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Driving Trucking's Success

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Mr. Arthur Marin
Executive Director
Northeast States for Coordinated Air Use Management
89 South Street, Suite 602
Boston, MA 02111

Via e-mail: lcfs@nescaum.org

Re: Regional Low Carbon Fuel Standard

Dear Mr. Marin and Members of the Board:

The American Trucking Associations, Inc.[1] ("ATA") submits these comments on the potential impacts of the Northeast States for Coordinated Air Use Management ("NESCAUM") Low Carbon Fuel Standard ("LCFS").[2] As the national representative of the trucking industry, ATA is vitally interested in matters affecting truck fleets, including the supply, price and specifications of diesel fuel. ATA's membership is directly affected by the diesel fuel specifications enacted by various States and has a substantial interest in NESCAUM's development of a regional LCFS.

ATA is committed to reducing the trucking industry's carbon footprint. ATA has enacted a sustainability plan, which could reduce annual carbon emissions by more than 90 tons, or roughly 20% of the trucking industry's total domestic carbon emissions.[3] Notwithstanding our demonstrated commitment to reducing the trucking industry's carbon emissions, we have serious concerns with a state or regional based LCFS. As participating NESCAUM states draft a Memorandum of Understanding concerning the development of a regional LCFS, ATA recommends that NESCAUM thoughtfully consider the relationship between the federal Renewable Fuel Standard ("RFS") and a

[1] ATA is a united federation of motor carriers, state trucking associations, and national trucking conferences created to promote and protect the interests of the trucking industry. Directly and through its affiliated organizations, ATA encompasses over 37,000 companies and every type and class of motor carrier operation.

[2] The comments set forth herein are based upon the NESCAUM *Low Carbon Fuel Framework*, signed on December 31, 2008.

[3] A copy of ATA's sustainability recommendations may be viewed through the following link: http://www.trucksdeliver.org/recommendations/index.html

regional LCFS, and the likelihood that a regional LCFS could increase carbon emissions in the short term. We also recommend that NESCAUM carefully consider the economic impact of an LCFS on the trucking industry and the impact an LCFS will have on the nation's energy security. ATA has specific concerns with the potential impact that high percentage blends of biodiesel will have upon the trucking industry and the impracticality of substituting natural gas for long-haul trucking operations. We address each of these issues below.

A. Relationship of a Regional LCFS to the Federal RFS

While the fact that there currently are no viable low carbon alternatives to ULSD that significantly lowers its carbon intensity stands as the primary obstacle to the implementation of an LCFS for diesel fuel,[4] we also have concerns over the impact that a regional LCFS will have on the existing federal Renewable Fuel Standard ("RFS").[5] The LCFS proposes to reduce emissions of greenhouse gases ("GHG") by lowering the carbon content of transportation fuels in the Northeast and Mid-Atlantic states. The primary mechanism envisioned to achieve the goal of lowering the carbon intensity of ultra-low sulfur diesel fuel in the region would entail blending biodiesel and renewable diesel into the existing diesel fuel.

Unlike other criteria pollutants (*i.e.*, particulate matter, NOx) that are of concern to the trucking industry, the impact of GHG on the environment is not dependent upon their point of emission. While the impact of particulate matter is limited to a finite area surrounding the location from which the pollutant is emitted, the emission of GHGs will have an equivalent impact upon climate change whether it is emitted in Connecticut, Kansas or Kazakhstan. For this reason, GHG regulation needs to be addressed at the national level (and arguably at the international level).

Reducing the carbon intensity of the fuel consumed in the NESCAUM region may not be the best way to maximize global carbon reductions. Indeed, as discussed below, we believe that the LCFS will actually increase total U.S. carbon emissions. While this may sound counter intuitive, the interplay between the federal Renewable Fuel Standard and a regional LCFS suggests that the short term impact of the LCFS will simply increase the amount of renewable fuel that is transported into the region for consumption. If the ultimate focus of the LCFS is to reduce total carbon emissions, then additional transportation of biofuels over long distances should be minimized.

