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TRANSFORMING FOREST WASTE TO BIOFUELS AND THE RENEWABLE FUELS STANDARD

FIELD HEARING

BEFORE THE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

UNITED STATES SENATE

ONE HUNDRED TENTH CONGRESS

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TRANSFORMING FOREST WASTE TO BIOFUELS AND THE RENEWABLE FUELS STANDARD

Monday, August 18, 2008

U.S. SENATE,
COMMITTEE ON AGRICULTURE,
NUTRITION, AND FORESTRY,
Rapid City, South Dakota

The Committee met, pursuant to notice, at 2 p.m., at the South Dakota School of Mines and Technology, Classroom Building, Room 204 East and West, Rapid City, South Dakota, Hon. John Thune, presiding.

Present or submitting a statement: Senators Thune and Johnson.

STATEMENT OF HON. JOHN THUNE, A U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator THUNE. Thank you all for attending today. This is an official hearing of the U.S. Senate Committee on Agriculture, Nutrition, and Forestry, Energy Subcommittee. Today's hearing is going to explore how biofuels are produced from forest waste and how that will help to meet our nation's growing energy needs. In particular, we will focus on issues surrounding the definition of renewable biomass in the expanded Renewable Fuels Standard.

We are joined today by a panel of experts within the biofuels and forestry industries. Their written comments have been submitted for the official record of the U.S. Senate Agriculture Committee. I also have statements from a number of environmental groups that wish to weigh in on this issue, as well. Although some of these groups were invited to attend the hearing, scheduling conflicts prevented representatives from testifying in person. Nevertheless, these statements will be included as part of the official hearing record.

During today's hearing, witnesses will have an opportunity to provide a verbal statement and answer a series of questions on cellulosic ethanol production from forest material. The verbal statements, questions, and answers will be made part of the official record, as well.

I want to thank Senator Johnson for joining us today. Senator Johnson is a member of the Energy Committee in the U.S. Senate. I would also like to thank Dr. Robert Wharton, President of South Dakota School of Mines and Technology, for hosting this event today. I also want to thank the staff and faculty of the South Da-

kota School of Mines and Technology for hosting this event and for making their assistance available and making the event a success.

Biofuels production has had a dramatic impact on our State and national economy. The ethanol industry has created thousands of jobs throughout the Midwest, decreased our dependence upon foreign oil, and lowered our gasoline prices. Many economists have determined that the additional nine billion gallons of ethanol that has been added to our fuel supply this year has kept record-high gas prices from increasing an additional 30 to 50 cents per gallon.

According to a recent Merrill Lynch study, biofuels are the single largest contributor to new fuel supplies in the world. According to the International Energy Agency, this trend is expected to continue, and I will quote from their study. "Biofuels have become a substantial part of the non-OPEC supply growth and will contribute 50 percent of the new fuel supply growth in the 2008–2013 period."

Clearly, ethanol has moved beyond a regional boutique fuel and is a major contributor to our transportation fuel supply. As we produce more ethanol, we must diversify the feedstocks that are used to produce the fuel, and we must also diversify ethanol production to include a much broader geographic area that stretches far beyond the corn and soybean belt.

In December of 2007, Congress diversified our fuel supply by enacting the Energy Independence and Security Act of 2007. This law requires blenders and refiners to blend 36 billion gallons of ethanol into our fuel supply each year by 2022. Of that annual quota, 21 billion gallons must be cellulosic ethanol that is made from renewable biomass other than corn. Renewable biomass includes non-food-related feedstocks, such as wood chips, fast-growing trees, beta grasses, yard waste, algae, and crop residues, including corn cobs and stalks.

However, the U.S. House of Representatives behind closed doors severely limited the definition of renewable biomass in the final phase of the energy bill debate in December of 2007. The final version of the definition of renewable biomass does not include any material removed or harvested from Federal lands and National Forests, regardless of how well these lands are managed. The definition of renewable biomass also excludes wood chips and tree thinnings from most non-industrial private forests.

Accordingly, ethanol produced from this material, which is abundant in the Black Hills area, is not eligible for the Renewable Fuels Standard. Blenders and refiners have little incentive to purchase this fuel from an ethanol producer because it is excluded under the Renewable Fuels Standard which will go into effect next year. This problematic definition severely limits economic incentives for a substantial portion of the biomass originating from the Black Hills that could substantially produce biofuel. As a result, the Black Hills will be deprived from a great opportunity to improve forest health and reduce fire danger while growing the local economy and contributing to our nation's home-grown fuel supply.

In a 2005 report entitled, "The Billion Ton Study," the United States Department of Energy and the United States Department of Agriculture determined that over 100 billion tons of woody biomass can be sustainably removed from our private and public forests.

This forest material is the byproduct of current logging activities or generated from hazardous fuel reduction treatments. If converted into ethanol, this material could produce between 5.5 and 6.5 billion gallons of ethanol each year using current technologies. This figure is roughly the total amount of ethanol produced in the United States in the year 2007.

According to the Environmental and Energy Study Institute, with improvements in technology, we would be able to produce up to 105 gallons of renewable fuel from a single ton of woody biomass. According to this conversion factor, over ten billion gallons of renewable fuel are off-limits to the definition of renewable biomass in the 2007 energy bill. Our witnesses will go into greater depth and detail of how this flawed definition limits biofuel production, particularly here in the Black Hills area.

In January of this year, I introduced a bill that would address the narrow definition of renewable biomass and correct it to include waste materials and thinnings from Federal forest land. Also, as a member of the Senate Agriculture Committee, I worked to make sure that the definition of renewable biomass in the 2008 farm bill includes waste materials and thinnings from Federal forests and non-industrial private forests. Under the 2002 farm bill authorization, facilities that produce ethanol from these materials are eligible for loans, loan guarantees, and grants from the United States Department of Agriculture.

Also, the 2008 farm bill includes a program that I authored called the Biomass Crop Assistance Program. This program takes a two-pronged approach to encouraging cellulosic ethanol production. It provides temporary targeted payments to producers who plant and harvest energy-dedicated crops in conjunction with the construction of a local biorefinery, and it also provides matching payments of up to $45 per ton for each ton of renewable biomass that is harvested, collected, stored, and then transported to a cellulosic biorefinery or used as another alternative fuel. This payment would include collection, storage, and transportation of forest waste collected here in the Black Hills. This type of assistance will help overcome the economic challenges of the first commercial-scale biorefineries.

More recently, I joined a bipartisan group of Senators and proposed a comprehensive energy bill called the New Energy Reform Act. This bill includes aggressive offshore drilling for oil and natural gas, incentives for new nuclear power plants, incentives for biofuels infrastructure, and over $8 billion for wind, solar, advanced vehicle technology, and other energy conservation measures. The New Energy Reform Act would also change the definition of renewable biomass to more closely conform to the 2008 farm bill. We hope to have an opportunity to move this bill soon after Congress convenes in September.

With that introduction, I would also like, as I said earlier, to welcome and introduce my colleague from South Dakota, Senator Tim Johnson, and allow him to make some opening remarks, and then I will introduce our witnesses and look forward to hearing their testimony. Senator Johnson?

STATEMENT OF HON. TIM JOHNSON, A U.S. SENATOR FROM THE STATE OF SOUTH DAKOTA

Senator JOHNSON. Thank you, Senator Thune. I appreciate your holding this important hearing. I want to also welcome today's witnesses and thank them for being here to provide us with their views.

The National Forest lands in the U.S. are an abundant source of biomass capable of producing billions of gallons of renewable fuels. I am a member of the Senate Energy Committee, which echoes John's work on the Agriculture Committee.

As we will hear from Randy Kramer of KL Process Design Group, the technology to change wood waste into biofuels is ready for commercial development. In the Southeastern U.S. and right here in the Black Hills, advanced ethanol companies are already breaking ground on cellulosic ethanol plants capable of turning woody biomass into ethanol.

The U.S. can displace 30 percent of current oil consumption by 2030 through the efficient conversion of existing biomass supplies from agriculture feedstocks and by sustainably utilizing biomass from our National Forests.

In December, Congress took a strong step toward achieving this ambitious target by passing the Energy Independence and Security Act. This bill doubles the amount of corn-based ethanol by 2015 and creates a new standard for producing the next generation biofuels from switch grass, wood waste, and other non-grain feedstocks.

But, as is often the case when Congress creates sweeping and ambitious legislation, it is necessary to revisit aspects of the law and correct shortcomings. Here, I am talking about Section 211 of EISA that limits slash and pre-commercial thinning to those removed from non-Federal forest lands. This poorly crafted definition of renewable biomass should be modified to unlock the sustainable collection of biomass from National Forest lands.

Several bills have been introduced in the Congress, including one by my colleague, Senator Thune, to correct this omission. We have a panel of experts today to explain the impacts of the current limitation and to offer suggestions as to how to modify current law. I believe that any change in the renewable fuel definition must provide for the sustainable collection of biomass from our public lands. In this regard, I believe there is near complete agreement.

According to the U.S. Department of Agriculture, there is enough woody biomass in National Forest lands to meet the nation's goals for displacing all of our current oil imports from the Middle East. I would much rather that our country support the creation of a biofuels industry using the biomass from our forests than depend on Middle Eastern nations for our energy security. It also would provide clean air, employment, balance of trade, and control.

Senator Thune, thank you again for holding this important field hearing and I look forward to the testimony from the witnesses.

Senator THUNE. Thank you, Senator Johnson.

I want to turn to our panelists now. We are going to start with Craig Bobzien, the Forest Supervisor of the Black Hills National Forest. Before coming to the Black Hills in 2005, Mr. Bobzien served as Deputy Forest Supervisor in the Panhandle National For-

est in Idaho. Over the years, Mr. Bobzien has acquired a wide range of working experience in silviculture timberl range, recreation, wilderness management, and administration. He is a certified Forester and a member of the Society of American Foresters.

I will introduce the other panelists, as well, and then I am just going to turn it over and let Craig start and we will go in the order of introduction.

Tom Troxel is with us, as well. He is the President of the Black Hills Forest Resource Association. Tom has been an active member of the Black Hills community and represents a diverse set of forest producers—forest product consumers, rather.

Randy Kramer is the President and co-founder of KL Process Design Group, a biofuels engineering and project development firm located in Rapid City. KL's co-founder and Vice President, Dave Litzen, is also here with us today and I want to welcome them, as well, and look forward to their testimony.

And finally, Hugh Thompson, who is a private forest owner. Hugh is a retired forest supervisor at Dixie National Forest in Utah and currently manages his family ranch along the border between South Dakota and Wyoming.

