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DEVELOPING ECONOMIC USES FOR FOREST FUELS

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON FORESTS AND FOREST HEALTH

OF THE

COMMITTEE ON RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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OVERSIGHT HEARING ON DEVELOPING ECONOMIC USES FOR FOREST FUELS

Tuesday, April 3, 2001
U.S. House of Representatives
Subcommittee on Forests and Forest Health
Committee on Resources
Washington, DC

The Subcommittee met, pursuant to notice, at 3:03 p.m., in Room 1334, Longworth House Office Building, Hon. Scott McInnis [Chairman of the Subcommittee] presiding.

Mr. MCINNIS. The Committee on Resources, Subcommittee on Forests and Forest Health is now in order. The Subcommittee on Forests and Forest Health is meeting today to discuss testimony on developing economic uses for forest fuels. Under Committee Rule 4(g), the Chairman and the Ranking Minority Member can make opening statements. If any other Members have statements, they can be included in the hearing record under unanimous consent.

STATEMENT OF THE HONORABLE SCOTT MCINNIS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. MCINNIS. Last week, the Subcommittee conducted an oversight hearing exploring the role of community-based partnerships in management of our national forests. During the course of the hearing, a critical theme surfaced, which was that healthy forests and healthy local communities are inalterably intertwined. Several witnesses testified that, where possible, local economies should be allowed to benefit from the implementation of sustainable management practices, which brings us to today's hearing.

One meaningful opportunity to encourage both healthy forests and healthy local economies is found in the emerging field of biomass production. In short, biomass is excess wood fiber generated by the mechanical thinning of forests. Biomass production seeks to utilize these wood byproducts for energy production. A good deal of work has also been done around the country to develop innovative value-added products from small logs, like furniture or hardwood floors or composite signs when made from chip wood and plastics, for example.

As the members of this Subcommittee and our witnesses know well, last year, Congress established the National Fire Plan to combat the rampant threat of catastrophic fire on our forest lands. At

present, 73 million acres of national forest lands run the substantial risk of experiencing runaway wildfires during the coming fire season. The cause of this imminent threat is clear: After 100 years of effective fire suppression, our forests are littered with excess fuels in the form of live small-diameter trees, dead trees of all sizes, branches, brush, needles, and leaves. The National Fire Plan creates a comprehensive and coordinated framework through which land managers can address this fundamental cause of our current forest fire crisis.

As resource managers begin to systematically reduce these forest fuels, as directed by the National Fire Plan, vast quantities of biomass will become available. If, for the health and sustainability of our forests, these wood byproducts are to be removed in the first place, it only stands to reason that these resources be put to an efficient use in the local marketplace. It is a matter of common sense. In my estimation, Congress and Federal land management agencies should take all practical steps to promote the long-term availability of biomass and availability of businesses that utilize it.

Now, there will be no doubt there will be some who cynically, and wrongly, view biomass production, particularly biomass stemming from implementation of the National Fire Plan, as some sort of threat to our forests. I do not see it that way. Let me be clear. Forest fuel reduction and biomass production is not an excuse to increase timber harvesting. Instead, it is a one-two combination that, in my opinion, simultaneously provides the sustainability of our forests and the health of our local economies.

I look forward to exploring the benefits, opportunities, and obstacles to utilizing biomass during the testimony from this hearing. Ultimately, I hope specific bipartisan proposals will emerge about how we can efficiently and responsibly promote the careful use of forest biomass.

[The prepared statement of Mr. McInnis follows:]

Statement of The Honorable Scott McInnis, Chairman, Subcommittee on Forests and Forest Health

Last week, this Subcommittee conducted an oversight hearing exploring the role of community-based partnership in the management of our nation's forests. During the course of the hearing, a critical theme surfaced, which was, that healthy forests and healthy local communities are inalterably intertwined. Several witnesses testified that, where possible, local economies should be allowed to benefit from the implementation of sustainable management practices. Which brings us to today's hearing.

One meaningful opportunity to encourage both healthy forests and healthy local economies is found in the emerging field of biomass production. In short, biomass is excess wood fiber generated by the mechanical thinning of forests. Biomass production seeks to utilize these wood byproducts for energy production. A good deal of work has also been done around the country to develop innovative value-added products from small logs, like furniture or hardwood floors or composite signs made from chip wood and plastics, for example.

As the members of this Subcommittee and our witnesses know well, last year Congress established the National Fire Plan to combat the rampant threat of catastrophic fire on our forest lands. At present, 73 million acres of National Forest Lands run the substantial risk of experiencing run-a-way wildfires during the coming fire season. The cause of this imminent threat is clear: after 100 years of effective fire suppression, our forests are littered with excess fuels in the form of live small-diameter trees, dead trees of all sizes, branches, brush, needles and leaves. The National Fire Plan creates a comprehensive and coordinated framework through which land managers can address this fundamental cause of our current forest fire crisis.

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Now, there will no doubt be some who cynically, and wrongly, view biomass production, particularly biomass stemming from implementation of the National Fire Plan, as some sort of threat to our forests. It is not. Let me be clear: forest fuel reduction and biomass production is not an excuse to increase timber harvesting; instead, it is a one-two combination that simultaneously promotes the sustainability of our forests and the health of our local economies.

So, I look forward to exploring the benefits, opportunities and obstacles to utilizing biomass during the course of this hearing. Ultimately, I hope specific bipartisan proposals will emerge about how we can efficiently and responsibly promote the careful use of forest biomass.

Mr. MCINNIS. The Ranking Member is not here. When the Ranking Member does appear, we will allow him some time for any opening remarks.

To the witnesses, first of all, I thank you very much for taking the time in your busy schedule to appear before the Committee today. I also want to let you know, this little machine right here, pay attention to it. Because we have a number of witnesses we would like to hear today, that is your timer, and if you would wrap up your comments when the machine indicates that that should be done, I would appreciate that.

Let me begin with the Ranking Member, Mr. Inslee, who has arrived. I will yield to Mr. Inslee for opening remarks and then we will proceed to our witnesses.

Mr. INSLEE. Let us proceed to our witnesses, Mr. Chair.

Mr. MCINNIS. All right, fine. Thank you.

Panel one, Mr. Hamilton, USDA Forest Service—I will just go ahead and introduce the panel—Ann Bartuska with the Forest and Rangeland Staff, and Denny Truesdale, Deputy National Fire Plan Implementation Coordinator. I thank the three of you. Mr. Hamilton, since you are first on the table there, why do you not proceed and we will just go across the table.

STATEMENT OF THOMAS HAMILTON, DIRECTOR, FOREST PRODUCTS LABORATORY, USDA FOREST SERVICE, MADISON, WISCONSIN; ACCOMPANIED BY ANN BARTUSKA, DIRECTOR, FOREST AND RANGELAND STAFF, WASHINGTON, D.C.; AND DENNY TRUESDALE, DEPUTY NATIONAL FIRE PLAN IMPLEMENTATION COORDINATOR, WASHINGTON, D.C.

Mr. HAMILTON. Thank you, Mr. Chairman. I will be delivering the testimony for all three of us, but we are all here to help answer questions. Our testimony was submitted for the record. What I intend to do here is briefly summarize our activities in use of the small-diameter and underutilized material from forests.

We believe there are significant benefits for removing this material. To name a few, hazardous fuels are reduced and communities are protected from fire. Economic opportunities are available to many of these rural communities. We believe this will help improve the condition and health of the forest. It will provide fiber for the

nation, and in the East in particular, it can contribute to preventing forest fragmentation.

There are some impediments, though, to removal of this material. A few of the major ones are, first of all, there needs to be an available and accessible supply. Simply put, investment dollars are unavailable if supply is uncertain. Second, the cost of traditional thinning and processing is high and it makes it uneconomic to use this material. And third, there is a lack of other value-added uses which could offset the higher costs. We believe that we can provide the kinds of technologies that will accomplish all of these things.

If you would look at the chart on my far left, it shows three columns, the one on your left being value-added uses, the one in the middle, traditional forest products uses, and the one on the right, what I have called residues. What that chart shows is that there are different levels of opportunity to use this material and we believe that moving as much as possible into the value-added column will mean that it will become economic to move this material out of the forest.

Yes?

Mr. MCINNIS. If I might interrupt, Mr. Hamilton, just for a moment, do you have copies of this included in your comments, of the charts?

Mr. HAMILTON. I do not, but we can provide those.

Mr. MCINNIS. I think it would be helpful. We cannot read them, obviously, from here, but I think that subsequent to the hearing, if you could provide us with copies of it, I would appreciate it.

Mr. HAMILTON. Okay.

Mr. MCINNIS. Thank you, and you may proceed.

Mr. HAMILTON. Thank you. The concept here is that using a material in its highest-value use will give us the best chance of covering costs.

Now what I would like to do is give you some examples of what we are doing with local communities, primarily in the West, to make this sort of thing happen. We think the most immediate opportunity is in the traditional markets and we are working with a number of firms and communities on this. We have shown that species such as Briscoe, Douglas fir, grand fir, and large pole pine in the west and red maple in the East can achieve an increase in value by mechanically grading it and providing lumber for trusses and I-beams. Typically, these species have not moved into high-value use applications. Red Creek Lumber Company in Sand Point, Idaho, is one example of a firm that is now doing this.

Another technical barrier is drying Ponderosa pine. We are working with mills in several locations to dry Ponderosa pine properly so it does not twist and warp. One example is Burnt River Forest Products Company in Unity, Oregon, where they are using some of the technology that we have provided.

We are also working with firms on small-diameter round wood for recreation structures, fence posts, and guard rails. Round wood is difficult to connect. I have brought an example here of a unique connection. It is a radial finger joint, but it is a way to connect round material to gain some strength.

Finally, we have been working with a community called Reserve, New Mexico, on ways to revamp their saw mill to use the smaller-

diameter material that is now available, and I just learned yesterday that as a result of our advice, they are moving into an expanded post and pole operation that will employ about 20 to 25 people in that community at a place where their primary mill is shut down.

Value-added markets are the ones that capture a substantial economic gain. We believe if we could move 30 to 40 percent of this material into the value-added kinds of categories, that would go a long way toward closing the gap between cost and returns.

We have been working with Hayfork, California, as I know you have heard in previous hearings, on a number of projects. They are shown on the big chart here, and I can provide that for you, also. But one of the examples would be using Douglas fir for flooring, because it is very dense and very hard and it adds significant value to the resource there.

We have been working with a firm in Arizona on making glue-laminated Ponderosa pine beams, where they are 100 percent Ponderosa pine rather than Douglas fir on the outside edges where the strength is needed. That firm is now entering production of those beams and that will mean that all of those beams will be made out of this resource.

We are working on recreation structures with firms in places like Hamilton, Montana, Enterprise, Oregon, Hayfork, California. An interesting sidelight is that they will all be furnishing material for some kiosks, recreational kiosks, at the 2002 Winter Olympics.

We are working with the Navajo Nation on home construction, and you will hear from Brett KenCairn on that, I think, a little later today.

And finally, in Hamilton, Montana, we are working with Rocky Mountain Log Homes to find ways to use raw material instead of dimensional material, two-by-eights and two-by-tens, for things like floor joists. And the interesting thing is, this would be fire killed timber, not timber that is removed before the fire, but timber that has been removed as a result of those fires this past summer.

One last point I wanted to make was that residues are an important part of this total package. Without the return you can get from residues, often the total package will not be economic.

We are working with a firm in New Mexico to make things like this sign that is made out of wood fiber and plastics. It does not get eaten by rodents because there is no resin in it, and as a result, the signs last a much longer period of time. They are currently in manufacture of these kinds of signs.

We are working with a concrete company in Colorado in manufacture of concrete using wood to increase the heat. We are working with a community in Salmon, Idaho, on providing small-scale energy for schools and their hospital. So those residues are an important part of the total package.

We believe that we can make a significant contribution, not only to the national economy but to local communities, with this material. With needed research, adequate technical and financial assistance, and some assurance of long-term supplies, I think this material can be economically viable.

I have a publication that I have left here for you that describes many other activities we have going on—

Mr. MCINNIS. Mr. Hamilton, you will need to wrap it up.

Mr. HAMILTON. Okay. Individual communities and firms, so you may look at that afterwards, and that concludes my remarks. Thank you very much.

[The prepared statement of Mr. Hamilton follows:]

Statement of Dr. Thomas E. Hamilton, Director, Forest Products Laboratory, Forest Service, U.S. Department of Agriculture

Mr. Chairman and Members of the Subcommittee:

Thank you for the opportunity to be here today. I am Tom Hamilton, Director of the Forest Products Lab. With me today is Ann Bartuska, the Director of Forest Management, and Denny Truesdale, Deputy National Fire Plan Implementation Coordinator.

Tremendous opportunities exist to improve wood utilization, bringing more value to forest material and reducing our dependence on other non-renewable energy resources. The Forest Service is actively involved in these opportunities. I would like to discuss our actions to improve the utilization of small diameter and under-utilized wood resources.

There is a national need for: 1) recognizing the significance of wood resources for community based value-added businesses and energy production; 2) intensifying efforts to increase the use of wood for energy; 3) applying our existing authorities to develop wood-based industries and; 4) expanding markets for the energy and products that we can produce through improving utilization of wood resources.

Using wood for products and energy generates additional benefits, including creating and sustaining jobs; diversifying and strengthening small business and rural economies; and reducing the threat of catastrophic wildfires.

As you know, the massive wildfires of 2000 have focused attention on the buildup of wood on Federal lands. The Forest Service estimates there are 400 to 500 million tons of small diameter woody biomass on national forest lands that are classified at high or moderate fire risk. Efficiently capturing and utilizing only a part of this material would help offset the public cost of hazardous fuels reduction and forest ecosystem vegetation while contributing to rural communities sustainable growth and development.

We have a long history of developing forest management systems and utilization technologies at the Forest Products Lab (FPL), Research Stations, State and Private Forestry programs on private woodlands, as well as, on the National Forests. We will continue to search for better ways to harvest, recover, and process this low value, small-diameter material in an economically and environmentally sound manner.

What Are Under-utilized Wood Resources?