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[4] *See* discussion at Section C, *infra*.

[5] In 2005, Congress enacted a renewable fuels standard. In 2007, Congress increased the amount of renewable fuel that is required to be used in the United States to 36 billion gallons by 2022.

The federal RFS requires obligated parties to blend 500 million gallons of biodiesel this year. That quantity grows to a billion gallons in 2012. By not specifying where the renewable fuel must be consumed, the RFS allows for the renewable mandate to be met in the most economically efficient manner (*i.e.*, close to where the renewable fuel is produced). State renewable fuel mandates distort these economic efficiencies, as fuel must be transported from the location where the feedstock is plentiful or the biofuel is refined to a location where it is mandated for consumption.[6] In this regard, state renewable fuel mandates actually increase the carbon profile of the fuel by forcing the fuel to be transported to specific points of consumption rather than being consumed close to where it is produced. The NESCAUM regional LCFS would cause this unintended consequence and will actually increase the carbon emissions and reduce the GHG benefits of the federal program, as biodiesel and other biofuels are forced to be transported from the Midwest to the Northeast to comply with the LCFS.

In this regard, a regional LCFS does not compliment the federal RFS and instead actually erodes some of its benefit.[7]

B. U.S. Energy Security

One of the most significant consequences of an LCFS will be its negative impact upon U.S. energy security, as certain sources of diesel fuel are effectively declared off-limits because their lifecycle carbon emissions may be higher than the fuel we use today. By placing barriers on the use of Canadian oil sands, U.S. oil shale reserves, and coal to liquid alternatives, an LCFS may actually undermine U.S. energy security by limiting access to large, secure and available sources of energy.

C. Available Low-Carbon Alternatives to Ultra-Low-Sulfur-Diesel

While various proponents of alternative fuels cite to biodiesel and natural gas as potential low carbon alternatives to petroleum-based diesel, for the reasons set forth below, these alternative fuels are not currently viable for the trucking industry.

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[6] While the LCFS is less proscriptive than some existing state biofuel mandates, because biofuel substitution is the likely compliance path for the foreseeable future, the LCFS will operate in a similar manner to a state renewable fuel mandate.

[7] Since biodiesel does not move by pipeline, it will be transported into the region by railroad and truck. As such, biodiesel produced in South Dakota will have a higher carbon pathway than biodiesel produced in Maryland.

a. Biodiesel

ATA supports the voluntary use of high quality biodiesel in low percentage blends that meet the ASTM-International diesel fuel standard (ASTM D975). Biodiesel is an alternative fuel that can help reduce our dependence on foreign sources of petroleum; however, biodiesel is not a viable low carbon replacement for diesel fuel.

1. Biodiesel - Questionable Carbon Footprint

Our first concern with biodiesel is the uncertainty surrounding its carbon footprint. While the U.S. Environmental Protection Agency ("EPA") has not yet finalized its Renewable Fuel Standard rulemaking, it is clear from the notice of proposed rulemaking that the lifecycle carbon emissions associated with biodiesel are too high for it to qualify as a low carbon alternative. Even if indirect carbon emissions are ignored, the amount of biodiesel that would have to be blended into petroleum-based fuel to obtain meaningful carbon reductions would require the use of biodiesel in high-percentage blends that would no longer meet ASTM on-road diesel fuel standards.

2. Biodiesel - Operational Challenges

Last year, ASTM-International approved a modification to the on-road diesel fuel standard that will facilitate the use of biodiesel in blends up to five percent (B5). Motor carriers have made enormous investments in heavy duty diesel engines. These engines were designed and built to run on diesel fuel that meets the ASTM D975 fuel specification. Indeed, engine manufacturers require the use of fuel meeting this ASTM D975 standard in order to preserve warranty claims. High percentage blends of biodiesel will not meet the fuel standard that the diesel engines were designed to run on and may create significant operational challenges for end users.

