Environment and Public Works Committee
United States Senate

Oversight Hearing on Domestic Renewable Fuels: From Ethanol to Advanced Biofuels

Testimony of:

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Good morning, Chairman Boxer, Ranking Member Inhofe, and Members of the Committee. My name is Brooke Coleman and I am the Executive Director of the Advanced Ethanol Council (AEC).

The Advanced Ethanol Council represents worldwide leaders in the effort to develop and commercialize the next generation of ethanol fuels, ranging from cellulosic ethanol made from switchgrass, wood chips and agricultural waste to advanced ethanol made from sustainable energy crops, municipal solid waste and algae. Our members include those endeavoring to produce advanced ethanol themselves, those interested in augmenting conventional ethanol plants with "bolt on" advanced ethanol production capacity, and those developing and deploying the technologies necessary to develop and commercialize advanced ethanol. The founding members of the AEC include Abengoa Bioenergy, BlueFire Renewables, Coskata, Enerkem, Fulcrum BioEnergy, Inbicon, Iogen, Mascoma, Osage Bio Energy and Qteros. We are affiliated with the Renewable Fuel Association (RFA) because we share a common goal of promoting the use of ethanol and broadening the types of feedstocks and processes used to produce the fuel.

This is certainly an important and timely hearing, and we appreciate the opportunity to be here today to discuss renewable fuels and the emerging advanced ethanol industry. My role today is to talk about advanced biofuels, and specifically advanced ethanol, in the context of existing and prospective U.S. renewable fuels policy. But I would like to start with something that is too often lost in the debate about Alternative Fuel A versus Alternative Fuel B, and that is: context.

Background: The Importance of Domestic Renewable Fuels Production

Much of the public and political discourse around renewable fuels has turned negative. Often lost in the perpetual critique of biofuels are the tremendous economic and environmental benefits of domestic renewable fuel production. Arguments to the contrary notwithstanding, the renewable fuels industry has generally met every challenge put before it over the last decade or more.

There are two primary examples:

1) The early stages of renewable fuel development in this country came as a result of a national interest in promoting rural economic development. We seem to forget how recently U.S. farmers were "price takers" selling over-supplied grains at below cost and struggling to make a living. Our government was forced to price support U.S. farmers to the tune of at least

several billion dollars per year, to make sure that rural America did not collapse under the weight of its own success in producing more grain from each acre of land over time. There is a false underlying presumption that, before biofuels, we had a good balance between supply and demand in the agricultural sector, and that $1.70 per bushel of corn was good for America, good for government spending, and good for world hunger. This is a fantasy. American farmers' increasing productivity flooded international markets with below cost grain and drove the U.S. government to provide crop assistance and invest in research for alternative uses of American crops. The proliferation of corn syrup is one example. Biofuels is another. At a time when we are exporting manufacturing jobs to countries like China and India at an alarming rate, deepening our deficit and revenue problems, the biofuels industry has built more than 200 biorefineries since 1988, employing hundreds of thousands of Americans, increasing the national GDP by more than $50 billion and raising household income by more than $35 billion. As a point of contrast, the oil industry has not built a refinery in the United States since 1976. In short, the renewable fuel industry met the initial charge of becoming an economic engine in rural America, and as discussed below, the advanced ethanol industry (if given a chance) will take the next step, spreading the wealth to states and regions not normally associated with renewable fuels.

2) The second challenge put before the domestic renewable fuels industry, with the enactment of the Energy Independence and Security Act (EISA) in 2007, was to reduce our dependence on foreign oil. Reducing our dependence on foreign oil should be an issue that unifies Congress. Central bank chairman Ben Bernanke recently stated that, "sustained rises in the prices of oil or other commodities would represent a threat both to economic growth and to overall price stability, particularly if they were to cause inflation expectations to become less well anchored." Credit T. Boone Pickens for taking this issue to a new level of candor when he said, "our dependence on foreign oil is killing our economy." Credit Donald Trump for highlighting the two unparalleled job killers this country faces when he said that China and OPEC are "eating our lunch." Americans transferred nearly $1 trillion to OPEC member states during the last oil price spike in 2008, which only lasted about 6-8 months. EIA forecasts suggest that recent trends above $100 per barrel are not a spike, but are instead a new equilibrium.

