified aerodynamic technologies and not any other technologies that are not aerodynamic even if these non aerodynamic technologies are SmartWay verified. Currently, U.S. EPA verified aerodynamic technologies for trailers include skirts that achieve 4 percent and 5 percent fuel savings, front trailer fairings that achieve 1 percent fuel savings, and rear trailer fairings that achieve 5 percent fuel savings. Thus, a fleet may comply with the dry van requirements by equipping its trailer fleet with either a skirt that is verified to meet a 5 percent fuel savings, or a skirt and a front trailer fairing that are verified to meet a 4 percent and a 1 percent fuel savings respectively, or a rear trailer fairing that is verified to meet a 5 percent fuel savings.

- 32. Comment:** The definition of “Low-rolling-resistance tires” should provide clarification as to the use of retreads. At a workshop on September 14, 2009, CARB staff indicated that the use of retread tires is a compliance option as long as the tire’s original casing has been SmartWay certified. The ability to use retread tires is an important component of this regulation from both a cost and reuse/waste reduction perspective. Language clarifying the use of retread tires as a compliance option should be either included in the regulation or addressed in a formal guidance document. (ATA2)

**Agency Response:** ARB agrees with the commenter’s assertion that the ability to use retread tires is very important from the economic and environmental point of views. The U.S. EPA SmartWay Program is currently working with the tire retread industry to develop specifications for SmartWay retread tires. As soon as the specifications are developed, ARB plans to update the regulation to include the requirements for SmartWay retread tires. Until then, ARB plans to provide an interim guidance or advisory that retread tires may be used as long as the casings of the retreaded tire are made from an originally SmartWay verified low rolling resistance tire. Regarding tires that will be replaced by SmartWay verified tires, those tires will continue to have a commercial value and use with other types of trailers and tractors that are unaffected by this regulation. Thus, ARB determined that there will not be an environmental impact since these tires can be used in other fleet operations.

- 33. Comment:** It is not clear why local-haul equipment continues to be subject to the low-rolling-resistance tire (LRRT) requirements. Local-haul equipment is not likely to accumulate the mileage necessary to achieve the benefits from LRRTs to justify their additional expense. Consequently, local-haul equipment, or equipment pulled by or pulling local-haul equipment, should be exempted from the LRRT requirements as well. (ATA2)

**Agency Response:** Most of the local haul tractors are deployed in urban local haul operations and normally operate at low average speeds compared to tractors that operate in regional or long haul operations. As discussed earlier, since aerodynamic drag varies with the square of the speed, requiring aerodynamic devices on local haul tractors and trailers does not justify the expenses since the low average speeds of the tractors provide minimal or negligible GHG benefits. However, at lower speeds rolling resistance is dominant (see Figure 1, agency response to Section III, comment #46) and thus reducing rolling resistance of tires at the low average speeds of local haul tractors could result in meaningful GHG benefits. ARB agrees that if the annual mileage accrued by a vehicle is very small then requiring low rolling resistance tires does not justify the expenses because the benefits are not significant due to the low mileage of the vehicle. Thus, a low mileage vehicle may be exempt from tire requirements based on the short-haul exemption criteria. However, local haul tractors and trailers that accrue more than 50,000 miles per year, but stay within 100-mile operating range, are more likely to be traveling some portion of their mileage at highway speeds and will achieve greenhouse gas reductions. Even if tractors are operated at lower average speeds, benefits will accrue due to high truck utilization and the relatively low or no incremental cost of the tires which justifies the tire requirements for local haul tractors.

**34. Comment:** A few of the concerns with the EPA Interim Test Method are:

- does not measure in-service performance of a vehicle or vehicle component,
- can not provide valid fuel consumption data, and
- has a precision error of at least 6%.

For these reasons listed above and based upon additional information provided below the CARB should immediately modify the existing technology verification process and procedures.

According to the SAE and TMC the precision of the subject test method is not reduced by testing on a roadway. The provision to test on “test track” only serves to increase test costs that will result in an increase in the cost of products and thereby limiting the number of options available to the industry. If CARB continues to rely solely upon the subject test method then CARB should allow for test results from all sources. The Interim Test Method should be modified to remove testing requirements on a “test track”; replace “test track” with “test route” to include testing on a roadway; remove limits on track grade, test site altitude, track surface condition, and precipitation; remove ambient temperature limits during testing, instead require a temperature range not to exceed 30°F for the duration of the test; modify maximum wind speed and wind gusts from 12 miles per hour to 5 miles per hour; and test trailers and test tractors must be same model, mileage, and configured the same. (Solus2)

**Agency Response:** ARB does not believe the comments made merit changing the Interim Test Method for the following reasons.