Under-utilized, wood resources are low value, small diameter trees, generally growing beneath the forest canopy. These trees are usually too small to make lumber or paneling, and of too little value to be economically harvested and transported. In many forests, their presence is a result of earlier management practices, such as fire suppression, and now creates a high risk of wildfire. Discovering new uses and expanding current uses and new product development could help reduce the cost of removing hazardous fuels and make this material into economical and renewable wood-based alternatives to large trees, plastics and other oil-based or more resource-costly products.

Value Added Products

In many parts of the West, particularly where fire risks are great, there is no industrial infrastructure capable of processing thinnings from hazardous fuels treatments. Yet, there are significant possibilities for adding value to the wood resource at the small scale, local community level. These include traditional commodity wood products made from small logs and non-traditional species, new secondary products such as structural strand lumber (made from chips), laminated timbers, oriented strand board, round products, and a vast array of specialty products. Obstacles to the use of small diameter and underutilized species on Federal lands for products include remoteness, high costs of harvest and transport, low timber prices, lack of industry, and administrative procedures designed for larger scales of timber harvesting.

Renewable Energy

Geothermal, solar, wind, and biological sources (including wood), provides about 4 percent of the total energy need of America. Approximately three-quarters of the

renewable energy today come from wood. Some analysts have estimated that the use of all alternative energy sources could potentially meet 20 percent or more of America's present energy needs. Wood could contribute a major portion of that amount.

Wood energy is thermal, electrical, or chemical energy produced from wood, including forest residue, unmerchantable material, and specialty-grown woody crops. In its simplest form, wood energy is using a fireplace, stove, furnace or boiler to produce heat. The scale of operation ranges from individual homes, to buildings and facilities such as schools, offices and hospitals, to heating districts in urban areas where the heat is distributed as hot water through a network of underground utility pipes.

Most of the current wood energy activity is associated with industrial wood processing facilities, such as sawmills and pulp and paper manufacturers. Wood by-products, such as bark, sawdust and pulp liquors, are burned or converted to gas to create heat or electricity for the facilities, the excess of which is often sold to local power grids. Electricity is also generated through the process of co-fired generation or co-generation, which is burning wood energy sources along with fossil fuel sources.

Challenges, however, exist in the use of wood energy. Wood from our nation's private forests plays a significant role in producing wood energy, especially in the Eastern United States. These forests are

actively managed to produce a variety of products and outputs including wood energy. Federal lands in both the eastern and western US contain significant sources of small-diameter and underutilized wood that can be used to develop and support strong wood products and energy economies.

The Biomass Research and Development Act of 2000 (Public Law No. 106–224) promotes the technology and research and development of industries that use trees, crops, and agricultural and forestry waste to make fuels, electricity, chemicals, and other industrial products. The law also provides that the feedstock sources on Federal lands should be fully integrated into this use. The Department of Agriculture and the Department of Energy have the joint Federal leadership in implementing P.L. 106–0224. The Forest Service, working through USDA, is a partner with other agencies to implement this law through a joint Biobased Products and Bioenergy Program.

The Forest Service is also a contributing agency to the President's National Energy Policy Group, now developing a national strategy that includes the use of renewable energy sources such as wood and agricultural crops and residues.

Forest Service Actions

The Secretaries of Agriculture and Interior presented the National Fire Plan (NFP) in September 2000, which emphasizes hazardous fuels reduction and community assistance. Funding for the NFP in Fiscal Year 2001 included $205 million for hazardous fuels treatments on National Forests, $120 million of which is targeted for Wildland–Urban Interface, and $20 million in discretionary grants for Economic Action Programs and pilot projects to develop wood utilization in communities close to the resource. In addition, the Forest Products Lab appropriation contains $750,000 for wood utilization research.

The Forest Service is developing appropriate management systems, harvest and delivery systems, processing and conversion systems to improve the economic feasibility of using small diameter and under-utilized wood that will help local communities build wood products and wood energy related industries.

Under the Biobased Products and Bioenergy Program, FS Research and Development is developing the science, technology and management systems for wood energy and wood products production on public and private lands, and improving the economic feasibility of using small diameter materials and solid wood and paper wastes. FS R&D is also developing low-impact operations and delivery systems. The fiscal year 2001 appropriation is over $12 million. The National Forest Products Laboratory in Madison, Wisconsin, is conducting research on product development, economics, and marketing of new and traditional products from small diameter and under-utilized trees. Through a partnership with State and Private Forestry, they are transferring new and existing technologies to those interested in commercial undertakings.

There is a strong need for market expansion in the use of small diameter and underutilized material. The following examples illustrate the range of projects that are underway:

- Economics and engineering using small-scale combustion technology for the community hospital and the Lewis and Clark Center in Salmon Idaho (contract for services with provider).

- Timber bridge construction using FPL lamination technology over an arroyo in Santa Fe, New Mexico (contract for services with provider).
- Potential uses of machine stress rated lumber for the Joseph Sawmill in Oregon (grant with university).
- Grading logs from fire killed timbers—Rocky Mountain Log Homes and University of Idaho.

The National Forest System in conjunction with the FPL and State and Private Forestry has created a full time position, located in Ft. Collins, Colorado, with responsibility for small diameter and under-utilized timber. This position promotes project planning, biomass applications, community cooperation and small diameter harvest techniques. Accomplishments so far include establishing a website, Tools for Forest Vegetation Management, to gather ideas and share information; working with universities, states, counties and community groups treating and utilizing small diameter material in southwestern Colorado; exploring cogeneration opportunities through a cooperative agreement with Colorado State University; exploring new and existing contracting authorities; and promoting the use of small diameter wood harvesters in central Oregon.

State and Private Forestry provides assistance to the 70% of the nation's forests not in Federal ownership. America's capacity to produce wood energy and products from renewable resources depends on these lands. Economic Action Programs (EAP), are providing opportunities to rural communities to diversify and expand their economies by providing support for innovative entrepreneurial businesses to remove, transport, and use wood. The EAP operates under broad existing authority, well-established networks and partnerships, and a proven record of local community-based implementation. The EAP serves as a catalyst, rather than the primary sources of funds to assist the communities to respond to needs they identify locally.

The National Fire Plan is expected to help create and expand markets by using wood that will be removed to reduce fire hazards. Thinning and other treatment of woody materials to protect local communities and watersheds are major emphases of the NFP.

These activities can provide a supply of wood to communities with facilities in place to process the material—provided that environmental and economic constraints can be met. Implementation of NFP may create as many as 8,000 new jobs in rural communities and provide economic opportunities for rural forest dependent communities through partnerships for natural resource work.

What More Is Needed To Encourage Utilization?

We are addressing the following challenges:

- Federal land management agencies have not been able to provide a reliable and consistent supply.
- High costs.
- Lack of value-added uses that could offset the higher forest operation costs.

National Forest Systems is addressing the first challenge by making sure our administrative and legal obligations are fully met prior to offering or contracting for the removal of material. We are also using our existing authorities more creatively. Illustrative of the latter approach is our recent development of a hybrid service contract with an embedded timber sale contract. In addition, continuing the hazard fuels reduction funding at this year's level would provide some assurance to companies that small diameter products would continue to be available in the future.

The second challenge can only be overcome through a coordinated effort within and across land management and other relevant agencies to;

1) recognize that utilization can be a cost-reduction opportunity;

2) assist communities and businesses in establishing hauling, sorting and processing facilities as well as in marketing products;

3) coordinate the sharing among interested parties in the cost of harvest and hauling, and

4) develop and implement integrated management and production systems, technologies, and information for harvesting, merchandizing, processing, marketing and distributing products and energy from small diameter and under-utilized material.

Other agencies may also be able to support the implementation of these goals. For example, USDA's Rural Development provides business and industry loans that would help establish new plants.

The third problem can be overcome by new product processing and market development, pilot testing and demonstration, development and dissemination of information needed for market acceptance, participation in standards development, and entrepreneurial training and business assistance.

Conclusion

Wood-based products and energy can eventually become significant contributors to a national energy policy. Supported by critical research and development, management systems development, active management on Federal lands, and targeted incentives, wood energy can become economically viable. The results of widespread use of wood products and energy greatly benefit the US through decreased pollution, enhanced energy security, improved management and fire safety of public lands, and increased economic opportunities in the rural economy. A coordinated approach is necessary to develop both products and suitable outlets for by-products and residues (energy). Both are needed for success. In short, the solution is community and technology based and can be achieved by addressing the larger problem one small community at a time.

This concludes my prepared testimony and I would be pleased to answer any questions you may have.

Mr. MCINNIS. Ms. Bartuska?

Ms. BARTUSKA. I think we will just be available for questions rather than comments at this time.

Mr. MCINNIS. Mr. Truesdale?

Mr. TRUESDALE. Yes, the same. If you have questions, we would be happy to answer them.

Mr. MCINNIS. First of all, back to Mr. Hamilton, go back through again the little log you have there.

Mr. HAMILTON. One of the difficulties in using round material for structural purposes is connecting it, connecting it on the ends, and we are working with certain special kinds of connectors, doing some research on those to determine how we can get the strength needed for structures. But we are also looking at how can you join these pieces so that you will have a strong joint, particularly in a tension or compression mode, not the vertical kind, and this is one example of the kind of connection that might work for that and add significant value to this material.

Interestingly, raw material retains about three times the strength of the largest dimensional piece that could be cut out of this round log, so it could add significantly to structural integrity and conservation of resources, using this kind of material.

Mr. MCINNIS. You mentioned one of the companies that employed 20 people. Were they making fence posts, is that what the company was doing?

Mr. HAMILTON. Posts and poles.

Mr. MCINNIS. Where was that located?

Mr. HAMILTON. In Reserve, New Mexico.

Mr. MCINNIS. So they have been pretty successful at figuring out the composite and the strength of the fence poles.

Mr. HAMILTON. We have been working with them on markets, on a business plan and what the best opportunity, given the resource in their area, is and that is what they determined they would like to move into. Actually, that operation is just now ready to start. They have not actually begun production yet.

Mr. MCINNIS. Going into this new area, how dependent is that upon the construction market in the country? In other words, with the downturn in our economy, construction is going to slow down. Will that impede our efforts to proceed forward to the market with some of these products?

Mr. HAMILTON. I do not think so, because initially, we are working with individual communities. Probably, their markets initially

will be largely local, but we are hoping that they will become larger and larger geographically so that the entire Western region will be the market.

One of the things I think that will happen here is, if it is successful in one community, a similar kind of production process in another community is actually going to be a benefit because we will begin to see enough of the material on the market to make it a commercial thing that builders will, in fact, use in a widespread way. So I do not think that is going to be an issue for these firms.

Mr. MCINNIS. Ms. Bartuska, maybe you can answer this question for me. There are some out there who would see the biomass or the removal of some of these materials as just simply a front to begin commercial logging. Can you tell me what checks and balances are in place out there and if there is some benefit to the commercial side and being able to use these materials to help offset the costs? You know, in the end, we probably still lose in the bottom line, but at least we offset some of the costs.

Ms. BARTUSKA. I think you have touched on one part of it, in that having the timber sale program available to do some of the work is certainly still an option, but what we have increasingly found with some of the materials that Tom is referring to, you cannot really offer or make that material available through a sale. It is just not economically viable.

And so the opportunity through service contracts to actually remove some of this material for fuels reduction purposes, for other kinds of forest structure changes, would require some appropriated dollars to do the service contract, and then once the wood is removed, using whatever the prescription is and we could have a secondary sale off-site. So you have all of the tools available. Some things would be through a service contract, where you do not have a sale directly tied to it. In other situations, you would have the sale as a secondary activity, maybe in a log sort yard like Reserve, New Mexico, has, or off a deck or landing. But quite a bit of this material, we think, will be moved without using a commercial sale and it would be made available subsequent to the activity.

Mr. MCINNIS. Now, to go a little further on that, what kind of reliability? I mean to be able to move this to some type of market, what kind of reliability do you have or do you give to people like the pole company or other people out there, that they are going to have an assurance of product delivery? My thought is, you cannot transport this very far and still make it economical, because we are right on the edge anyway. Would you comment on that? Are you able to give any assurances on the pilot projects or tests that you are doing?

Ms. BARTUSKA. Well, on the pilot projects, which I think you are referring to the now 56 stewardship contracting pilots we have, we do have some assurances that all of those projects are about three to 5 years in length. But they are also all very small projects, and we are talking about a scale of work across the interior West or the high fire risk areas that probably the pilots do not necessarily respond to.

So you ask a really good question, and that is how can we, within these communities, create a long-term supply to accomplish resource objectives, and we do not have all the answers. I think what

we are trying to do is through a more effective use of our NEPA work, where we can develop programmatic environmental impact statements that give us a larger area of work, where we can have a series of projects, not just one, but we would be over a five- to 10-year period of a series of activities that would all be made available to the community to bid upon over time. Bundling contracts, we are looking at multiple opportunities where a particular contractor could bid on maybe a small sale, maybe a service contract, certainly road obliteration opportunities, all the different projects one would have to do a restoration.

Putting that all together, we think that that gives a much better basis for a community to invest in itself, to either invest in the equipment they need or the long-term opportunities the business climate has.

Mr. MCINNIS. Thank you. Mr. Inslee?

Mr. INSLEE. Thank you, Mr. Chair.

As far as long-term plans, is there a plan, let us say in sites where you do mechanical thinning this year or the next year, is it anticipated there would be another generation of thinning, you know, 15 years hence, or is the theory that once the thinning occurs, we then revert to allowing the natural fire cycle to sort of reestablish itself?

Ms. BARTUSKA. That is really going to be dependent upon site condition. In some areas, there may be one entry to do a certain amount of thinning, evaluate what happens to the stand over time. You may have to go back in a second time. And then, hopefully, and that is part of the cohesive strategy, is you have a combination of thinning or some mechanical treatment, but ultimately to reintroduce fire and allow fire to continue and to maintain itself. But I think we also know in some of these interface areas that that will not be possible, and so a periodic entry to do structural changes would be very appropriate.

I do not know if Mr. Truesdale has an addition to that.

Mr. TRUESDALE. No, I think that is correct. It would be a combination. The ideal sequence of events that is outlined in the cohesive strategy would be to go in and mechanically treat the site and then fire would be—the stand would be in a condition that fire could naturally come through and play its role.

