

BEFORE THE
SURFACE TRANSPORTATION BOARD

STB EX PARTE NO. 672
RAIL TRANSPORTATION OF RESOURCES CRITICAL
TO THE NATION'S ENERGY SUPPLY

COMMENTS OF THE
U.S. DEPARTMENT OF AGRICULTURE

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Date: July 12, 2007

AUTHORITY AND INTEREST

The Secretary of Agriculture is charged with the responsibility under the Agricultural Adjustment Act of 1938 and the Agricultural Marketing Act of 1946 to represent the interests of agricultural producers and shippers in improving transportation services and facilities by, among other things, initiating and participating in Surface Transportation Board (Board) proceedings involving rates, charges, tariffs, practices, and services.

SUMMARY

The purpose of this public hearing is to examine issues related to the efficiency and reliability of rail transportation of resources critical to the Nation's energy supply, including coal, ethanol, and biofuels. The Department of Agriculture (USDA) thanks the Board for initiating this public hearing and supports an exchange of information.

USDA is concerned that the growth of the ethanol industry could be hindered by potential constraints in the Nation's rail capacity to handle and ship ethanol and co-products, limited infrastructure to consolidate ethanol shipments at rail terminals, and the possible future lack of adequate capacity to blend ethanol with gasoline.

Further, USDA is mindful that the rapid expansion of ethanol production is projected to result in large shifts in domestic corn use and acres planted. This could result in substantial changes in rail demand and grain transportation patterns. Increased demand for the rail transportation of fertilizer is also expected as corn production increases because corn requires much more fertilizer than soybeans and wheat.

USDA appreciates the opportunity to participate in the discussion undertaken by STB, industry, carriers, and other government agencies. It is USDA's goal to provide input that aids the search for solutions to prevent or alleviate potential distribution problems associated with the expected increase in ethanol production.

BACKGROUND

On August 8, 2005, President Bush signed the Energy Policy Act of 2005 (PL 109-58) into law. The comprehensive energy legislation established a nationwide renewable fuels standard (RFS) that was to start at 4 billion gallons in 2006 and increase to 7.5 billion gallons in 2012 (*Table 1*). The RFS is the result of several years of negotiations between the ethanol industry, oil industry, Federal government, State interests, environmentalists, agriculture, and consumer groups. These groups sought to determine the best way to encourage a greater contribution from the domestic renewable fuel industry in order to reduce our Nation's dependence on foreign oil.

Table 1: The Energy Policy Act 2005 RFS Provisions	
Year	Renewable Fuels (billions of gallons)
2006	4.0
2007	4.7
2008	5.4
2009	6.1
2010	6.8
2011	7.4
2012	7.5

Under the RFS, an increasing percentage of our Nation's fuel supply is to be provided by renewable, domestic fuels, including ethanol and biodiesel. The key objectives are to reduce consumer fuel prices, increase energy security, improve environmental quality, and stimulate growth in rural America.

The increased use of renewable fuels has expanded U.S. fuel supplies and eased the burden on the refining industry. While no new oil refineries have been built in the United States since 1976, over 120 ethanol production facilities have been built during this time, adding critical volume to the gasoline market. Blending ethanol with gasoline and biodiesel with diesel directly increases domestic fuel capacity.

Support for renewable fuels remains strong at the Federal level. As a means of reducing our Nation's dependence on foreign oil, President Bush called for fuels standards to require 35 billion gallons of renewable and alternative fuels in 2017. Congress is currently debating additional incentives for the production of alternative and renewable fuels as it considers actions to increase the RFS.

