**House Agriculture Committee**

**Subcommittee on Conservation, Credit, Energy & Research**

**Oct 29, 2009**

**Written Testimony**

**Susan Ellerbusch**

**President, BP Biofuels North America LLC**

My name is Susan Ellerbusch, and I am the President of BP Biofuels North America LLC.

BP appreciates the opportunity to appear before this committee and present our views on the opportunities and challenges in the advanced biofuels industry. The needs of our country require that we explore for and develop a diverse set of new domestic sources of energy that are secure and reliable in good times and in tough times. We believe advanced biofuels will play a material role in the US energy future.

**BP Overview**

I am one of the 29,000 employees at BP working in the United States. We are not only the largest oil and gas producer in the United States, but also the company that invests in the most diverse energy portfolio in the industry. Over the last 5 years, we have invested approximately $35 billion in the US to increase existing energy sources, extend energy supplies and develop new low-carbon technologies.

BP's investments stretch from the Gulf of Mexico to the North Slope of Alaska and from the East Coast to the Midwest and the West Coast. Our 11,700 service stations – most of them locally owned and operated – are a familiar part of the American landscape.

BP is 100 years old this year – a history that began with striking oil in the Persian desert after six years of toil and has continued through wars, oil shocks, globalization and growing environmental awareness. The company's major spending programs touch every major segment of the energy industry, from exploration and production of oil and natural gas through refining and distribution of fuel products, as well as renewables. Persistence and innovation have been two of the company's hallmarks, along with an ability to anticipate and adapt to external trends, whether political, social, economic or environmental.

**BP Alternative Energy**

We've recognized the changing nature of the world's energy needs. As an energy supplier we are faced with the need to meet consumers' growing consumption demands and at the same time ensure secure sources of energy that offer solutions to climate change.

So it is not surprising that BP has been an early mover in the low-carbon world, setting up a solar business over 30 years ago and leading the oil and gas industry in acknowledging the risks of climate change and urging precautionary action.

Today, BP's alternative energy businesses are integral to the BP Group. Our alternative energy businesses aim to be commercially, as well as environmentally, sustainable. Launched in 2005, BP Alternative Energy is on track to achieve its objective to invest $8 billion over 10 years on renewable and alternative energy. In the biofuels space alone, BP has committed more than $1.5 billion to biofuels research, development, and production in response to increasing energy demand and the need to reduce overall greenhouse gas emissions from transport fuels.

BP is focusing its alternative energy investments on areas where it believes it can create the greatest competitive advantage. It has chosen to focus on the technologies of wind and solar power, biofuels and carbon capture and storage.

**Biofuels**

BP has relished the opportunity to invest in a new high growth industry. In biofuels, there are many potential options for feedstocks, molecules and processes. BP is prioritizing what it identifies as the strongest biofuels options for increasing energy security, reducing greenhouse gas emissions and supporting sustainable agriculture.

In the longer term, through developments in feedstock and process conversion technologies, we believe biofuels offer the potential to comprise a material share of the transport fuels market in key regions. For example, the US Department of Energy has forecast that biofuels could serve 20-30% of the US transportation market by 2020. Additionally, the International Energy Agency has estimated that biofuels could form up to 30% of the global road transportation market by 2050, in work done in cooperation with the World Business Council project on Sustainable Mobility.

Importantly, biofuels offer the potential to deliver lower overall greenhouse gas (GHG) emissions compared with conventional fuels. Biofuels reduce GHG emissions entering the atmosphere on a total well-to-wheels or crop-to-car basis. That is, the carbon dioxide (CO2) emitted when the biofuel is burnt in the vehicle is offset by the CO2 absorbed during the growing of the crop. Future technology developments in the area of advanced biofuels offer the potential for biofuels to deliver GHG emission savings on a well-to-wheels basis of up to 90% versus conventional fuels. This can potentially be achieved

through a combination of using less energy-intensive crops, or waste materials, and highly efficient/high yielding conversion processes.

**BP Biofuels**

BP has made a strategic choice to participate in biofuels. BP has identified biofuels, in particular advanced biofuels, as one of the most compelling options to reduce GHG emissions and address energy security and supply diversification needs. As one of the largest transportation fuel providers in the US, BP has long been one of the most significant blenders and marketers of biofuels in the nation. For example, last year BP blended over 1 billion gallons of ethanol with gasoline. In addition, biofuels are complementary to vehicle technologies which increase fuel economy, leading to a more sustainable transport fleet.