ARB does not agree with the commenter's conclusion that the Interim Test Method does not provide valid fuel consumption data. U.S. EPA's Interim Test Method which is based on the SAE J1321 is established to evaluate the performance of a vehicle or vehicle component under standardized conditions. In addition to the provisions specified by SAE J1321 test procedures, the Interim Test Method specifies additional conditions or constraints on variables such as grade, wind speed, length of test track, track surface conditions, ambient temperature, elevation, etc., that have significant impact on fuel consumption performance of the vehicle. Controlling these variables reduces the variability of the measurement, helps ensure the validity of the test results, and enables fleets to compare the performance of one device against that of the other tested under the same conditions. This is consistent with SAE J1321 test procedure which as a rule recommends the control of as many variables as possible in order to get conclusive results (see section 1 of SAE J1321 test protocol.)

The purpose of the Interim Test Method is not to measure the in-service performance of a vehicle or technology but to measure the performance of a technology for the purposes of certification or verification of the technology. Furthermore, the commenter's claim that the test method has a precision error of 6 percent is not substantiated. Rather, as indicated in SAE J1321 test protocol<sup>6</sup>, based on test experience of long haul trucks, fuel consumption measurement using portable weigh tank methods is considered to have an overall accuracy of  $\pm 1$  percent.

SAE J1321 permits testing on a roadway or a test track. It also states that the more variables controlled the more conclusive the test results and better repeatability of the test. Conducting testing on a test track rather than on a roadway enables controlling more variables such as track shape, surface, grade, and altitude, provides better monitoring and recording of weather conditions, and minimizes the impact of other vehicles on the test vehicles. The length of the test track is recommended by testing experts to reduce undue lateral forces on the vehicle and maintain a neutral speed appropriate for the drive cycle. We agree that zero or reduced wind speeds are ideal to reduce measurement errors. However, setting wind speed and wind gust at 12 miles per hour balances what is optimum speed with what is practical so as not to increase unduly the cost and time needed to conduct testing. The Interim Test Method requires that the test trailers to be of the same age, same model, mileage, and condition. Similar requirements apply to the test tractor. All of the specifics of the test plan including tractor-trailer gap, tire tread depth (included in tire condition), and other details would be worked out by the technology developer and the U.S. EPA before the testing is conducted.

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<sup>6</sup> See SAE J1321 Joint TMC/SAE Fuel Consumption Test Procedure - Type II, Section 7, Test Accuracy.

**35. Comment:** The U.S. EPA has not verified any aerodynamic devices based on the “General Requirements” specified in the Interim Test method. According to the SAE J1321, there have not been any valid tests performed and thus there are not any verified EPA technologies and therefore there are no CARB verified technologies. SAE J1321 states: “A single test is inconclusive regardless of the results. A single test should be taken as an indicator. Test results must be repeatable to have validity.” SAE J1321 also states: “If a number of tests do not show consistent results, then one must conclude that the changes caused by the component or vehicle system are less than can be measured by the test procedure.” The EPA has violated its own Interim Test Method by failing to require that J1321 tests be repeated, as instructed by the SAE J1321 standard, in order to develop a valid test result with quantifiable fuel use measurements. (Solus2)

**Agency Response:** ARB disagrees with the above comment. The Interim Test Method does not affect the existing devices that are already verified by the U.S. EPA. This is because the guidance that was used to verify these technologies was exactly the same as the Interim Test Method. Like the “General Requirements” in the Interim Test Method, the guidance (Appendix B of the Staff Report) also required manufacturers of the product to conduct an SAE J1321 test protocol and to follow all provisions in the protocol which includes the provision to repeat the tests until at least 3 valid T/C (Test Vehicle Fuel Used/Control Vehicle Fuel Used) ratios were obtained (section 6.10 of SAE J1321 test protocol.) In addition to complying with all the requirements in the SAE test procedure, the initial guidance also required manufactures to meet additional provisions such as testing vehicle on a test track, ambient temperature range during testing, grade changes, altitude of test facility, test speed, precipitation on test track during testing, etc. Based on these test conditions, a number of manufacturers were able to verify their technologies as SmartWay compliant technologies. Examples are Freightwing, Inc., Laydon Composites, Ltd., and Advanced Transit Dynamics to mention a few. The commenter may refer to the test reports published (referenced in the Staff Report) by these manufactures to verify the test protocol followed by these manufacturers in verifying their technologies, which are consistent with SAE J1321 test procedures.