   These massive transfers of wealth have lasting effects. According to the U.S. Department of Energy, every major oil spike in history has been followed by a recession. Foreign oil is the single largest part of the federal trade deficit, and we all know that the jobs follow the money. Americans are paying a price they cannot afford for foreign oil, and there is no relief in sight. High oil prices in the past have encouraged more exploration, more extraction, more production and gradually increasing stocks. As noted in the March 2011 edition of *Science* magazine, "not this time." Meanwhile, worldwide demand, even in recession, is skyrocketing; from 2003 through 2010, China's vehicle population grew at an annual rate of 18.6%, hitting the roads and consuming petroleum far faster than even the most ambitious projections.

   So what role has the renewable fuels industry played in this problem? Last year, the U.S. ethanol industry alone displaced more oil than we import every year from Saudi Arabia. To date, the conventional ethanol industry has met the volumetric challenge put before it by the federal RFS, while simultaneously reducing the energy and natural resources required to produce ethanol. And this is just the first step.

We understand from testimony here today, and from talking to members of Congress, that some consumers do not want biofuels in their gasoline. This may be the case. But before we consider rolling back the clock, and potentially undercutting the domestic renewable fuel industry, we should be careful to consider the ramifications: (1) renewable fuels have become an important and stable source of income and job creation in rural America; and, (2) every gallon of biofuel not used is another gallon of oil (and most likely, foreign oil) that will need to be purchased at debilitating prices by American consumers.

So what about the pump price impacts of using less ethanol? Ethanol is now a major player in U.S. gasoline markets, accounting for roughly 10 percent of nearly every gallon of gasoline sold in America. In a world economy in which the possibility of a supply disruption sends prices skyrocketing, actually reducing fuel supply would have severe implications for gas prices. According to Merrill Lynch, gas prices would be 15 percent higher without ethanol. At $4 per gallon, which is the price right now in California, that's roughly 60 cents per gallon. Most economists agree that the impact would significant, ranging from 20 cents to more than 60 cents per gallons. The rack price of ethanol is currently about $2.60 per gallon. The wholesale price of gasoline is ~ $3.20. Taking a broader perspective, Americans simply cannot afford to export more jobs and revenue overseas to secure transportation fuel. We need to start reversing this trend instead of adopting policies that perpetuate it.

Then there is the issue of where the oil industry is headed. When thinking about consumer cost, it is misleading to compare tomorrow's advanced biofuels to today's oil when the cost curves are headed in opposite directions. Using more biofuels displaces what is called the "marginal barrel" of oil – the "new" barrel coming into the marketplace along the margins of world oil production. This new barrel is no longer light sweet crude because the light sweet crude resource cannot keep up with demand. The marginal barrel is most often oil extracted using thermal enhancement, heavy or extra heavy oil, or tar sands (bitumen). The marginal barrel of oil is usually the most expensive, energy-intensive, ecologically destructive, and highest carbon-intensity liquid fuel in the marketplace. We already spend roughly $400 billion per year on foreign oil. This figure will spike rapidly as unconventional oil becomes more prevalent. Investing a tiny fraction of this cost in advanced biofuels, as an alternative to the marginal barrel of oil, will pay large and permanent (when the domestic advanced biofuels industry emerges) dividends for American consumers.

The Third Challenge: Bringing Advanced Biofuels to Market

If the first two challenges put before the U.S. renewable fuels industry were rural economic development and reducing foreign oil dependence, the third challenge (also embodied by EISA and the federal RFS) is bringing advanced biofuels to market. Before getting into what we do (and do not) need to make this vision a reality, it is important for policymakers to understand exactly where these companies stand with regard to commercialization.

The federal RFS contains very aggressive blending requirements for advanced biofuels. This is appropriate, given the nature of the oil dependence problem we face. But it also creates the potential for non-compliance. Fortunately, the architects of the RFS were well-aware of the uncertainties in the marketplace, and the program provides EPA with flexibility. Recent downward adjustments to the cellulosic biofuels blending requirements have set in motion a dialogue about the readiness of the advanced biofuels industry to produce commercial-scale volumes of fuel.

This is where we stand:

1) There are more than 50 cellulosic and advanced biofuel demonstration and pilot projects built, under construction or in scale-up in the United States. According to both U.S. EPA analysis and California Air Resources Board carbon accounting methodologies, these facilities are producing the lowest carbon fuel in the country, in comparison to both existing fuels and even future fuels such as electricity and hydrogen. There are many more potential projects under consideration, hinging largely on whether Congress makes clear that it is standing behind its initial commitment to advanced biofuels.