We believe BP is a natural leader in this space. BP has a long history of addressing the issue of increasing CO2 emissions, offering increasingly cleaner fuels to customers and identifying new growth opportunities to develop our business. Biofuels serve markets we are familiar with and have incumbent positions in, and applications in which we have extensive expertise. It leverages our capabilities and insights into energy markets and logistics and project and operational management.

In 2006, BP decided to move beyond blending biofuels to also develop and manufacture our own biofuels. We formed a separate business within BP charged to develop this business opportunity. At the heart of our business is a desire to continually advance our ability to produce biofuels and advanced biofuels in a sustainable manner.

BP's Biofuels business has a focused strategy. We have three primary programs. First, we intend to produce cellulosic biofuels from dedicated energy crops in the US. Second, we are developing an advanced biofuels molecule called biobutanol that can be deployed in existing and new ethanol production units. Lastly, we are producing biofuels in Brazil using sugarcane as a feedstock.

Our US business model is built on five strategic beliefs:

1) We must create a new value chain within the US to enable the growth of advanced biofuels. New partnerships are required to bring capabilities from agriculture, biotechnology, engineering, manufacturing and fuel distribution together in a unique way.
2) There are multiple approaches to producing advanced biofuels, but we believe the fermentation of sugars from a variety of sources is one of the winning technology platforms for delivering this industry at scale.
3) Technology development will make biofuels cost competitive and performance competitive with incumbent products by 2022.
4) Transitional incentives and support structures need to be in place to bridge this nascent industry as the value chain forms and technology cost improvements are realized.

5) Regulation, technology and good operating practice will enable a sustainable industry to form.

Our focus in the US was catalyzed by the Energy Independence and Security Act of 2007. Through EISA, Congress created significant opportunities to develop and grow the contribution of biofuels to the US transportation fuels market. EISA also served to move the industry beyond the good start the US has had with corn ethanol. New support for the next generation of biofuels such as cellulosics and advanced molecules such as biobutanol created the opportunity for the development of a differentiated biofuels industry sooner than anyone had previously envisioned.

Our commitment to a public/private partnership in the area of advanced biofuels is very real. BP is investing $500 million over 10 years in the Energy Biosciences Institute (EBI). The EBI brings BP together with experts from the University of California at Berkeley, The University of Illinois at Urbana Champaign and the Lawrence Berkeley Labs. We have created an institute at which biotechnologists are able to investigate many possible applications of biotechnology to energy, including advanced fuels. The EBI's work also includes research into the social and economic impacts of biofuels.

**BP Biofuels Programs**

BP intends to produce cellulosic biofuels in the United States. Our cellulosic biofuels program is focused on two key technology pathways. First, we intend to utilize dedicated energy crops, such as high-yielding perennial grasses, as feedstocks. Second, we intend to utilize a biochemical conversion process to produce the biofuel from the feedstocks.

BP has created a joint venture company called Vercipia Biofuels with Verenium Corporation to build the first commercial scale cellulosic biofuels facility in the US. To date, BP and Verenium have made a total commitment of $45 million to the venture. The joint venture company is led and supported by a team comprised of employees from both BP and Verenium.

The formation of the Vercipia Biofuels joint venture builds on the $90 million investment made by BP in 2008, which allowed the two companies to further advance Verenium's original cellulosic technology and ensure delivery of Verenium's 1.4 m gallon/year proof-of-concept demonstration facility in Jennings, Louisiana.

BP and Verenium's proprietary technology enables conversion of nearly all the sugars found in cellulosic biomass, including both five carbon and six carbon sugars into ethanol. This technology is a reality today. Our focus going forward is to enhance and improve the efficiency of the technology so that it can be deployed at pace and scale.

Vercipia Biofuels is progressing the design and engineering required to develop one of the first commercial scale cellulosic ethanol facilities in the US, located in Highlands County, Florida. The estimated construction cost for this 36 million gallon per year facility is between $250 and $300 million. The Vercipia Biofuels joint venture plans to

break ground on the facility in 2010 and be fully operational in 2012. With plans to add additional capacity, the joint venture company intends to develop a second site in the Gulf Coast region.