But as Ann said, with the wild and urban interface, with all the other considerations on how much fire we can actually use, smoke management, clean air considerations, I think it is going to be a combination of things over time in order to maintain those forests in a healthy situation.

Mr. INSLEE. Thanks. The Chair has laid out concerns about decisions being driven by commercial interests one way or another and I want to talk to you more about how to guard against that. Let me talk about a concern I would have, is that if we develop—well, it is kind of interesting, the question was asked, how do we develop a sustainable supply of this material? Somebody has got to make a capital investment to make these poles, if you will. That person is going to want to have a supply for 30, 40, 50 years or through the generations.

If you do create that industry, there is going to be a demand for that raw stock and there is going to be a political demand for it

off national land, just as there is now for what we think of two-by-fours and four-by-fours. How do we avoid the commercial interests driving a political—say political forces driving decisions rather than scientific ones about what size of cut, where to cut, where the areas are that have to be mechanically thinned twice or three times instead of once.

How do you create a commercial industry and not create an environment that drives non-scientific decisions? What restrictions or agency procedures could we adopt that would avoid that, and let me just throw out an idea for you. What if the salvage, if you will, if you look at it as kind of salvage of the raw product, what if those decisions were handled through a separate agency, through the GSA rather than the Forest Service, so you do not have one agency combining the commercial interest with a decision to do the thinning? Is that a viable way to try to not create this inappropriate incentive in the decision making process?

Ms. BARTUSKA. I am not sure I can answer your proposal about the salvage. That is a—

Mr. INSLEE. It is not a proposal, just a brainstorm on my part.

Ms. BARTUSKA. It would be interesting to look at. What I would love to do is turn it over to one of our folks to do an analysis of it, those who have a good familiarity of contracting mechanisms and the way our salvage operation works.

But I think you are getting to the bigger picture and that is if we have a goal of doing restoration, can we provide an opportunity for a sustained economic base so that people have an opportunity to do the work but not make it so big that we basically have the business driving the management. There is a phrase that—well, Brett has used this many times, but this idea of being small scale or of a large scale, not growing so big that you have the business side driving what is actually done on the forest or on the lands, but instead having this balance between, just enough scale to make it economically viable over a certain period of time. And that is where a lot of, I think, our planning and our analysis comes in.

There is a very good example on the Clearwater National Forest, the North Locks Watershed Project, where they did an analysis of a 146,000-acre watershed and they identified what the end condition is. They know what they wanted to do, long-term restoration. They identified the projects that would need to be done where on that watershed to get there, and then they started figuring out, well, what are the tools we have. And in most, in fact, all cases, a commercial sale was not the tool that they wanted to use.

They had thinnings, they had prescribed fire, they had wildlife openings. All of that was done. They identified a scope of work that would take 10 years to do. They had a budget identified for that entire 10 years. That allows the community, then, to know what investments they make. It allows the forest to plan on what is the amount of work that it is doing. But it also sends a very clear signal that after this work is done, except for some maybe periodic other types of activities, that is the end, so people can make a business decision based on that.

I think if we can duplicate that in many of those kinds of watersheds around the country, that is one basis for getting at some of these issues that you have talked about, and trying to maintain—

this is not just another commercial logging program. This is using all the tools that we have.

Mr. INSLEE. Mr. Chair, can you permit me one more question here? My red light is on, but in the decision in the planning process, where thinning will occur, whether it will be mechanical or a burn, does the Service take into consideration the economic value of what you may remove from the product? Is that involved in the decision, and from your last answer, I assume it is. You have to plan about whether it is going to be a commercial sale or whether it is going to be a service contract. Do you see what I am getting at?

Ms. BARTUSKA. Yes. What would normally be done is that you identify what is it you want to do in terms of, let us say in this case, removing wood. If part of that wood could be removed through a commercial sale, that would be one of the tools that is identified. If they know that it is not a high enough quality to make up a sale, then they would do it through a contract, remove the wood to get to—either go into a landfill, hopefully minimize that, or some other way to use that product. But you would not a priori say, we are going to do a sale to get this job done. First you identify what it is you want to accomplish and then lay out the different tools that you have available.

Clearly, though, when you have a Service contract, the Service contract is a mechanism that requires funds up front to do it. The sale, the reason we have timber sales in many cases is that you can actually get the work done, and because of the value of the product, you do not have to have that money up front. But in many of these areas we are talking about with fuels reduction, these are not viable timber sale areas. There is a quality of material that is just not going to get you what a sale would provide.

Mr. INSLEE. Thank you.

Mr. MCINNIS. Mr. Otter?

Mr. OTTER. Thank you, Mr. Chairman.

Mr. Hamilton, a very good report. I am impressed with the amount of work that has already been done. One of the questions I would have is, how do you make the transfer from your workshop, inventive bench, into the marketplace bench? Have you made any of these transitions with these products yet?

Mr. HAMILTON. Yes. The ones that I described are all technologies that we developed through our research part of our organization. We are fortunate at the forest products laboratory to have a State and private forestry unit there whose assignment is to move this technology into practice. They will work with their counterparts in every State, in these cases primarily in the West, to get this technology into practice.

In addition to that, we toured virtually every State in the West and talked with communities, forest land managers, rural development folks, and talked about we could do and then asked them the question, are there some things we can do that you see would be a benefit in your particular area? So as we moved into this, we already had an idea of the kinds of needs that they had and what might work best in particular areas, and I think that helped move things a little more rapidly.

Mr. OTTER. But my point is, do you sell them the technology or do you sell them a franchise or how do you make the transition from government ownership into private ownership, private production, or do you make that transition? Is the government in the business? Who is in this business now?

Mr. HAMILTON. What we do is provide technology, and the way we have characterized the technology we provide is trying to accomplish a public objective like removal of small-diameter timber because of the threat of catastrophic fires. By providing that technology, we will help communities and firms understand that you do not just go into business using our technology. You need to have a business plan. You need to understand the market. You need to understand resource availability. But at that point, it becomes a private enterprise and we step away from it.

Mr. OTTER. So you give them, then, the results of your research?

Mr. HAMILTON. Right.

Mr. OTTER. Is there any kind of an amortization for the government on that research?

Mr. HAMILTON. No.

Mr. OTTER. That is a pretty good deal.

Mr. HAMILTON. Well, as I said, our research is designed to provide a public benefit, and the reason we work so closely with the private sector is no one is going to use our research if it is not economic. So to accomplish that public objective, we need to be sure that someone is going to use it, and if we can make it economic, then that public objective will be realized.

Mr. OTTER. Let us talk about the economics of this private marketplace, which I believe that there is a misunderstanding about. Do you not believe that it will not take long if you are successful with this product here, or even this post and pole? It seems to me that Canada has got a lot of large pole pine and they themselves would take a pretty good look if that pole business and rail business, 21-foot rails and eight-foot posts got to be pretty good business. Would we not be getting a lot of that product down here?

Mr. HAMILTON. Could be. I would guess that that would be an opportunity for Canadians as well as firms in the U.S.

Mr. OTTER. So we would not be able to just say, we are only going to do this—maybe my question should go more to the soft wood agreement that we have with Canada that, what, 4 days ago expired.

Mr. HAMILTON. Right.

Mr. OTTER. In order to give some of these new aspiring young businesses that are going to use the undergrowth some pioneer status or an effort to get going in their marketplace, would a renewal of the Canadian soft wood agreement have some positive effect on this potential?

Mr. HAMILTON. I do not know that that agreement would really—it would affect some of these—

Mr. OTTER. If you are involved with these products, it would, would it not?

Mr. HAMILTON. It would affect some of these kinds of products. Others, I do not think are included. The round wood, for example, I do not think would be included. The composite products, I do not

think were included in that lumber agreement. I think that was a solid wood agreement, but—

Mr. OTTER. Yes, but nobody has had the technology on this stuff and perfected it to marketplace application, and as you said, value added. So now we have given the technology away. We cannot give the technology to just one company, can we?

Mr. HAMILTON. No, it is in the public domain.

Mr. OTTER. That is right, and so now it is available to everybody. I think I have gotten that clear in my head now.

One other point I would like to make, overlay this whole opportunity that we have in removing the dense forest with the wilderness plan that we have. Could you overlay that, and sustainability and availability of product, of resource?

Mr. HAMILTON. Ann, can you answer that, or Denny?

Mr. TRUESDALE. I think the numbers that Lyle Laverty has presented on the overlap between the areas that we have looked at in condition class two and three, and those would be the condition classes at moderate to high risk from having a fire, and the roadless areas is approximately 27 percent of that is in overlap. Now, that does not correlate directly to the areas that may have small-diameter material to utilize. That would be in long-needled pines, grasses, and chaparral. So in those areas, in those two fire regimes, there is about a 27 percent overlap.

Now, we do not know for sure what that means as far as impact on ability to do—where our priorities are, because I think you have been briefed recently on the communities-at-risk list and the processes we are going through to set the priorities, and there may be some of those roadless areas that are close to some communities, but at this point, we do not know where those priorities are going to fall out.

Mr. OTTER. Thank you, Mr. Chairman.

Mr. MCINNIS. Mrs. McCollum?

Mrs. MCCOLLUM. Thank you, Mr. Chair. I think this is a wonderful discussion that I am just trying to get a handle on from the questions that have been asked, and maybe you can help me out.

In Minnesota, we mandated biomass as part of a mix of alternative fuel energy, but we were working with our farmers and they were going to grow poplar and other kinds of crops, literally, for it, and so we were providing tax incentives for entrepreneurship for businesses to get in, and so I am thinking, hmm, this might be a good idea for our State forests and for our national forests, for where we have those kinds of facilities already set up, because there is going to be an investment made by groups of people to have the resource continually coming to them at a location.

How does this work? Do we have any entrepreneurship in the area that is looking at doing biomass in other forms, raising it as a crop?

Mr. HAMILTON. Yes, and generally, that is, well, I guess a regional consideration. I was going to say a local consideration, but a regional one. In some parts of the country, raising biomass as a crop and using it locally for energy, for example, is the most economically efficient thing to do. In other parts of the country, perhaps the inter-mountain West would be an example, there is a lot of biomass that we believe should be removed from the forest, and

so probably that particular kind of operation might not be as economically viable there.

The other thing is, it depends on what that short rotation or uniform species material is going to be used for. Pulp and paper, for example, pulp in particular requires species uniformity and that is something you do not find in a lot of the stands on the national forests in the West. There is a large diversity of species. So one reason that those kinds of crops that you are referring to are grown is to get that uniformity for certain kinds of processes.

Mrs. MCCOLLUM. Mr. Chair, sir, I have worked—I am just right out of the private sector and I am trying to figure out how, without other private sector entities to continue to supply fuel, how we start—and I am very interested in the project—how we start this project, though, and have other outside people invest into it and then make the decision, whoops, we are not going to supply you any more product and not put a pressure on the government promise, "You said you were going to," "I have made this investment, what happens to me?"

And so I just want to understand. You are not setting any criteria that in the region, in the area, that there already be, whether it be energy or some of these other products, some other biomass industry in there that you would be part of, you would not be the driving engine.

And then, Mr. Chair, I had one other quick question.

Mr. HAMILTON. No, we would not be—as Ann Bartuska pointed out, our reason for removal is because we want to move that material out of the forest. The fact that we can find an economic use for it means that we can pay some of the costs, at least, hopefully all of them, of moving the material out of the forest. So the driver is not the use. The driver is to get the material out of the forest in this particular case.

Ms. BARTUSKA. Can I partly answer that, too?

Mrs. MCCOLLUM. Certainly.

Ms. BARTUSKA. I think another answer to your question is, what we would use to sort of create that environment, that partnership, would be the forest plan, and if in the development of a forest plan we identified biomass energy areas, or if that was a goal, then that would be the way we would establish a long-term track record. But not having a plan that would identify that as one of the planned goals, then you would not have a guarantee that there is going to be a partnership in producing wood as a biomass product over a long period of time.

Mrs. MCCOLLUM. Mr. Chair, if we are asking people to come in, we are asking them to be partners and partners do not like to feel that they are not part of it.

Mr. MCINNIS. Pardon me, Mrs. McCollum. Would you mind repeating what you just said?

Mrs. MCCOLLUM. Well, if we are asking people in to be partners, if we say, come in, we will provide this for you, you build the infrastructure to be there, I think then we set up an expectation that we are going to be fully responsible partners. And so I would think, at least starting out, we would want to try to be in regions where we are fitting in with other private sector biomass industries so we are not asking someone to assume a huge risk.

Mr. MCINNIS. That is true, but when we have biomass, when we are trying this forest plan, it unfortunately does not always place us within a local arena where those kind of industries exist. And if we do not—in my opinion, in response to your question, and then I will allow you to proceed with your next question to the witnesses, in my opinion, if we do not partner up with somebody, what are we going to do with it? I am with the Forest Service in this business.

You may proceed. You had another question following.

Mrs. MCCOLLUM. And Mr. Chair, I am not familiar with the Forest Service policy. How clean of a requirement is it for the forest floor to be after cutting has taken place? I know that that has been a real contention in our State forests back home. Can you tell me how clean it is left, because that can contribute to the problem that we are talking about and then needing to do the burns.

Mr. TRUESDALE. There is generally a requirement, and I assume—I do not know your State, but I assume your State is as with many others that I am familiar with, that logging operations, operations that take place in the forest, once they are finished, that there has to be some consideration of fire danger and the risk that would be left afterwards. In the old days, there were large fires in your part of the country where that was not a consideration. At the turn of the century, people took out the big trees, left all the slash and many fires resulted from those conditions and people have learned from that.

The condition of the forest, though, after these operations would depend upon the makeup of the structure of the forest that is required, that we would desire for that condition, not just to keep it clean, but the species that need to be there, how much material and all that. So it would vary from place to place. Some places, such as in the Chairman's area, where you have got Ponderosa pine and what you want is the traditional pine to open Ponderosa pine, it may be very clean because that would require frequent fires to come through. In other areas, it may be what some people would think looks pretty messy if they are comparing it to a city park, but that would be the structure that would be required afterward.

