Executive Summary

This report is in response to Section 6206 of the Food, Conservation, and Energy Act of 2008 (PL 110-246), which directs the Secretaries of Agriculture and Transportation jointly to conduct a study of rural transportation issues. The report reviews transportation and its effect on rural communities, with an emphasis on agricultural transportation. It looks in depth into each of the four major modes of transportation commonly used by agriculture in the United States: trucking, railroads, barges, and ocean vessels, examining each in the light of its ability to meet rural America's transportation needs now and in the future. It identifies some broad issues that merit attention from policy makers.

Transportation is critical to U.S. agriculture, which raises the food for America and feeds a hungry world with its abundance. Our transportation system moves food from farms to our tables, and to ports for export to foreign markets. The four major modes work together in a seamless network, cooperating and competing with one another in a balanced and flexible system that delivers products efficiently and economically in an ever-changing market.

Agriculture is the largest user of freight transportation in the United States, claiming 31 percent of all ton-miles transported in the United States in 2007. Much of this freight travels out of the country. Global agricultural supply and demand have changed rapidly since 1990. Corn and soybeans have increased dramatically in both consumption and production. During the past 5 years, half of American wheat was exported, along with 36 percent of the soybean crop and 19 percent of the corn crop. These exports travel from the inland areas of the United States where they are produced to borders and ports by way of a network of trucks, trains, and barges.

The need for agricultural transportation will continue to increase, based on projected growth in the demand for U.S. agricultural products domestically and overseas.

Transportation Issues Affecting Agricultural Shippers

This study highlights some policy issues that should be examined. These issues are described in greater detail in Chapter 15: Multimodal Issues.

- Transportation needs should be viewed from a system standpoint. Current governance oversees each mode of transportation—trucks, railroads, barges, and ocean vessels—separately and disparately rather than as a single interlocking system of transportation. The U.S. agricultural supply chain is a major user of the nation's transportation system, so its needs, especially in rural areas, should be taken into account in the planning and oversight of transportation in the United States.
- Ocean shipping and railroads are exempt from many antitrust rules. These exemptions have the potential to decrease competition, reduce service, and raise rates. However, since each of these industries cooperate as part of a network (although in different ways), carriers believe the limited antitrust exemptions have facilitated this cooperation.

- The rapid consolidation of the railroad industry through mergers has resulted in a decrease in the unrestricted interchange of traffic, routing choices, and the level of competition among railroads. Shippers are concerned with switching limitations, restricted interchange, paper barriers, inconsistent service, high rates, excessive fuel surcharges, bottleneck rates, and the effectiveness of the rate challenge process. However, railroad productivity has increased greatly since deregulation in 1981, and rates have fallen for many shippers, although to a lesser degree for grain and coal shippers. At the same time, the financial health of the rail industry has improved, benefiting farmers and rural areas.
- In 2005, Congress clarified the 100 air-mile radius agricultural exemption from the hours of service rules, first granted in 1995. It means that drivers transporting an agricultural commodity or farm supplies for agricultural purposes are exempt from the maximum driving and on-duty time provisions required of long-haul drivers. The agricultural exemption is important because of agriculture's unique requirements; however, questions remain about its impact on highway safety.
- Funding for new waterway projects is nearly depleted, and there is a growing funding gap to finance ongoing projects. A consensus on the best way to tackle these funding issues is needed.

Transportation Supports Rural America

An effective transportation system supports rural economies, reducing the prices farmers pay for inputs, such as seed and fertilizer, raising the value of their crops, and greatly increasing their market access. The economies of rural areas are intertwined. As agriculture thrives, so does its supporting community. Providing effective transportation for a rural region stimulates the farms and businesses served, improving the standard of living.

The interaction of agriculture and the off-farm jobs it supports provides a solid base for rural communities. Agriculture is far from the largest employer in rural America. Four other sectors—services, government, retail and wholesale trade, and manufacturing—comprise 80 percent of rural employment. Agriculture is responsible for less than one in ten rural jobs but, because it is so capital-intensive, it generates much more economic activity in the community than just the jobs it creates.