2) The technology for cellulosic and advanced biofuels is ready. Companies have demonstrated success and significantly reduced cost at each stage of the research, development and scale-up process. The industry is moving toward deployment of commercial-scale volumes to meet the RFS. See Addendum A to my testimony for further information about production cost.

3) Commercial development of advanced biofuels has been slowed by the recession. This is true for nearly every business sector in the United States. But there are also acute financing gaps – often associated with the so-called Valley of Death – that are exacerbated by an unsettled, policy-driven and largely non-competitive U.S. fuel marketplace. The "financing gap" and "restricted marketplace" problems must be addressed in order for our industry to reach its full potential.

The Need for Further Government Engagement: Why It's Appropriate and Necessary

The advanced biofuels industry stands ready to meet the challenge of bringing commercial-scale advanced biofuel gallons to market, as called for by the federal RFS. The success of the industry will create jobs, reduce our deficit, increase revenue, and greatly improve the environmental footprint of the U.S. transportation fuel industry. But it will require continued government involvement during the initial stages of scale-up.

Here is why the U.S. government must deepen its support of advanced biofuels:

1) The status quo is bankrupting the country.

With fiscal responsibility on the minds of nearly every member of Congress, there is no bigger drain on our economy and revenues than foreign oil dependence. It is the single largest piece of the $497.8 billion 2010 federal trade deficit, and represents a huge fraction of annual spending by U.S. consumers that is not recirculating through our economy. According to the Institute for Local Self Reliance, 75 cents of every dollar spent on biofuels re-circulates through the local economy; conversely, 75 cents of every dollar spent on oil exits the local economy, and in most cases, the country. Only Alaska exports significantly more oil than it consumes; other U.S. states export jobs and capital to other regions and countries to secure fuel energy. American consumers and our economy simply cannot afford to take a "hands off" approach to this problem.

2) **We are not going to "free market" our way out of the foreign oil dependence problem, because the U.S. transportation fuel market is not a free market.**

The U.S. transportation fuel marketplace is highly regulated, driven by policy as opposed to price, and is dominated by highly-consolidated incumbent oil companies that continue to receive the large majority of federal subsidies to the U.S. fuel energy sector.

For example, a recent study showed that fossil fuels received 70 percent of U.S. federal energy subsidies between 2002 and 2008, not including the loopholes in oil and gas laws that, according to the Government Accountability Office (GAO), allowed petroleum companies to forego paying $53 billion in royalty payments, over just four years, for extracting natural resources from lands owned by the American taxpayer (source: ELI). Capital investments, such as oil field leases and drilling equipment, are taxed at an effective rate of 9 percent, which is far lower than the standard rate of 25 percent and lower than virtually any other industry.

The now infamous Deepwater Horizon offers case-in-point. The Deepwater Horizon was owned by Transocean, which moved its headquarters from Houston to an offshore location in 1999. BP leased the rig from Transocean, but used an oil industry tax break to write off 70 percent of the rent for the Deepwater Horizon – a deduction amounting to $225,000 per day since the lease began. This is one lease involving one oil company. But it's the kind of market dynamic advanced biofuels have to compete with every day.

On the demand side, it is not just a matter of showing up in the marketplace with a cost-competitive fuel. Our vehicles and pumps basically cap the amount of ethanol that can be used in the marketplace, suffocating future demand forecasts and complicating investments in advanced biofuels. The stark reality today is that our companies must go through the oil companies to gain market access, or face having to reinvent the entire supply-chain. Unless the oil companies believe that the new entrants will build production capacity, and ultimately pose a threat to their business, they have little incentive to allow these new companies and their new technologies into the space. This market dynamic, which greatly exacerbates the current cycle of price volatility and massive transfers of wealth from American consumers to OPEC members, is not going to correct itself.
If Americans deserve what we all seem to agree is the ultimate goal – a free and open marketplace in which energy development and innovation can occur – we are going to have to enact policies and incentives to encourage these dynamics to take root.