High-percentage blends of biodiesel gel at a higher ambient temperature than petroleum-based diesel and may cause trucks to become stranded in cold weather. Anti-gelling products, heating systems for fuel tanks and blending with No. 1 diesel fuel have been used to prevent gelling, but each of these options adds to operating costs. High-percentage biodiesel blends also can cause a variety of costly engine problems, and are therefore not recommended for use by engine manufacturers. Even if new trucks were designed to accept high percentage blends of biodiesel, the long lifespan of a diesel engine makes high percentage biodiesel blends an unacceptable alternative for the millions of trucks that comprise the existing fleet.

Another operational challenge presented by biodiesel is that it behaves as a solvent and may dislodge sediment that naturally accumulates in truck fuel systems, requiring an unanticipated fuel filter change in advance of regularly scheduled maintenance. This could be a significant issue and cost for over-the-road trucks, which

often travel far from their base of operations, and may not be able to perform this unscheduled maintenance.

3. Biodiesel is Expensive

Biodiesel derived from soy oil is significantly more expensive than petroleum derived diesel fuel. The example provided below demonstrates the difference between the wholesale cost of biodiesel and the wholesale price of ULSD.

The Economics of Biodiesel [8]

Feedstock Costs:	$ 2.99
Soy Oil (7.3 lbs./gal.) @ 38 cents +.03 cents for transport:	
Production Costs:	
Methanol (12%-20% by volume)	$ .10 - .20
Catalyst	$ .10 - .12
Electricity	$ .01
Natural Gas (boiler - heat)	$ .08 - .10
Labor and Overhead	$ .05 - .10
Maintenance	$ .03 - .05
Insurance & Tax	$ .03 - .05
Depreciation	$ .05 - .10
Total Production Costs	**$ 3.44 - $3.72**
Federal Tax Credit (expires 2009)	$ -1.00/ gallon
Wholesale biodiesel (w/o transport)	**$ 2.44 - $2.72 / gallon**

On October 23, 2009, the wholesale price of ULSD was $2.10 per gallon.[9] Even with the $1.00 per gallon federal blending credit applicable to biodiesel, the renewable fuel was still significantly more expensive than the average price of ULSD. Moreover, there is no guarantee that Congress will extend the biodiesel blending credit, which will expire at the end of 2009 unless renewed. If Congress does not act to extend this tax credit, then the cost of biodiesel could be almost double the cost of ULSD.

The price comparison of biodiesel to ULSD shown above is not an anomaly as the price of soybean oil has varied directly with the price of crude oil. Even during the record high diesel prices during the summer of 2008, biodiesel remained more expensive than ULSD.

[8] Sources: *The Wall Street Journal* (October 23, 2009); and American Trucking Associations.

[9] *The Wall Street Journal* (October 23, 2009).

In addition to the significant cost differential between biodiesel and ULSD, high percentage blends of biodiesel have a lower energy content, requiring more fuel to be purchased to perform an equivalent amount of work.

b. Natural Gas

ATA supports the *voluntary* use of natural gas as a lower-carbon alternative fuel. Liquefied natural gas (LNG) may reduce carbon emissions by 15 to 25 percent, depending upon the source of the natural gas and the efficiency of the natural gas liquefaction facility.

LNG is not a currently viable alternative for most long-haul trucking operations. LNG could be an acceptable fuel solution for certain short-haul applications within an industry as diverse as trucking; however, there are significant hurdles to overcome, before natural gas can begin to be used as a substitute for diesel fuel.

1. The Economics of Natural Gas

One of the biggest obstacles to using natural gas in the trucking industry is the cost of a natural gas truck. Natural gas trucks sell at a premium compared to heavy duty diesel engines for Class 8 trucks (*i.e.*, $40,000 - $70,000 more).[10] Federal (and State) tax incentives are available to purchasers of natural gas trucks to narrow the price differential between diesel and natural gas trucks; however, these incentives are not sufficient to completely offset the natural gas truck price premium.