The transportation system that contributes to the success of agriculture also supports rural manufacturing. Although the traditional view of rural America is agricultural, it is, in fact, manufacturing that is critical. Manufacturing employs 15 percent of the rural workforce. As a share of total employment, manufacturing is 42 percent more important to rural America than to metropolitan America. The availability of rail, air, and highway services is one of the most commonly cited requirements of manufacturing and commercial establishments.

Transporting Biofuels

The burgeoning use of biofuels contributes towards our country's policy goals of addressing climate change, supporting the domestic economy, and reducing the nation's dependence on imported petroleum. By 2008, U.S. ethanol production had reached 9.3 billion gallons—equivalent on an energy basis to approximately 36 percent of the gasoline produced from crude oil imported from Persian Gulf countries. Renewable fuel standard (RFS-2) goals target biofuel use to be 36 billion gallons by 2022—a very brief time in which to develop the distribution infrastructure.

The biofuels most commonly used in the United States are ethanol and biodiesel. Ethanol is produced in much greater quantities than biodiesel, making its transportation requirements more complicated because more demand is placed on the transportation system. Most is currently produced from corn, and most ethanol plants are in the Corn Belt. As cellulosic ethanol is commercialized production density is likely to remain in the Midwest due to the abundance of crop residue.

To achieve the RFS-2, EPA estimates that 40 unit train destinations* will be needed by 2022. There are currently 13 unit train destinations. Additional unit-train destinations would create more ethanol corridors on the rail network, preventing congestion points that could develop with increased biofuel shipments. Future transportation needs will be influenced by the location of feedstocks and production facilities and the extent to which the next generation of biofuels can use existing distribution infrastructure.

Transporting Coal

Coal is a major source of energy in the United States. In 2006, it was responsible for one-third of domestic energy production and almost half of electric power generation. Despite the growth of alternative energy sources, coal will continue to be a major source of power for rural consumers. Because coal plays such an important role in generating electricity, its costs—including its delivery costs—are reflected in the price consumers pay for electricity. The cost of coal delivered to electric plants has increased every year since 2000.

The Clean Air Act Amendments of 1990, which limited sulfur dioxide emissions, increased the demand for coal with less sulfur. Production shifted from the Appalachians to the Powder River Basin of Wyoming and Montana, which now produces 43 percent of the Nation's coal. This western shift has resulted in the use of cleaner coal, but production is now far from river transportation systems, and competitive access to railroads is limited, raising issues about generating electricity at affordable prices.

Since 1979, when the first coal mines began production in the Powder River Basin, the railroad industry has constructed the longest new rail line built in the 20th century, purchased many locomotives and coal hoppers, and made investments in existing infrastructure on routes from

* Unit train destinations are petroleum blending terminals and intermediate storage terminals that are equipped to handle unit trains of at least 50 cars.

Wyoming to coal consumers in the Midwest and on both coasts. Railroad investment in this infrastructure has benefitted shippers of other commodities as well, since few rail lines carry only coal.

Railroads are vital to coal transportation, and coal is vital to railroads. Coal accounted for 46 percent of railroad car loadings in 2007 and will continue to be important in the future. Sufficient railroad capacity is essential to move this traffic.

Coal shippers are concerned about bottleneck rates and contractual paper barriers that prevent interchange with competing railroads, which can result in higher rates. Railroad service problems and high rates can directly impact rural consumers by pushing up electricity rates.

Rail Competition and Agriculture

Rail is the only cost-effective mode of transportation available to many agricultural producers. Railroads transport nearly all the grains and oilseeds produced in Montana, more than 70 percent of the commodities produced in North Dakota, and more than half of those produced in Arizona, Oklahoma, and South Dakota.