3) **The U.S. government role in innovation dates back more than 100 years, and its engagement in technological development usually stems from an interest in promoting national security and/or enhancing global competitiveness.**

While it is true that America's commitment to free market principles has played a central role in establishing and maintaining our leadership in the global economy, this does not mean that the marketplace did all the work. The development of the oil, coal, natural gas and nuclear industries relied (and rely) very heavily on tax breaks, direct subsidies, and programs designed to reduce investment risk. Similar to the loan guarantee program enacted today for renewable energy, the U.S. government enacted policies decades ago to ensure that the considerable risk associated with using new technologies to drill for fossil fuels was mitigated

so that enterprising new companies and entrepreneurs would not shy away from pioneering new ways to bring energy to the marketplace. The rationale for offering these incentives was very often national security (e.g. World War II, Cold War, etc.) or the desire to maintain and accelerate the global competitive position of the United States. In another example, the foundation of the internet and technology boom – arguably the singe largest source of economic growth over the last 15 years – was laid by government research and government agencies like the National Science Foundation (NSF). It is indisputable that the U.S. government played a central role in developing some of the most transformative technological breakthroughs in history, and in most cases, the rationale was strikingly similar to that used to underscore the need to reduce oil dependence.

The alternative, as advocated by some policymakers, is to disengage government from the marketplace. This would require two realities: (1) that we actually disengage the government from the entire marketplace, including the fossil fuels industry; and, (2) that we accept the reality that the market does not value our acute national interest in remaining secure and competitive in the global marketplace.

Recommendations: Accelerating the Commercialization of Advanced Biofuels

As discussed, there are roughly 50 advanced biofuels projects underway in various stages of development. However, meeting the requirements set forth in the RFS will require very rapid commercial scale-up of these and other facilities. It is important to take into consideration the nature of the scale-up process when it comes to an industrial or commodity product.

While many of the cost reductions are achieved through technological development, as is the case for advanced biofuels, the final efficiencies are achieved via commercialization (i.e. the "experience curve") and economies of scale. There is no better example than corn ethanol. When the corn ethanol industry started building plants, their production costs exceeded their feedstock costs by a large margin. However, corn ethanol producers have reduced their production costs by roughly 60 percent since the first commercial plants were built in the 1980s. Likewise, some solar companies have seen a similar 60-70% production cost reduction in just the last ten years, as capacity has increased significantly. The bottom line is that to bring the clearly demonstrated value of advanced biofuels to market, we need to build commercial plants. And to build plants at the scale necessary to meet the RFS, we need three primary things:

(1) <u>A stable and long-term commitment to help bridge financing gaps</u>

The enactment of the federal Renewable Fuel Standard (RFS) in December 2007 was a landmark achievement for the advanced biofuels industry. It is critical that the RFS not be opened for legislative amendment or administratively weakened in any way, as this would put the entire advanced biofuels industry at risk and send the wrong signal to the marketplace.

There are, however, "front end" challenges in the fuel energy marketplace that the RFS does not solve. The first challenge is that without operating track records, and with new technologies, advanced biofuel producers are unable to leverage low-cost capital. This pushes these companies into a situation where they have to rely on a combination of higher-cost equity (requiring higher and/or more immediate returns) and/or a combination of equity, government engagement and

debt (which is not often available). This market dynamic greatly reduces the pool of available money to finance plants.

This problem is exacerbated by two other factors: (1) the cellulosic ethanol waiver provisions in the RFS, which require U.S. EPA to reduce the mandated volumes of cellulosic ethanol to reflect the amount of cellulosic ethanol production capacity in the marketplace; and, (2) a restricted marketplace, which makes demand forecasting nearly impossible for investors. Both of these factors increase the uncertainty and risk in the marketplace for "next gen" investors.

There are several programs already on the books that are designed to address pieces of the "financing gap" problem. For example, the DOE loan guarantee program is designed to mitigate the front-end investor risk associated with building first-of-kind plants. This program has worked in the instances where it has been administered, and should be accelerated. It has also produced exceptional returns. Every dollar expended by the DOE loan guarantee program has generated an estimated 13 dollars in private sector spending, and the program has created tens of thousands of new jobs. Likewise, the existing cellulosic ethanol producer tax credit (PTC) is designed to attract investors by making the return on investment more predictable and substantial, while the "New Cellulosic Ethanol Biomass Depreciation Allowance (Public Law No: 109-432)" reduces the up-front cost of building a plant.