So with that, those are the panelists who we will hear from and I want to start—and they have all been warned to try and confine, if they can, their oral comments to about 5 minutes. Anything that they have submitted in the form of written testimony will be made a part of the official record of the hearing. But I do want to begin now with Mr. Bobzien. Thanks for your work.

STATEMENT OF CRAIG BOBZIEN, FOREST SUPERVISOR, BLACK HILLS NATIONAL FOREST, CUSTER, SOUTH DAKOTA

Mr. BOBZIEN. Senator Thune, Senator Johnson, thank you for this opportunity to discuss renewable woody biomass and the changes made to the Renewable Fuels Standard by the Energy Independence and Security Act of 2007. I am going to summarize my written testimony as requested here with some remarks on definitions and then move into more specifics regarding wood biomass as a byproduct of our vegetation treatments on the Black Hills forests as a means to sustain forest health here.

The definition of renewable biomass in the Energy Independence and Security Act excludes most forest biomass materials from Federal lands except those that are obtained from the immediate vicinity of buildings and other areas regularly occupied by folks. The definition of renewable biomass in the Energy Act excludes most forest biomass materials from Federal lands except those in this vicinity, which also then would preclude its consideration of being counted toward the Federal Renewable Standard. It also then would not allow for this to be a source of renewable energy in much of the National Forest System.

I would like to shift more specifically to the Black Hills National Forest. The Black Hills area has the potential for woody biomass to support energy production.

The ponderosa pine forest here grows abundantly, and over time, much of the forest has become overly dense and requires thinning to maintain forest health. We thin the trees to reduce the threat

of severe wildfires to communities, improve the forest health, and to improve wildlife habitat.

In most cases, a portion of the forest is removed for commercial saw timber while desirable large trees are maintained. This activity also produces then woody biomass as the byproduct residue in the form of tops, limbs, and other small-diameter trees. We have a viable industry here in the Black Hills Forest, an extensive road system. The commercial timber harvest that occurs and the precommercial thinning that we use to thin these dense small-diameter stands produce approximately 207,000 green tons of biomass annually on the Black Hills Forest. About 90 percent of this is readily available along our forest roads in large piles.

What I would like to do right now is illustrate some of the conditions on the forest with three photos for you, Senator Thune and Johnson, and for our audience.

This first photograph here illustrates our conditions on the forest and how forest health is so important and our activities to maintain forest health is shown here. The upper area here is very dense. It has the gray—rather, in the red areas are the dense forest that has mountain pine beetle activity. This is a natural insect activity. We use thinning as a means to try to reduce these stand densities to curb some of the mortality caused by the mountain pine beetle and to create a different kind of an open forest structure, again, to reduce the chance of crown wildfire.

In showing this activity, here are some of the piles that we have right now that are the biomass that reflects the residue that we have from this commercial removal of saw timber at sites. This is actually the central part of the forest, completed under a Healthy Forest Restoration Act project.

The second photograph here illustrates an up-close version of the type of forest condition that remains after we have thinned the forest, showing removal of the fine fuels, which is biomass, and then these tops that have been placed here by the loggers that have taken these trees, and these are what are being stockpiled adjacent to these forest roads. This is a quantity that currently is available throughout much of the Black Hills Forest as we carry out these operations.

And thirdly, over time, if we don't have markets for this material, then we are in a position where we go out as this biomass actually degrades in quality and it remains a fire hazard so we go ahead and burn these areas, which of course has smoke released into the atmosphere, CO2, and also then you have to go back and rehabilitate these sites so that they are productive once again and re-seed them so there is not noxious weeds growing in the sites.

As I illustrated in those photographs what I want you to understand is our opportunities to use this considerable resource of biomass are limited. Right now, small quantities of this material is removed by the public for firewood, for home heating. We have some that are removed for posts and poles. This last summer, approximately 180 truckloads were taken for home heating by our National Guard. It was in an exercise to take those to the Lakota Tribe for their home heat.

We have relatively small quantities currently are chipped in the forest and then transported to cabinet manufacturers here in the

Black Hills and also for emerging markets that we have in public building heating systems and for cellulosic ethanol. In all, the total use of all these areas that I illustrated amounts to about ten to 20 percent of all of these residue piles are currently being utilized.

And as I showed in the photographs, most of these are burned so that we will not have hot fires in the summertime going through those piles. As I indicated in the photographs, the burning releases carbon in the atmosphere and it impacts the soils.

Now, the situation of excess biomass in the Black Hills is much the same for other National Forests in terms of the supply. For example, in Northern Colorado, the bark beetle infestation has killed nearly 1.5 million acres of lodgepole pine there. Efforts to reduce the fuel to remove the hazard trees are creating vast amounts of biomass which could be used for this renewable energy.

Development of additional markets for this material would help defray the cost of treatments and result in more revenue. Utilizing this material as a renewable resource could help reduce our dependence on fossil fuels. It is going to benefit our forests, our air, and our communities.

Thank you for the opportunity to address the subcommittee and I will answer any questions that you may have. Thank you.

[The prepared statement of Mr. Bobzien can be found on page 28 in the appendix.]

Senator THUNE. Thank you very much, Craig.

Tom Troxel?

STATEMENT OF TOM TROXEL, PRESIDENT, BLACK HILLS FOREST RESOURCE ASSOCIATION, RAPID CITY, SOUTH DAKOTA

Mr. TROXEL. Thank you, Senator Thune and Senator Johnson. On behalf of our members, I appreciate this opportunity to testify today.

By defining renewable biomass in the 2007 energy bill to exclude most woody biomass from our nation's forest, Congress missed a tremendous opportunity to proactively contribute to our nation's energy independence, the health of our forests, improved air quality, reduction of greenhouse gases, improved watershed health, reduced risk of forest fires, and the economic viability and diversity of local communities.

As has been discussed, the Renewable Fuels Standard requires the use of 16 billion gallons of cellulosic biofuels, a product that can be manufactured from, among other things, woody biomass, annually by 2022. However, I am not sure that the United States can achieve the 16 billion gallon Renewable Fuels Standard without utilizing woody biomass.

For purposes of discussion, I have identified three sources of woody biomass from our forests: Logging slash, sawmill residues, and submerchantable trees.

Logging slash are the tops, limbs, and unmerchantable portions of the trees that are cut and most slash is piled on the landings for later burning. Every slash pile that is burned is energy produced, but wasted. Utilizing this slash for energy production would reduce management costs, increase revenues to the landowner, and significantly reduce emissions compared to burning piles.

Most sawmill residues are now utilized for products like animal bedding, landscaping, wood pellets, and particle board. However, about 200 railroad cars of wood chips are still shipped each month from the Black Hills to a pulp and paper mill in Longview, Washington, at considerable expense in freight and energy cost.

Thinning small tress is very expensive, mostly because of limited markets for products from those trees. However, thinning those small trees is an important silvicultural treatment to improve vigor and growth of the forest and to reduce the risk of fires. New markets for these small trees would benefit all forest land owners.

One of the long-term management challenges is that the annual forest growth in the Black Hills National Forest is about twice the rate of timber harvest. The recent fires and the ongoing mountain pine beetle epidemic in the Black Hills National Forest are symptoms of an overstocked forest combined with a period of severe drought.

The Forest Service's most recent estimate of their current year fire suppression cost is $1.6 billion. Rather than spending more and more money fighting fires, taking proactive steps to manage our forests to reduce the risk of catastrophic fires just makes good sense.

If woody biomass from Federal lands does not contribute to the Renewable Fuels Standard, then the likelihood of producing cellulosic biofuels from woody biomass in the Black Hills is very slim. On the other hand, with a new definition of renewable biomass that includes Federal lands, the large quantity of woody biomass originating in the Black Hills National Forest could provide anchor volume for woody biomass from other forest lands.

I have read about concerns from some groups about mining the National Forests for biomass and degrading our forests, but I believe those concerns are baseless. Like all National Forests, the Black Hills National Forest is sustainably managed according to an in-depth forest plan prepared in accordance with the National Forest Management Act. The forest plan contains sustainable management strategies and direction for sensitive areas, wildlife habitat, water quality, snags, and other environmental protections.

The entire South Dakota Congressional delegation has been very supportive on issues regarding the Black Hills National Forest, especially funding, and I and our members are very appreciative. I want to specifically thank you, Senator Thune, for introducing S. 2558 that would modify the definition of renewable biomass with regard to Federal forest land. We support that bill.

We would also support language to further modify the definition of renewable biomass with regards to private forest land, similar to the definition of renewable biomass in the 2008 farm bill. Ideally, that would provide opportunities for local businesses to expand and diversify their utilization of sawmill residues and to explore better utilization of slash and submerchantable trees. With the possibility of better utilization, increased revenues, and reduced costs, we could expect better forest management by all forest land owners.

By expanding the Renewable Fuels Standard definition of renewable biomass to include Federal lands, Congress would simultaneously contribute to better forest management, increase energy

independence, improve air quality, healthy watersheds, and strengthening and diversifying local businesses and communities.

I appreciate the opportunity to testify today and I would be happy to answer questions after the others' testimony.

[The prepared statement of Mr. Troxel can be found on page 40 in the appendix.]

Senator THUNE. Thank you, Tom.

We turn now to Randy Kramer.

STATEMENT OF RANDY KRAMER, PRESIDENT, KL PROCESS DESIGN GROUP, LLC, RAPID CITY, SOUTH DAKOTA

Mr. KRAMER. Senator Thune, Senator Johnson, thank you for the opportunity to provide testimony.

Beginning in 2001, KL has collaborated with researchers at the South Dakota School of Mines and Technology to develop a thermal-mechanical process to make ethanol from ponderosa pine, which is found in abundance in the Black Hills National Forest. The research resulted in what we believe to be the first demonstration plant capable of commercial operations using wood waste to produce ethanol. Ethanol production from this plant will offset transportation for ethanol coming into the Black Hills from long distances.

Our efforts and research are dedicated to forest stewardship that includes finding better uses for gathered forest and mill waste that otherwise provides added fuel to forest fires. The Black Hills National Forest supervisor and his staff have been cooperative in our research efforts and we all agree the Black Hills National Forest is an exemplary case study in proper use of a National Forest, respecting the interests of both citizens and forest products industries that coexist in and around the Black Hills.

KL is uniquely qualified to discuss the implications and effects of the cellulosic ethanol provisions legislated in the 2007 energy bill. Beyond our experience in grain and cellulose-based ethanol plant design, our engineers are veterans of oil exploration and refining and our project managers are veterans of combat operations in oil-rich areas of the world.