The Staggers Rail Act of 1980 economically deregulated railroads, encouraging greater reliance on free markets to promote railroad profitability and relying on competition to protect shippers and the public. The preservation and protection of competition is vital for the prosperity of agricultural producers and shippers operating with a deregulated railroad industry. Railroads have had certain exemptions from antitrust laws since 1914. When deregulation leaves the protection of customers to competition, antitrust laws are vital to protect that competition.

The loss of rail-to-rail competition due to railroad mergers and the associated increase in market power was not foreseen by many when the Staggers Act was passed. However, the abandonment of rail lines was a predictable outcome of railroad deregulation. Prior to deregulation, the railroad industry was characterized by excess capacity. Following deregulation, railroads reduced costs by eliminating excess capacity. Many routes and branch lines were abandoned, railroads merged to eliminate duplicative facilities, and costs fell as productivity increased. The mergers increased railroad market power and profitability. Nevertheless, rates for many shippers fell from 1981 through the end of the 20th Century. Since 2004, however, rates have begun to rapidly increase as railroads reach the limits of their capacity.

The level of rail-to-rail competition for grains and oilseeds decreased significantly between 1992 and 2007. Almost 75 percent of agricultural areas lost rail competition from 1992 to 2007, and the areas in which a railroad had a monopoly in transporting grain and oilseeds increased from 10 percent to 15 percent. At the same time, the revenue-to-variable-cost ratio in 83 percent of those areas increased.

Rail Rates

The passage of the Staggers Act in 1980 enabled railroads to increase their return on investment, in part by allowing differential pricing in which different rates can be charged to different shippers and therefore some shippers bear a greater share of fixed costs than others. Agricultural commodities have historically carried higher rates than traffic more subject to competition from other modes. When selling their products farmers have little control over the prices they receive, so higher transportation costs result in lower net prices to farmers. This not only can affect the economic vitality of U.S. agriculture but also the competitiveness of U.S. agricultural exports in world markets.

Nationally, not only are rail rates for grain and oilseeds higher than those for other commodities, but the rates have increased more rapidly during the four years since 2003. Rail rates for grain and oilseeds rose 46 percent from 2003 to 2007; rates for all other commodities increased 32 percent in the same period.

Railroads have structured their rates to favor larger movements. There is a significant rate advantage for the largest trainload shipments of grain and oilseeds. Many costs that were once included in railroad rates have been shifted to shippers, such as car ownership. Railroads have also paid billions in merger premiums, which causes higher rates for shippers.

Railroad rates have increased significantly since 2004, increasing railroad profitability. In part, this has resulted from a lack of rail capacity and a need for additional investment in locomotives, freight cars, and fixed plant. In part, the increase in rates has been a response to rising costs, as pointed out in a report by Christensen Associates in 2007.

There is considerable evidence that railroad fuel surcharges recovered more than the additional cost of fuel, artificially boosting railroad profits. From 2001 to 2007, surcharges were 55 percent higher than the incremental increase in the cost of fuel.

Bottleneck rate situations constrain the options available to shippers, decreasing routing efficiency, increasing rates, and increasing the market power of railroads.

Rail Service

The railroad share of the grain transportation market has been shrinking in recent years, in part because of changes in the way grain is marketed and in part because of increases in rail rates. The closure of many rail branch lines and a shift to "shuttle train" service by railroads has resulted in the closure of many country grain elevators, resulting in the movement of grain for longer distances on rural roads to shuttle train terminals.

The U.S. railroad system is a network. The unrestricted interchange of traffic among railroads could allow shippers to achieve higher efficiency and better access to markets. In many cases, however, railroads restrict network interchange—restricting shipper choices of markets in the process—in an effort to increase profitability.

The abandonment of grain branch lines has in some cases limited the markets farmers can economically reach, resulting in lower prices due to the cost of transportation or a lack of access to markets. While the concentration of grain loading at fewer points has increased the efficiency of rail transportation, it has also resulted in the movement of grain over local roads for longer distances, resulting in higher road maintenance costs for many rural communities.