Unfortunately, none of these programs are dependable from a long-term investment standpoint. The funding for the loan guarantee program has been targeted for spending cuts, which puts existing and prospective projects at risk. Both the PTC and depreciation allowance expire very soon, which means that investors cannot count on these incentives when assessing these companies 5-10 years out into the future. In fact, as case-in-point, the U.S. Department of Energy does not even take these incentives into account when assessing applications for the loan guarantee program.

As a starting point, we recommend that Congress do the following:

a. Make a clear commitment not to open up the RFS;
b. Scale up and streamline the loan guarantee program for advanced fuels;
c. Extend the current tax incentives for advanced biofuels for a time period that reflects the commitment embodied by the RFS;
d. Explore new and fiscally responsible ways to de-risk the marketplace for advanced biofuels investors and reward performance for producers.

(2) <u>A stable and long-term commitment to increase market access and competitiveness in the U.S. liquid fuel marketplace</u>

The current U.S. transportation fuels marketplace is not open, competitive or price-driven. Current ethanol markets are saturated, as the overwhelming majority of today's vehicles are only certified to operate on 10 percent ethanol blends. Incremental blend wall increases – i.e. the move to certify E15 – send an important signal to the marketplace and provide some headroom for existing producers, but do little to assuage the increasing sensitivity of advanced biofuel investors to longer-term demand problems. As discussed, this exacerbates the "financial gap" problem by increasing uncertainty, which in turn ramps up the cost of capital for facility

construction and shrinks the pool of available funding for the financing of advanced ethanol facilities.

The well-discussed solution to this problem is the aggressive deployment of flex-fuel vehicles (FFVs) and blender pumps, which would allow the consumer owning an FFV to choose the percentage of ethanol blended into each gallon of gasoline based on price or personal preference. Any discussion about FFVs and blender pumps leads to a "chicken or the egg" problem, in which automakers do not want to produce FFVs without blender pumps, and station operators do not want to invest in blender pumps if the cars are not available. The relative cost of producing an FFV (~$100 per vehicle) is far lower than the relative cost of purchasing and installing a blender pump, and U.S. automakers already produce FFVs for Brazilian auto markets for little (if any) discernable extra cost. The evolution process must start with the vehicles.

(3) No backsliding

It is absolutely critical that current programs supporting the production and use of biofuels are not discontinued or allowed to expire. This is important for two reasons: (1) these are early-stage companies that need time to realize the advantages reaped by incumbents, which include decades of public investment in infrastructure and government support, fully depreciated plants, economies of scale and operating track records that afford access to low-cost capital; and, (2) the lack of consistency and durability in U.S. alternative fuels policy is a major problem undercutting efforts to scale-up the advanced biofuels industry.

There are several examples:

- The USDA and DOE loan guarantee programs have been very successful and cost effective where administered, but the available funding has been cut on repeated occasions, almost from the inception of the programs. The program is under consideration for cuts yet again, while there is little discussion about government support for oil companies.

- The biomass to energy titles in the 2008 Farm Bill, including the Biomass Crop Assistance Program, are very useful for reducing the feedstock cost of producing advanced biofuels. These programs are due to expire.

- There are various tax incentives very similar to those offered to the fossil fuels industry, including the producer tax credit for cellulosic ethanol and the accelerated depreciation allowance offered to certain eligible biorefineries (discussed above). Both incentives are scheduled to expire at the end of next year, and therefore cannot be relied on by investors and developers.

As a starting point, we recommend that Congress do the following:

a. Make a clear commitment not to open up the RFS;
b. Protect, scale up and streamline the loan guarantee program for advanced fuels;
c. Work with the advanced biofuels industry to identify and protect critical and cost-effective farm bill titles;

d. Extend the current tax incentives for advanced biofuels for a time period that reflects the commitment embodied by the RFS.

Conclusion:

The public debate about biofuels is almost always robust, but not always rooted in fact. It is a debate that often loses the forest for the trees, and focuses on the immediate-term discomforts of change rather than the longer-term potentially catastrophic impacts of not changing.

The reality is that the current ethanol industry has achieved what it was asked to achieve, while extending supply and mitigating gas prices. But more important for us, they have demonstrated the viability of ethanol in the marketplace as scale, which is tremendously helpful to the advanced ethanol industry when it comes to reducing risk and securing investment.