While our team's cellulosic ethanol technology helps reduce the United States' dependence on foreign oil, our plants eliminate particulate emissions resulting from controlled and uncontrolled fires in our National Forests, costing the Federal Government millions of dollars to manage. For all of the combustion engines on the road today, there is no better technology than biofuels produced from wood waste that can readily demonstrate a self-sustaining and environmentally responsibility solution to our nation's current energy needs.

With the new mandate to increase the use of ethanol made from feedstocks other than grain, commercialization of these technologies is needed now to meet the RFS. KL stands ready to meet that need. While we begin the commercialization of cellulose-based ethanol, we must protect grain-based ethanol and guard against misrepresentations driven by oil, grocery, and extreme environmental special interests that either link high grain prices to the production and use of ethanol or wrongly portray that the utiliza-

tion of wood waste coming from existing Federal timber sales will turn our National Forests into tank farms for biofuels production.

There are many factors that cause food prices to rise, and it is well known through USDA statistics that oil price increases, not the production of ethanol, is the main reason for increases, the price of oil itself. Incentives and public support for both corn- and cellulose-based ethanol must be maintained, just as the incentives for oil discovery were put in place and maintained since 1925.

This past spring, President Bush said the United States has not built a refinery since 1976. In fact, the 84 new ethanol plants built over the last 10 years have effectively replaced the need for approximately eight new average-sized oil refineries. Again, this bright spot in renewable energy growth was overshadowed by the media who conveyed the negative, misinformed messages sent out by special interests, which ultimately led to a slowdown in the capital markets that once supported this industrial growth of ethanol production. We need to get it back on track.

As we grow our cellulosic-based business model, our plants will be smaller and decentralized throughout the United States, co-located with or close to biomass sources immune to the geo-agricultural constraints and dependence on regulated markets associated with grain-based ethanol production, thereby eliminating or reducing the cost of transporting biomass material and in close proximity to populated areas with a requirement to use biofuels. This design disarms critics who believe ethanol production is too remote from the end user and makes use of biomass that is either burned or landfilled.

To illustrate, in the Black Hills National Forest, where tons of particulate matter are pushed into the atmosphere through the prescribed burning of underbrush, it can be used as a feedstock to produce renewable energy, potentially dropping the price of fuel in the Black Hills by five to ten cents.

As we plan for our next plant, a key consideration is the ability to use the incentives put in place by the 2007 energy bill. However, as the bill was finalized, we now understand that the National Resources Defense Council influenced legislation that exempted biomass taken from the National Forests to count toward the Renewable Fuels Standard. Specifically, credits intended for cellulosic ethanol production from biomass harvested from our National Forest through Federal programs already in existence were taken away by special interests without the support of our legislators. The intent of this last-minute provision was to discourage the harvesting of material from the National Forests for biofuels production.

However, the drafters failed to understand that existing timber harvest programs already allowed for the removal of material from the National Forest. Any reasonable person would understand that processing waste thinnings into a clean-burning fuel is less destructive to the environment than burning it in place.

To illustrate, the Black Hills National Forest today has 1.2 million dry tons of thinnings and slash on the ground. As a feedstock for a cellulose plant with electrical power cogeneration capability, this material could be used to produce 50 million gallons of ethanol while exporting 100,000 megawatt hours of electrical power. To put

this amount of energy production into perspective, the Rapid City area consumes approximately five million gallons of ethanol per year and 650,000 megawatts of power. At today's consumption rate, the material that is currently collected and piled in the Black Hills could provide 10 years of ethanol and 2 months of electrical power for Rapid City.

In the case of commercial timber harvested through these Federal programs, mill waste from the operations fit perfectly with our business model, but the burden of segregating non-credit qualifying bits of National Forest mill waste from private or State timberland that do qualify is as impractical as it sounds. Imagine the complexity of separating mill waste for the sake of recovering valuable cellulosic ethanol credits. The cost would likely outweigh the credit.

We live near a National Forest and consider ourselves active stewards of the environment. Our desire is not to clear-cut the forest to produce biofuels, but given existing timber harvest programs, credits from these operations are critical to the near-term success of cellulosic ethanol.

To conclude, we want to thank Senators Thune and Johnson and Representative Herseth Sandlin for bringing this important forest management and renewable energy issue to Congress. Just as they joined in an effort to save Ellsworth Air Force Base, we are proud to see this demonstration of unity, along with assembling bipartisan support throughout the House and Senate for this legislation. Thank you.

[The prepared statement of Mr. Kramer can be found on page 31 in the appendix.]

Senator THUNE. Thank you very much. We appreciate it.

Now we will turn to Hugh Thompson.

STATEMENT OF HUGH THOMPSON, PRIVATE FOREST OWNER, ALADDIN, WYOMING

Mr. THOMPSON. I thank you kindly, both Senators, for inviting me to testify before the Senate Agriculture Committee today. As a South Dakotan hurt by high fuel prices, concerned about domestic energy security, and interested in seeing economic development in our State and in our area, this is an important hearing.

As a rancher and landowner with timber and brush on my property, I am particularly interested in the potential use of wood as a feedstock for renewable energy and the production of cellulosic ethanol, in particular. It is common knowledge that most folks don't eat a lot of wood waste, but you can make fuel from it and that is my interest as a land owner.

Following my Federal assignment, I served 4 years as Deputy Director for the Utah Department of Natural Resources, where I also had oversight for the Utah Energy Office. I returned home back to the ranch in 2004 and am now fully engaged along with my farmer-rancher family in trying to make a living off the land. I have always been interested in how we can manage our lands in a sustainable manner to produce income. Raising hay, grain, livestock, leasing hunting privileges, and doing occasional timber harvest are all traditional sources of revenue for South Dakota and Wyoming ranchers.

In the 21st century economy, we are looking for new markets, including the potential of using our lands to grow feedstock and to use the residue we already have on hand for a future cellulosic biofuel industry.

This Congress and this administration has done much to promote wood as a transportation fuel source. For all the good that has been done and for an issue that requires the utmost in professional management, it is distressing to see its definition cloaked in the thinly veiled environmentally preservationist terms used in the EISA. As currently written, the law places confusing parameters on significant acreages of private forest lands that do not fall within the category of, quote, "actively managed plantations." Specifically, the present definition appears to restrict what can be collected for use as a biofuel feedstock from naturally growing and regenerating forests, which make up more than 90 percent of our nation's non-Federal forests.

Specifically, I see at least three fundamental problems with the current definition of renewable biomass in the Renewable Fuels Standard. The first one, potentially disqualifying material removed from the forest through necessary and appropriate forest management activities. Proper forest management focuses on moving the forest toward its desired condition. Whether that condition is to produce wood or fiber, to recruit desirable tree species, or protect against insects and disease, to improve habitat, or any other desired outcome, appropriate management often includes removing materials from the forest that can and ought to be used productively is impossible. By using definitions like slash, private trees, residues, pre-commercial thinning to limit the material that can be used productively, the definition contradicts rather than promotes good forest management.

Second, creating a chain of custody confusion for transportation fuel producers. I think this has already been alluded to. The current definition suggests that different parts of the same tree may or may not be considered qualifying feedstock for renewable fuel production. Biofuel producers required to demonstrate compliance with the standard would have to sort out which of the incoming raw materials constitute qualifying feedstock.

And the third one, preventing an opportunity to improve Federal forest management to the benefit of adjacent private forest owners. Private forest owners understand that the risk to their lands often is as much determined by the type of management occurring on adjacent lands as it is by their own management practices. By placing significant limitations on wood coming from Federal lands, the current definition discourages the opportunity to provide sufficient supply for a facility that could process feedstock from both the Federal and adjacent private lands at the same time. In this region, private forest feedstocks are probably not sufficient to be standalone economical and need the Federal land feedstocks to sustain a viable industry.

Senator Thune, you have introduced legislation in the Senate, S. 2558, which amends the definition so that our National Forest System can be responsibly managed for biofuel production. I strongly support your legislation as sensible public policy. I also support any

similar legislation that will bring forward the language in Section B of the farm bill definition.

Thank you for the opportunity to testify and I will be happy to answer any questions that you may have.

[The prepared statement of Mr. Thompson can be found on page 36 in the appendix.]

Senator THUNE. Thank you, Hugh, very much. I thank all of you for your testimony.

What I would like to do is ask some questions of the panel and then allow Senator Johnson to pose some questions, as well, and I want to start with Mr. Bobzien. You had touched on, I think, in some of your testimony some of the answers to this, but I want to maybe get a little bit deeper into it. Are there characteristics of the Black Hills National Forest that make this forest particularly well suited for biofuels production?

Mr. BOBZIEN. Yes, there are. First, it is really a tree growing forest from an environmental standpoint. Trees grow and they regenerate abundantly on the Black Hills Forest, and over time, there is a need to manage the density and environmentally it is good to remove the excess trees from the forest.

Secondly, the industry that we have currently here on the forest and with potential markets also lend themselves toward utilization of biomass.

And thirdly it would enhance the economics and the social support that we have through our principal management trying to maintain a diverse and healthy forest that the public is proud of, and when we remove these products in an environmentally sound and with economic benefits, this all lines up to be a very good source for biomass for our communities, the industry, and the forest.

Senator THUNE. As a follow-up question to that, you kind of touched on this, too, but summarize the forest stewardship benefits of responsibly and sustainably removing biomass from the Black Hills. I mean, tell me how that is going to impact pine beetle management. Would it help with that? Fire suppression activities, wildlife habitat, those types of sustainability issues.

Mr. BOBZIEN. Yes. The photograph, the first photograph I shared, Senator Thune, gave an illustration of that and how we are able to reduce this dense forest and reduce that stock in there, especially when we have had drought conditions, to try to maintain forest health through proper stocking and also provide different diversity and wildlife habitat. It is a renewable resource and the fact that we have an ongoing need to address wildfire risks, all those coupled together are part of our overall plan of stewardship. It includes using this excess material as biomass as an important component, to help us manage the forest and reducing burning that produces waste in the atmosphere.

Senator THUNE. How about if there were greater economic demand for forest waste material, how does that impact some of the large fire suppression costs of the Forest Service operation budgets and outcomes, and obviously that is something we have dealt with a lot here in the last few years, with lots of fires, and I know that we in the delegation have worked to secure additional funding for dealing with fire—risk management, fire prevention, that sort of

thing. Tell me how this might impact the cost the Forest Service has to deal with as a result of the threat of fires.