The ethanol produced in our first facility in Florida will be developed with energy grass feedstocks such as energy cane. We believe energy grasses will be an essential part of the future US feedstock mix, given their high yield, yield improvement potential and reduced pressure on land resources. Going forward BP intends to progress other cellulosic facilities in the US and broaden our energy grass feedstock portfolio. BP's intent is to continue to scale up the production capacity of future units as we move toward a cost structure that can compete with traditional transport fuel sources.

In the area of advanced molecules, BP is focusing on biobutanol. Biobutanol is an advanced biofuel molecule that builds on the benefits of the ethanol molecule and adds additional strengths. These additional strengths include:

- It can be produced from the same feedstocks as ethanol through modest upgrades of existing facilities.
- It is less susceptible to separation in the presence of water than ethanol/gasoline blends, and therefore can use the industry's existing distribution infrastructure without requiring modifications.
- A 16% blend can be used in all existing vehicles and infrastructure, offering consumers better fuel economy than E10 and double the GHG benefit as E10 making it an efficient enabler of the renewable fuels objectives set out by Congress in the EISA.

BP believes biobutanol will help to accelerate the adoption of biofuels and assist in overcoming the blend wall, so that the US can meet targets for reducing greenhouse gas emissions from transport more quickly. We have created a joint venture with DuPont called Butamax for the development and commercialization of this fuel molecule. We are currently building a demonstration facility in the UK and hope to be able to commercially deploy our technology in the US during the 2012 to 2013 timeframe.

Outside of the US, BP has focused its current investments in biofuels production on Brazilian ethanol made from sugarcane. Brazilian sugarcane ethanol has a wells-to-wheels GHG footprint that is at least 50% less than conventional gasoline. BP has made the largest investment to date by an international oil company in the Brazilian ethanol production industry by taking a 50% stake in the Tropical BioEnergia joint venture, which already has one refinery producing ethanol.

**Advanced Biofuels Industry Challenges**

BP is a strong supporter of advanced biofuels. However, we do recognize there are challenges to advancing the biofuels industry in the US. Biofuels is about bringing together our two most important value chains – agriculture and energy. We do not take this challenge lightly.

Our nation's initial focus in the biofuels industry was on making ethanol and biodiesel from existing agricultural commodities using existing, well established and proven manufacturing technology. Financing for this first wave of the industry came from the agricultural community and later from a large infusion of financial capital from private investors and the banking sector. The ethanol and biodiesel markets formation benefited from readily available feedstocks, off-the-shelf technology and a vibrant investment climate. With limited barriers to entry the first generation industry rapidly expanded to meet and exceed the targets set out by Congress.

With the rapid development and success of the corn ethanol biofuels, the biofuels industry began focusing on ways to produce more sustainable biofuels with strong environmental thresholds. However, the development and deployment of an advanced biofuels industry would not have been as quick were it not for passage of the EISA in 2007.

To properly evaluate policy options for the advanced biofuels industry, one must consider several critical differences between current generation biofuels and advanced biofuels. First, advanced biofuels are the largest portion of fuels in the 2007 EISA. Advanced biofuels in general, and cellulosic biofuels specifically, do not have existing or well developed feedstock supply value-chains. Whether the feedstock is high yield energy grasses or various waste products from forestry or agriculture, these value chains need development. This market development will take time and will include participation from land owners, farmers, seed companies, agricultural and forestry equipment OEMs, agricultural banking sectors and insurers, and transportation companies. We need to continue to nurture and stimulate the development of this value chain.

Secondly, the technology for conversion of the feedstocks to biofuels is still being developed. Yes, we can produce advanced biofuels today, but they are not cost competitive with current biofuels. Many technologies are not yet readily available to the market. Most of the companies in this space are technology startups. Generally speaking, the companies are good at developing technology, but lack the capabilities to scale the technology into major capital projects. As unit capacities increase over time, these projects could cost upwards of $500 million each. This industry will therefore be enabled by partnerships that bring together small technology companies and large processing companies – such as BP – who have the project management, engineering, and operational skills to bring to scale the technology.