The advanced ethanol industry is in the first stages of building on the market established by conventional ethanol. What we need to meet expectations is the same type of tax treatment that the oil industry has enjoyed for decades, and an aggressive program to open the marketplace for the increased use of ethanol. It will benefit everyone to bring consumer choice to the pump. It will allow ethanol to excel when price competitive with gasoline, and vice-versa. It will open the door to the development of more ethanol production, and other advanced biofuel production, from different feedstocks and new technologies. It will allow consumers to choose how much ethanol they use, freeing the industry from many of the concerns heard today. This is what we all want.

The alternative is grim. The costs of relying of foreign sources of energy are starting to mount. We are falling behind in the global race to be exporters rather than importers of the next generation of energy technologies and know-how. China spends nearly $12 billion per month on clean energy development. According to U.S. Commerce Secretary Gary Locke, “[t]they’re doing this because they really want to be the world’s supplier of clean energy and they recognize this will support millions of jobs.”

The advanced ethanol industry is not looking for handouts. It is looking for a level-playing field and a durable, predictable and cost-effective policy commitment to advanced biofuels over time. If this happens, we will bring tremendous value to the marketplace and to American consumers.

Thank you for the privilege of speaking before you today. I look forward to your questions.

Addendum A
Estimations of Various Advanced Ethanol Production Cost Scenarios

Cost of production data is considered trade protected by advanced biofuels companies. However, several experts, including those at NREL, have published estimates of the costs of emerging advanced ethanol production, in a hypothetical "nth plant" (i.e. mature plant) scenario.

These estimates vary widely based on the assumptions used, and should only be considered general estimates of the production cost of advanced ethanol. But together these data points offer a framework for understanding the relative costs of petroleum, ethanol, advanced ethanol and other fuels, and the value proposition at hand. Wholesale gasoline is currently trading at $3.19 per gallon; corn ethanol is currently trading at $2.61 per gallon (April 11th, 2011).

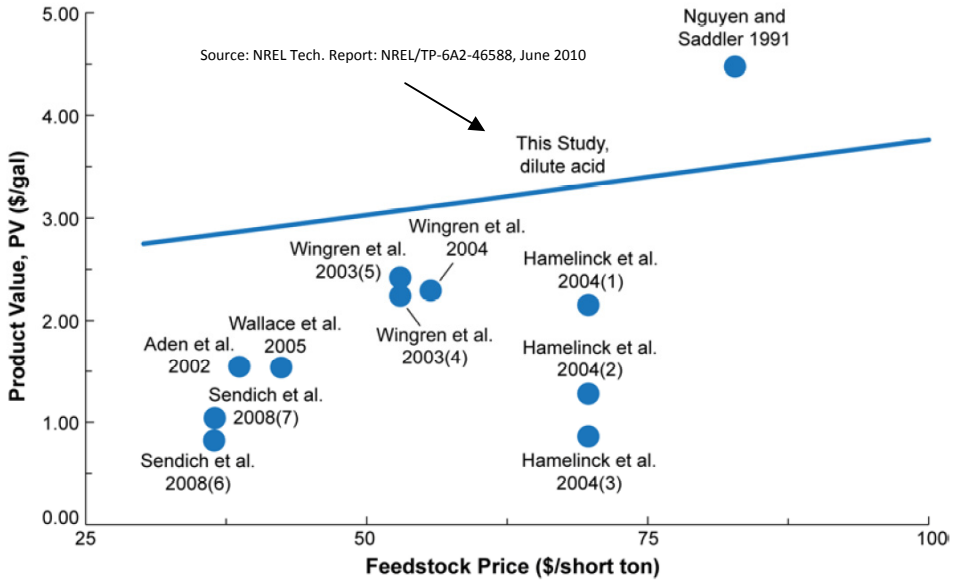


Figure 14. Ethanol cost estimations from previous techno-economic studies.
(1) Short term technology—Simultaneous saccharification and fermentation (SSF). (2) Middle term technology—Simultaneous saccharification and cofermentation (SSCF). (3) Long term technology—Consolidated bioprocessing (CBP). (4) Separate hydrolysis and fermentation (SHF). (5) SSF. (6) CBP. (7) SSCF.