Mr. BOBZIEN. Well, Senator, I am aware of legislation, and while I can't lobby, certainly information that we have show that the fire costs have gone from 13 percent of the Forest Service budget in 1991 to 48 percent of the Forest Service budget today. And so in that scenario, where we have a flat budget, we have a substantial reduction in our forest programs as a result of all of this increased fire cost. That impacts our ability to do things such as some of the hazardous fuel reduction or the removal and management of the forests, as well as every other program including recreation, research, and things of that nature. So money there and large fire costs do reduce our ability to invest, say, in the proactive thinning of the forest to reduce some of these hazardous fuels out there, whether for forest health, to reduce the risk of wildfires, and those sorts of activities.

Senator THUNE. How could we incentivize the production of biofuels from forest waste and tree thinnings without mining the forests for biomass? One of the arguments that is made against including these types of biomass from a National Forest in the definition that would allow for cellulosic ethanol production to meet the Renewable Fuels Standard is that these forests will then be—you know, we will start mining those and it will become more aggressive in terms of thinning in order to meet the RFS. What are some ways that you could think of we might be able to incentivize production of biofuels from forest waste that would not in any way jeopardize the forests or create this issue of mining our forests for biomass materials?

Mr. BOBZIEN. Well, first, Senator, I look at mining typically used as something that is not renewable, and as I described earlier, is we look at this, where we are using it for forest health reasons, we have a renewable resource and our responsibility to all the American people is to manage that in a sustainable and renewable way that people like to see that done. So from a public policy standpoint, first and foremost, this is to maintain a healthy forest that the citizens of the country want to see. So that is on the public side.

On the private side, that is to try to give as much flexibility, I think, to the private sector to develop this, as we have suggested today, to find new markets for this, that those kind of incentives then would actually be an environmental benefit, as well, with the ground, like not having to burn that material, and to provide energy for the country in several different forms.

By having this material available and having the condition of the forests both renewable and sustainable; all make a desirable situation that our people want to see over time. It all fits together well as a renewable resource.

Senator THUNE. Let me ask—thank you, Craig. Let me ask Tom Troxel here, how much biomass do you think could be removed from the Black Hills National Forest each year for biofuel production? That would include slash materials, small-diameter trees, logging residue, sawmill wood chips and sawdust. What is the universe that we are talking about here that you might be able to use to meet an RFS if that definition were changed?

Mr. TROXEL. I broke woody biomass into three categories, and one of those, the submerchantable trees, and I would look to the Forest Service to give an estimate of that quantity.

The second is sawmill residues, and one thing I do want to be sure to clarify is that we have lots of existing uses for sawmill residues, and I used the Merillat particleboard plant as one example. I think it is in our best interests to try to complement the existing uses and not try and compete them and detract from the existing uses of those wood residues.

So after we utilize as much of the sawmill residues as possible locally, we still ship about 200 rail cars of wood chips to pulp mills in Longview, Washington, every month. How long that makes economic sense or energy sense, I am not sure. The economics and the dynamics of that have changed with the cost of fuel increasing as sharply as it has. But there are roughly 100 tons per rail car, 200 rail cars per month, and so that works out to about 240 tons a year.

And then on the slash piles, our best estimate is that the loggers in the Black Hills on all ownerships produce about 5,000 of those slash piles every year, and I understand that Craig Bobzien and the folks in the Black Hills National Forest are working with some research people from Denver to try and quantify what the—try and quantify the amounts of material that are available from those piles.

Senator THUNE. And back to Craig, in your testimony, you mentioned about 207,000 tons annually of biomass could be available in the Black Hills.

Mr. BOBZIEN. Yes, I said that, sir, and that would be what would be readily available next to roads, like we showed in the photograph there. Some of our—while we have an extensive road system, some, you can take a chip truck currently to some, and not to some of the others. There is more biomass available that is more difficult and more expensive to retrieve. Yes, that is an estimate of what we have that is readily available next to main forest roads.

Senator THUNE. Well, if the number that I had was accurate that came from the Renewable Energy Institute, it said you could actually get 105 gallons of cellulosic ethanol per ton of biomass, that would—if my arithmetic is correct, and there is a reason I didn't go to South Dakota School of Mines and Technology—but there is over 20 million gallons just in the 207,000 tons that you talked about, which would be the equivalent, if you were going to build a biorefinery, of a 20–million-gallon refinery, which would be a substantial, I would think, refinery. So in any event, it seems to me, at least, that in the best of the readily retrievable amount that is out there, it is a significant amount.

I have got some questions for Mr. Kramer and for Mr. Thompson, as well, but I want to allow Senator Johnson to ask some questions for these panelists, so go ahead.

Senator JOHNSON. Thank you, Senator Thune.

First, Mr. Bobzien, I believe that a robust renewable fuels industry using wood waste as a feedstock to produce cellulosic ethanol is another tool to managing our public lands. What types of benefits do you think communities located near National Forest lands can realize from a renewable fuels industry utilizing forest bio-

mass? Also, how do you think the management of public lands would be changed if we could establish a vibrant renewable fuels industry in the Black Hills?

Mr. BOBZIEN. Thank you, Senator Johnson. Well, the first thing is, again, it is a condition where people could benefit from a healthy forest. That is where this all starts. And so the removal of some of the products from the forest are important to maintaining the forest health in much of the forest.

Second, having the industry, as I pointed out, would reduce our smoke that we would be producing in the atmosphere, even though we try to burn when it is the very best ventilation in the atmosphere, we still produce smoke and it impacts the communities in the wildland burning, and so that would be a benefit to reduce that.

Also, we would be taking that slash material that could threaten and create some hot fires prior to it being disposed. Those are some of the most important things I first see.

And then for the industry, depending on how the renewable energy is developed, as several of the other panelists noted how that energy could be used locally, that would be an industry decision or a Congressional decision, based on how our laws relate to the use of this material.

Senator JOHNSON. In the past few years, one of the most successful hazardous fuels reduction projects undertaken by the Black Hills National Forest was the Prairie Project along Highway 44 west of Rapid City. Would the current definition of renewable biomass materials that is provided for in the 2007 EISA have excluded wood waste from the project from counting toward meeting the RFS?

Mr. BOBZIEN. Actually, the Environmental Protection Agency still is responsible to interpret what are some of the definitions that apply there, so I don't have a pat answer for you. I can't say in regards to whether that would be included or not. Clearly, we have areas not only close to communities such as the Prairie Project, but in other parts of the forest where we have this residue that could be available for renewable energy production.

Senator JOHNSON. Mr. Troxel, provided the Congress can modify the definition of renewable biomass, what improvements to the Forest Service Timber Sale Program or other commercial programs can the Forest Service pursue with producers in order to increase the value of harvesting the types of small-diameter trees and woody biomass necessary for incentivizing cellulosic ethanol plants?

Mr. TROXEL. The most important thing that the Congress can help do is to give some stability and predictability to the National Forest Timber Sale Program, and most of what we have talked about here is driven by the values of the saw timber that the Forest Service sells in their Timber Sale Program.

I have a graph. This top line is the allowable sales quantity from the Black Hills Forest Plan, and this is the line of actual accomplishments, going back to the remand of the Forest Plan by the Chief of the Forest Service in 1999. And all of the South Dakota delegation have worked very hard with us to increase funding and increase this program, but we are only now getting back to the level that the Forest Service predicted we would be at in 1998.

This is the sort of thing that is very tough to go to bankers or investors and say, we want you to put up 30 or 40 or 50 million dollars on a plant or a facility that is dependent for half to two-thirds on supplies of woody biomass from the National Forest.

Some specific ideas on how to do that, Mr. Bobzien alluded to the fire spending and how that is taking a larger and larger proportion of the Forest Service budget, and I think if the Congress would recognize that as part of the appropriations process, that would be very helpful. Right now, the Forest Service is on track to overspend their fire appropriations and they are actually in the process of going out and taking away money from forests like the Black Hills National Forest. They are taking away $400 million nationally, and that is a very disruptive step.

Stewardship contracts are something that would be helpful. I think they allow the Forest Service to be more efficient. They can keep more of their money on the forests. It reduces the amount of overhead funding they send to the Washington office and the regional offices and allows them to combine more types of work in a single contract, which makes those more efficient.

From the industry side, stewardship contracts tend to give more stability and predictability over the long term. There is still an issue with, we call it cancellation liability funding, that the Forest Service is required to maintain funds in the event that the contract was canceled, and there is legislation proposed that would deal with that.

So I would say those things are steps that the Congress could take that would help get more stability and predictability, which is really the bottom line of what we need to see more of in order to incentivize the sorts of utilization that we are talking about today.

Senator JOHNSON. Mr. Thompson, if the Black Hills can develop a viable cellulosic ethanol industry, utilizing biomass from public and private forest lands and thereby boosting the value of the timber from these lands, how would you predict that this type of energy production affects the development and highest and best use of private forest land in the Hills? Would land use and development patterns change?

Mr. THOMPSON. I think, Senator Johnson, any time that you can develop a market for material that we have out there on our private forest lands that will help keep the farmer and the rancher on the land is going to be good for the local community. It is going to keep that land from being subdivided into 20–acre ranchettes. It is going to allow the tax structure and the assessment values on ag to provide those services for ag when sub-development will cost the county and the State additional dollars in infrastructure. Anything you can do to keep the rancher on the land, keep it from being unfragmented and keep it in more natural habitat will be a benefit to the community.

Senator JOHNSON. Mr. Thompson, is there enough privately held land in the Black Hills to allow a meaningful and viable ethanol industry to exist?

Mr. THOMPSON. Not on a stand-alone basis, Senator. I think it has to go hand-in-hand with the material that is on the Black Hills National Forest, as well. We need them both, and it is kind of a symbiotic relationship. They have got to go hand-in-hand. Defi-

nitely, the private lands can't stand alone and support the kind of industry that we are talking about today.

Senator JOHNSON. Mr. Kramer, it seems to me that one challenge facing your company caused by the new definition of renewable fiber is separating out wood waste collected from private lands and that collected off of public lands. If an ethanol company is supplied woody biomass material collected from different classifications of land, can you explain how that complicates your company's compliance with the current law?

Mr. KRAMER. [Off microphone.] Yes, sir. I can tell you [inaudible] we have a good idea where it came from, but we don't know exactly where it came from. [On microphone.] How is that? We have a good idea where this came from, but we don't know exactly where it came from. If it came from Hugh's land, for instance, and his land was adjacent to the National Forest, and the Baker Brothers were out there doing the clean operation [inaudible] subscribed forest plan, and yet they might have gone onto Hugh's land for some other reason, if this got into the same bin, the same truck, it would be very, very difficult to segregate the dust, the sawdust that is in here and to be able to understand what kind of [inaudible] from Hugh's land or from the National Forest, which we can't [inaudible]. So it is very difficult.