Mr. MCINNIS. Mr. Peterson?

Mr. PETERSON. Thank you, Chairman.

I guess I would like to ask the panel, what can Congress do to help? Put the monkey back on us. What can we do to help?

Mr. HAMILTON. First of all, I think having support from the Congress to make sure that we can accomplish some of the questions that have been raised, like some assurance of supplies. Finding ways to assure supplies over a longer period of time would be useful.

I think a continuation of the support that we receive from Congress to work on some of the technologies and some of the methods we have for moving those into practice rapidly would be very useful so that we can continue this process.

So I guess from my point of view, the main thing would be continued support and probably working together on some of the issues that come up that seem to slow the process would be the ways that I think we could get this done most readily.

Mr. PETERSON. If we could get Congress to speak with one voice. [Laughter.]

Mr. PETERSON. How about the other two?

Ms. BARTUSKA. Well, in about a year, we will have more results from the stewardship pilots and so we will be able to come back with a list of things that have been successful and have not. Now, notwithstanding we have a year to wait, I know one of the areas that we have talked quite a bit about in being able to implement the fire plan is the support for the Fish and Wildlife Service and National Marine Fisheries Service in helping us through Section 7 consultations, and being able to have sufficient capability in those two agencies goes a long way to helping us get our job done, because we do need them at the table as we try to move our projects forward.

I think we also have some concerns and hope that we have continued support for the cohesive fire strategy, and you probably want to talk about that.

Mr. TRUESDALE. Well, then, I think the most important thing is in the continuation of the national fire plan, you folks through the Appropriations Committee in the appropriations last year asked us to prepare a 10-year strategy on dealing with the issue. It seems like it is pretty easy when you have 2,000 fires, seven million acres burning, to address the initial attack, preparedness, fire suppression, and those types of activities.

But in the 10-year strategy, you are asking us to continue to look at what we need for 10 years on a national fire plan, and that includes preparedness, it included suppression, it included hazardous fuels treatment, it included the restoration of burned areas, and it included the State and private, the community assistance, the economic action, which will help develop some of these markets that we are talking about here.

But I think the support from both sides, from the administration and the Congress, of a balanced plan that is not just fire suppression or hazardous fuels treatment, and the recognition that it is a long-term process and how do we deal with this over the next 10 years, I think is very important.

Mr. PETERSON. Do you do 10-year contracts now?

Ms. BARTUSKA. Yes, we do for timber sales.

Mr. PETERSON. For timber sales?

Ms. BARTUSKA. I think actually for—I am not sure what the authority is for service contracts. I think we tend to keep them on about 5 year, three to 5 years in length, but I am not sure. We could get the information specifically on what our authorities are. But I know for timber sales, we have a 10-year limit.

Mr. PETERSON. You mentioned the pilot stewardship programs. Can you tell us a little bit about them? When did those start and when will we have some data there?

Ms. BARTUSKA. Well, the stewardship contracting pilots were initiated in the fiscal year 1999 appropriations bill. We got funding authority and funding for 28 projects at that time and we just in this last cycle got authority for another 28.

It allows us to use some new authorities, things like goods for services, where we actually are able to have a contractor come in, do a particular activity, and then if they have any wood removed

as part of that activity then can keep it and use it for other products, like post and poles. It allows us to bundle contracts, multiple contracts. It allows us to have a multi-year contracting going on through those projects, a whole host of other activities, some existing authority, some not.

We have our first report—actually, we have had two reports. The first year was not really conclusive. It is sort of where we are on the projects. We have just gotten a report, which will be delivered to Congress, I think this next week, on the results of the last 2 years, and again, I think we only have about 51 of the projects actively in operation.

So we think that another year will give us more information about what is working, what is not. We have already found certain things are not as effective as we would have liked them to be, so we have an opportunity to change those over time.

Mr. PETERSON. Thank you.

Mr. MCINNIS. Mr. Holt?

Mr. HOLT. Thank you, Mr. Chairman.

Coming from New Jersey, I do not have a lot of direct experience with this, and so I am trying to get a sense of the two prongs of what I think we are talking about here. One is fire suppression and the other is economic use of materials.

As I understand it, the cost of cleaning a forest is something like $500 an acre. First of all, do I understand correctly, and secondly, how dependent is that on how thoroughly it is cleaned up? And then I wanted to follow on Mrs. McCollum's question of how that thoroughness relates to the fire suppression. I am not sure to whom I am addressing this, whoever would care to take it.

Mr. TRUESDALE. I can address the cost issue for you. It would range—your numbers are good, but the range is pretty wide. In the South, where you are simply maintaining some areas with fire, the costs can be $35 or $50 an acre. In other areas that, for various reasons that are grown up or the access is difficult, it could be as high as $1,500 an acre, particularly if you are working around the interface with homes and that sort of thing. I think $500 is a reasonable amount, and yes, it would depend upon the amount of material there and how much material is needed to be removed or altered in some way in order to meet the conditions that you want.

Mr. HOLT. Can you—yes?

Mr. HAMILTON. Can I just clarify one point, and that is what we are talking about here is fire prevention, not suppression.

Mr. HOLT. I beg your pardon. Prevention is the better term, yes. I stand corrected.

Mr. HAMILTON. One thing, the value-added opportunities that we pointed out here are real key to that cost question. If we can move more of the material into higher-value uses, then we have a better opportunity to cover the cost that you are referring to. But on the other hand, you need to get an economic return even for the forest value part of the material to have an economic package. So it is a case of trying to find the best economic use for all the material.

Mr. HOLT. To get the benefit of either the fire prevention or the economic use of material, how thoroughly must one clean? I guess that is really what I am trying to get at.

Mr. HAMILTON. I will let Ann speak to this in a minute here, but basically, what we are talking about is trying to achieve a particular forest condition, and so clean might not necessarily be the right word. What we are trying to do is achieve a condition that fire science says will put that forest in a situation where we will not have the kinds of catastrophic wildfires that we experienced last summer. And depending on the species and the location, that condition will vary. So the amount of removal is different in different areas and again depends on species, climate, and a lot of factors.

Mr. HOLT. Ms. Bartuska?

Ms. BARTUSKA. Yes. I think the only thing I would add to that, I think Tom hit most of the points, is, and it is a balance between recognizing what fire activity might be and ecological sustainability. You need to have enough biomass left so that other processes go along, so that you have the critters in the soil and the litter that keeps the forest functioning, and so that is that balance that we have.

And fortunately, our fire scientists have done a really good job with models to be able to say, given a certain, whether it be a climate type or the forest type, what you can expect in terms of the amount of material left on the floor, what the fire cycle might be, and can give us some good predictions with reasonable accuracy, I would say, over time. So we are very fortunate that the science has been there for a while to build that database.

Mr. HOLT. Does it make sense—I mean, is it possible to do the fire prevention by doing the clearing, the cleaning only in patterns around boundaries, in a checkerboard pattern, whatever it would be, and leave large areas untouched for wildlife or other forest processes?

Mr. TRUESDALE. Yes. In fact, if you look at some of our estimates in the cohesive strategy, our initial estimates of those acres at risk in the West were 56 million acres, and that since has been refined since folks have gone through that. Our most aggressive strategy that we felt was even remotely possible at one time would only address 50 percent of those acres over a 15-year period. So the patterns that you are talking about are natural that are fire cycle anyway. When a fire burns through, it produces patterns.

And with the wild and urban interface, homes, protected areas, watersheds, if you are only going to be able to get half of it at a very aggressive strategy over 15 years, that is exactly the process that we would use to pick those priorities and address those areas that were the most critical to start with—around the edges, around communities, municipal watersheds, those sorts of things.

Mr. HOLT. Thank you, Mr. Chairman.

Mr. MCINNIS. I wish to thank the panel. We appreciate your time. Mr. Inslee?

Mr. INSLEE. Thank you, Mr. Chair, for that courtesy. You have got this prime interest of having a program that wants scientific decisions made by an agency that does not have a self-interest in maximizing the removal of fiber from the forest, and we also want to have usage for what ends up being removed. To accomplish both of those objectives, does it not make sense to segregate the stream of income realized from the agency making the decision?

I guess what I am saying is, does it not make sense to have funds realized from the sales of material used in the fire remediation projects to go straight to the Federal agency without stopping by the Federal trust funds for the Forest Service, which at least in some people's mind gives the Service some self-interest in this issue. Does it not make sense to do that segregation for the public trust in this program?

Ms. BARTUSKA. Certainly, that would be one way to be able to keep that separation clean. I think the only key we have is that part of those funds that are realized through the sale of material are cycled back to the forest to get more work done. If that work could be done through other ways, then what you are talking about would certainly work, and I think that is where we would have to manage the expectation of how much does it cost to really do the job out there and have sufficient resources to do that.

Mr. INSLEE. Thank you very much, Mr. Chair.

Mr. MCINNIS. Again, thank you, panel. I appreciate your time and your testimony. I found it very interesting.

Mr. MCINNIS. We will call up our second panel of witnesses. I thank the second panel, Ms. Smith, Mr. Carlson, Mr. KenCairn, and Mr. Holmer. Again, if you have just come into the hearing room, we are going to have to adhere to the 5-minute rule. I would appreciate your consideration in that regard.

We will begin our testimony with Ms. Smith. You may proceed.

STATEMENT OF MEGAN SMITH, CO-DIRECTOR, AMERICAN BIOENERGY ASSOCIATION, WASHINGTON, D.C.

Ms. SMITH. Thank you. Mr. Chairman and distinguished members of the Subcommittee, thank you for allowing me this opportunity to testify on behalf of the members of the American Bioenergy Association, of which I am a Director.

The United States is at a critical time for the development of alternative energy sources, both for transportation and electricity. Our dependence on foreign oil has put our economy and national security at great risk. At the same time, catastrophic forest fires have reached historic proportions in the Western United States. These two issues increase energy demand and the need for forest fire abatement has put us at a crossroads today where creating a win-win situation is more than just possible. However, any plan regarding removal of large amounts of small-diameter forest material must include a market strategy for ridding of this low-value biomass. The ABA believes the solution to be biomass conversion to energy and chemicals.

Biomass is any matter composed of three components, cellulose and hemicellulose, which are two types of sugar polymers, and lignin, which is the glue holding these two sugar chains together. The lignin, which is the precursor to coal, has the same energy content as a high BTU-grade coal but without the ensuing pollutants. It is capable of supplying a biomass power plant with additional energy or a biomass ethanol plant with all of its electricity needs. Examples of biomass include wood waste, agriculture residues, fast-growing grasses and trees, and the paper component of solid waste.

Low-value biomass can be converted to several high-value products, such as electricity, ethanol, and chemicals. Markets will determine which of these three is the highest value in a particular situation and industry will adapt its bio-refineries accordingly.

The first area is biomass power. I would like to allow a colleague, Bill Carlson of Wheelabrator, to update the Committee on the current biomass power industry with just a few additional comments.

There are a small number of utility-sized biomass gasification plants at different phases of construction which will act as test facilities for the future industry. The major power plants include the Burlington, Vermont, gasifier project, which has added a 50-megawatt gasifier pilot plant to its existing facility and successfully attained full operation in August 2000, and the Chariton Valley Resource Conservation and Development project, which is growing switchgrass on 35,000 acres of underutilized cropland for gasification purposes.

The second area is biomass ethanol. The current corn-based ethanol industry converts to ethanol only part of the available sugar in the corn plant. The National Renewable Energy Laboratory, along with industry, have new technologies for biomass conversion to ethanol which have shown conservative estimates for energy efficiencies at four-to-one, that is, four energy units in output compared to energy use during production. This is largely due to the use of lignin's high energy content. In addition, some circumstances may even allow these bioethanol plants to sell excess power to the electrical grid, which would be an obvious benefit in locations such as California.

The world's first biomass ethanol plant with expected start-up in 2002 will be located in Jennings, Louisiana, and will use sugar cane bagasse as its feedstock, as well as wood waste and rice hulls in the future. Other plants under development include the City of Gridley rice straw project. This plant will use forest residues, as well, collocated within an existing biomass power facility. The Collins Pine Companies project in Chester, California, is planning to build an ethanol plant fed by sawmill residues as well as small-diameter forest material from private land. This project is well into feasibility studies, showing very positive results, and will use biomass derived from the Quincy Library Group's project, as well.

The third area is biomass chemicals. The area of biomass conversion to chemicals may provide to be the largest market potential for cellulose in the future. This November, Cargill Dow will start up a plant that will make polylactic acid, or PLA, from corn. From PLA beads, Cargill Dow will produce such products as carpets, clothing, and plastic cups which are all biodegradable and renewable. here are two such examples. The material in this shirt here and also this carpet was carbon dioxide in a farmer's cornfield just 1 year ago, if the clerk would not mind passing those up to the members to look at. The significance of this technology in decreasing our dependence on imported oil is great, as many products now used in the U.S. are derived from petroleum-based feedstocks.

The ABA applauds the Lugar-Udall Biomass Research and Development Act of 2000, which did much to promote this concept of biomass. The ABA would like to highlight a few of its

recommendations to help carry out what we believe is the true intention of the statute.

ABA recommends authorization for biomass research, development, and deployment programs of the U.S. Department of Energy, including increases of at least 20 percent per year for the next 10 years.

ABA recommends no monies be authorized and appropriated for fiscal year 2002, starting at $2 million and increasing an additional $2 million each year thereafter, for funding the biomass energy pilot programs at the Forest Service.

ABA is convinced that long-term reliable feedstock contracts of at least five to 10 years be put in place.

The ABA recommends that the definition of allowable biomass for the 1.5-cent per kilowatt hour closed-loop production tax credit be opened up to include open-loop biomass plants.

Thank you, Mr. Chairman and members of the Subcommittee, for allowing me to speak on the many benefits of biomass conversion to energy and chemicals for a cleaner and stronger nation for future generations to come.

Mr. MCINNIS. Thank you, Ms. Smith. By the way, the only timer in the room that works is the one over by Mr. Holt, so pay attention to that.