Addendum B
Discussion of Food vs. Fuel Issue

Background

Food versus fuel is a term used to suggest that the increased production of biofuels has caused food prices to increase. The theory is that using grain for fuel increases the demand for grain, which in turn drives up grain prices and increases the cost of producing or gaining access to food. The food versus fuel headline is important to all biofuel sectors because its chief proponents are using the theory to underpin an effort to rollback or curtail the federal Renewable Fuel Standard (RFS), which requires the use of a wide variety of conventional and advanced biofuels.

Discussion

From 1974 to 2005, real food prices (adjusted for inflation) dropped by roughly 75 percent. From 2005 to 2008, food and grain prices increased steadily. During this period, both the price of oil and the use of ethanol rose significantly. These correlations led to a robust public debate, starting in 2008, about whether ethanol or oil was the primary cause of food and grain price increases.

Recent events greatly inform the food versus fuel debate. After increasing sharply, oil prices dropped dramatically in late 2008 and 2009. During the same period, the Consumer Price Index (CPI) for groceries showed the steepest year-over-year decline since 1950, with the Bureau of Labor Statistics citing the 27.3 percent decline in the energy index as the primary cause. And as food prices declined steeply in 2009, biofuel production continued to increase to record levels. In sum, since the inception of "food versus fuel" in 2008, the correlation between oil price and food price has continued, while the brief correlation between ethanol use and food price has broken.

There are other facts strongly suggesting that the food versus fuel theory is overblown:

- Corn is well-supplied. U.S. agriculture has doubled its production of corn over the last thirty years while expanding corn acreage by only 3 percent.

- U.S. agricultural exports have not decreased as grains have allegedly been "diverted" to biofuel production. In most cases, they have increased.

- A recent campaign called FoodPriceTruth.org revealed that profit margins among the major food producers in the United States (e.g. Kraft, Cargill, etc.) increased significantly, in some cases more than 100%, during a time when their major trade association, the Grocery Manufacturers Association (GMA), blamed biofuels for price spikes.

The purpose of the food versus fuel campaign appears to be to roll back the clock on corn ethanol to facilitate a reduction in grain prices (to the benefit of GMA-member profit margins). There are several problems with this approach: (1) biofuel critics want to open and amend the RFS, which would cause great harm to the advanced biofuel industry; (2) the correlation between ethanol use and food prices does not exist to any significant degree, which suggests that reducing ethanol use would not provide food price relief; and, (3) using less renewable fuels will increase fuel prices, according to Merrill Lynch and others, which is the primary cause of food price increases.

Addendum C
Government Support for the Fossil Fuels Industry

The United States government provides a large subsidy to oil companies, with major tax breaks at virtually every stage of oil exploration and extraction. A large percentage of these incentives do not expire. Eliminating the bulk of these subsidies would not be disruptive to the economy because the oil industry is mature and highly profitable.

Some common examples include:

- A recent study showed that fossil fuels received 70 percent of U.S. federal energy subsidies between 2002 and 2008, to the tune of more than $70 billion during this time period. This number does not include the loopholes in oil and gas laws that, according to the Government Accountability Office (GAO), allowed petroleum companies to forego paying $53 billion in royalty payments, over just four years, for extracting natural resources from lands owned by the American taxpayer (source: ELI, 2009)
- Capital investments, such as oil field leases and drilling equipment, are taxed at an effective rate of 9 percent, which is far lower than the standard rate of 25 percent and lower than virtually any other industry. For many small and midsize oil companies, the tax on capital investments is so low that it is more than eliminated by various credits (i.e. the company returns on those investments is higher after taxes than before)
- Many small and midsize U.S. oil companies can claim deductions for the lost value of tapped oil fields far beyond the amount the companies actually paid for the oil rights
- Construction bonds at low interest rates or tax-free
- Research-and-development programs at low or no cost
- Assuming the legal risks of exploration and development in a company's stead; for example, the oil industry received $2 billion in incentives to explore and develop unconventional sources of oil.
- Below-cost loans with lenient repayment conditions
- Income tax breaks
- Sales tax breaks - taxes on petroleum products are lower than average sales tax rates for other goods
- Development assistance received from international financial institutions (the U.S. has given tens of billions of dollars to the World Bank and U.S. Export-Import Bank to encourage oil production internationally).
- The U.S. Strategic Petroleum Reserve
- Construction and protection of the nation's highway system
- Up to $100 billion annually securing the loading and safe passage of oil tankers in foreign countries (i.e. securing the virtual maritime oil pipeline).