Thirdly, private investors and the banking sector are in a very different state than during the surge of funding for biofuels in 2006 and 2007. Venture capitalist funding supports the development of start-up technology companies and much of that investment is limited until they see proof-of-concept in the industry. The banking sector's support is required for investments in the scale-up of commercial facilities. Given the recent recession and the banking sector's financial difficulties, lending has become scarce in the biofuels space. New investments in advanced biofuels are having difficulties gaining financing

even with current government support structures due to the evolving technology state of the industry.

Even if the recession and banking sector challenges had not occurred, the business risk for advanced biofuels is not the same as it was corn for ethanol. The banking sector does not yet view the advanced biofuels value chains as proven and reliable or new conversion technologies as low risk investments. Even though government initiatives such as the Renewable Fuels Standard, tax credits, USDA and DOE grants and loan guarantee programs are in place to stimulate and mitigate the risk of investments, the banking industry still does not see them as low enough risk at this point in the national economic recovery. Thus capital markets are frozen for major advanced biofuels capital projects.

The confluence of these factors has led to slower progress for advanced biofuels in the US than otherwise expected. However daunting these challenges may seem, they are not insurmountable.

**Advanced Biofuels Industry Solutions**

To achieve the national goals on energy security, progress on GHG emissions, and further rural development, BP supports a robust biofuels industry where many players will bring forward a variety of technology and commercial solutions. Partnerships between different types of companies - large and small, technology and manufacturing, agricultural and energy, financial and operational – through extended value chains – will be needed to make this industry work.

Specifically, we need the stability of a long-term governmental support structure to de-risk the investment in advanced biofuels. Congressional support that is short, has uncertain timeframes or is continually evolving creates uncertainly which translates into financial risk. Stability and certainty in the existing EISA programs are vital to mitigating the risk associated with investing billions of dollars in evolving technology. Investors and developers must see a secure market. A stable framework to support the evolving industry will go a long way to accelerating the industry toward achieving national energy and environmental goals.

The framework in BP's view must continue to include a set of transitional support mechanisms that bridges today's nascent industry and allows companies such as BP, our partners Verenium and DuPont and other leading players in the industry the time and space to deliver at scale a cost efficient, sustainable solution for US transport energy needs. Transitional support mechanisms such as the cellulosic biofuels production tax credit and the biomass crop assistance program are very important as we make initial investments in technology that is yet to be competitive with traditional fuel sources.

We believe the USDA and the DOE must continue to play a pivotal role in developing the advanced biofuels industry. We look to the USDA's leadership in helping to support feedstock development and the formation of the upstream portion of the value chain. We look to the DOE's leadership in helping to support the downstream conversion

technology portion of the value chain. Importantly, the DOE will need play a key role in the initial funding of advanced biofuels, as the initial commercial-scale facilities will be more expensive to build than current generation biorefineries. The USDA and DOE along with other policymakers must recognize the developmental nature of the advanced biofuels industry and help to manage the risks that companies such as BP and the other early leaders in this field are facing as we attempt to create this new industry. In this effort, the government can and will play a critical role.

Assuming supply side dynamics are addressed, there remain demand side barriers to be resolved. The most pressing issue is solving the so-called blend wall issue - the market's inability to absorb additional biofuel volumes. The blend wall results from well intentioned but disconnected energy policy and legal frameworks. BP believes that a combination of time, technology development, and policy support and infrastructure investment will solve this problem. We believe advanced molecules such as biobutanol can assist in lessening the effects of the blendwall in the marketplace. But, as fuel suppliers and policymakers, we need to be sensitive to these dynamics to ensure that consumer expectations continue to be met.

**Closing Comments**

I want to thank the committee for giving me the opportunity to share our thoughts on the issues and challenges facing the advanced biofuels industry. BP appreciates the energy security, economic, and environmental challenges faced by the US, and wants to be a part of the solution.

I am convinced that the biofuels industry has the potential to make a positive contribution to energy security, climate change mitigation and rural development. Biofuels today play a key role in delivering sustainable transport fuels to US motorists and will continue to do so well into the future.

BP is committed to working with Congress and others to address the energy and environmental needs of this nation through comprehensive energy policy solutions. BP believes we must have an all the above strategy to meet the growing demand for energy around the world and biofuels is a key component to that strategy.