[The prepared statement of Ms. Smith follows:]

Statement of Megan Smith, Director, The American Bioenergy Association

BIOMASS ENERGY FOR FOREST FIRE FUEL REDUCTION

Introduction

Mr. Chairman and distinguished members of the Subcommittee, thank you for allowing me this opportunity to testify on behalf of the members of the American Bio-Energy Association, of which I am Director. The United States is at a critical time for the development of alternative energy sources, both for transportation and electricity. Our dependence on foreign oil has put our economy and national security at great risk. At the same time, catastrophic forest fires have reached historic proportions in the Western U.S. These two issues—increased energy demand and the need for forest fire abatement—has put us at a crossroads today where creating a win-win situation is more than just possible. However, any plan regarding removal of large amounts of small-diameter forest material must include a market strategy for ridding of this low-value biomass. While many small-scale solutions are being considered within rural communities throughout the West, a large-scale solution must be adapted for the more extensive rural/urban interfaces. After considerable analysis by the Western Biomass Consortium, a group funded in the past by the U.S. Departments of Energy and Agriculture, this solution appears to be the selective mechanical thinning of small-diameter material in our over-stocked forests coupled to producing domestically based, renewable, and environmentally friendly energy and chemicals, using biomass as feedstock.

Background

What is biomass? Biomass is any matter composed of three components: cellulose (a 6-carbon sugar chain, or polymer), hemicellulose (a polymer of mostly 5-carbon sugars) and lignin (the "glue" holding these sugar chains together). Roughly speaking, biomass is composed of 50% cellulose, 25%hemicellulose, and 25% lignin, which is the precursor to coal. The lignin component has the same energy content as a medium- to high–BTU grade coal, but without the ensuing pollutants of sulfur and nitrogen, and is capable of supplying a biomass power plant with additional energy feedstock, or an entire biomass ethanol plant with all of its electricity needs. Examples of biomass include wood waste, agriculture residues, fast-growing grasses and trees, and the paper component of municipal solid waste.

The U.S.' ever-increasing dependency on petroleum (or hydrocarbons) has put us in a precarious position both with respect to our economy and national security, as energy is the lifeblood of this great country. If we could begin to phase-down our

hydrocarbon use and phase-in our biomass, or carbohydrate, use, the impact would be tremendous. We would start down a critical path of true energy security, while helping to stabilize our economy overall, increasing jobs around the U.S. for many put out of work in rural areas where the majority of biomass is grown.

Low-value biomass can be converted to several high-value products, such as electricity, ethanol for transportation, and chemicals. Markets will determine which of these three is the highest-value in that particular situation, and industry will adapt these "bio-refineries" accordingly. Below is a brief review of each technology.

Biomass Power

Biomass is currently being used for conversion to electric power through conventional combustion technology. The current biomass power industry is composed of approximately 350 plants with combined capacity of approximately 7,800 megawatts (MW), employing 66,000 people. Of those plants, 45 recently lay idle for various reasons, with 655 MW of unrealized capacity going to waste. The dormancy of these plants is largely due to the past low-cost of competing energy sources. However, with recent escalation of electricity prices, some plant are coming back on-line. But more of these biopower plants could be built throughout the U.S., particularly the West, where biomass is abundant as a forest residue and electricity is badly needed.

Currently, there are a small number of utility-size biomass gasification plants at different phases of construction which will act as test facilities and pilot plants for the future industry. The major pilot plants include:

- Burlington, Vermont, Gasifier Project—Burlington Electric Department's McNeil Generating Plant has been producing wood-fired biomass power at its 50 MW per year plant, but has recently integrated a new gasification technology to add more capacity. DOE, along with the technology licensee Future Energy Resource Corporation (FERCO), has added a 15 MW per year gasifier as a pilot plant, and successfully attained full operation in August 2000 using FERCO's "SilvaGas" technology, producing electric power directly from biomass in a conventional gas turbine.
- Chariton Valley Resource Conservation and Development (RC&D) Project—This Iowa project encompasses a public/private partnership between U.S. Department of Energy, U.S. Department of Agriculture, and the Chariton Valley RC&D Area, under DOE/USDA's Biomass Power for Rural Development initiative. Approximately 500 local farmers and landowners are aligned with the combined research and investment power of 14 organizations. The project will be growing switchgrass on 30,000 to 40,000 acres of underutilized, marginal cropland.

In addition to the above technologies, there is growing interest amongst the coal industry and utilities to co-fire biomass with coal, reducing some pollutants such as sulfur and nitrogen oxide. The TVA and the Northern Indiana Public Service Company (NIPSCO) are just a few that are investigating biomass co-firing with coal.

Biomass Ethanol

The current corn-based ethanol industry converts to ethanol only part of the available sugar in the corn plant, i.e., the starch inside the corn kernel itself. The remainder of the kernel is converted to products such as animal feed, corn oil and syrup. While the USDA recently determined that today's ethanol plants have increased production efficiencies to reflect a net energy gain of 25%, DOE's new highly efficient technology for biomass conversion to ethanol (or bioethanol) could increase efficiencies for corn ethanol plants even further, through conversion of corn fiber and stover. Predicted efficiency improvements from these additional conversions would allow some of these corn ethanol plants in increase their outputs on the upwards of 15% from the current capacity. Conservative estimates for energy efficiencies for a stand-alone biomass ethanol plant is 4:1, that is, four energy units in output compared to energy used during production. One of the predominant reasons for this difference between starch and cellulose conversion to ethanol is use of the lignin contained in the biomass itself. The high-energy content of lignin allows a stand-alone biomass ethanol plant to be self-sufficient, that is, to not require an outside energy source, instead combusting the lignin in a standard boiler for energy use. In addition, some circumstances may even allow these bioethanol plants to sell excess power to the electrical grid. In locations such as California, this would be another obvious benefit. Because of its efficiencies, bioethanol will only require the ethanol incentive for a short period of time, with goals to compete effectively with gasoline prices by 2010 or sooner.

The world's first biomass ethanol plant will be located in Jennings, Louisiana, and will use sugar cane bagasse as its feedstock. BC International (BCI) has a patented technology that it hopes to use in the future on wood waste and rice hulls at this

plant as well. BCI is currently coming to financial closure on its plant, with expected start-up in 2002.

Using waste feedstock such as forest and agriculture residues helps to make these first bioethanol plants that more profitable. Other plants under development include:

- City of Gridley—In California, BCI will use its technology on waste from rice in the form of rice straw, alleviating open-field burning. This plant may use forest residues as well, co-locating with an existing biomass power facility.
- Collins Pine—The Collins Pine Companies, a family-owned private timber firm out of Portland, Oregon, with a facility in Chester, California, is planning to build a plant fed by small-diameter forest material. The plant will be sited by an existing sawmill operation, also using mill residues. This project is well into a feasibility study showing very positive results, and will use biomass from both private and public lands, deriving some feedstock from the Quincy Library Group's project.
- Masada Resources Group—In Middletown, NY, Masada will use its technology to convert the cellulose stream of municipal solid waste to ethanol, garnering a tipping fee to help make the plant more profitable.

Biomass Chemicals

A rapidly expanding area in biomass utilization which may provide the largest market potential in the future, is the area of biomass conversion to chemicals. Large companies such as Dow Chemical and Dupont are currently looking at high-value chemicals from biomass. One such chemical is polylactic acid, or PLA. Cargill Dow LLC is currently constructing such a plant in Blair, Nebraska, with start-up operation slated for November of this year. From PLA "beads", Cargill Dow and its business associates will be able to produce such products as carpets, clothing, and plastic cups which are all biodegradable and renewable. The significance of this technology in decreasing our dependency on imported oil is great, as many products now used in the U.S. are derived from petroleum-based feedstocks. Using biomass instead of petroleum for such products would allow us to save our precious oil for higher-value markets, stretching out our dwindling supply of oil. While the Cargill Dow plant will use corn starch short-term, it will soon use cellulosic biomass as well.

The Bio–Refinery Concept

The bio-refinery is a relatively new concept developed largely by the U.S. Department of Energy. It essentially mimics a petroleum refinery in that it would produce many different products from one plant. For instance, many oil refineries produce multiple products, such as gasoline, natural gas and chemicals. At a bio-refinery, industry could produce ethanol, electricity and chemicals as well. In the end, the highest valued product would most likely be produced in the largest amounts, through a simple "flip of a switch" in these flexible plants.

Benefits

The benefits of biomass conversion are numerous and great. Of most interest to this Subcommittee, forest fires stemming from immense fuel loading have severely threatened human life and property, particularly in the Western U.S. The Department of Energy's National Renewable Energy Laboratory (NREL), located in Golden, Colorado, has been working closely with the timber industry and local communities to investigate the potential for conversion of sawmill and forest residues to biomass ethanol and power; results from the composition analysis of mill samples sent to NREL from different locations around the U.S. are very promising. Co-locating a biomass ethanol plant to an existing lumber/saw mill or biomass power plant makes the economics of the bioethanol that much more attractive through shared capital expenses, such as boilers and wastewater treatment facilities. In addition, not only does this technology have the potential to create jobs in rural communities, but it will also help keep our forests safe and healthy by creating a market for the small-diameter trees and brush which are fueling these fires.

Feedstocks such as agricultural and municipal solid waste, many of which are troublesome to the environment and communities nationwide, can also be used. For example, many areas of the United States have become extremely burdened with solid waste disposal, causing landfills to turn away waste only to find there are few other disposal options. In California, even simple refuse such as yard trimmings is piling up at a high rate of speed; this debris could also be converted into energy or chemicals. And one extreme example: New York state has an enormous pile of old wooden pallets just outside of Manhattan which could supply enough feedstock to support a 100 million gallons per year ethanol plant. This is a tremendous figure,

considering the total ethanol production of the U.S. currently stands at 1.5 billion gallons a year.

Agriculture residues have also increased the burden on landfill sites. For example, in 1990, California's legislature mandated the phase-out of rice straw burning by farmers at a rate of 10% reduction per year with the phase-down now complete, leaving the farmers no choice but to plow the straw under. This is costly and greatly increases the risk of disease while reducing rice yields. California also has legislation in place disallowing 50% of municipalities' solid waste going to landfill sites. As a result, the rice farmers have been forced to find an alternative disposal system for their crop residue that is being turned away from landfills. The California legislature appointed a Committee on Alternatives to Rice Straw Burning which determined conversion of rice straw to ethanol as one of the few viable options. Other agriculture residues such as orchard trimmings and pecan shells are being turned away from landfill sites as well. Although this refuse is a detriment today, it may in the future actually acquire value, increasing farm income.

Congress will begin deliberating agriculture issues this year in preparation of Farm Bill reauthorization. Diversification of farm crops is critical for latter year production on farms. Eventually, crops like fast growing trees (e.g., poplars) and tall grasses (e.g., switchgrass) will encourage both sustainable agriculture and clean energy production for the United States. There is also significant effect on global warming. For example, production of dedicated energy crops and use of bioethanol reduces the net release of carbon dioxide by 90% or more, helping to reduce greenhouse gas emissions significantly. Few other options are available to the transportation sector to achieve this reduction.

Recommendations to the Subcommittee

Department of Energy Biomass Authorization—The ABA applauds the Lugar/Udall "Biomass Research and Development Act of 2000", which did much to promote the concept of biomass in the Congress and within the USDA and DOE. We appreciate the efforts of its sponsors and hope to continue working with Congress to advance the use of biomass in the U.S. The ABA would like to recommend two areas to help carry out what we believe is the true intention of this statute:

1) the USDA's requests for proposals (RFPs) that were used to fulfill the biomass authorization directive only allowed for starch-based crops and long-term cellulosic crops, therefore no short-term cellulosic biomass plants, such as those using agriculture or forestry residues, were recipients of the allocation; we would like to recommend an expansion of the biomass definition to include these residues in any future solicitations at the USDA.

2) the DOE biomass programs were not authorized under this bill, which includes research and development allocations for power, fuels and chemicals. If the United States' goal is to achieve a tripling of biomass utilization by 2010 as has been suggested, this will require significant increases to these DOE biomass budgets, which totaled approximately $110 million in fiscal year 01. An increase of at least 20% per year is recommended for DOE biomass programs. It is imperative that both research and commercialization efforts be funded to the greatest possible level to avoid the technological "Valley of Death", an end many government-funded technologies have met in the past.

Funding for Biomass Energy Pilot Plants at USFS—The aforementioned DOE biomass authorization will allow for monies for both biomass research and support of ongoing biomass energy pilot plants. However, there is currently no line item in its appropriations bill for supporting these plants at the Forest Service. While the National Fire Plan of last year allowed for very limited solicitations for these types of projects, the allocation was not enough to make an impact on future forest fire abatement. Region 5 alone received $40 million worth of solicitation responses from hundreds of applicants facing the threat of fire, only to be able to fund approximately $1.2 million in the end. It is astonishing that of the $1.8 billion Congress allocated in Emergency Supplemental appropriation monies last year for the Fire Plan, only this small amount was set aside for large-scale pilot facilities. This lack of resources will not serve in finding a solution to the immense problems facing forest fire abatement tactics using fuel treatment and disposal. DOE is currently burdened with funding all of these pilot plants, several of which are addressing the forest fire issue. Therefore, ABA would recommend new monies to be authorized and appropriated for fiscal year 02 starting at $10 million, and increasing an additional $10 million each year thereafter. In addition, we would recommend long-term funding of the National Fire Plan overall.

Long–Term Feedstock Contracts—There is a dire need for reliable, long-term biomass feedstock contracts for biomass energy plants, particularly ones using forest thinnings. While long-term contracts have had a tumultuous history, there has been

no greater need for these contracts than today. To be succinct, if long-term, reliable feedstock contracts (at least five to ten years) are not put in place, biomass energy plants will not multiply anytime in the near future in great numbers, that is, enough to make a difference in a forest fire abatement plan. Financial institutions are very unlikely to back a project, particularly a new technology such as bioethanol, unless there is a guarantee for long-term feedstock contracts. While ABA understands that this is a lot to ask of a Congress that works on a year-to-year basis on many issues, it is imperative in helping support a robust fledgling biomass industry. ABA cannot stress this point enough.