Senator JOHNSON. What kind of penalty would you generate if you mixed products?

Mr. KRAMER. I don't think that we would have a legal issue as far as taking it or not or using it. It is the issue of losing the effect of the credit, which is financially credited on our balance sheet and cash-flow. We have to depend much like the corn plants did in the early days on some form of subsidy to keep us going while we develop commercialized technology.

Senator JOHNSON. Thank you, Senator Thune.

Senator THUNE. Mr. Kramer, as a manufacturer of ethanol from Black Hills wood chips, do you anticipate or see the need for any modifications from the current Black Hills National Forest Management Plan in order for the trimmings and slash to be utilized by a cellulosic ethanol plant?

Mr. KRAMER. Senator, I don't think that we need to change the existing plans that are out there today. From the numbers that we have done, there is enough to sustain at least one ethanol plant to the tune of about 50 million gallons, which is enough size for our business model. That means that you can produce about 50 million gallons over the course of a [inaudible] that location. But the Forest Plan is not [inaudible] today. It does need to be modified, and that is why I think it is important that we make sure that people understand we are not asking for more, just for what we are [inaudible].

Senator THUNE. What kind of transportation, feedstock transportation issues have you experienced with your current plant? It strikes me that one of the difficulties is, obviously, a kernel of corn is very deferent, and one of the issues that we tried to address in the 2008 farm bill with regard to cellulosic ethanol in the energy title was payment for storage, delivery, transportation, and that sort of thing. What types of issues have you dealt with in terms of transportation?

Mr. KRAMER. It has been exactly the cost of—what I pointed out in my testimony. Where corn prices are high, the reason for those prices going up has a whole lot to do with oil prices being high and production of corn and the transportation of corn to the ethanol plants. Those costs are no less as important for us when it comes to delivering the sawdust, for instance, from [inaudible] South Dakota or from Wyoming. At $45 a ton, the folks that are bringing us that sawdust are not making a lot of money and it really has a lot to do with the price of oil. So the learning point from that was for us to co-locate the plant with a sawdust mill waste provider.

We have the keep that program that is out there [inaudible] put in place. It is going to offset about 50 percent of those costs if you look at that pair line. So it is important that we move along with the promulgation of the rules and start applying for those [inaudible].

Senator THUNE. Do you anticipate that transporting biomass feedstock to the Black Hills would negatively impact tourist travels or tourism in the Black Hills? if not, why not? What is your——

Mr. KRAMER. I am going to ask Dave Litzen to weigh in, and then I would like to have a little——

Mr. LITZEN. I am a graduate of South Dakota School of Mines and I did a little math before the hearing.

Senator THUNE. That's where all the smart people in my school went.

[Laughter.]

Mr. LITZEN. But using the amount that we believe is already in the Hills in terms of biomass slash on the ground, the 1.2 million tons that is existing, it would take about, we figure, 80,000 trucks to move that material out of the forest into a centralized location. Now, those 80,000 trucks would be spread over a 10–year period. Assuming that the consumption of ethanol in this area is about five million gallons a year, we would build a five million gallon-a-year plant. Therefore, that establishes a 10–year lifespan of this biomass that already exists, 8,000 trucks a year, more or less. Forty-five trucks a day is what that amounts to. And according to some of the traffic maps that we have looked at, that is about a 1–percent increase in travel on the highways. So again, rough math based on some of the numbers that we are familiar with.

Senator THUNE. And with regard to your business plan, how is the current definition of renewable biomass that is in the RFS affecting or impacting the plans that you have to produce cellulosic ethanol in the Black Hills National Forest?

Mr. KRAMER. Like Craig Bobzien brought this up earlier, [inaudible] predictability is everything for us and capital markets, when it comes to looking for a loan for the next plant, it is based on contracts that we have, the input and the output, both the feedstock coming in and the ethanol going out.

In the case of the input coming in, the Department of Energy has a loan guarantee program with 29 stipulations that you have to meet. One of them is that we have to be contracted for the feedstock to come into the plant. This—the way the law is written right now, we can't take the credit from the National Forest material and thereby that negates that loan guarantee program. It cancels it out. So we really can't use that loan guarantee program.

So from [inaudible], from looking at the next plant for us, knowing that the technology is still in commercial development, and every day we make advances on that, but the bottom line is we are going to be stuck with one plant until the capital markets improve, either for an adjustment——

[Inaudible]

Mr. KRAMER [continuing]. Corn ethanol market improves, and that the negativity out there—the negativity that is out there on the corn-based ethanol, it influences the capital market for cellulose-based ethanol and absolutely hurts us.

Senator THUNE. The Mines graduates are really talented.

[Laughter.]

Senator THUNE. Mr. Thompson, and Senator Johnson already asked a couple of questions that I wanted to get at with regard to the private land owners, but just sort of a general question. What information can the forest land owner community provide the committee, the Ag Committee and the Congress, to help in our oversight of the EPA and USDA's efforts with regard to this issue?

Mr. THOMPSON. I think the biggest assistance we can be to the committee and to the Federal agencies is the ability of the private land owners to give you quick feedback and quick turnaround. We are not constrained with all of the bureaucratic measures that are put on the Federal agencies and we can give you turnaround information very quickly. We can be adapting, and I think this industry has to be adapting. It has to be light on its feet. And land owners, I think, the producers of the biomass feedstock can be lighter on their feet than perhaps the Feds.

Senator THUNE. Well, I do want to say, because I think it is—I toured the National Renewable Energy Laboratory last week in Golden, Colorado, and they are doing a lot of testing and experiments with cellulosic ethanol production from various feedstocks, including corn stover, including wood chips, including switchgrass, all of which we have an abundance of here in South Dakota. But their goal is to have cellulosic ethanol competitive with $65 oil by the year 2012, and furthermore, they believe that to hit the 21 million—21 billion, I should say, gallon RFS that is called for in the RFS by 2022, that we will have to build an additional 400 biorefineries, and that assumes 50 million, I guess, gallons per refinery, which would create up to 40,000 jobs.

I think a lot of those jobs can be created right here in South Dakota, but it is going to take a change in the definition that will allow the feedstocks that are available here in the Black Hills, the biomass that is available out here, to be used, or cellulosic ethanol production in that definition changed so that it fits within the RFS. And that is why I hope that by continuing to elevate this issue and getting more people engaged in it, we will be able to persuade the Congress that that is the right direction to go.

And I think it is really important that people realize that in many cases, what we are talking about here are these residues, or waste, slash piles, those sorts of things, are things that have no economic value and, in fact, impose a cost, an economic cost as well as an environmental cost. And we ought to be looking at ways that we can derive some value, some beneficial use from those things, and this is a remarkable opportunity, I think, for South Dakota

and it is very regrettable and unfortunate that this was excluded from the definition in the energy bill last year. We are going to try and rectify that. And so we appreciate your ongoing support and input on that.

What I would like to do at this time—we have a few minutes—is just open it up to our panelists for some questions. If there is anybody in the audience, and we won't be able to take a lot of questions, but we will take a few questions here if anybody has questions for any members of the panel. And we will bring you a microphone.

Mr. KADIS. John Kadis, State Senator from Rapid City. Could you specify who in the middle of the night, who the forces were the prevented us from having the definition that you have to come back on at this stage?

Senator THUNE. Well, the definition in the energy bill last year, the Senate bill included Black Hills National Forest. It went into conference with the House. All I know are reports that I have read, and some of the reporting that has been done on this suggests that at sort of the 11th hour, that the leadership in the House, and primarily Speaker Pelosi, had that definition changed so that it didn't include Black Hills National Forest for eligibility in the Renewable Fuels Standard in the bill. So again, that is based upon reporting on that. All we know is that it was in there and then all of a sudden it wasn't, and that happened very late in the process.

Mr. CRANDALL. [sp.] I think you can hear me without the microphone. While you have Dave Litzen up there with a degree and experience, I would ask you to address the question [inaudible] are based upon having five gallon [inaudible]. Ask him to run the equation backwards. Ethanol comes from carbon. Carbon is in the trees. Carbon is in the cellulosic content. If you just count the carbon molecules in a ton, the amount of ethanol potential per ton escalates dramatically, and he is in a better position [inaudible], but since a big driver of the economics is that [inaudible] 105 gallons per ton [inaudible] ask him how much the potential is when science catches up with reality.

The second point is that while that stuff is on the ground out there, it is 60 percent water. No one in South Dakota that is in the harvesting business with private land owners is going to haul water. They will reach the point where they will take the water out while it is in the pile. They will reduce it in size, [inaudible] pay for that [inaudible] 220, 240, 250 gallons per ton. When those compounding economics come back to South Dakota, they are going to take the form of a massive amount of [inaudible]. I would ask you the question, Senator.

[Laughter.]

Senator THUNE. Mr. Science?

Senator THUNE. Do you want to take a shot at that, Dave? It is a good question. I can't answer it.

Mr. LITZEN. Thank you, Mr. Crandall, for putting me on the spot. The numbers that David brought up and just the maps [inaudible], the 100—I believe the 105–gallon per dry ton conversion is probably based on the theoretical availability in a ferment aging process. Some of the numbers that Dave is projecting, and I don't know that it goes over 200 gallons a ton, again, depending on the feed-

stock, but it probably would take a technology like, for instance, you know, Chris [inaudible] is working on here through gassification-type processes that will convert the entire biomass to [inaudible].

There are differences of opinion as to [inaudible] we believe in the fermentation process because there is the opportunity to produce not only ethanol from the process, but also usable carbon dioxide and a solid byproduct that can be converted to electrical power, as well. So there are different applications for different circumstances. Again, our preferences are likely going to fall in that fermentation technology or 105 gallons per ton maximum. But again, there are other ways to do this and there is more than one solution.

Senator THUNE. More questions, anybody? Yes, sir?

Audience Member. If the Forest Service was meeting their allowable [inaudible], how much more biomass would be available [inaudible] on hand now?

Mr. BOBZIEN. It is very close. It should be very close, because the operations we have right now are very close to the forest plan levels.

Senator THUNE. Anybody else?

[No response.]

Senator THUNE. OK. Any closing comments from members of our panel? I want to give you all a chance before we adjourn here to make any final observations or thoughts. If there is a question that we didn't ask you that you would like to have been asked or some information you would like to get on the record, please feel free to do that. Again, we appreciate very much your being here today and your input.

All right, one more here. James?

Audience Member. Senator Thune, maybe it would be appropriate to get on the record along with [inaudible] both you and Senator Johnson hereafter to get before us and help support the forests we have got and [inaudible] on the record and ask Mr. Bobzien what the actual growth [inaudible], and recognizing that since 1900 this forest has grown from 1.5 million to over six million inventory, I think [inaudible] the current annual growth.