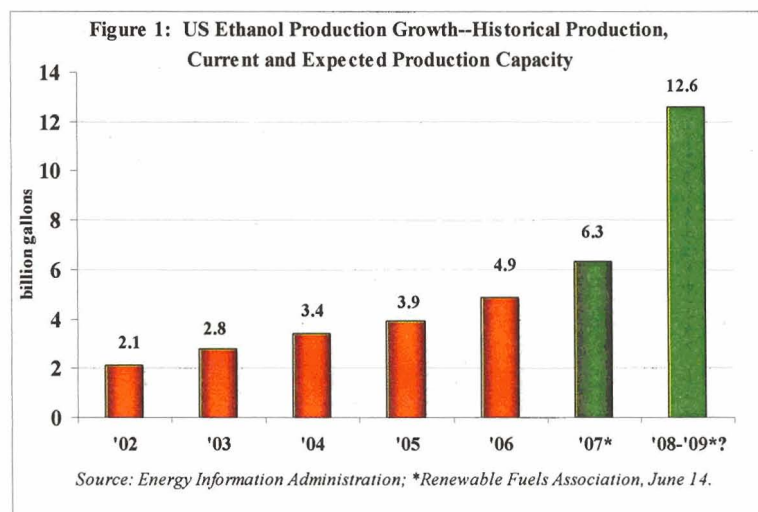
The U.S. ethanol industry surpassed the RFS in 2006, when 4.9 billion gallons of ethanol were produced and used. Current annual ethanol production capacity stands at 6.3 billion gallons (*Figure 1*).

Expanded production capacity

currently under construction is

expected to double annual ethanol production capacity to 12.6 billion gallons by the end of 2009, if not sooner.

To date, logistical concerns have not hampered production growth (nor have they significantly hampered the continued construction and expansion of new plants). However,



several issues that may arise as production grows include: 1) uncertainty about the location of and demand from terminal markets, 2) rail infrastructure to efficiently ship ethanol and co-products, 3) shifts in grain rail transportation, 4) increased transportation demand for agricultural inputs, mainly additional fertilizer for increased corn acreage, and 5) expected long-term growth in freight volumes.

EFFECTS OF INCREASED ETHANOL PRODUCTION ON RAIL TRANSPORTATION

Increased Sensitivity to Demand and Distribution Changes

All three major transportation modes in the United States—rail, barge, and truck—are now at or near capacity. It is extremely unusual to see constraints in all three modes at the same time unless there is a major crisis such as a world war or a catastrophic natural disaster.

Each transportation mode is experiencing a different set of constraints on capacity. In general, these capacity constraints include inadequate road or terminal infrastructure, a lack of motorized vehicles or cargo conveyances, and an insufficient number of trained operating personnel. Capacity constraints are being caused or aggravated by: 1) congestion that results in slower speeds, 2) changes in hours of service or other regulations, 3) deterioration of aging infrastructure that restricts the flow of traffic, and 4) excessive shut down time due to required maintenance.

The lack of excess capacity increases the sensitivity of transportation modes to natural disasters and sudden changes in transportation demand and distribution patterns. Changes in transportation demand and distribution patterns associated with rapidly increasing ethanol production could impact rail network performance. The increased sensitivity of transportation

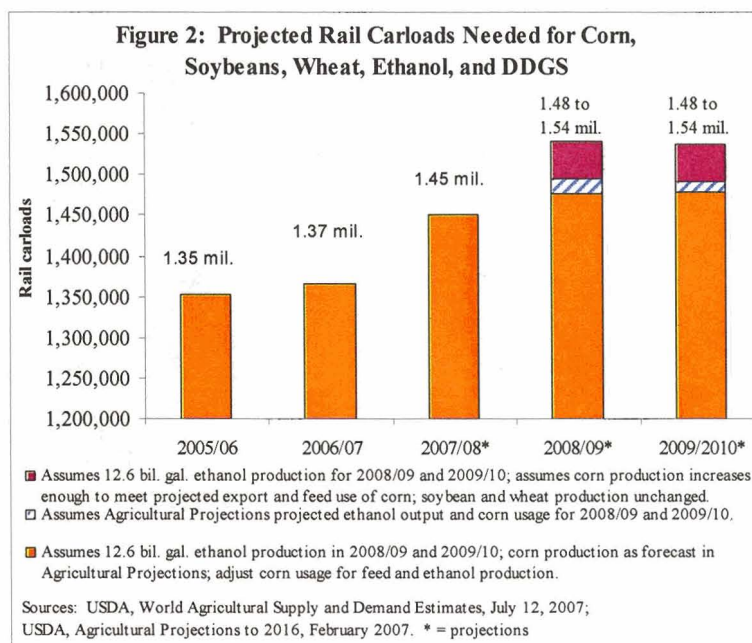
modes became evident in the aftermath of Hurricanes Katrina and Rita in 2005, when truck and rail had insufficient capacity to transport displaced barge freight demand.