Tax Incentives—There are several types of tax incentives which would help support both existing and new biomass facilities:

1) Open–Loop Biomass Tax Credit—Tax incentives for biopower plants are essential for their existence under the current restructuring of electricity markets. Currently, existing biomass power plants cannot capture the 1.5 c/kWh production tax incentive because the biomass must be dedicated for the use of producing energy, or "closed-loop" biomass plants; no such plants exist today. ABA recommends that the definition of allowable biomass for this tax credit be opened up to include "open-loop" biomass plants, such as ones using wood and agriculture residues throughout the U.S.

2) Biomass Co–Firing with Coal Tax Credit—Many coal plants as well as utilities in the U.S. are becoming more interested in co-firing biomass with coal to help back out their pollutants. States having both coal plants and excess biomass find this idea particularly attractive. ABA recommends that co-firing biomass with coal be given a 1.0 c/kWh production tax credit for that portion of electricity generation which is derived from biomass. Most co-firing facilities will co-fire between 5% and 15%of biomass with coal.

3) Incentive for Pro-active Fuels Reduction—Private forest landowners should receive incentives for pro-actively thinning their forest stands for biomass use in a biopower or bioethanol plant. This tactic would also help aid overall forest fire abatement. While most of the timber controversy surrounds public lands, these forests should not be overlooked. For example, a California state law provides a $10 per ton incentive directly to the biomass energy plants for material coming from fuels reduction projects. Any incentive that would help off-set the very expensive practice of mechanical thinning of biomass and transportation to a biomass facility would greatly help the biomass industry.

Conclusion

As you can see, conversion of biomass to energy and chemicals is a win-win situation all around, having both short- and long-term implications. Here are just a few examples of the benefits:

- helps control forest fires and improve forest health by alleviating fuel loading in our forests.
- creates new bio-based industries which are environmentally sound.
- produces new energy for the electrical grid for our current and future energy needs, helping abate future energy crises.
- helps stabilize the U.S. economy, creating jobs in both the forestry and agricultural communities.
- helps energy security by decreasing our dependency on foreign oil
- rids of burdensome waste materials normally going to overstocked landfills.
- helps clean up our air through reduction of emissions.
- helps the farmer through sustainable agriculture and energy crop production, providing an alternative to reliance on agriculture subsidies.
- helps initiate a carbohydrate-based (versus hydrocarbon) economy with major economic and job creating multipliers.

And most importantly:

- helps wean the United States from its foreign oil dependency and strengthen our nation's competitive edge by producing a domestic fuel from our own resources.

Thank you, Mr. Chairman and members of this Subcommittee, for allowing me to speak on the many benefits of biomass conversion to energy and chemicals for a cleaner and stronger nation for future generations to come.

Mr. MCINNIS. Mr. Carlson, you may proceed.

STATEMENT OF BILL CARLSON, GROUP VICE PRESIDENT, WHEELABRATOR ENVIRONMENTAL SYSTEMS, ANDERSON, CALIFORNIA

Mr. CARLSON. Mr. Chairman, members of the Subcommittee, I appreciate the opportunity to be here today to discuss a concept that we have worked on now for about 15 years. With perhaps 90 million acres in the West needing treatment, and optimistically, 20 years to get the job done, and perhaps 50 tons of excess biomass per acre, we are looking at billions of tons needing disposal by either burning or removal.

In a 20-year program, if we mechanically thin 50 percent of all acres treated, over 100 million tons of material will be removed per year. The only potential uses that could come close to utilizing this amount of material are transportation fuels and chemicals, which Megan just discussed, and electric production. I will focus on electric production, which is our business, and draw upon 25 years of experience.

These thinnings would fuel 7,300 megawatts of biomass power, an amount that would nearly double nationwide biomass capacity. In actuality, because of the salvaging of higher-value products, such as those that were discussed earlier by the Forest Service, the needed new biomass power plants would total only perhaps 3,000 to 4,000 megawatts. This is only 4 percent of the installed capacity in the West and is less than 20 percent of the expected new capacity needed over the 10 year buildout that might be required for these new plants. Thus, incorporating this new power into the Western grid is clearly not a problem.

Drawing on 15 years of biomass power experience in Northern California using thinnings off both public and private lands, let me state that neither the plants nor the thinning techniques require further pilot studies or demonstrations. Both the plants and the results of thinning are widely accepted and supported.

Let us discuss the economics, both of the land treatment and for the power plants, to see if this thesis is supportable. The alternative, prescribed fire, would take 15 to 25 years to achieve the same desired forest condition and in total would cost perhaps $400 to $500 per acre. Properly done, mechanical thinning followed by a light fire could do the same or better job in less than 5 years at perhaps no cost to the taxpayer.

Our experience demonstrates that a thinning designed to achieve a forest condition not unlike that existing at the time of Western settlement will remove about 50 tons of material per acre while still leaving the larger trees properly spaced and in the species that existed historically. Among this 50 tons of material will be 2,000 to 5,000 board feet of small logs, whose value will pay the total cost of the thinning plus subsidize the delivery to market of the 29-ton biomass fuel fraction, if necessary. The Forest Service could receive a gross profit of $180 to $700 per acre with which to pay their administrative costs.

Let me emphasize here, however, that these numbers cannot be achieved if we place roadblocks, such as arbitrary maximum size limits, on the thinning. Instead, we must select the trees to stay to meet the objectives of a healthy fire-resistant forest and let the contractor remove the rest.

In the West, the infrastructure exists to utilize the small logs that are produced in large quantity, though much of that is now closed and will need to be retooled. A large-scale, long-term commitment to this thinning program will restore this infrastructure without the need for public funds.

The biomass power infrastructure of perhaps 100 to 150 30-megawatt plants is trickier, since such plants exist now only in California. These $60 million facilities will produce electricity for about six cents per kilowatt power while paying transportation costs for the fuel from the woods. While this is a very competitive price in today's Western power market, it is expected to be as much as two cents per kilowatt hour above market once gas prices return to earth and new plants are online.

The solution for new and existing biomass plants is the passage by Congress of the open-loop biomass tax credit, which Megan just described, which would have a before-tax value of about 2.5 cents per kilowatt hour. This change to Section 45 of the Code is currently included in draft energy legislation on both the Republican and Democratic sides. This credit, coupled again with a long-term commitment to a large-scale thinning program, will pave the way to construction of plants, again without reliance on public funding.

The conclusion, then, is that a large percentage of the forest health problem in the West can be solved without public funding by an integrated forest thinning/biomass power program. In addition to improving forest health and reducing fire potential, the program would accomplish the following: Reduce by 98 percent the amount of air pollution resulting from burning the same biomass via prescribed fire; replace the volume of Federal timber lost over the last decade in the region; dramatically increase the amount of renewable power in the region at a time of rising oil and natural gas prices; allow private capital to replace Federal dollars while solving the problem; and is a solution that has been proven to bring diverse interests together in support.

For this to happen, Congress needs to move in three key areas. First, establish a long-term commitment to forest thinning as the primary mechanism for treating Western forests and establish broad principles for its implementation.

Second, authorize Federal land managers to enter into long-term stewardship or service contracts that measure success on the basis of acres treated and not as a traditional timber sale.

Third, pass the open-loop biomass provision during this year's reauthorization.

With these actions, the program to reclaim our Western forests from disease, insects, and fire can gain needed credibility and we can begin to see private capital flow toward a solution to this massive problem. That problem may well become a well-disguised opportunity. Thank you.

Mr. McINNIS. Thank you.

[The prepared statement of Mr. Carlson follows:]

Statement of William H. Carlson, Vice President & Alternate Energy Group General Manager, Wheelabrator Environmental Systems, Inc.

USE OF FOREST THINNINGS AS FUEL FOR BIOMASS POWER FACILITIES

With a US Forest Service estimate of 89 million acres within the National Forests of the West at moderate to high risk of catastrophic fire, we have a mighty job on our hands if we are to remove hazard fuels before these lands burn catastrophically. If we give ourselves two decades to complete this task, and we will be lucky if we have that long, we would need to treat 4.5 million acres per year. With perhaps 50 tons of excess fuel per acre needing to be removed, a total of 225 million tons annually of excess fuel would need to be burned under controlled conditions or mechanically removed from the site.

When you talk in quantities of 225 million tons per year, you quickly settle your potential solutions on extremely high volume uses, such as the potential to produce transportation heating fuels or electricity, two of the very largest industries in America. You could continue to burn up this material in prescribed fires, but at 30 lbs. of particulate matter per ton burned, it is unlikely that the agency would be allowed to introduce an additional 3.4 million tons of particulate annually into western skies.

If we assume a 50/50 split of prescribed fire and mechanical thinning due to slope limitations, etc., each would be performed on 2.25 million acres annually, producing over 110 million tons of excess biomass annually, still clearly a massive undertaking.

We will now focus exclusively on the production of electric power from biomass to see if it is potentially up to the task of utilizing most or all of this material. Currently, the DOE estimates that there are 7,800MW of biomass electric power in 350 individual plants, most associated with the forest products industry. A typical base loaded biomass plant will consume 15,000 tons/MW annually (8,000 bone dry tons) of fuel. The 110 million tons of thinnings to be consumed would fuel 7,300MW of new capacity, essentially a doubling of the current industry.

Since biomass is a very bulky, low value fuel, the plants must be located quite close to the resource (within a 50–75 mile radius). Consequently, if we are to build plants to take thinnings from 2.25 million western acres annually for 20 years, all the plants must be located in the West. With the exception of Alaska, all the 89 million acres of overstocked western forests lie within the interconnected western electric grid of the Western Systems Coordinating Council (WSCC). This grid, which has a peak load in excess of 100,000MW, has recently been growing at a rate of 2–5% annually. Thus, the region needs 2–5,000MW of new capacity annually just to keep its head above water. Over a 10-year buildout period for the biomass plants, the region would need 20–50,000 new MW's, of which the 7,300MW's would be biomass, a comfortable fraction.

As a further sales pitch for biomass power, let me add that these plants need no pilot studies; either for the plants, the economics or the thinning techniques. For the last 15+ years in Northern California these plants have been reliably producing power, partially fueled by forest thinnings. Nearly a million acres of both private and public lands have been thinned to produce a "desired forest condition", and the results are there for all to see. The results on the land and in the plants are heavily supported by local government agencies, state forestry officials, air quality officials, the California Energy Commission, local environmental groups and the public. The success of these plants and their positive impact on the land is what led this body to pass the Quincy Library Group bill a couple of years ago with only one dissenting vote.

Let us turn now to the economics of using biomass power plants as a sink for large quantities of forest thinnings; both the economics of the plant and the economics on the land. Beginning with the land we find that if the U.S. were to commit to a 20-year program of fuel reduction on USFS lands in the West, it would take a massive amount of money. To treat completely 4.5 million acres annually with prescribed fire until the "desired forest condition" is achieved would likely cost in excess of $400 per acre (Figure 1), or $1.80 billion annually for 20 years. Clearly, we must look for a lower cost and more environmentally benign option.

Our 15 years of experience in forest thinning for both public and private landowners has convinced us that there is a lower cost option involving mechanical thinning that can, under certain conditions, actually return a profit to the landowner. Figures 2 and 3 represent two thinning scenarios, one with and one without pulp chip removal, that both result in a positive return to the landowner.

The key to operating a cost-effective thinning operation is to create no artificial or arbitrary barriers to thinning. The single criteria is to establish a "desired forest

condition" that is a forest that resembles presettlement condition and thus is both healthy and fire resistant. The trees that are to be left are then marked, providing the proper mix of sizes, spacing and desired species. Thickets or openings can be incorporated for specific wildlife purposes. Basically, you are removing the small trees beneath the big trees.

Once marked, the unit is then turned over to a thinning contractor who removes the unmarked material. The contractor then sorts through the removed material to find products having a value greater than that of mere fuel. In our experience an acre thinned from below to produce the "desired forest condition" will yield, in addition to 29 tons of fuel, some 2–5000 board feet of small logs. It is the value of the logs that allows the thinning cost to be completely paid by the contractor, often returning a small profit to the landowner ($180/acre). If pulp chips have a ready market in the area, the economics prove even better ($700/acre). Both of these examples assume fuel has no value and has to be delivered to a power plant for free. If the power plant can pay transportation costs, the economics improve further.

Thus, it is possible to thin large acres of national forest land in the West at no cost to taxpayers, provided there is an infrastructure of biomass power plants and forest products mills, and provided no arbitrary constraints (i.e. maximum diameter limits) are placed on the operation. If the criteria is simply to remove excess fuels and return our western forests to a presettlement condition, it can be accomplished very cost effectively and environmentally beneficially with mechanical thinning.

In nearly all the West, the infrastructure of forest products mills already exists, though a high percentage are currently closed due to recent dramatic curtailments in Federal timber sale levels. Many would have to be retooled to handle the predominantly small logs that this type of operation produces.

An infrastructure of biomass power plants does not currently exist, however, except in California. To create these plants in the West within 5–10 years will require a sound economic basis for the investment. Figure 4 is a set of economics for a 30MW biomass power plant located in the rural west and built at a cost of $60 million. The debt is financed over a 20-year period. The total expense for the plant, on a per kWh basis, is slightly in excess of 6 cents/kWh which is a reasonable cost in today's western electric markets. That cost is assumed to be as much as 2 cents/kWh over market once natural gas prices return to past levels.

To cause these plants to be built in support of a large scale forest thinning program, it will be necessary to incentivize them in the form of a Federal biomass tax credit which is currently only available to "closed loop" biomass plants. "Closed loop" is made up of fuel sources that are grown exclusively for burning, clearly not the case in this example. The change in the tax code to allow "open loop" plants a credit has been close to passage each of the last two years and is currently included in both the Republican and Democratic versions of proposed energy legislation. The minor change in tax law is certainly something that could happen this year.

Clearly, mechanical thinning of overstocked national forest lands in the West over the next two decades can solve a major share of the forest health and fire potential problems. Though the quantities of materials that must be removed are staggering, they could be accommodated in forest products mills and biomass power plants without unrealistic changes to the region's infrastructure. In addition to being an environmentally superior method of reestablishing our western forests, the proposal has the following additional benefits:

- Restores large-scale economic activity in areas of the West that have suffered great economic distress.
- Avoids the massive air pollution and threat of escape that plagues a large scale prescribed burning program (Figure 5).
- Replaces the volume of Federal timber lost over the last decade in the region, albeit with smaller logs.
- Dramatically increases the amount of renewable energy produced in the West, taking pressure off our fossil fuel needs, much of which is imported.
- Allows private capital to replace Federal dollars in solving our forest health problems.
- Can be a solution that brings together diverse interests in support (see attached brochure).