Senator THUNE. Mr. Bobzien, do you care to answer that question, what the annual growth is?

Mr. BOBZIEN. I would be happy to provide that fact for the record. I don't have that right off the top of my head, Senator Thune. I will present the forest-wide growth amount, and then for those areas within the forest that we have managed for sustainable forest products. I will present those facts to you for the record in each one of those categories.

Senator THUNE. OK. That, I would appreciate. That would be useful information to have, as well.

Again, I want to thank everybody for their participation. This is an issue which, at the low end, it is 207,000 tons, at the high end, if it is 1.2 million tons, that is a lot of potential cellulosic ethanol and potentially a lot of jobs and economic development here for the Black Hills region. We certainly want to facilitate making that happen, particularly as cellulosic ethanol becomes commercially viable, and I don't think that is very far away. The technology is there.

There is a lot of work being done already. KL is doing it. As I said, NREL in Golden, Colorado, is working on that. There are four [inaudible] right now from the Department of Energy that are working on converting other forms of feedstock into cellulosic ethanol, and I believe that that is the next generation of biofuels that will get us away from this debate of food versus fuel, which we hear a lot of these days with corn-based ethanol and which, I might add, incidentally, there is a lot of misinformation and distortion, as well. But nevertheless, the long range to get to 36 billion gallons of ethanol, we have got to move to the next generation of biofuels, which will be cellulosic ethanol made from many of the things that we talked about today, and many of which are in abundance right here in South Dakota and particularly here in the Black Hills. So I hope that we can fully utilize those in a way that not only preserves the health and the integrity of the Black Hills as a resource, but also takes many of these waste products that it generates and produces and reduce the fuel oil attributable to those and convert them into a beneficial and valuable resource from which we can derive an economic benefit here in Western South Dakota.

So thank you all very much for attending. This hearing is adjourned.

[Whereupon, at approximately 3:25 p.m., the committee was adjourned.]

A P P E N D I X

AUGUST 18, 2008

Opening Statement - - Senate Agriculture Field Hearing - -

Thank you Senator Thune. I appreciate your holding this important hearing. I want to also welcome today's witnesses and thank them for being here to provide us with their views.

The National Forest Lands of the United States are an abundant source of biomass capable of producing billions of gallons of renewable fuels.

As we will hear from Randy Kramer of KL Process Design Group, the technology to transform wood waste into biofuel is ready for commercial development. In the southeastern United States and right here in the Black Hills advanced ethanol companies are already breaking ground on cellulosic ethanol plants capable of turning woody biomass into ethanol.

The United States can displace 30 percent of current oil consumption by 2030 through the efficient conversion of existing biomass supplies from agriculture feedstocks and by sustainably utilizing biomass from our National Forests.

In December, Congress took a strong step toward achieving this ambitious target by passing the Energy Independence and Security Act. This bill doubles the amount of corn-based ethanol by 2015 and creates a new standard for producing next generation biofuels from switch grass, wood waste and other non-grain feedstocks.

However, as is often the case when Congress crafts sweeping and ambitious legislation, it is necessary to revisit aspects of the law and correct shortcomings.

Here I am talking about Section 211 of EISA that limits slash and pre-commercial thinning to those removed from non-federal forestlands. This poorly crafted definition of renewable biomass should be modified to unlock the sustainable collection of biomass from National Forest

Lands. Several bills have been introduced in the Congress, including one by my colleague, Senator Thune, to correct this omission. We have a panel of experts today to explain the impacts of the current limitation and offer suggestions as to how to modify current law.

I believe that any change to the renewable fuel definition must provide for the sustainable collection of biomass from our public lands. In this regard, I believe there is near complete agreement.

According to the United States Department of Agriculture there is enough woody biomass on National Forest Lands to meet the nation's goals for displacing all of our current oil imports from the Middle East.

I would much rather that our country support the creation of a biofuels industry using the biomass from our forests than depend on Middle Eastern nation's for our energy security.

Senator Thune, thank you again for holding this important field hearing and I look forward to the testimony from the witnesses.

Statement

Craig Bobzien
Forest Supervisor
Black Hills National Forest
Rocky Mountain Region
Forest Service
United States Department of Agriculture

Before the
United States Senate
Committee on Agriculture, Nutrition and Forestry
Subcommittee on Energy, Science and Technology
August 18, 2008

Concerning Transforming Forest Waste to Biofuels and the Renewable Fuels Standard

Thank you for the opportunity to discuss renewable woody biomass and the changes made to the Renewable Fuel Standard (RFS) by the Energy Independence and Security Act of 2007 (EISA). I'll also make a few remarks about dealing with forest waste as a byproduct of vegetation treatments for forest health on the Black Hills National Forest.

The Environmental Protection Agency (EPA) is responsible for issuing regulations to ensure that gasoline sold in the United States contains a minimum volume of renewable fuel — the RFS. The RFS program increases the volume of renewable fuel required to be blended into transportation fuels.

EISA divides renewable fuels into two categories—

- advanced biofuel, which is renewable fuel other than ethanol derived from corn starch that has lifecycle greenhouse gas emissions that are at least 50 percent less than baseline (gasoline or diesel) lifecycle greenhouse gas emissions; and

- conventional biofuel, which is renewable fuel that is ethanol derived from corn starch.

Within the total mandate of 36 billion gallons of renewable fuels by 2022, 21 billion gallons must qualify as advanced biofuels. Advanced biofuels include cellulosic biofuels, which would be derived from sources such as renewable woody biomass.

The definition of renewable biomass in EISA excludes most forest biomass materials from federal lands except those obtained from the immediate vicinity of buildings and other areas regularly occupied by people, and public infrastructure at risk from wildfire. Forest biomass removed from other National Forest System (NFS) land could not be counted towards meeting the RFS.

In addition to the limitations imposed by the definition of renewable biomass in EISA, different definitions of the same term could give rise to confusion about what materials qualify as renewable biomass. For example, the definition of renewable biomass in the Energy Title (Title IX) of the Farm Bill (P.L. 110-246) is more broadly inclusive, covering:

> "...materials...from National Forest System lands and public lands that are byproducts of preventative treatments to... (1) reduce hazardous fuels, (2) reduce or contain disease or insect infestation, or to (3) restore ecosystem health ....and that are harvested in accordance with applicable law and land management plans, and the requirements for old-growth maintenance, restoration, and management under...the Healthy Forest Restoration Act of 2003."

Interpreting the definition in P.L. 110-140

Because the definition of renewable biomass in EISA includes material obtained from the immediate vicinity of buildings and public infrastructure at risk of wildfire, Federal land managers are presented an issue regarding how to apply the EISA definition of "at-risk" areas, particularly as they relate to communities within the wildland-urban interface (WUI). The WUI is an area in which structures and other human developments meet or intermingle with wildland vegetation. These areas pose the biggest fire risk to life, property, and infrastructure in associated communities.

Material from hazardous fuels treatments in the WUI could serve as a feed stock to producers of eligible biomass. Over 19 million acres of hazardous fuel treatments have been completed by the Forest Service and the Department of the Interior since the National Fire Plan was established in 2001. More than 12 million of those acres are within the WUI.

How much of this material would qualify to meet the RFS depends on the regulations EPA develops to interpret the definition of renewable biomass contained in the statute. The Forest Service has participated with our sister agencies within USDA in technical information sessions with EPA and has provided to EPA our perspective and experience in defining and identifying areas and communities "at risk" from wildfire within the WUI.

However, the renewable biomass definition in EISA precludes the use of woody biomass from National Forest System lands outside of "at risk" areas, thereby excluding significant amounts of biomass that could be available for renewable energy. The definition could constrain the economic utility of this biomass and forego opportunities to make these treatments more cost effective. Absent markets for this biomass, this material will continue to be burned in place, or chipped and transported, to remove the fuel from the forest.

Development of additional markets for this material would help defray the cost of vegetation treatments and result in more revenue. Utilizing this material as a renewable energy source could help reduce our dependence on fossil fuels and would benefit our forests, our air, and our communities.

Biomass Production on the Black Hills and the Rocky Mountain Region

The Black Hills National Forest illustrates the potential for woody biomass to support energy production. The ponderosa pine on the Forest has grown abundantly, and over time, much of the Forest has become overly dense and now requires thinning to maintain forest health. We thin trees to reduce the threat of severe wildfires to communities, improve forest health, and improve wildlife habitat. In most cases, a portion of the forest is removed for commercial sawtimber, while desirable large trees are maintained. This harvest activity also produces woody biomass residue in the form of tops, limbs and small-diameter trees.

Commercial timber harvest and pre-commercial thinning of dense, small-diameter stands produce approximately 207,000 green tons of biomass annually on the Black Hills National Forest. About ninety percent of this biomass is located in concentrations of large piles adjacent to forest roads.

Our opportunities to use this considerable resource of biomass are limited. Small quantities are removed by the public for home heating and posts and poles. We sent 180 truckloads of this material to the Lakota Indians via the National Guard during their recent training exercise in the Black Hills. Relatively small quantities of biomass are chipped in the forest and transported for use in cabinet manufacture and for emerging uses in public building heating systems and cellulosic ethanol. In total, all of these uses currently account for only about 10 to 20 percent of the available material. Most of it is burned to keep it from fueling large, hot fires in the summer. Burning releases carbon into the atmosphere and impacts the soil — and the material is wasted.

The situation in the Black Hills is much the same in other national forests. For example, in northern Colorado the bark beetle infestation has killed lodgepole pine trees across 1.5 million acres. Efforts to reduce fuels and remove hazard trees are creating vast amounts of biomass which could be used to produce renewable energy.

Thank you for the opportunity to address the subcommittee. I'll be pleased to answer any questions you may have.

THE SUBCOMMITTEE ON ENERGY, SCIENCE AND TECHNOLOGY

OF THE UNITED STATES SENATE

COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY

TRANSFORMING FOREST WASTE INTO BIOFUELS

AND TO ADDRESS

THE CURRENT PROHIBITION ON ETHANOL PRODUCED FROM FOREST WASTE COUNTING TOWARDS THE RENEWABLE FUELS STANDARD.

SUBCOMMITEE HEARING

2:00 PM, August 18, 2008

South Dakota School of Mines and Technology

Rapid City, South Dakota.