Increased Demand for Rail Service

Expanded ethanol production is expected to result in an increase in demand for rail services for ethanol and DDGS. The rise in ethanol and DDGS rail shipments should more than offset the expected decline in rail demand for grain transportation (discussed below). For marketing year¹ 2007/08, USDA projects U.S.

railroads will transport 1.45 million railcars of the three major grains, ethanol, and DDGS—nearly 6 percent higher than the prior marketing year (Figure 2).

Corn production in the U.S. for the 2007/08 marketing year is expected to reach about 12.8 billion bushels, up approximately 2.3 billion bushels (22 percent) from last year.² The larger corn crop is the result of expanding ethanol production and high corn prices. But, a larger



¹ The marketing year for corn and soybeans begins September 1 and the marketing year for wheat begins June 1.

² Projections assume the railroad modal share for domestic and export movements of each grain remains the same as in 2004 as reported in USDA, Agricultural Marketing Service, Transportation and Marketing Programs, Transportation of U.S. Grains: A Modal Share Analysis, October 2006. Market shifts and rail tariff prices could change modal shares.

corn crop will not necessarily translate into increased rail demand for grain transportation because: 1) trucks dominate the transportation of corn to ethanol plants, 2) a significant share of the increase in the corn crop will be trucked to ethanol facilities, 3) soybean production is expected to be reduced because many farmers switched to planting corn, and 4) the diversion of corn to ethanol plants has led to a reduction in feed use and exports of corn.

Since 97 percent of U.S. ethanol is produced from corn, transportation demand, corn use, originations, and destinations for corn may shift. In April, for example, USDA lowered the expected feed use of corn in 2006/07 by 3.5 million tons, resulting in more than 11,000 fewer carloads of corn that otherwise would have been shipped by rail. USDA projects 2007/08 corn use³ for ethanol to reach 3.4 billion bushels, up 58 percent from last year, while feed use and exports are projected to decrease by 1 and 5 percent, respectively.

Transportation shifts are expected to continue into the 2007/08 corn-marketing year, and over the next several years. Increased ethanol production could cause major corn-producing states to become corn-deficit states, resulting in the rail movement of corn from other states. The sourcing of grain for the export market is also expected to shift.

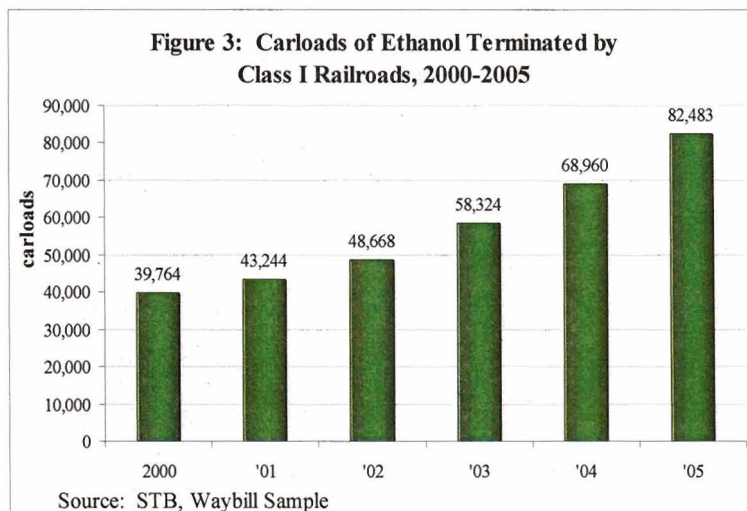
In 2004, rail moved 33 percent of U.S. corn to export locations and 32 percent to domestic processors, feed lots, and dairies.⁴ Corn constitutes 50 percent of all rail grain movements.⁵

³ Currently, 1 bushel of corn used in ethanol production yields approximately 2.75 gallons of ethanol and 17.5 pounds of DDGS.

⁴ Transportation of U.S. Grains: A Modal Share Analysis, U. S. Department of Agriculture, Agricultural Marketing Service, Transportation and Marketing Programs, Transportation Services Branch, October 2006, pg. 13.