**Committee on Agriculture**
**U.S. House of Representatives**
**Required Witness Disclosure Form**

**House Rules* require nongovernmental witnesses to disclose the amount and source of Federal grants received since October 1, 2006.**

**Name:** Susan Ellerbusch

**Address:** 28100 Torch Parkway Warrenville, IL 60555

**Telephone:** _____

**Organization you represent (if any):** BP Biofuels North America LLC

_____

1. **Please list any federal grants or contracts (including subgrants and subcontracts) you have received since October 1, 2006, as well as the source and the amount of each grant or contract. House Rules do NOT require disclosure of federal payments to individuals, such as Social Security or Medicare benefits, farm program payments, or assistance to agricultural producers:**

**Source:** _____ **Amount:** _____

**Source:** _____ **Amount:** _____

2. **If you are appearing on behalf of an organization, please list any federal grants or contracts (including subgrants and subcontracts) the organization has received since October 1, 2006, as well as the source and the amount of each grant or contract:**

**Source:** See Attachment 1 **Amount:** _____

**Source:** _____ **Amount:** _____

**Please check here if this form is NOT applicable to you:** _____

**Signature:** _____

* Rule XI, clause 2(g)(4) of the U.S. House of Representatives provides: *Each committee shall, to the greatest extent practicable, require witnesses who appear before it to submit in advance written statements of proposed testimony and to limit their initial presentations to the committee to brief summaries thereof. In the case of a witness appearing in a nongovernmental capacity, a written statement of proposed testimony shall include a curriculum vitae and a disclosure of the amount and source (by agency and program) of each Federal grant (or subgrant thereof) or contract (or subcontract thereof) received during the current fiscal year or either of the two previous fiscal years by the witness or by any entity represented by the witness.*

**PLEASE ATTACH DISCLOSURE FORM TO EACH COPY OF TESTIMONY.**

**Attachment 1**

(*Cont.*) **2. If you are appearing on behalf of an organization, please list any federal grants or contracts (including subgrants and subcontracts) the organization has received since October 1, 2006, as well as the source and the amount of each grant or contract:**

BP Biofuels North America LLC has not received any federal grants or contracts (including subgrants and subcontracts) since October 1, 2006.

BP Biofuels North America LLC (or certain affiliates, as described below) has the following federal grant applications currently pending:

- Application for U.S. DOE Loan Guarantee (U.S. DOE Solicitation Number DE-FOA-000005), submitted on February 20, 2009 by Highlands Ethanol, LLC (which is 50% owned by BP Biofuels North America LLC).

- Application for DOE Recommendation under § 48(C)(d), submitted on October 16, 2009 by Highlands Ethanol, LLC (which is 50% owned by BP Biofuels North America LLC).

- Application for DOE Recommendation under § 48(C)(d), submitted on October 16, 2009 by Verenium Biofuels Texas LLC (which is 100% owned by Highlands Ethanol, LLC; Highlands Ethanol, LLC is 50% owned by BP Biofuels North America LLC).

**Susan A. Ellerbusch**
susan.ellerbusch@bp.com

## CAREER SUMMARY

An accomplished senior leader within the energy industry who has operated across the Chemicals, Retail and Fuels segments. Skilled in operations management, marketing, strategy and business development. Demonstrated effectiveness in leading change, driving results and operating both regionally and globally.

## EXPERIENCE

### BP Biofuels

**Current** **President, BP Biofuels North America**

- Defined the strategic participation strategy for the biofuels business within the region.
- Led deal negotiations for $100m technology partnership in cellulosic ethanol. Established commercial JV for the development of $300m production facility.
- Directing venture and partnership activities through board memberships.

**2007** **VP, Global Business Development & COO**

- Developed business development framework for evaluating and progressing opportunities for equity investments. Generated an option set of 11 potential investments globally.
- Led negotiations for $1bn deal for the formation of a Brazilian JV. First major oil to successfully enter Brazilian ethanol industry.
- As COO of start-up Biofuels business worked jointly with President to create organization and develop initial strategy and business plan.