Railroads have since the 1990s been moving to larger-capacity grain cars as a cost-reducing measure. While these cars permit mainline movement of grain at lower cost, many branch lines cannot accommodate the heavier weights, and smaller railroads often lack the resources to make necessary investments in their infrastructure to handle the heavier cars.

Rail Capacity

Rail capacity is usually examined in terms of average tonnages carried and investment strategies, which gives a misleading picture of the situation. Capacity should be looked at in light of the specific characteristics of agricultural movements. The seasonal needs of agriculture, its regional variation, and the presence of local nodes of congestion show that attention must be paid to specific components rather than aggregate data.

Rail capacity constraints were common from 2003 through the first half of 2006. Weaker demand for rail freight transportation beginning in late 2006 and a recession that began in December 2007 slowed demand and resulted in adequate rail capacity for agricultural products since the harvest of 2006.

The increased use of rail transportation, which has benefited the railroads financially, also has contributed significantly to rail congestion. Each route mile during 2007 carried, on average, 171 percent more traffic in ton-miles—nearly triple the traffic—than in 1980.

Rail Investment

Significant and sustained growth in freight demand is expected, and could double by 2035. Investment in the railroad industry, however, is not expected to keep up with demand once the economy fully recovers, especially in agricultural areas. This shortfall of investment could threaten the United States' competitive position as a low-cost supplier of high quality grain.

Railroads are a capital-intensive industry. The railroad industry's profitability has surged in recent years, finally giving it adequate revenue* and increased access to capital. In an attempt to meet the rising demand for their services, railroads spent $420 billion on infrastructure between 1980 and 2007, investing almost 18 percent of their revenue on capital expenditures.

* Revenue adequacy is a regulatory concept used by the Surface Transportation Board to determine whether railroads are earning adequate profits in relation to their investments.

According to a recent supplement to the Christensen study, Class I railroads may need to invest $89 billion by 2035 to satisfy demand. Some observers have suggested that public funding might still be needed because in a slower economy railroads have less revenue available for improving future rail capacity.

Rail Rate Relief

Tariff rail rates can be challenged before the Surface Transportation Board (STB) when revenue exceeds 180 percent of operating cost and the railroad has market dominance. Rail rates for contracted and exempted movements may not be challenged; STB has no jurisdiction over those movements.

STB has created two classes of rate cases: coal rate and non-coal rate. Coal rate cases take millions of dollars and two to four years to pursue. They have no restrictions on the amount of the award if the contested rate is higher than 180 percent of the railroad's variable costs.

Simplified procedures are available for appealing non-coal rate cases, but have limits to the amounts that can be awarded. Shippers contend that the cost of pursuing these rate appeal procedures is too high and the monetary limits too low; they could result in shippers receiving little more than the cost of using them. A chemical company has used the simplified procedures, but no agricultural shipper has appealed rates using them.

Barge Transportation

For shippers near the inland waterways, barges offer a low-cost transportation alternative for moving their crops and fertilizer. Critics, however, argue that all the operational and maintenance costs and half the capital costs of these waterways are covered by the government through appropriations to the U.S. Army Corps of Engineers, which is responsible by law for maintaining the Nation's inland waterways. Barges move more than a third of our corn exports and 17 percent of our soybean exports through the New Orleans region along the Mississippi River and Illinois Waterway. The market share of barges has been slowly shrinking for a number of years, and traffic on these waterways has declined.

Although aging, the locks and dams on the system are generally reliable. As locks age, however, repairs and maintenance become more extensive and expensive. The balance of the Inland Waterways Trust Fund, which finances 50 percent of most of the capital costs of the inland waterways, has been declining since 2002 because expenditures have increased and revenues have declined, indicating a there is a structural imbalance between the two. It is unclear how the funding will be provided. The lack of a clear path forward on funding is of significant concern to farmers that depend on the inland waterways to move their crops to market. The funding to maintain and rehabilitate the existing infrastructure needs to remain a priority.