⁵ Association of American Railroads, Freight Commodity Statistics, 2005.

Increased rail service demand is expected to impact railcar fleet⁶ composition and availability for moving corn, ethanol, and DDGS. Grain is shipped in covered hopper railcars (C113 and C114). The covered hopper railcar fleet as of January 1, 2007, totaled 268,000—almost 2 percent higher than on January 1, 2005. It is possible that shifts in transportation patterns could put a strain on grain railcar availability.



Ethanol is currently transported by rail, barge, and truck. Railroads shipped about 60 percent of ethanol produced in the United States in 2005, or 82,483 carloads (*Figure 3*). According to preliminary Freight Commodity Statistics, railroads kept up with ethanol production growth in 2006—ethanol production grew by 26 percent from the previous year and the Class I railroads' origination of all alcohols⁷ grew by 28 percent.

As ethanol production capacity approaches 12.6 billion gallons, demand for rail transportation of ethanol may grow dramatically to an estimated 245,000 total ethanol carloads per year. This growth is almost three times the amount of ethanol shipped in 2005. Railroads assert that this is well below the 1.2 million grain carloads and 20.8 million total carloads they

⁶ Railcar fleet statistics are from Association of American Railroads, telephone conversation with Craig Rockey on July 3, 2007.

⁷ Preliminary data does not include ethanol-specific statistics. Nearly all of the growth in alcohol movements during 2006 is expected to be from increased ethanol movements. Freight Commodity Statistics, compiled by Escalation Consultants, Inc.

originated in 2006. The rapid growth in ethanol movements and a shift in transportation patterns, however, are expected to occur in the next 18-24 months. The consequences of these changes occurring during a relatively short period could include a strain on rail transportation and logistics infrastructure, thus possibly resulting in disruptions to rail service.

The production of ethanol co-products—distillers dried grains with solubles (DDGS)—is expected to grow proportionally with ethanol production. DDGS are typically shipped in jumbo covered hopper railcars or containers to domestic feedlots and export markets. According to preliminary Freight Commodity Statistics, railroads originated 22,683 DDGS carloads in 2006—31.5 percent higher than in 2005. If demand for DDGS continues to grow as production increases, demand for railcars and rail service will grow as well.

The demand for rail transportation by all commodities so far this year has been weaker than expected due to slower than expected U.S. economic growth and lower demand from the automotive and construction sectors. Weak year-to-date demand for intermodal rail movements and from several other industries reliant on rail transportation has also contributed to lower than normal demand for rail transportation. The shift of corn used for ethanol production to local truck transportation has also compounded weaker than expected demand for rail transportation, but increased future corn production is expected to nearly offset this shift in coming years. Weaker than expected demand has eased railroad constraints in certain areas, but capacity issues and concerns remain.

Increased Need for Adequate Infrastructure Investment

The railroad industry will be challenged to meet the demands of tomorrow. Rail freight is forecast to increase from 1,879 million tons in 2002 to 3,525 million tons by 2035, an increase

of nearly 88 percent.⁸ In order to meet expected future demand for rail transportation, the railroad industry would likely need to invest heavily in railroad infrastructure.

Even though more railroads are attaining revenue adequacy, resulting in return-on-investment constraints being less of a factor, railroads are still faced with limits as to how much of their profits they can invest to increase capacity. In addition, the economics of the railroad industry (as occurs with other industries) provides an incentive for railroads to limit rail capacity in order to maximize profits, especially when railroads may not have effective competition from other transportation modes or other railroads.

Inadequate rail infrastructure investments could result in ethanol and other agricultural shippers facing significant difficulties in obtaining adequate rail service in the future. This could also lead to smaller ethanol shippers raising issues regarding the Common Carrier Obligation if larger ethanol shippers receive what is perceived as better service.

