CONTEXT

# A Review of the Energy Independence and Security Act of 2007 and its Impact on U.S. Grain and Oilseeds Production

**Presented by:**

**The Context Network**

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# About Context

The Context Network provides business management consulting services to the world's leading agribusiness and food companies, as well as associations and government agencies. Services include opportunity assessment, strategic planning, market research, competitive intelligence, research targeting and regulatory compliance. The firm also conducts multi-client studies on key industry topics that we, or our major clients, believe will be driving factors for the future of agribusiness.

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# Executive Summary

The Energy Independence and Security Act of 2007 (EISA), is "an omnibus energy policy law that consists mainly of provisions designed to increase energy efficiency and the availability of renewable energy." It contains a number of requirements that will directly impact American agriculture over the next 14 years. The most significant are in Title II, which describes increased energy security through biofuels. The Title contains a new set of biofuels requirements that increases the amount to be utilized in the U.S. to 36 billion gallons by 2022, and goes on to describe what feedstocks will be utilized. The key requirements are to utilize:

- up to 15 billion gallons of corn starch-based (CSB) ethanol by 2015.
- 500 million gallons of biodiesel starting in 2009 and peaking at 1 billion gallons in 2012. This explicit requirement expires after 2012.
- 100 million gallons of cellulosic ethanol in 2010, growing to 16 billion gallons in 2022.
- 5 billion gallons of other advanced biofuels (which includes anything but corn starch-based ethanol) by 2022.

One subtle but important aspect to the EISA requirements is that is that it specifies the volume of different biofuels to be used, not produced. This means that imports could play an important role in the supply of biofuels utilized. The maximum amount of biofuels (ethanol) imported to the U.S. was 675 million gallons in 2006. We expect that this number could more than quintuple in the long run as both the cost of producing CSB ethanol and the price of biofuels rise.

This white paper reviews the provisions of EISA that have an impact on agriculture with a focus on Title II. It then goes on to assess what the impacts will be in terms of the demand on corn, soybean oil (SBO), sorghum and cellulosic feedstocks; the total acres required of each; expected prices for each commodity; and the effect on net returns per acre.

Our approach was to first assess whether the above requirements could be met over the short-term (2008 to 2010), the medium-term (2011 to 2015) and the long-term (2016 to 2022). Rather than simply assume that all the provisions would be met, we looked at forecasts from the government, academia and private forecasters; factored in information from our own industry sources; and added our own insights, gained from years of working in the agriculture industry, to develop our own projections of the amount of biofuels that would be produced in each period and with which feedstocks. The purpose of this approach is to assess what the actual impact would be rather than the hypothetical impact as outlined in EISA.

The choice of multiple time periods is based on our observation of three distinct periods. In the short term, essentially all biofuels production is to come from agricultural commodities and the completion of production capacity already under construction. The medium term is a transition period when production of biofuels from agricultural commodities is to peak and production from cellulosic and other feedstocks begins. New production capacity is required to meet the volumes specified in EISA in the medium term. In the long term, nearly all increases in production are from cellulosic and other feedstocks.

### Key Findings:

- Conventional biofuels and biodiesel will meet the short-term EISA requirements of 12 billion gallons for ethanol and 500 million gallons for biodiesel. Prices for corn and, particularly, soybeans will moderate somewhat as stocks-on-hand improves worldwide over the period. Acres devoted to corn and soybeans are not expected to change significantly from current levels.
- The supply of cellulosic ethanol will not meet the EISA requirement of 100 million gallons by 2012. Only two very small pilot plants are in operation and most of the first small demonstration plants won't begin production until late 2010 or 2011.
- Conventional biofuels and biodiesel will meet the medium-term EISA requirements of 15 billion gallons for ethanol and 1 billion gallons for biodiesel. We predict that imports of ethanol will rise as the import tariff on ethanol is reduced. Production of biodiesel from animal fats will contribute ~200 million gallons towards the 1 billion gallon requirement. Further growth in biodiesel supply will stall out unless additional

incentives to improve the profitability of biodiesel are provided. We predict that biodiesel incentives will not be forthcoming. Prices for corn and soybeans will increase 10-15% over the period. Acres devoted to corn and soybeans will stabilize at ~90 million acres for corn and 70 million acres for soybeans. Additional supply for biofuels will come from yield increases and a reduction in exports and use in animal feeds.

- The supply of cellulosic ethanol and other advanced biofuels will not meet the EISA requirements based on current technology. Cellulosic ethanol supply will only reach 600 million gallons in the medium term because of poor economics and the inability to attract capital. Two billion gallons of advanced biofuels from a combination of biodiesel and ethanol production from sorghum will be produced by 2015.
- In the long run, biofuels supply will reach ~25 billion gallons by 2022. Cellulosic ethanol production will reach nearly 3 billion gallons. Imports will provide as much as 5 billion gallons of ethanol. CSB ethanol will be allowed to rise to make up for some of the shortfall in cellulosic ethanol production, but will be limited to the incremental amount available from gains in corn yields. Biofuels and commodity prices move higher as oil prices increase. Acres devoted to corn and soybeans move marginally higher.
- Cellulosic ethanol's future is dependent on technology development and new legislation on green house gases (GHG's). We suspect the first legislation will pass in the next three years and will probably address emissions, not carbon content. New legislation after 2015 will be more favorable to cellulosic ethanol and could prompt a major increase in production after 2020. We believe significant improvements in cellulosic ethanol technologies will be forthcoming but that it will take longer than hoped for by Congress and many others. Agricultural residues, forest residues and municipal wastes will provide most of the feedstocks required. Energy crops will not play an important role until lower cost residues are fully exploited.

***It is important to point out that the impacts to American Agriculture are less than one might expect from a doubling in the demand for corn to make ethanol and SBO to make biodiesel.*** In all of the models and forecasts studied, the fundamental assumption is that the additional supply of feedstocks required will come from a reduction in exports and in feed use. Implicit in this is that supply will grow internationally to compensate for the

reduction in U.S. exports. Other assumptions are 1) that oil prices will not rise precipitously and 2) other major corn and soybean exporters won't enact their own biofuels legislation. This could turn out not to be the case and the whole economic equation of grain and oilseeds used for biofuels could change. We mention this because under this scenario there would be significant upward pressure on prices. As projected, this virtually assures continued strong prices for corn and soybeans which will sustain the strong value of land in the cornbelt, further erode cotton acres and benefit input suppliers for corn and soybean production.

Issues and wildcards that could negatively impact biofuels developments are addressed at the end of the white paper. We do not see the "Food vs. Fuel" argument constraining biofuels derived from agricultural commodities beyond the limits Congress has already set forth in EISA. We believe the argument between proponents and opponents of biofuels has shifted to how "green" biofuels are.

Concerns about the federal government's long-term commitment appear unwarranted given the very fact that EISA was passed. We expect that blenders' credits will be renewed for at least five years and probably to 2015. An important litmus test of federal support will be how quickly a study is completed to determine if E15 or E20 can be used in non-Flex Fuel vehicles.

Acceptance of biofuels by all the individual states will not be a barrier, with the exception of major oil producing states. California has approved increasing ethanol blends from 5.75% to 10%. New biofuels terminals are being built in the Southeast to support use there.

Finally, biofuels legislation (the Energy Policy of 2005) has already had a major impact on American Agriculture. Corn prices have jumped over 75%, acres planted in corn have increased over 15% and traditional crop rotations have changed. "Cheap" corn prices and ample stocks-on-hand have been key ingredients to the biofuels industry's growth. EISA will solidify the shifts that have taken place in agriculture and permanently reallocate the distribution of agricultural commodities in the U.S. and the rest of the world.