**36. Comment:** Currently none of the aerodynamic technologies on the EPA verified list have satisfied the published EPA Interim Test Method based upon the SAE J1321 standard. SAE J1321 clearly states the following; “A test is inconclusive regardless of the results. A single test should be taken as an indicator. Test results must be repeatable to have validity”. EPA verification does not require that TEST be repeated to validate the fuel savings. The failure of EPA to require this fundamental and critical step in the process results in test results that do not satisfy either SAE J1321 or the EPA Interim test method and therefore the verification of device by EPA is not supported by valid test data. (Solus2)

**Agency Response:** The above comment is incorrect. As indicated in agency response to comment #35, manufacturers followed all provisions of SAE J1321 test protocol including the statements quoted in the above comment when verifying their products. Published test reports by Freight Wing, Advanced Transit Dynamics, and others document that tests were repeated several times until at least 3 valid T/C ratios were obtained as required by SAE J1321 test protocol (section 6.10 of SAE J1321 test protocol).

**37. Comment:** CARB's strict reliance on the voluntary EPA SmartWay program to identify viable aerodynamic technologies has and will continue to adversely affect the programs success. CARB should provide itself an option for a waiver of the EPA verification process based upon a body of data provided by a fleet or fleets that desire to use non EPA verified technology. This waiver is critical to ensure that CARB does not arbitrarily restrict the use of technology that has continually demonstrated high fuel saving performance and operational performance in the real-world operational environment. This waiver option is critically important due to the unreliability of the EPA verification process based upon SAE J1321 test data. Language should be added to the regulation to allow any combination of dry-van aerodynamic technologies that has been demonstrated to the U.S. EPA or CARB to meet or exceed a 5 percent fuel savings in accordance with industry standards and based upon preferred in-service testing. (Solus2)

**Agency Response:** ARB does not arbitrarily restrict the use of technology that demonstrates high fuel savings performance. Any technology that is verified according to the U.S. EPA's Interim Test Method would qualify as a compliant technology to meet the requirements of this regulation. Thus, ARB does not believe it is necessary to provide a waiver of U.S EPA verification test procedure. Furthermore, ARB does not agree with the commenter's statement that the U.S. EPA verification is unreliable. The U.S. EPA verification method was developed with input from the trucking industry and technology developers and is based on the industry-wide accepted SAE J1321 test protocol. Allowing various test methods and in-service testing would limit the ability to compare the performance of technologies since they will be subject to different test conditions. Therefore, no change was made to the regulatory language to allow alternative means of testing procedures.

## **E Compliance and Enforcement**

**38. Comment:** The definition of "Compliant trailer" in Section 95302 (a)(9) unnecessarily takes away flexibility large fleets need in order to remain competitive in a rapidly changing marketplace by eliminating the provision previously found in the second paragraph of Section 95307 allowing for bringing a trailer into compliance by "retiring such trailer from California service." We recommend the definition of compliant trailer be modified to state that, for the purposes of the fleet trailer compliance schedule, methods

of bringing a trailer into compliance include retiring it from California service. (Werner)

**Agency Response:** Although not explicitly stated in the regulation, retiring a trailer from California service will still be an acceptable method of complying with an optional trailer fleet compliance schedule.

**39. Comment:** Section 95307(f)(20) prohibits a large fleet participating in the large fleet compliance schedule from operating any trailer in California after July 1, 2010 unless such trailer is (a) compliant, (b) listed on the owner's fleet list, (c) a refrigerated van, or (d) otherwise exempt under the regulation. This restriction effectively accelerates the compliance date for non-compliant trailers not in the designated California fleet from January 1, 2013, to July 1, 2010. The prior version of this regulation included no such prohibition. Under the prior version, trailers not identified as part of a carrier's California fleet could have operated on California highways until January 1, 2013. This would have allowed such a carrier more time to adjust to the new conditions and perfect its methods of segregating its fleet into California and non-California operating units. More troubling than this seemingly arbitrary restriction is the equally arbitrary provision added at 95307(f)(13) that places a similar restriction on owners participating in the small fleet compliance schedule. The restriction on small fleet owners, however, does not take effect until July 1, 2012, a full two years after large fleets are affected. We recommend that the requirements set forth in (f)(20) and (f)(13) be removed entirely from the regulation. In lieu of a complete deletion of these provisions, they should at least be made consistent so that large fleets, also, have until July 1, 2012, to make the necessary, drastic revisions to their operations. (Werner)