ISSUES THAT COULD AFFECT ETHANOL PRODUCTION

Railroad Capacity Constraints

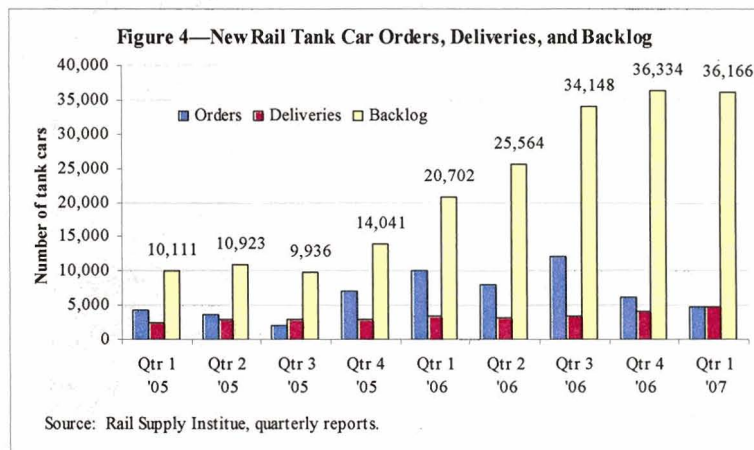
As new ethanol production facilities enter the market, railroads have begun to put in place policies limiting rail service availability to ethanol plants. These policies limit service that would increase congestion near or on already congested rail lines. Some destination points, including Dallas/Ft. Worth, TX, have had embargoes in place, requiring ethanol shippers to obtain permits for shipping ethanol to those locations on the railroad. An East Coast railroad

⁸ U. S. Department of Transportation, Federal Highway Administration, Office of Freight Management and Operations, Freight Analysis Framework, 2006.

recently lifted an embargo on ethanol shipments, which was put into place originally due to congestion problems. Rail service limitations could deter or slow additional ethanol production.

Need For Adequate Supply of Ethanol Rail Tank Cars and DDGS Railcars

Ethanol is shipped in standard tank railcars (T108). As of January 1, 2007, the T108 fleet was at 41,000, but orders for new construction are expected to almost double this fleet in the next 2-2 ½ years.



Rail tank cars are nearly all privately owned, either by leasing companies or shippers. The railroads have been advising builders of new ethanol plants to ensure an adequate supply of railcars. As a result, orders for new rail tank cars started to increase in the 4th quarter 2005 and continued to increase through the 3rd quarter 2006 (*Figure 4*). Rail tank car manufacturers increased production lines, but the backlog grew from about 10,000 railcars in the 3rd quarter 2005 to a peak of 36,334 railcars in the 4th quarter 2006, but has decreased to 36,166 railcars in the 1st quarter 2007. The ethanol industry focused on ethanol rail cars first because they are relatively inexpensive and easy to build as compared to covered hopper railcars used to ship grain and DDGS.

Increased demand for shipping DDGS has also expanded demand for super jumbo covered hoppers. From first quarter 2005 through first quarter 2007, new deliveries for DDGS railcars have totaled 11,307—most of the growth occurred in 2006. DDGS are estimated to use about 70 percent of this fleet.

Flowability⁹ issues associated with shipping DDGS have created expectations of a shorter lifespan of DDGS railcars, thus making them relatively more costly than the rail tank cars. DDGS are also shipped in containers for export. The same flowability issues have started to affect availability of containers. In addition to an efficient logistics infrastructure, an adequate supply of railcars for ethanol (and cars/containers for DDGS) is needed to sustain growth in the ethanol industry.

Supply Chain Issues

There is concern that the efficiency of the ethanol transportation system may begin to depend on the ability of the blending market to accommodate additional quantities of ethanol. If constraints on blending capacity were to idle ethanol capacity as early as September – just as harvest of this year’s corn crop begins – it could exacerbate a shortage of grain storage capacity and further disrupt the transportation system.

⁹ During storage and transport, DDGS tend to cake and bridge between particles. Thus, flowability has become one of the major issues that needs to be addressed for effective sales, marketing, distribution and utilization of distillers grains. Because these co-products do not always flow easily from railcars, workers sometimes hammer the car sides and hopper bottoms in order to induce flow. This can lead to severe damage to the rail cars themselves and can also pose worker safety issues.

The supply and demand of ethanol may become temporarily out of sync because blenders require time and desire additional financial incentives to add blending capacity. These extra financial incentives could be in addition to the current blender tax credit of \$0.51 per gallon, which is in place through 2010. Blenders are watching Federal and State legislative processes carefully to assess the legislative risk to their capital investments.