The trucking industry is incredibly competitive. There are more than 600,000 companies registered with the U.S. Department of Transportation and 96 percent of them are small businesses that operate fewer than 20 trucks. In an industry with operating expenses that often exceed 98% of collected revenue, trucking companies cannot afford to increase their capital expenses by purchasing high priced natural gas trucks that cost significantly more than the trucks that their competitors are operating.

LNG fuel tanks are constructed from ¼" thick stainless steel and add significant weight to the truck, which may negatively impact truck productivity.[11] For example, two 119 gallon tanks weighing approximately 1,000 pounds would reduce the payload of a

[10] There are currently two natural gas engine classes: (1) a spark ignition, 320 horsepower version that sells at a $40,000 premium to its diesel counterpart; and (2) a 450 horsepower, compression ignition version that sells at a $70,000 premium to its diesel counterpart.

[11] A 119 gallon tank weighs approximately 500 lbs., while a 72 gallon tank weighs approximately 270 lbs.

cargo tank truck carrying ethanol by over 150 gallons. Thus, more trucks would be required to haul an equivalent amount of product, which negatively impacts fuel consumption, emissions, and the cost of transporting freight. It should be noted that some trucking operations do not operate at the maximum legal weight and the productivity of these operations would not be adversely impacted by the weight penalty associated with natural gas trucks.

One positive economic aspect of natural gas trucks is that natural gas currently sells at a significant discount to diesel fuel on a diesel gallon BTU equivalent basis. While both diesel and natural gas prices fluctuate, through 2009 LNG sold at a significant discount to ultra low sulfur diesel fuel (*i.e.*, approximately 75 cents to $1/gallon cheaper). Natural gas trucks, however, are less fuel efficient than their diesel counterparts. Spark ignited natural gas engines have a reduced fuel economy of 7% to 10%, while compression-ignition natural gas engines have about a 1% fuel economy penalty. As a result, some of the economic benefit of less expensive natural gas is given up in the form of lower fuel efficiency.

Notwithstanding the fact that natural gas is less expensive than diesel fuel, the significant premium associated with natural gas trucks compared to diesel trucks makes natural gas an unrealistic alternative for most trucking companies. Due to the competitive nature of the trucking industry, significant financial incentives would be required to address the premium charged for natural gas trucks, before they can be considered a viable alternative to diesel trucks.

2. Infrastructure Concerns

The second major obstacle to the use of natural gas as an alternative fuel for the trucking industry is the lack of a competitive refueling infrastructure. Most long-haul trucks are not centrally refueled and do not travel regular routes. Running out of gas on the side of the road is a significant challenge, as LNG mobile refueling is not an option and the truck would have to be towed to a refueling station. The ubiquitous nature of diesel refueling stations accommodates that uncertainty. Unfortunately, it is virtually impossible for over-the-road fleets to find LNG fueling outlets.

LNG trucks must be refueled at specialized stations that are configured for the specific truck. Putting aside the issue of refueling compatibility, many of the natural gas fuel stations in this country are owned and operated by municipalities, and prior contractual arrangements would have to be made before commercial trucks could use these municipal LNG refueling stations. Since the product is dispensed at -260 degrees Fahrenheit, employee training and the provision of personal protective equipment also may be necessary.

Building out an LNG refueling infrastructure will take time and an enormous amount of money. An LNG filling outlet with a refill capability that is comparable to the time necessary to refuel a diesel truck costs over $500,000. There also may be permitting challenges associated with the construction of an LNG refueling system, as few fire marshals and permitting authorities have prior experience with LNG refueling stations.

It is not sufficient to have a single LNG vendor with stations built at strategic locations along key freight corridors. Absent a competitive refueling infrastructure, trucking companies could face unreasonably high prices at individual retail LNG stations that have no competition in a particular geographic area. While competition exists in the natural gas industry, the high barriers to entry for retail LNG refueling stations may slow the development of a competitive refueling infrastructure. A competitive LNG refueling model would require the presence of multiple entities selling LNG in the same geographic area.