**Agency Response:** ARB does not believe it is necessary to allow fleets participating in the large fleet compliance schedule to create a separate pool of vehicles subject to the January 1, 2013 hard deadline. This is because ARB believes it could actually hurt the flexibility of fleets that allocate too many trailers into a hard deadline pool initially to avoid bringing trailers into compliance in the early years of the large fleet compliance schedule. By doing so, a fleet owner could end up being forced to retrofit a large percentage of his/her fleet before January 1, 2013 because he/she still needs such trailers to operate in California after such date. Alternatively, if a fleet owner designates all trailers into a single compliance plan pool, as will likely be the case under the current regulation, the fleet owner would have the flexibility to decide for each individual trailer whether to retrofit or retire such trailer from California service when its particular compliance deadline approaches. Not only would this spread the requirement to retrofit or retire the fleet over a six year period, it would also allow the owner to return a retired trailer back into California service by simply retrofitting such trailer with the required SmartWay verified technologies at that time. In addition, the phase-in schedule begins slowly, so even if a fleet's early retrofits are to

trailers that he/she eventually removes from California service, such trailers would probably only represent a small portion of the fleet.

As to the restrictions set forth in section 95307(f)(13), in addition to the reasons given above, ARB believes they are also necessary to prevent large fleets from underreporting the number of trailers they own in order to qualify for the small trailer fleet compliance schedule. Because they are expected to have more limited financial resources to retrofit their fleets, small fleets are given additional time to comply with this regulation. If a large fleet is able to participate in the small trailer fleet compliance schedule, it would undermine the intent of the regulation to restrict large fleets from taking advantage of the additional compliance time given to small fleets.

**40. Comment:** The regulation specifies that the diesel on-road and off-road reporting systems (“DOORS”) will be used as the online reporting tool for this regulation. Unlike off-road equipment, the tractors and trailers affected by this regulation are required to be registered with motor vehicle agencies in order to receive operating credentials. As a result, fleets are already devoting considerable resources to adding, modifying and deleting equipment registrations. (ATA2)

**Agency Response:** Although ARB realizes that reporting requirements often require a substantial resource commitment from affected businesses, such reporting is necessary in order for ARB to provide flexibility without compromising the regulation’s effectiveness or enforceability. ARB continues to work on DOORS with the goal of simplifying the reporting process, and we encourage affected fleets to continue to provide us with comments and suggestions.

**41. Comment:** It is not clear how compatible DOORS is with the current systems being used by motor carriers and motor vehicle agencies. In the interest of conserving fleet resources and avoiding duplication, ATA requests that CARB work with fleets, registration agents, leasing companies, motor vehicle agencies and others to ensure DOORS is either interfaced with existing equipment registration systems or, alternatively, compatible with such systems. In addition, the data confidentiality protections of DOORS must be equivalent to those which have been established by the motor vehicle agencies. (ATA2)

**Agency Response:** Currently, ARB is working to harmonize the reporting required by this regulation with that of the Statewide Truck and Bus Regulation to prevent the need for fleets to enter vehicles subject to both regulations twice. In addition, ARB has formed a public-private subcommittee dedicated to improving DOORS and making it more user-friendly. Regarding the commenter’s concern about information security, access to DOORS is currently through a connection that is secured through a protocol that is

widely used on the internet. ARB understands the commenter's concerns about information security and welcomes any additional comments or suggestions as to how to improve upon the security protocol that is currently in place.

- 42. Comment:** Although not stated in the regulation, with the exception of exempt equipment and trailers included in the fleet compliance schedules, it is our interpretation that equipment which conforms to the requirements of the regulation is not subject to any reporting requirements. Please confirm that this is in fact correct. (ATA2)

**Response:** A fleet is only required to report a compliant trailer if such fleet elects to participate in the small fleet compliance schedule. Reporting such trailer as part of the large fleet compliance schedule is optional. However, for any fleet participating in an optional trailer fleet compliance schedule, reporting such trailer is to the fleet's benefit since the trailer may be used to meet annual fleet conformance thresholds and could be eligible for early compliance credit under the provisions of the large fleet compliance schedule. If a fleet, however, is not participating in an optional trailer fleet compliance schedule, the trailers do not need to be reported.