The potential demand for ethanol if the U.S. goes to E10 (a gasoline blend, containing 90 percent gasoline and 10 percent ethanol) in all regions would be approximately 14 billion gallons (*Table 2*). Some regions of the Nation have expanded ethanol use faster than others. For example, California is expected to approve an increase in the use of ethanol in gasoline from the current 5.7 percent limit to 10 percent by the end of 2007. Legislatures in southeastern States are also considering increasing ethanol-blending requirements. This adds to the uncertainty of ethanol demand in terms of volumes, timing, and geographic location.

Table 2--Potential Ethanol Volumes (In million gallons, Based on 10% blend of 2004 Motor Gasoline Consumption)			
Ethanol Consumption			
State	Potential	2005	Potential % Increase
Alabama	261	41	533
Alaska	29	6	396
Arizona	274	14	1,830
Arkansas	145		
California	1,579	918	72
Colorado	213	102	109
Connecticut	184	162	14
Delaware	42		
Dist. of Col.	15		
Florida	847		
Georgia	507		
Hawaii	45		
Idaho	63		
Illinois	527	455	16
Indiana	324	136	138
Iowa	166	128	29
Kansas	134	18	635
Kentucky	232	77	202
Louisiana	234	66	256
Maine	71		
Maryland	267	0	90,774
Massachusetts	287	10	2,867
Michigan	500	195	156
Minnesota	272	276	
Mississippi	165		
Missouri	324	127	155
Montana	50	1	3,407
Nebraska	88	53	66
Nevada	109	53	106
New Hampshire	72		
New Jersey	436	7	6,386
New Mexico	98	6	1,526
New York	577	328	76
North Carolina	443	116	280
North Dakota	36	17	111
Ohio	524	264	99
Oklahoma	191		
Oregon	155	31	399
Pennsylvania	523	100	421
Rhode Island	38	10	301
South Carolina	259		
South Dakota	44	27	60
Tennessee	306		
Texas	1,158	29	3,890
Utah	104	2	4,568
Vermont	35		
Virginia	398	106	275
Washington	270	25	972
West Virginia	85	23	275
Wisconsin	257	127	102
Wyoming	33		
United States	13,997	4,059	245

Source: DOE/EIA
http://www.eia.doe.gov/emeu/states/_seds_updates.html
(next update planned for 8/03/07)

It is more efficient and cost effective for railroads to move unit trains consisting of about 95 cars moving from one origin to one destination. The need for construction of terminals that consolidate production of several ethanol plants into more efficient unit trains may become the key to the efficiency of rail ethanol transportation and ultimately the ability of ethanol production to expand. Unit train movements are expected to increase the average number of loadings per year for each ethanol tank car, which could help alleviate potential tank car shortages.

Due to the efficiency of unit trains, rail tariff rates are typically lower than those for single-car and smaller shipments. For example, BNSF's tariff rate for a single-car rate for a shipment from Southwest Iowa to California is \$1,200 higher per car than the unit train tariff rate (*Table 3*).

Table 3-Sample BNSF Tariff Rates, effective April 1, 2007 (excludes fuel surcharges)

Sample Route	Unit Train ¹	Gathered ²	Single Car	Cost Comparison	
				Gathered vs. Unit	Single vs. Unit
	\$ /car				
From SW IA to IL					
From SW IA to CA	\$2,100	\$2,500	\$2,900	\$400	\$800
	\$3,900	\$4,400	\$5,100	\$500	\$1,200
	\$ /gal.				
From SW IA to IL	\$0.07	\$0.09	\$0.10	\$0.014	\$0.03
From SW IA to CA	\$0.13	\$0.15	\$0.17	\$0.017	\$0.04

¹ Unit Train: A 95-car ethanol train originating at 1 plant.

² Gathered Train: A 95-car ethanol train originating at 2 or 3 plants.

http://www.bnsf.com/markets/agricultural/ag_news/year2007/pricing07/p02-28-07a.html

Locations capable of accepting unit trains of ethanol currently include: 1) Watson and Carson, CA, 2) Ft. Worth and Arlington, TX, 3) Chicago, IL, 4) Albany, NY, 5) Providence, RI, 6) Sewaren and Linden, NJ, 7) Baltimore, MD, and 8) Stockton, CA. Future demand locations could include population centers in the Southeast, the Delta Region, and the Pacific Northwest. New terminal market facilities that would consolidate smaller ethanol shipments from numerous plants into unit trains are under construction in Manly, IA, and St. Louis, MO.