### BP Retail

**2006** **VP, European Retail Marketing, Offer & Buying**

- Led a team of marketing professionals responsible for marketing programs, loyalty and rewards, strategic convenience trading and offer, and buying for 11 countries across Europe. Efforts span convenience retailing, food and fuel.
- Responsible for $78m marketing investment budget.
- Delivered 30% reduction in marketing staff while simplifying the interfaces at the global, regional and local levels to drive improved marketing efficiency going forward.

**2004 - 2005** **VP, Branded Offers & Formats, Marketing & Offer Development**

- Led a global team of marketing professionals focused on driving brand strategy and standards, new offer and format innovations, improving profitability of existing offers and formats and creating differentiated food and beverage offers globally.
- Drove the development of a global food strategy that resulted in the repositioning and re-launching of Wild Bean Café in US and Europe. Included new value proposition, café and packaging designs and food offer redevelopment

**2002 - 2004** **VP, Convenience Marketing, US Convenience BU**

- Led development of the convenience retail strategy for 2 distinct brands, ampm and bp, across 19 US markets
- Led a customer focused team responsible for category management, price book, merchandising, supply chain, advertising and sales promotion, brand management and market research, and training and development (6 direct reports plus approximately 110 field and headquarters staff, $1.5bn in sales and $45m in marketing investment dollars).
- Drove the day to day operations associated with product selection, placement, pricing and promotions resulting in the delivery of two times industry LFL growth and 2% gross margin improvement.

### BP / AMOCO CHEMICALS

**2000- 2002** **Director, Strategy & Business Development, Polymers BU**

- Led Solvay acquisition and integration efforts for Polypropylene US. Responsibilities included delivery of valuation and business plan including synergy capture.

- Developed and implemented an innovative new strategy to reposition polypropylene. The strategy delivered a 75m RCOP improvement after 24 months through organizational restructuring, asset reconfiguration and market repositioning.
- Represented BP's ownership interests in Arco Polypropylene, LLC joint venture through board member role.

**1999 - 2000 Product Manager, Polypropylene BU**

- Led a cross-functional business team, including operations, marketing, sales and R&D.
- Drove day-to-day activities for product line sales of $250 MM. Responsibilities included developing and maintaining pricing policies, optimizing the grade slate for profit maximization, and establishing and tracking performance targets. Results included driving inventory down by 25%, hi-grading several commodity sales contracts to improve margins in excess of 3 cents per pound and operating BP assets at utilization levels in excess of the industry.

**1998 - 1999 Market Manager - Fiber & Film, Polypropylene BU**

- Led global film market assessment resulting in recommendation relating to organizational structure changes and identification of product portfolio options.
- Evaluated market options within key carpet segment resulting in redefinition of strategy.
- Coordinated product development efforts to align product portfolio with market needs.

**1996 - 1998 Associate, Business Analysis and Acquisitions**

- Led a cross-sector value chain study to identify value creation opportunities. Consulted senior management on strategic options for maximizing corporate value through integration.
- Evaluated chemicals acquisition target and made recommendation on transaction options.
- Developed and implemented a market assessment process to enhance Amoco's marketing efforts. Lead development of a global marketing plan for the packaging market.

**1994 - 1996 Sales Representative - Northeastern US, Chemical Intermediates**

- Developed and managed an $18 million sales territory.
- Recommend and successfully implemented an aggressive strategy to reorganize distribution within the Northeast.
- Expanded sales to the personnel care industry by nearly 200%.

**1992 - 1994 Sales Representative – Southwestern US, Chemical Intermediates**

- Expanded a $6 million sales territory by 30% in less than two years.
- Recommended and implemented a pricing initiative for solvents resulting in both a market share and net income gain.

**1991 - 1992 Marketing Specialist, Chemical Intermediates**

- Coordinated the development of business group's annual budget.
- Managed formula pricing models for Styrene and coordinated product swaps.

**1990 Marketing Intern, Marketing Communications**

- Analyzed the effect of corporate advertising on Amoco's image.
- Designed and authored technical literature and promotional advertisements.

## EDUCATION

### THE UNIVERSITY OF ILLINOIS

**Master of Business Administration, June 1991**

- Concentrations in Marketing and Strategic Management.
- Dean's List.

### THE UNIVERSITY OF ILLINOIS

**Bachelor of Science in Genetics, May 1989**

- Conducted independent research project on calcium binding proteins.
- Dean's List.