3. Operational Challenges

Using LNG as an alternative fuel also creates operational and maintenance challenges for the trucking industry.

LNG On-Board Tanks – Some fleets have experienced significant problems with LNG fuel tanks. These tanks are double-walled construction with a vacuum between the two walls (like a giant thermos bottle). The vacuum serves as a temperature barrier. In some cases, fleets reported a loss of the vacuum due to tank manufacturing issues that manifest themselves months and even years after being placed into service. The vacuum can be replenished, but the process is costly and is not a permanent solution. Impacting a tank (such as during a collision or accident) can also result in a lost vacuum. As vacuum pressure decreases, fuel temperature rises, causing internal tank pressure to rise. The pressure relief valve built into the tank vents natural gas into the atmosphere, which affects the amount of fuel available for use and offsets the environmental advantages of using LNG.

Operating Range – An LNG truck equipped with two 119 gallon tanks has an operating range of approximately half of the typical diesel long-haul truck. These tanks are extremely heavy and negatively impact truck productivity for those fleets that haul freight at the truck's legal weight limit.

Maintenance Costs – A natural gas engine may require injectors to be replaced more frequently than a diesel engine, which increases operating expenses. For spark-ignition natural gas engines, replacement of spark plugs, ignition modules and various sensors also add additional maintenance costs.

On the positive side of the maintenance expense ledger, natural gas engines require fewer oil changes. Oil change intervals for LNG trucks are three times longer than diesel engines.

Training – Natural gas engines operate differently than diesel engines and in-house mechanics will require approximately 60 hours of specialized training. Finding a qualified natural gas mechanic is more difficult than finding a diesel mechanic. The local truck dealer may not have the requisite experience, tools or parts to quickly perform repairs. As a result, some fleets have reported that the downtime for repairs is significantly longer for natural gas engines.

Methane Exposure – Maintenance shops that will work on natural gas-fueled vehicles should include a methane detection system and a methane evacuation system. One ATA member reports spending over $150,000 on infra-red sensors, modified lighting and electrical systems, and an air evacuation system.

4. Environmental Implications

Particulate matter (PM) and nitrogen oxide (NOx) emissions from LNG-fueled trucks are similar to diesel trucks manufactured in compliance with EPA's 2010 diesel emission standards.

Lifecycle carbon emissions from a natural gas engine compare favorably to diesel engines. Depending upon the source of the natural gas and the liquefaction efficiency rate, natural gas can reduce CO2 emissions by 15%- 23%. Note, however, that methane is 20-times more potent than CO2 as a greenhouse gas. As LNG in fuel tanks warms, methane is released to the environment through a pressure relief valve. The venting of methane from trucks parked over an extended period could result in a net increase in greenhouse gas emissions compared to diesel fuel.

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The focus of any LCFS initiative should be the total reduction of carbon. Unfortunately, the focus of the NESCAUM Regional LCFS is reducing the carbon intensity of fuels sold in the participating Northeast and Mid-Atlantic states without regard to the impact on the Nation's total carbon emissions. The LCFS will simply ensure that low carbon fuel will be transported into the region for consumption rather than be used in the area where it is produced. This unnecessary transportation of biofuels increases the amount of fuel the Nation will consume and unnecessarily increases the

Nation's carbon footprint. To ensure the maximum reduction of GHG emissions, NESCAUM States should embrace a national approach. The federal RFS and the EPA's efforts to develop a national low carbon fuel standard may provide a more appropriate framework for reducing GHGs. NESCAUM States should avoid enacting a regional LCFS to ensure that its carbon reduction initiative dovetails with the rest of the nation.

We also believe that the costs of the LCFS to the trucking industry and other diesel consumers generally have been overlooked. These costs are significant and will have a detrimental impact upon the trucking industry.

If you have any questions concerning the issues raised in this letter, please contact the undersigned at (703) 838-1910.

Respectfully submitted,

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Vice President & Regulatory Affairs Counsel