In summary, several supply chain issues can pose significant problems to growth in the ethanol industry. Sustained expansion in the ethanol industry will depend, in part, on the

blending market being able to accommodate larger quantities of ethanol. Growth in rail terminal market development and facilities also is likely to be important.

ISSUES FOR FUTURE DISCUSSION

Rail infrastructure, efficiency, and reliability are not the only factors that can limit the production and distribution of renewable and alternative fuels. As the renewable and alternative fuel industry matures, the entire supply chain for renewable and alternative fuels will likely be scrutinized for inefficiencies and potential bottlenecks that could hinder our Nation's goal of reducing dependence on foreign oil. USDA poses the following rail related questions to encourage dialogue toward workable solutions to the various issues that could impede the production and distribution of renewable and alternative fuels via rail.

Issue: The volume of DDGS produced may be greater than the feed industry can absorb, causing logistical concerns in the future.

Ethanol producers are working to develop both domestic and export demand. Since domestic demand is not expected to consume all the DDGS likely to be produced, export demand will become essential to successfully increasing ethanol production capabilities. In addition, scientific research is progressing on determining the proper amount of DDGS to include in feed rations by type of animal and developing DDGS standards.

Issue: How can ethanol and DDGS transportation data availability be improved?

Statistics on rail grain movements have developed over time and are fairly easy to access and monitor each week. Availability of similar data for ethanol rail movements is not as readily available on a timely basis. Business and policy decisions can be influenced by the amount of accurate and timely information. USDA believes that any improvements in this area would greatly benefit both business interests and policy makers.

Issue: Will the production of cellulosic ethanol affect investments in new transportation and distribution capacity (for the additional ethanol volumes, as well as the inbound feedstock)?

Currently, corn is the main feedstock for ethanol plants, but the amount of ethanol that can be produced from corn is far below the national renewable and alternative fuel production goals proposed by President Bush. As economically competitive methods of producing cellulosic ethanol or other renewable fuels are discovered, ethanol plants could be developed in regions currently not producing ethanol. This could possibly require investments in rail capacity and other distribution infrastructure. The location of these ethanol plants would likely be close to the location of the feedstock production because cellulosic feedstock is likely to require more feedstock volume to produce a gallon of ethanol than corn. The geographic areas of potential expansion of cellulosic ethanol production need to be evaluated for the best logistical integration into the existing and growing corn-based ethanol industry.

CONCLUSION

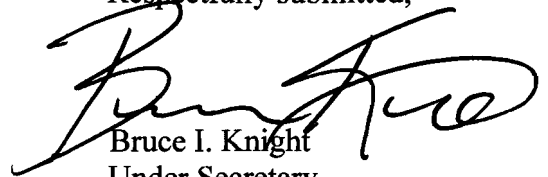
USDA thanks the Board for initiating this public hearing on an issue that is important to agricultural and biofuels shippers. USDA is concerned that the growth of the ethanol industry could be hindered by potential constraints in the Nation's rail capacity to handle and ship ethanol

and co-products, limited infrastructure to consolidate ethanol shipments at rail terminals, and possible future lack of adequate capacity to blend ethanol with gasoline.

The rapid expansion of ethanol production is projected to result in large shifts in domestic and export corn use, as well as corn acres planted. This could result in substantial changes in rail transportation demand and grain transportation patterns. Increased demand for the rail transportation of fertilizer is also expected because corn requires much more fertilizer than soybeans and wheat.

USDA urges STB and all other interested parties involved to consider these issues carefully. It is USDA's hope that the information presented and questions raised in our comments are beneficial to the Board as it continues to monitor issues related to the efficiency and reliability of rail transportation of ethanol and biofuels.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Bruce I. Knight", is written over the typed name.

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CERTIFICATE OF SERVICE

I, Bruce Blanton, certify that on this 12th day of July, 2007, I caused a copy of the foregoing document to be served by first-class mail, postage prepaid, on all parties of record in STB Ex Parte No. 672.



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