For the above-described scenario to develop, it is a rather short list of things that Congress must do:

- Establish a long-term commitment to forest thinning as the primary mechanism for reestablishing health in western forests and establish broad rules for it implementation.
- Authorize Federal land management agencies to enter into long term stewardship contracts that are measured on an "acres treated" basis rather than a traditional timber sale basis.

- Pass the "open loop" biomass provision in the IRS Section 45 Tax Credit for Wind and Biomass that is due to be reauthorized this year.

The forest products and biomass energy industries stand ready to invest many billions of private capital to create an infrastructure to cost effectively solve the forest health and fire potential problems in the West in an environmentally superior way. For that to happen, however, it will require a long-term commitment on the part of Congress and the President to the process described in this paper. While changes in Federal law required are few, they will be somewhat controversial initially, but will ultimately be proven to be the best approach, both environmentally and economically, as they have been in Northern California. We urge you to move quickly, as another fire season approaches. We do not need more studies or pilot programs; we need action from this Congress before the rest of the western forests go up in smoke.

[Figures referred to in Mr. Carlson's testimony follow:]

Figure 1 – Comparison of Forest Health Treatments

SCENARIO / TIMELINE	#1 Biomass thin then reintroduce Rx fire with associated higher value products included during the thinning operation	$/ac cost	#2 Biomass thin then reintroduce Rx fire without removal of forest products other than biomass	$/ac cost	#3 Reintroduce prescribed fire with no biomass removal in any form	$/ac cost
YEAR 1: The existing stand	500 acres, relatively flat, 30 to 50 tons of excess fuel loading		500 acres, relatively flat, 30 to 50 tons of excess fuel loading		500 acres, relatively flat, 30 to 50 tons of excess fuel loading	
YEAR 1: The activity	Harvest biomass for fuel (17 BDT/ac); logs, 4 MBF/ac. Results in a stand of trees and other vegetation spaced as prescribed. Original forest floor surface-fuels still remain. The stand can now be considered fire tolerant. . Assumes power plants will pay approx. $25/BDT for fuel and that logs will net $100/MBF	<130-180> **profit**	Harvest biomass for fuel (17/BDT/ac). Results in a stand of trees and other vegetation spaced as prescribed. Original forest floor surface-fuels still remain. The stand can now be considered fire tolerant. Assumes power plants will pay approx. $25/BDT for fuel	240-255 cost	Introduce fire in an unthinned stand. Goal is to reduce volume of surface fuels plus kill some portion of the standing green vegetation. Results are mixed often creating as much or more hazard fuel as it eliminates. After some time has passed to allow for some breakdown of the newly killed vegetation, additional Rx burns will be required to remove new accumulations.	200-300 cost
Once about **YEAR 5:** Activity	Rx Burn	75-110	Rx Burn	75-110		
YEAR 6	Attained desired future condition that can safely be maintained with future Rx burns 10-15 years apart.		Attained desired future condition that can safely be maintained with future Rx burns 10-15 years apart			
Sometime in the **YEAR 7-10** period					Rx burn: Wide range of possible costs due to variability of fuel loading resulting from 1st Rx burn	100-300
Sometime in the **YEAR 17-20** period					Rx burn: after this Rx burn the desired future condition may have been achieved or still more Rx burning may be required.	75-150
Estimated TIME and COSTS of achieving the desired future condition	**Profits of $70-75/ac; 4-6 years, results very predictable, risks low**		**$315-365/ac; 4-6 years, results very predictable, risks low**		**$375-750 (or more should additional Rx fire be required to achieve the goal); 17-20 years (or more); results are unpredictable and risks high**	

Figure 2

Economic Analysis of Biomass Harvesting Operations Scenario #1 (for Multiple Products on Per Acre Basis)

	Volumes			Values	Costs	Profit
	(MBF)	(GT)	(BDT)			
Logs	3	17	10	$900	$300	$600
Pulp Chips		25	15	$945	$630	$315
Hog Fuel		10	6	($63)	$150	($213)
TOTALS		**52**	**31**	**$1,782**	**$1,080**	**$702**

ASSUMPTIONS:
Moisture content (% water) = 40%
Green ton log weight/MBF = 5.7

INCOME FROM OPERATIONS:
$702/acre
$702/52 tons= $13.50/green ton

Product Value Assumptions:
$/MBF log value on truck = $300
$/BDT pulp chip value in van = $63

Note: hog fuel cost assumed to be $0 minus trucking figured @ $45 per hour for 3.5 hours (60-70 miles one way)

Production Cost Assumptions (on board truck):
$/MBF logging costs = $100
$/BDT pulp chipping costs = $42
$/BDT hog fuel processing costs = $25

Carlson

Figure 3

Economic Analysis of Biomass Harvesting Operations
Scenario #2 (for Multiple Products on Per Acre Basis)

	Volumes			Values	Costs	Profit
	(MBF)	(GT)	(BDT)			
Logs	4	23	14	$1,200	$400	$800
Pulp Chips		0	0	$0	$0	$0
Hog Fuel		29	17	($183)	$435	($618)
TOTALS		**52**	**32**	**$1,017**	**$835**	**$182**

ASSUMPTIONS:
Moisture content (% water) = 40%
Green ton log weight/MBF = 5.7

INCOME FROM OPERATIONS:
$182/acre
$182/52 tons= $3.50/green ton

Product Value Assumptions:
$/MBF log value on truck = $300

Note: hog fuel cost assumed to be $0 minus trucking figured @ $45 per hour for 3.5 hours (60-70 miles one way)

Production Cost Assumptions (on board truck):
$/MBF logging costs = $100
$/BDT hog fuel processing costs = $25

Carlson

Figure 4

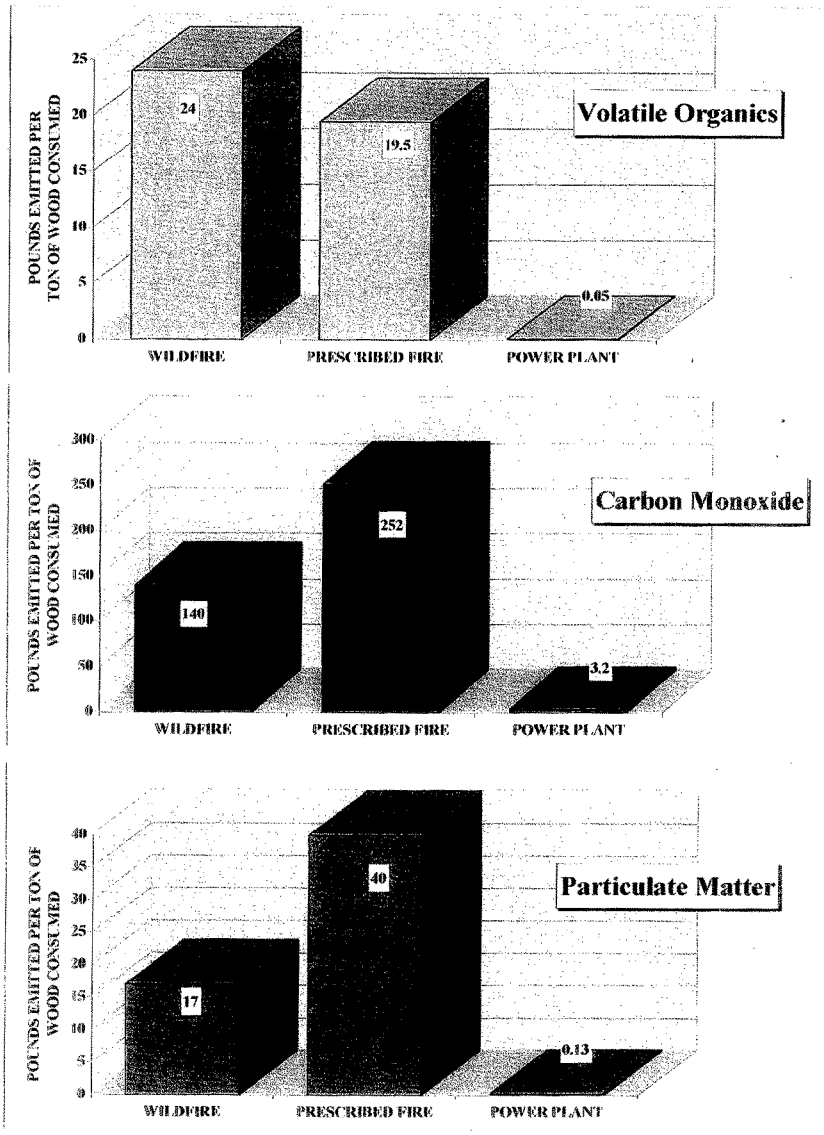
Biomass Plant Economics

Costs	**¢/kWh**
Debt Service	3.0
Fuel	1.30
O&M	1.25
A&G	0.50

Total	6.05¢/kWh
Revenue	4.00¢/kWh

Deficit	2.05¢/kWh
Federal Tax Credit	(1.7¢/kWh after tax, or 2.65¢/kWh pre-tax)
Tax Benefit (equiv.):	2.65¢/kWh
Equivalent Profit	0.6¢/kWh or $1.5 million annually

Figure 5
Pollutant Emmission Comparison



Mr. MCINNIS. Mr. KenCairn?

STATEMENT OF BRETT KENCAIRN, PROGRAM DIRECTOR, INDIGENOUS COMMUNITY ENTERPRISES, FLAGSTAFF, ARIZONA

Mr. KENCAIRN. Good afternoon, Mr. Chairman and members of the Subcommittee. My name is Brett KenCairn and I am the Executive Director of Indigenous Community Enterprises in Flagstaff, Arizona. We are an organization that was founded explicitly to find uses for the small-diameter thinnings from restoration treatments that benefit local communities. I am pleased to work on this topic with you, as I have 10 years' experience working on this in both the Northwest and the Southwest.

I have four issues that I want to raise for you with regard to this and the considerations that you should, I think, have with it. First is the issue of scales we talked about last week. As I noted in my testimony last week, the scale of operations in wood products facilities is extremely important. The choice of scale will affect not only the distribution of the benefits but also how much wood is used and how long it will take to develop these facilities.

As an example, in the biomass industry, my organization is working right now to evaluate the implementation of a small-scale biomass facility associated with the rounded processing facility that we are building in the Navajo mission. We are looking at a facility of about a half a megawatt to a megawatt in size, would cost about $1 million to establish, and would use about a truckload to two truckloads a day of material. That is a level at which the local entrepreneurs can actually make that happen on a community-based scale.

In contrast, many of the other alternatives being considered are facilities in the 30- to 50-megawatt range that would cost, as we have heard, about $60 million to establish. That is going to be very difficult for a local community to be a major partner in the ownership of such a facility and it is going to require a substantial volume of material, on the scale of 20 to 30 truckloads a day. It has been my experience working in forestry for 10 years that we are not yet at the point that we can actually guarantee that level of material, and so it could create this sort of conflict that we have been gridlocked with for about 10 years.

The second major issue is time frames for implementation. It has been my experience that these community-scale enterprises, such as the ones that we are working on in Northern Arizona, California, and the others that you have seen are much quicker to market. We believe that we can put a round wood processing facility and a biomass facility online in 12 to 18 months. Oftentimes, these larger-scale facilities would take, on a minimum, two to 4 years to establish.

The third issue is the distribution of benefits. Again, if we look at creating a few large-scale concentrated facilities, that is going to concentrate the economic benefits in a few locations. By creating a more disperse set of facilities across rural communities would mean we can distribute those benefits more broadly and make them more compatible with the characteristics of supply that exist in that area.

And fourth, of course, the economic influences of management that one member has mentioned. There is a substantial public distrust of economic motives and one of the best assurances that we have against economic motives driving this process is to keep the scale reasonable to the locale and to the forest.

I would like to then briefly describe the work that we are doing in Northern Arizona. We, about 2 years ago, as we were looking for other types of uses for this material, we were pushed by the Navajo, who said hat in their community, there was a substantial need for wood products. Seventy percent of that community still heats with wood and there is a huge need for housing. About 60 percent of the Navajo population either does not have their own home or is living in very substandard conditions. In addition to that, the community has about a 50 percent poverty rate and about 50 percent of their students are not even graduating from high school. So we saw this as an opportunity for not only using this material but also creating an economic development benefit, as well.

What we have been developing, then, for the past year is the establishment of a round wood processing facility, state of the art, in fact, that could produce not only affordable housing in the shape of Hogans of traditional Navajo design, but a whole series of other products that could be used in both local and other markets. By doing so, we are also developing and testing technologies that would be relevant to other rural communities in other locations, not only our area, but across the West. We believe that there is strong support for this, not only in our community, but we have a strong pledge from the Navajo president himself.

The summary of all this, I would say in terms of the scale issue, is that we believe that community-based, community-scaled enterprises can create more and lasting benefits for rural communities. Those benefits can be more equitably distributed. The implementation and time to market is much shorter, and we can actually create immediate opportunities for utilization of some of these forest fuels and thinnings. And finally, that we would reduce the perverse incentives, if you want to call it that, of economic interests that have become too big for that region.

To accelerate this, though, we have two recommendations. The first is that we need to move research and development out of academic centers and urban centers and into the rural communities that are actually doing this work themselves. I have already talked with Tom Hamilton and others at the lab who have been very supportive of this to begin working right in the communities there are trying to develop the businesses with this research and development. We have some ideas with this regard that we have actually been working on and we would like to start sharing with your staff soon.

The second is that we really need for you to be a watchdog on the Forest Service and others to make sure that the drive to implement this forest management does not lead to contracts that are so large that our locally-scaled enterprises can no longer compete for those contracts because they have become too big.

And finally, as we have said before, the economic action programs have been extremely successful in trying to inspire this innovation and development and we would like to continue to have

your support for those and, in fact, see those funding levels increased.