Testimony of Randy Kramer, President and Dave Litzen, Vice-President

KL Process Design Group

Rapid City, South Dakota

www.klprocess.com

Senator Thune, Senator Johnson; thank you for the opportunity to provide testimony on the current prohibition on ethanol produced from forest waste counting towards the renewable fuels standard. I am Randy Kramer, President and co-founder of KL Process Design Group (KL), a biofuels engineering and project development firm located here in Rapid City. Our co-founder and Vice-President, Dave Litzen is here with me today and will also provide testimony. Beginning in 2001, KL has collaborated with researchers at the South Dakota School of Mines and Technology to develop a thermal-mechanical process to make ethanol from ponderosa pine which is found in abundance in the Black Hills. The research resulted in what we believe to be the first wood waste ethanol demonstration plant capable of commercial operations. Since its start-up in August, 2007, Western Biomass Energy is providing cellulosic ethanol to its first customer, the American Lemans Racing Series, being the first racing series to supply its teams with E85 produced from wood waste.

Our efforts and research are dedicated to forest stewardship that includes finding better uses for gathered forest and mill waste that otherwise provides added fuel to forest fires. The Black Hills National Forest Supervisor and his staff have been supportive of our efforts and we agree, that the Black Hills National Forest is a exemplary case study in proper use of the national forest, respecting the interests of the citizens that co-exist in and around the Black Hills.

KL is uniquely qualified to discuss the implications and effects of cellulosic ethanol provisions legislated in the 2007 Energy Bill. Beyond our experience in corn and cellulose-based ethanol plant designs, our engineers are veterans of oil exploration and

refining and our project managers are veterans of combat operations in oil-rich areas of the world. Our cellulosic technology also helps reduce particulate emissions resulting from controlled and uncontrolled fires in our national forests, costing the federal government millions of dollars to manage.

Corn-based ethanol is the only large volume, biofuels bridge to the 2022 cellulose ethanol goal. We must protect this bridge as a strategic component to allow companies like ours to improve cellulose technology; and we take exception to the misrepresentations being touted by the media, special interest groups and the United Nations who cling to the baseless notion that ethanol is somehow displacing agricultural resources and linking the displacement of corn from food to fuel. Incentives for both corn and cellulose based ethanol should be maintained just as incentives for oil discovery were put in place and maintained since 1925. Earlier this summer, President Bush stated that the United States has not built a refinery since 1976. KL takes a different approach. In the bio-fuels vernacular there were, in fact, 84 new bio-refineries built over the last ten years that have effectively replaced the need for approximately eight new averaged-size oil refineries. This assumes 115,000 barrels per day of crude feed with 50% of the crude converted to gasoline. The difference is crude oil will only be extracted once where bio-refining feedstocks replenish every year. This new RFS is the only responsible energy plan that requires even more bio-refineries by 2022. As cellulose-based ethanol technology improves, our business model departs from the current paradigm of large grain-based ethanol plants in the Midwest. While grain-based plants are an important part of the future bio-refining strategy, cellulosic ethanol plants will be smaller and decentralized throughout the US; co-locating with or close to biomass sources that are immune to the

geo-agricultural constraints needed for grain based ethanol production, thereby eliminating or reducing the cost of transporting biomass material and in close proximity to populated biofuels demand. This design disarms critics who believe ethanol is too far from the end user and makes use of biomass that is either burned or land-filled. In the case of the Black Hills National Forest, where tons of particulate matter is pushed into the atmosphere through prescribed burns to thin the forest, we believe this material can be used as a feedstock to produce a renewable, clean-burning fuel.

To meet the requirements of the RFS, we know there will be a need to continue improving efficiencies in grain and cellulose based designs to move us quickly to what we call the "glucose economy" where starch or cellulose provide the sugars used to produce chemicals and bio-fuels. The United States possesses the biomass to meet the needs of a glucose economy and is well-documented in the Department of Energy's own "Billion Ton Study" conducted at the Oak Ridge Laboratory in April 2005. As noted in the study, much of this biomass is located on federal lands to include our national forests. To sustain the momentum of building additional bio-refineries that meets the intent and aggressive mandates of the RFS, administrative rules must allow for all forms of biomass without regard to its source. As we plan to co-locate our second plant with a sawmill in the Black Hills, one specific clause in the 2007 Energy Bill, inserted by special interests after lawmakers reviewed what they thought to be the final language, must be corrected. Specifically, credits intended for cellulosic ethanol produced from biomass harvested from our national forests through federal programs already in existence, must be restored. The intent of this last minute provision was to discourage the harvesting of material from the national forests for bio-fuels production. However, the drafters failed to understand

that existing timber harvest and thinning programs already allow for the removal of material from the national forests. In the case of thinnings, any reasonable person would understand that processing this waste into a clean burning fuel is less destructive to the environment than burning it in place. To provide an example a bit closer to home, the Black Hills National Forest today has 1.2 million dry tons of thinnings and slash already on the ground. As a feedstock to a cellulosic ethanol plant with electrical power cogeneration capability, this material could be used to produce 50 million gallons of fuel ethanol while exporting _____ MW of electrical power. To put this amount of energy production in perspective, Rapid City consumes ____ 1 to 2 million gallons of ethanol per year and ??? MW-hours/year. At today's consumption rate, the material that is currently collected and piled in the Black Hills could provide ??? years of ethanol and ??? years of electrical power for Rapid City.

To conclude, in the case of commercial timber harvested through these federal programs, mill waste from these operations fit perfectly with our business model but the burden of segregating non-credit qualifying bits of national forest mill waste from private or state timberland mill waste that do qualify is as impractical as it sounds. Imagine the complexity of separating mill waste for the sake of recovering valuable cellulosic ethanol credits. The cost would likely outweigh the credit. We live near a national forest and consider ourselves active stewards of the environment. Our desire is not to clear-cut the forest to produce biofuels but given existing harvest programs, credits from these operations are critical to the near term success of cellulosic ethanol; and the process improvements we make during this development period enable us to keep pace with the 2022 goals.

Statement of Hugh Thompson
Before the Senate Agriculture Subcommittee on Energy
Rapid City, South Dakota
Monday, August 18, 2008

Thank you for inviting me to testify before the Senate Agriculture Committee today. As a South Dakotan hurt by high fuel prices, concerned about domestic energy security and interested in seeing economic development in our state, this is an important hearing. As a rancher and landowner with timber and brush on my property, I am particularly interested the potential use of wood as a feedstock for renewable energy and the production of cellulosic ethanol in particular.

Let me begin by providing some background on my family and myself.

In 1888 my grandfather homesteaded at what is now the mouth of Thompson Gulch in the Black Hills National Forest. He worked as a sawmiller and ran cattle on the public domain. The ranch is still in the family.

My grandfather logged on the ranch in the early 1900's, and again in the 1930's. I have logged it twice, once in 1975 and, most recently, in 2005. It is still properly stocked and is a good example of a healthy, sustainable forest.

After growing up on the ranch, I obtained Forest and Range Management degrees from Colorado State University and spent the next 34 years building a career with the U.S. Forest Service, retiring as Forest Supervisor of the Dixie National Forest in Utah. Following my federal retirement, I served as Deputy Director for the Utah Dept. of Natural Resources for four years.

I returned home in 2004. I am now fully engaged as an overworked and underpaid rancher and farmer. Like anyone who makes his living off the land, I am always interested in how I can manage my lands in a sustainable manner to produce income. Raising hay and livestock, leasing hunting rights and doing occasional logging are all traditional sources of revenue for South Dakota ranchers. In the 21st century economy, we are looking at new markets, including the potential of using our lands to grow feedstock for a future cellulosic biofuel industry.

There has been a lot of talk about the potential of a cellulosic biofuel industry. A recent federal government study estimated that about 8.5 percent of the nation's current transportation fuel demand can be met using woody biomass as a feedstock for cellulosic ethanol production, a significant portion of the total called for in the Renewable Fuels Standard established for the country by Congress. While the future sounds bright, it is important to recognize that at the present, this is a new industry that will make its greatest contributions to our country's transportation fuel needs once it fully establishes itself commercially.

In order to help this young industry to take root and succeed, Federal policies should provide strong support with a minimum of bureaucracy. Potential feedstock suppliers, producers and distributors all need to understand that this is an industry that will be allowed to reach its full promise, without arbitrary restriction or parameters.

This Congress and Administration has done much to promote wood as a transportation fuel source, providing grants and loan guarantees to jump start refinery construction, creating a targeted tax credit, and mandating a market for cellulosic biofuel through the Renewable Fuel Standard. For all the good that has been done, however, I am concerned that the definitions used to qualify wood as a feedstock under the Renewable Fuel Standard in the Energy Independence and Security Act place unnecessary restrictions on land use, preventing wood from realizing its full potential and thereby preventing our country from meeting the renewable fuel standards established by Congress.

Potential feedstock providers to the cellulosic biofuel industry around the country share my concern. The definition in the Renewable Fuels Standard limits the use of both private forests for the purpose of feedstock collection, thereby threatening to substantially limit where cellulosic refineries can be located.

As currently written, the law places confusing parameters on significant acreages of private forestlands that do not fall within the category of "actively managed plantations." Specifically, the present definition appears to restrict what can be collected for use as a biofuel feedstock from naturally growing and regenerating forests, which make up more than 90 percent of our nation's non-federal forests. The definition may also remove potential

markets and viable economic options for private forest landowners and managers who have acreages in need of thinning for a variety of sustainable forest management practices. Depending on how federal agencies like the EPA – and perhaps ultimately the courts – construe the current definition, wood collected from my property could easily be excluded from eligibility under the RFS.

Specifically, I see at least three fundamental problems with the current definition of renewable biomass in the Renewable Fuels Standard:

1. Potentially disqualifying material removed from the forest through necessary and appropriate forest management activities. Proper forest management focuses on moving the forest toward its desired condition. Whether that condition is to produce wood or fiber, to recruit desirable tree species, to protect against disease or insects, to improve habitat or any other desired outcome, appropriate management often includes removing material from the forest that can and ought to be used productively if possible. By using definitions like "slash," "planted trees," "residues" and " pre-commercial thinning" to limit the material that can be used productively, the definition contradicts rather than promotes good forest management.

2. Creating chain of custody confusion for transportation fuel producers. The current definition suggests that different parts of the same tree may or may not be considered qualifying feedstock for renewable fuel production. Biofuels producers required to demonstrate compliance with the standard are left to sort out which of the incoming raw materials constitute qualifying feedstock. The potential complexity of such a requirement could serve as a powerful incentive for the fuel producer to exclude large portions of its potential feedstock supply in order to meet compliance requirements. If identifying qualifying feedstock becomes too complex or costly, some potential cellulosic fuel producers may decide to forgo constructing a conversion facility altogether.