Truck Transportation

Trucking is critical for American agriculture. The industry carries 70 percent of the tonnage of agricultural, food, forest products, alcohols, and fertilizers. It links farmers, ranchers, manufacturers, and service industries to grain elevators, ethanol plants, processors, feedlots, markets, and ports. More than 80 percent of cities and communities are served exclusively by trucks. The first and last movements in the supply chain from farm to grocery store are by truck. Agriculture's trucking needs are seasonal, requiring frequent trips during planting and harvest seasons. Many agricultural products are perishable and time sensitive, requiring the efficiency, special handling, or refrigerated services best provided by trucks.

The trucking industry is highly competitive. Half of all trucking companies own one truck, driven by the owner. This keeps rates low; the average operating costs are 95 percent of operating revenue.

In 1995, Congress recognized the needs of farmers and ranchers during the busy planting and harvest seasons and provided a seasonal 100-air-mile radius exemption from hours-of-service rules for drivers transporting agricultural commodities or farm supplies for agricultural purposes. Congress also allowed the U.S. Department of Transportation (DOT) to provide an exemption from the commercial driver's license (CDL) requirement for drivers of farm vehicles used to transport agricultural products or supplies to or from a farm within 150 miles of the owner's farm.

However, interstate commerce case law has affected farm trucks driving short distances within States or across State borders, requiring compliance with the same Federal rules that apply to professional, full-time, long-haul truck drivers. Any goods eventually destined for interstate or foreign trade are considered part of interstate commerce.

Trucks are governed by Federal law limiting axle weights and gross vehicle weight to 80,000 pounds on the Interstate Highway System. Agricultural interests argue that farm and forest products are heavy, bulky, and of low value, making transportation a large component of their final price, and would like to see a limit of 97,000 pounds with a sixth axle on Interstates. Studies have indicated that trucks do not bear the full cost of the damage they cause to highways. Increasing allowable weight without a sixth axle would increase pavement maintenance costs, requiring more revenue for maintaining the highways. Also, existing bridge design capacities may not permit heavier loadings without significantly shortening bridge lives, which would of course increase the required investment in highways. One proposal is to charge a fee for heavier vehicles with a sixth axle and dedicate the receipts to bridge repair and maintenance.

Ocean Transportation

Ocean shipping of agricultural products is in either bulk vessels, which are contracted for individual shipments (tramps), or in container ships, which usually ply scheduled routes (liners). Grains and oilseeds are frequently moved in bulk vessels, which are usually the least expensive shipping method. The market for bulk shipments is highly competitive. Fleet capacity is determined by the rate at which old ships are scrapped and new ones built. High shipping rates before the recession slowed scrapping and spurred building, moderating rates. Companies are responding to the current downturn by removing ships from the fleet or laying them up.

More than half of U.S. agricultural exports by value move in marine shipping containers. Containers haul all types of agricultural products, from bulk grains to frozen beef. Agricultural shippers report that container availability is the greatest challenge facing their business. The recent decline in import cargo reduces the availability of containers for export cargo, resulting in lost sales and unreliable service to overseas buyers.

Infrastructure and technological improvements are needed at U.S. ocean ports to expand capacity to accommodate the forecast growth in U.S. trade and avoid costly congestion.

Multimodal Issues

The seamless network that makes up America's transportation system has four major components: trucks, trains, barges, and ocean vessels. For example, a cargo, such as wheat, might be moved off the field to an elevator by truck, loaded into a train at the elevator, transported to another elevator on the Mississippi River, where it is moved to barges, then taken downriver to New Orleans for transfer to a ship bound for Africa. Each mode of transport is important, but their interaction is vital.

Current United States policy is mode-oriented; different agencies focus on each mode of transportation, and each mode has its own funding mechanisms. Investment and planning could be better focused if it were more system-based. A systems-based approach could identify choke points in the network, and investments could be targeted to improve the interaction between modes.

Transportation will continue to be integral to the successful functioning of the agricultural sector. The Federal Government can play an important role in supporting improvements to the multimodal transportation system that will benefit rural America and global consumers of U.S. food and agricultural products.