- 43. Comment:** While tractors and/or trailers that meet certain operating conditions are eligible for specific exemptions, a mechanism to allow the movement of exempt equipment beyond its operating radius is needed. For example, a local-haul trailer may be purchased or leased at a location beyond 100 miles of its local-haul base. This trailer will need to travel outside of its exempt operating range, yet provisions are not currently in place to allow this. CARB staff has acknowledged the need for such a solution. ATA would like to ensure an operating solution for this situation is either provided in the regulation or addressed through a formal guidance document. (ATA2)

**Agency Response:** ARB does not believe movement of exempt equipment will prove to be a problem in practice. If a problem should emerge, ARB is committed to working with the affected party and, if warranted, will consider addressing the issue in a future amendment of the regulation.

- 44. Comment:** In addition, with demand for equipment ranging from planned expansions to instant response, the interaction between registration and enforcement needs to be seamless to allow for the movement of equipment. With DOORS being envisioned as the primary link between the regulated fleets and the enforcement agency, ATA encourages CARB to develop a system which allows for the nearly instantaneous movement of equipment when placed in service or when changes in service status occur (i.e., moving exempt equipment out of state). The ability to quickly add, delete or modify the registration status of equipment is especially important. In the case of leased equipment, multiple lessees may operate the same piece of

equipment during a one-week period. This will require the ability to add and delete lessee information through DOORS in order to keep the equipment in-service and accurately registered. (ATA2)

**Agency Response:** Because some information entered into DOORS will require ARB review before being made available to enforcement personnel, there is the potential for database synchronicity issues during the enforcement of this regulation. However, since all new data entered into DOORS will be time stamped, any questions that arise regarding reported data can easily be resolved through a more detailed investigation.

- 45. Comment:** It is not clear how trailer fleet compliance schedules can be adjusted to accommodate growth or reductions. Trailer owners will need to make compliance plan revisions when they add purchased trailers and remove sold or retired trailers throughout the year. A modification allowing such revisions should be included in this section. (ATA2)

**Agency Response:** A fleet may add trailers at any time, but a newly-added trailer may not be added to an existing compliance plan once the due date for that compliance plan has passed. The optional trailer fleet compliance schedules are only available to trailers that exist in the owner's fleet at the time of the compliance plan due date. Therefore, for a newly-added trailer, the owner will have three options: 1) bring the trailer into compliance before operating such trailer in California, 2) register the trailer as a local-haul trailer before operating such trailer in California, or 3) dedicate such trailer to only short-haul and local-haul tractors when operating in California. Regarding sold and retired trailers, they will not have to be removed from our database. For a sold trailer or a trailer completely taken out of service, once the fleet officially relinquishes custody of the trailer, they will no longer be held responsible for it. However, the fleet should maintain evidence documenting the transfer should questions of ownership arise in the future. For a trailer that is simply retired from California service, as long as the trailer does not operate on a California highway after such time, the trailer will be considered compliant.

- 46. Comment:** The requirement to report trailers that will not operate in California should be eliminated. With today's corporate structures, the breadth of this requirement could capture trailers that are outside the North America continent. There is no nexus between the reporting of these trailers and the goals of this state regulation. Therefore, the requirements to report trailers that will not operate in the state, as well as their California operating status, are unnecessary. (ATA2)

**Agency Response:** For fleets participating in the large fleet compliance schedule, they are no longer required to report trailers that do not operate within California. However, for fleets participating in the small fleet

compliance schedule, it is still required to report such trailers. This reporting is necessary to help ensure large fleets do not underreport trailers to qualify for the small fleet compliance schedule.

**47. Comment:** There does not appear to be a means, provision, or requirement in the regulations whereby exempt trailers or tractors can be identified as such by individuals who must verify whether a tractor or trailer is compliant. There is no provision for a certificate or other documentation for a responsible person to refer to protect themselves from using or shipping in a non-compliant tractor or trailer. (CTA3)

**Agency Response:** ARB is currently developing a web portal for the public to look up the expected compliance or exemption status of any reported trailer.