3. Preventing an opportunity to improve federal forest management to the benefit of adjacent private forest owners. Private forest owners understand that the risk to their land often is as much determined by the type of management occurring on adjacent land as it is by their own management practices. By placing significant limitations on wood coming from federal lands, the current definition discourages the opportunity to provide sufficient supply for a facility that could draw its feedstock from both federal and

adjacent private land and at the same time significantly reduce the fire risk of fire, insect infestations and disease on federal lands by reducing excessive undergrowth, thereby protecting adjacent private lands from harm.

You have introduced legislation in the Senate, S. 2558, which amends the definition so that our National Forest system lands can be responsibly managed for biofuel production. I strongly support your legislation as sensible public policy.

I also support similar legislation in the House of Representatives, H.R. 5236, introduced by Representative Stephanie Herseth-Sandlin. These bills improve the definition of "renewable biomass" that can be used to produce RFS eligible cellulosic biofuels to include renewable plants and trees and wood waste as well as woody debris that is collected off of federal lands in accordance with applicable laws to reduce fire hazards and promote forest health.

Taken together, the bills introduced by you and Rep. Herseth-Sandlin set the right standard – and send the right signal – for the future cellulosic biofuel industry.

Thank you again for this opportunity to testify. I will be happy to answer any questions you may have.

WRITTEN STATEMENT FOR THE RECORD

TOM TROXEL
DIRECTOR, BLACK HILLS FOREST RESOURCE ASSOCIATION
RAPID CITY, SOUTH DAKOTA

BEFORE THE FIELD HEARING OF THE
UNITED STATES SENATE
COMMITTEE ON AGRICULTURE, NUTRITION, AND FORESTRY
SUBCOMMITTEE ON ENERGY, SCIENCE AND TECHNOLOGY

TRANSFORMING FOREST WASTE TO BIOFUELS AND THE RENEWABLE FUELS STANDARD

AUGUST 18, 2008

I. INTRODUCTION

Good afternoon, Senator Thune. I am Tom Troxel, Director of the Black Hills Forest Resource Association, a trade association representing the forest products companies in the Black Hills. There are approximately 16 primary forest products companies and 12 secondary forest products companies in the Black Hills, with 1,600 employees and contract loggers and truckers, and $180 million in value of products produced. On behalf of our members, I appreciate this opportunity to testify today.

By defining "renewable biomass" in the Energy Independence and Security Act of 2007 to exclude most woody biomass from our nation's forests, Congress missed a tremendous opportunity to proactively contribute to our nation's energy independence, the health of our forests, improved air quality, reduction of greenhouse gases, improved watershed health, reduced risk of forest fires, and the economic viability and diversity of local communities.

The Renewable Fuels Standard requires the use of 36 billion gallons of renewable fuels annually by 2022; of those 36 billion gallons, 16 billon gallons must be cellulosic biofuels, a product that can be manufactured from, among other things, woody biomass. Woody biomass is essentially any tree or part of a tree, including the trunk, limbs, tops, roots and foliage. In its broadest sense, woody biomass would also include recycled paper and wood products.

There are significant opportunities to utilize woody biomass to contribute to our nation's energy needs, and I question whether or not the United States can achieve the 16 billion gallon Renewable Fuels Standard mandate without utilizing woody biomass. The problem, however, is that the Renewable Fuels Standard definition of renewable biomass excludes nearly all woody biomass that could be used to produce cellulosic biofuels.

For purposes of discussion, I've broken woody biomass into three categories, sawmill residues, logging slash and submerchantable trees:

Sawmill Residues

Disposal of sawmill residues, including sawdust, shavings, bark and chips, can be a significant challenge for sawmills. Not too many years ago, every sawmill had a teepee burner, where all of those residues were burned. Fortunately, we can now utilize most of those residues, for products like particleboard, animal bedding, landscaping, and wood pellets. In some cases, secondary businesses depend on those residues for their raw materials, most notably, Merillat Industries, which uses sawdust and shavings to manufacture particleboard and kitchen and bath cabinets. However, about 200 railroad cars of wood chips are still shipped to a pulp and paper mill in Longview, Washington each month, at considerable expense in freight and energy costs.

Logging Slash

A by-product of logging is the limbs, tops, and unmerchantable portions of the trees that are cut, generally referred to as slash. The majority of the logging in the Black Hills

utilizes mechanized logging equipment for felling, skidding, and limbing. The slash is piled on the landings for later burning at a significant cost to the landowner. Every slash pile that is burned is energy produced, but wasted. Utilizing this slash for energy production would reduce management costs, increase revenues, and significantly reduce emissions compared to pile burning.

Submerchantable Trees

Thinning is an important silvicultural treatment to improve vigor and growth of trees and to reduce the risk of fires. However, thinning is very expensive, in large part because there is little to no associated revenue due to the lack of markets for small trees. One of the major challenges for forest management is how to accomplish, and pay for, removal of small or otherwise unmerchantable trees that are not usable for lumber. New markets for these small trees would benefit all forest landowners.

The recent fires and mountain pine beetle epidemic in the Black Hills NF are symptoms of an overstocked forest combined with a period of severe drought. The majority of the Black Hills NF is rated as moderate to high fire risk, and the mountain pine beetle epidemic continues to spread in our forests. Annual forest growth in the Black Hills NF is about twice the rate of harvest. Increased utilization of woody biomass could help reduce the long-term risk of forest fires and mountain pine beetles, as well as the associated costs and indirect effects.

Congress appropriated $1.2 billion in FY 2008 for Forest Service fire suppression costs, but the Forest Service's most recent estimate of actual fire suppression costs is $1.6 billion. Rather than continuing to spend more and more funds on fighting fires, taking proactive steps to keep our forests healthy and increase their resistance to catastrophic crown fires makes good sense.

The sawmills in the Black Hills process logs from a mixture of federal and private lands. If woody biomass originating from federal lands does not contribute to the Renewable Fuel Standard, then for all practical purposes, the likelihood of producing cellulosic biofuels from woody biomass is very slim. On the other hand, if Congress could enact a more inclusive definition of renewable biomass, the large quantity of woody biomass originating from the Black Hills NF could provide 'anchor volume' for utilization of woody biomass from other forestlands.

According to news reports, concerns about "mining" the national forests for biomass were a major reason for the Energy Bill's constrained definition of renewable biomass. The Natural Resources Defense Council's website discusses the national forests as being "at risk of being mined for biomass", states that "proposals to use 'thinnings' from national forests do not make economic or ecologic sense" and that the biofuels produced, "if feasible at all, could come at the expense of degraded forests and would establish an unsustainable industrial demand for continued commercial exploitation of public resources."

I strongly disagree. Like all national forests, the Black Hills NF is sustainably managed according to an in-depth forest plan that has been exhaustively prepared in accordance with the National Forest Management Act. The forest plan contains management strategies and direction for sensitive areas, wildlife habitat, snags, and other environmental protections. Instead of acknowledging the direction in the forest plans, the Renewable Fuels Standard definition of woody biomass simply prohibits utilization of slash, mill residues or submerchantable trees from federal lands from being utilized for renewable energy.

I want to compliment you Senator Thune, for your leadership on this issue, specifically S. 2558, which would modify the definition of 'renewable biomass' with regard to federal forestlands. We support that bill. We would also support language to further modify the definition of renewable biomass with regards to private forestlands, similar to the definition of renewable biomass in the 2008 Farm Bill.

Ideally, that would provide opportunities for local businesses to expand and diversify their utilization of sawmill residues, and to explore better utilization of slash and submerchantable trees in consultation with the Black Hills NF, all with the objective of supplementing, not replacing, the existing uses of wood in the Black Hills.

Biofuels has the potential to add value and reduce the costs of removal. With the possibility of increased revenues, or at least reduced costs, we could expect better forest management by all forest landowners. By expanding the definition of renewable biomass and adding value to forest products, Congress would simultaneously contribute to better forest management and increased energy independence.

If renewable fuels are important to our energy security strategy, then let's be realistic, and let's utilize the potential contributions of woody biomass from our forests. If we genuinely intend to produce 16 billion gallons of cellulosic biofuels, then utilizing low value, sustainable woody biomass from our forests will reduce pressure to utilize alternate feedstocks from sensitive lands elsewhere.

Again, modifying the Renewable Fuels Standard definition of renewable biomass would allow better utilization of woody biomass to reduce dependence on foreign oil, keep good jobs in the United States and the Black Hills, reduce the risk of fires and keep forests in the Black Hills healthy and green, contribute to healthy watersheds, and strengthen and diversify local businesses and communities.

This concludes my prepared statement. I appreciate the opportunity to testify today, and I would again like to thank Senator Thune for his leadership on this important issue.

QUESTIONS AND ANSWERS

AUGUST 18, 2008

United States Department of Agriculture | Forest Service | Black Hills National Forest Supervisor's Office | 1019 N. 5th Street
Custer SD 57730-8214
Tel. 605/673-9200
TTY 605/673-9227
www.fs.fed.us/r2/blackhills FAX 605/673-9350

File Code: 1510/2400
Date: August 29, 2008

THE HONORABLE JOHN THUNE
UNITED STATES SENATE
ATTN: BRENDON PLACK
SR-493 RUSSELL SENATE OFFICE BLDG
WASHINGTON, DC 20510-4105

Dear Senator Thune:

On August 18, 2008, at the Senate field hearing before the United States Senate Committee on Agriculture, Nutrition and Forestry, Subcommittee on Energy, Science and Technology concerning transforming forest waste to Biofuels and the Renewable Fuels Standard, I was asked how much wood volume grows on the Black Hills National Forest. I agreed to respond in writing for the record.

Our adjusted estimated net annual growth is 23.8 million cubic feet (119 million board feet).

This was calculated as follows. The 1999 net annual growth (>5.0 inches diameter) for all species is 37.8 million cubic feet (164 million board feet)[1] on the 1,147,226 forested acres on the Black Hills. However, only 724,000 un-burned acres are suitable for timber production[2] (63% of total forested lands). The estimated adjusted net annual growth is 23.8 million cubic feet (119 million board feet).[3]

If I can be of further assistance, please do not hesitate to call.

Sincerely,

/s/ Craig Bobzien
CRAIG BOBZIEN
Forest Supervisor

[1] DeBlander, Larry T., August 2002. Forest Resources of the Black Hills National Forest. Rocky Mountain Research Station, Ogden, UT.
[2] Black Hills National Forest Land and Resource Management Plan, Record of Decision, page 36. March 1997. (865,890 acres – 142,000 suitable acres burned since 2000 = 724,000 acres)
[3] 37.8 million cubic feet annual growth (1999 inventory) x 63% = 23.8 million cubic feet adjusted net annual growth.

O