**48. Comment:** Section 95303 does not contain specific provisions entitling drivers, California-based brokers, motor carriers, or California-based shippers to use exempt equipment. (CTA3)

**Agency Response:** Drivers, California-based brokers, motor carriers, and California-based shippers are required to only operate and/or dispatch vehicles that comply with section 95303. Pursuant to the regulation, a vehicle meeting the exemption provisions set forth in section 95305 also complies with section 95303. Therefore, the regulation does entitle the aforementioned entities to operate or dispatch vehicles that are exempt pursuant to section 95305.

**49. Comment:** The proposed regulation in Section 95306(d)(2) and Section 95307(c)(2)(N) requires tractor and/or trailer owners to provide, among other information, VIN and license plate numbers. While CTA has no objection to such information being provided, ARB must keep this information confidential at a level equal to the standard established by the DMV by not making it available for public access. This data can be used by competitors and vendors to put companies at a competitive disadvantage. (CTA3)

**Agency Response:** Proprietary and trade secret information that a company provides to ARB when reporting as required by this regulation, and that the company clearly identifies as confidential, will generally not be released to the public without ARB following procedural safeguards against the release of confidential information. Air pollution emissions data, however, including such data that a company may believe constitutes trade secrets, are public records that must be disclosed under Government Code 6254.7(e). Information used to calculate air pollution data is not "emission data" and will not be released to the public if that information qualifies as a trade secret.

ARB expects to hold the following information as confidential whenever companies assert a claim of confidentiality when they submit the information:

fleet composition, vehicle or fleet age, fleet size, and other confidential data used to determine the estimated cost of compliance. Title 17, California Code of Regulations (CCR), Sections 91000 to 91022, and the California Public Records Act (Government Code 6250 et seq.), set forth procedural safeguards for those who submit information to ARB that they have identified as confidential. If ARB receives a request for disclosure or seeks to disclose data that the originating company has identified as confidential, ARB will ask the fleet owner to provide written confirmation that the information is indeed proprietary or a trade secret, along with documentation supporting the claims of confidentiality. ARB may release fleet information to the U.S. EPA, which protects trade secrets as provided in Section 114(c) of the Clean Air Act and amendments thereto (42 USC 7401 et seq.) and in federal regulation, as well as other public agencies including, but not limited to, law enforcement and public health agencies, provided those agencies preserve the protections afforded the information which is identified as a trade secret or is otherwise exempt from disclosure by law (Section 39660(e)).

ARB may make information available to the public relating to 1) violations that have been issued, 2) the reported exemption status of a vehicle, 3) the expected compliance status of a trailer being brought into compliance in accordance with an optional trailer fleet compliance schedule, and 4) the make and model of a vehicle based on its vehicle identification number or license plate number.

**50. Comment:** The regulation needs to discuss the requirements for ARB to ensure the process of adding and removing tractors and trailers from exempt and compliance lists can be accomplished electronically so that the consequences of changes can be reflected instantly. This is especially critical for large fleets that will undergo thousands of changes each year. For large fleets, a paper intensive process is problematic. (CTA3)

**Agency Response:** Regarding exemption reporting only, ARB is currently working on an online reporting system that will allow fleets to enter and/or edit their reported information at any time. The aforementioned online reporting system will also be available to fleets for submitting their compliance plans pursuant to one of the optional trailer fleet compliance schedules. However, a fleet owner will not be able to add or delete trailers from a compliance plan once the due date for such compliance plan passes. See agency response #45 for more information about adding and deleting trailers.

**51. Comment:** Section 95307(b)(3) states "...a trailer owner may redistribute trailers among the final three annual conformance commitment lists (but) the trailer owner may not alter the number of trailers identified on each list." Under this provision, it is unclear how a large fleet compliance schedule would be adjusted for a growing or shrinking large fleet in which there could be thousands of fluctuations every year. (CTA3)

**Agency Response:** See agency response #45.

**52. Comment:** If the only reason for an owner to report all the trailers is to determine eligibility for the Large Fleet Compliance Plan yet the only trailers that must comply are those that visit California, it is not reasonable or necessary to require large companies to report all the trailers in their corporate families. Reporting should only be required for the subsidiaries that plan on operating trailers in California once the regulations become effective. (CTA3)

**Agency Response:** ARB agrees with the commenter. The current regulatory language does not require large fleets to report trailers that will not operate in California.