I would also just note in passing, as I close, that Tom and his lab have done a yeoman's work and I think that they have been substantially underfunded and we hope that they get more funding to help support this work, as well. Thank you, Mr. Chairman.

Mr. MCINNIS. Thank you, Mr. KenCairn. I will appreciate you visiting with the staff on moving it out to the rural areas.

[The prepared statement of Mr. KenCairn follows:]

Statement of Brett KenCairn, Director, Indigenous Community Enterprises

Dear Mr. Chairman and members of the Subcommittee:

Good morning, my name is Brett KenCairn. I am the Executive Director of Indigenous Community Enterprises, a non-profit organization based at Northern Arizona University in Flagstaff, Arizona. ICE was founded for the explicit purpose of creating new economic and enterprise opportunities in rural and Native communities associated with public forest restoration in northern Arizona. Our primary focus of development over the past 18 months has been creating new uses for the small diameter trees being removed in restoration treatments. Prior to helping found ICE, I worked for almost 15 years on forest restoration and community development issues in both the southwest and the northwest. I have worked with the Forest Products Lab and other institutions for over six years looking for new uses for the byproducts of restoration, and I also worked on more than a dozen community initiatives attempting to build economic development opportunities using these small diameter trees and other restoration byproducts.

It is my understanding that a central purpose of this hearing is to examine options for achieving three broad goals associated with finding uses for forest fuel materials:

- Creation of viable uses for restoration by-products,
- Development of enterprises that strengthen and diversify rural economies,
- Reduction of the dependence on and use of fossil fuels

To address these goals, I would like to structure my presentation today in three parts. First, I would like to suggest a conceptual framework with which to consider how to best make use of small diameter trees and the key obstacles and opportunities we face with each major strategy. Second, I will describe briefly the work of my organization and how it illustrates the key issues related to biomass utilization. Finally I will outline a strategy we believe could substantially accelerate the evolution of wood product and biomass strategies that benefit both communities and forests.

Forest Fuels Utilization Options

For me it has been useful to recognize that there are three broad categories of potential uses for the small diameter tree byproducts of restoration. These are:

- Breakdown into dimensional lumber e.g 2 x 4, 4 x 4 etc.;
- Conversion into raw fiber/biomass;
- Processing as roundwood (post and pole type material).

These distinctions help us to recognize where there is already substantial research and development taking place. They also indicate consequences about choices of scale for enterprises of each type. The different choices among these three approachs will also effect the relative costs and time-to-market that each strategy will require. Finally, we can compare how particular strategies will effect local communities.

As an example, in 1997 I participated in a proprietary evaluation of the viability for establishing a state-of-the-art one-pass saw mill in the southwest. This is technology that uses laser optimization and other advanced techniques to cut an entire log into the opitimal mix of dimensional lumber in one pass. This approach would have cost around $10–15 million to establish, and could have been economically viable at the scale of as little as 15 million board feet of base material annually. Start up time for a facility of this type is probably 6–9 months. Although relatively expensive, it is potentially within the range of existing more established local entrepreneurs in some locations.

In contrast, a biomass facility on the scale typically proposed (30–40 megawatts) is going to cost in the neighborhood of $25–50 million to capitalize. This amount almost guarantees that local investment will be insufficient. Often majority ownership of these types of facilities is held by interests outside the community. A biomass fa-

cility at this scale will require 30–40 million board feet of material, and it will, depending on environmental permitting and other compliance issues, take 2–4 years to establish. This is not, however, the only scale of biomass that can be developed. Smaller scale systems, in the range of 1/2 to 1 1/2 megawatt facilities are now viable and can be capitalized for around a million dollars.

The final utilization option I want to describe today is roundwood. Rather than cut small diameter trees into boards, or grind it into chips or sawdust, we can also leave it in the form that nature engineered it (round). In this form it is stronger and has less propensity for defect. Milling small logs often results in high proportions of defect or low grade lumber even using the best of technologies. Leaving small trees in their round form also creates opportunities for utilizing the unique aesthetic properties of this material. These roundwood uses are currently the least well explored. The Forest Products Lab has done its best to provide support given very limited budgets for this topic. No other research organization in the country has made a substantial effort to investigate these issues, largely because they have not been of interest to the large companies that typically shape research priorities. This is, however, an area of particular interest to community-based initiatives because it represents uses that are more congruent with local skills and experience and has lower barriers to entry (capital, expertise, available markets).

The Navajo Hogan/Roundwood Manufacturing Project

My own experience illustrates this situation and the potential for both roundwood and community-based community-scaled initiatives. While working with the Grand Canyon Forests Partnership, I was looking at a wide variety of options for making use of the low-grade small diameter trees being removed in restoration treatments on public forestlands. During that time I was approached by several Navajo people who suggested that there was a huge need for wood products on the Navajo Nation. First, over 70% of Navajo families still use wood as their primary source of heat. Second, there is a huge housing shortage on the Navajo Nation. The Navajo Division of Economic Development reports that there is a need for over 30,000 new homes on the Nation. This represents probably 60% or more of the total population that either has no home of their own or is living in seriously substandard housing.

In our conversations with Navajo people we learned that there was a strong desire to return to more traditional housing designs, namely the octagonally shaped, log built Hogans. These structures were traditionally built from logs of about the same diameter as those we are currently attempting to find uses for. So began a year long process to work with Navajo elders and others to develop Hogan designs that could incorporate small diameter logs, maintain traditional design features, but have the more modern amenities that Navajos would also like to enjoy (indoor plumbing, electricity, well insulated space). ICE recruited a diverse set of partners including ASU's School of Architecture, NAU's Colleges of Forestry, Engineering, and Business, the Forest Service and Grand Canyon National Park, and private sector partners to begin developing and evaluating these opportunities. I have included computer renderings of the designs that we have developed in this process.

A core goal in this development process was to create a strategy in which the use of small diameter trees and the creation of affordable community housing could also create economic opportunities for community residents. Per capita income on the Navajo Nation is less than $6,000, barely 1/4 of the national average. Over 50% of Navajo live below the poverty line. Unemployment rarely drops below 40–50%, and a high school drop out rate of nearly 50%. By creating a manufacturing facility Cameron, Arizona, a rural community in the western portion of the Navajo Nation, we believe we can address all three of these issues—wood use, affordable housing, and economic development'simultaneously.

Throughout this process we continue to work very closely with community members. We recently held meetings at both the community level and with the President of the Navajo Nation in Windowrock, Arizona. A number of elders from the community joined us in this recent meeting with the President and were the ones who impressed on him the importance of supporting this community-based project. As a result of this meeting, the President pledged funding to assist with the renovation of a currently unused industrial building in the community we have targeted for the manufacturing facility.

A key element in this development has been to identify the most effective ways to process small diameter trees into roundwood building materials. We have looked at technology both nationally and internationally and at a series of machines that can create uniform dimension material ideal for mass building applications. Our goal is to create not only Hogan structures, but a wide array of products—gazebos, shade structures, fencing, panelized building products, fencing, furniture—from small diameter wood.

At the same time, we want the facility to operate at a scale that is well suited to the current social, economic, and ecological situation. We anticipate a start-up cost of around $1–1.5 million. We project direct employment of 15–20 people when we reach full production. This does not count support jobs created. At this scale we would utilize between 1–2 million board feet per year depending on other product development. Far more than this amount already exists on the Kaibab and Coconino National Forests in sales that are through the NEPA process and sit on the shelf without bidders due to the lack of uses for small diameter trees.

Despite this apparently modest use of wood, our estimates suggest that this facility would enable the treatment of over 1,000 acres of forestland annually, several times more than is currently being treated in our area. Most important, this facility would be far more flexible and adaptive to changes in resource flows and would not require guaranteed contracts of large volumes of biomass in order to assure capitalization.

As a companion to our wood product facility, we are also currently evaluating a range of small-scale biomass technologies. Again, the emphasis is on a scale that is within the capacity of a community-based enterprise to establish and maintain, utilizes volumes of biomass that are well within the range of what is available, and can be established in a relatively short timeframe. We are evaluating several types of technology that range in size from 100 Kw to 1 Mw. Material demands would be from 2–20 tons of biomass day (compared to 600–700 tons/day for many biomass facilities). Again, capitalization costs are relatively small—around $1 million—and could be established in 9–12 months.

Finally, we feel that this approach is much more politically viable than strategies that create large capital intensive facilities with large wood volume needs. Benefits of this smaller scale approach clearly flow to local people, both in the products and in the employment opportunities associated with those products. The business development strategy builds community assets and human capital. The types of materials the project has been designed around do not require any of the larger trees generally at the heart of many timber sale disputes. The scale of the operation makes more flexible and adaptive to changes in resource flows, thus reducing the propensity that an economic interest will attempt to direct forest management to maintain its material flows.

Accelerating Appropriate Scale Development

To summarize my statements to this point, I have asserted that smaller scale, community-based wood products and biomass enterprises will:

- Create more, and more lasting, rural community benefits,
- Be 1–2 times faster at scaling up to implementation,
- Enable more immediate implementation of strategic fuel reduction treatments,
- Engender more political support (fewer appeals).

However, based on the experience of many of us who have been working for over 10 years in partnerships and forest-based community development, I believe the current structure of research and development necessary to support these appropriate scale, community-based strategies is inadequate. There are several major deficiencies that need to be addressed:

- Inadequate funding, particularly for community-based, community-scaled alternatives;
- Too great a distance between research facilities and areas attempting to innovate; and
- Lack of an immediate connection between research and implementation.

As practitioners we feel strongly that a new approach to research and development needs to be created. In this model, research and development would be based in rural communities with academic and institutional support being provided based on the particular innovations being attempted in that context specific situation. In this way, research results would be directly relevant to the problems being encountered, and results would feed directly into support for enterprises that are creating local jobs and using restoration by-products. We refer to these rural-based facilities as Innovation and Development Centers to indicate their focus on developing and applying new strategies as quickly as possible, rather than become preoccupied with research alone.

We imagine a series of these facilities, both in the West and in other portions of the country where community-based approaches need to be developed. At the same time, we feel there is a particular urgency to create these centers in the West given the challenge created by the substantial funding currently going towards removal of forest fuels. An existing network of community-based forestry initiatives already exists and has been working on these issues for the past decade. This network would be a logical starting point for establishing these types of facilities. As a net-

work of non-profits, these organizations are committed to the larger goal of assisting all forest-based rural communities find viable economic diversification strategies.

It is important to recognize the existing programs that are working and could be expanded to support such efforts. The Economic Action Program run through the State and Private Forestry program of the US Forest Service has been one of the most successful vehicles for spawning and supporting innovation at the local level. Because of their direct presence in rural communities, the Forest Service has been much more effective at delivering both funding and technical assistance to rural communities than comparable programs such as USDA Rural Development or other state and Federal programs.

Congress should also monitor the contracting procedures being used by the Forest Service and BLM to insure that an adequate share of these restoration services (thinning, burning, watershed restoration etc) and byproducts (e.g. small diameter thinnings) are being secured by smaller local contractors.

We look forward to working with Congress to find ways to implement these and other strategies currently being developed. We believe we have a great deal to offer in finding solutions that are economically practical, socially equitable, ecologically responsible, and politically viable.

Thank you for the opportunity to present to you today.

Mr. MCINNIS. Mr. Holmer?

STATEMENT OF STEVE HOLMER, CAMPAIGN COORDINATOR, AMERICAN LANDS ALLIANCE, WASHINGTON, D.C.

Mr. HOLMER. Great. Thank you for this opportunity to testify. The American Lands Alliance supports a smart response to meet our energy needs that focuses on greater efficiency, alternative energy development, and reducing demand. We do not believe important wild lands, such as the Arctic Wildlife Refuge and the front range of the Rockies, wilderness areas and national monuments, for example, should be sacrificed for energy development. We also do not believe that it is responsible to consider intensive logging and expansion of biomass that could put more pressure on our forests.

In particular, I would just like to say that the best example that we have right now of a similar technology is chip mills in the Southeast United States. When this technology was first proposed, the idea was utilization of second-growth forests and engineering developments to utilize these plantations that are there. So plants started getting situated all across the Southeast, and then what we have now is a situation where the forests are being over-cut. According to Forest Service data, softwood extraction is now currently exceeding growth, and within the decade, the same will be true for hardwoods. And so we are very concerned that introduction of biomass across the Western United States could ultimately lead to over-cutting of the forests.

We also have some very substantial concerns about the hazardous fuel program that everyone is predicating will make this material available. Just to give an idea of some of the concerns the environmental community has about the hazardous fuel program, I would like to request that this letter be included in the official record, and I can make copies available to all the members. This was a sign-on letter endorsed by all the national environmental groups that said that mechanical fuels treatment should be focused on the urban-wildlands interface, and we believe that, according to Forest Service data, should be about 200 feet from the actual structures and communities. So when you look at those lands, the vast

majority of those lands are, in fact, privately held, not national forest lands, and certainly not back-country areas or roadless areas. And so we would like to see the mechanical fuels program focused on those areas.

Mr. HOLMER. We would also like to see substantial environmental safeguards included to the program—protection for old growth, protection for roadless areas, protection for riparian areas and sensitive habitats for endangered and threatened species. And right now, we have very serious concerns that the direction the Forest Service is taking with this program is not in keeping with those principles.

For example, the Forest Service currently admits that only 25 percent of the projects under the fuels program are anywhere close to the urban-wildlands interface. We also strongly disagree with how broadly the agency has defined the urban-wildlands interface. The fact is, we do not see any solid criteria defining these areas or prioritizing the treatments. How do they figure out where they should start and what are the priority restoration needs for that given area? So we do feel like we need better ecological analysis to happen before any activities take place.

Similarly with biomass, we feel like there needs to be a broad-scale cumulative impact analysis to make sure that if there is going to be sourcing from forests, that, in fact, it is not going to lead to over-cutting. We do see a lot of potential for biomass using urban waste streams, using agricultural waste, but given all the pressures and controversy surrounding forest management, we simply do not see a massive expansion of this program being appropriate at this time.

We also see some other very substantial problems with this program, and some of this was brought out in other testimony. For example, one testimony is calling for long-term feedstock contracts. There is a long history of these lengthy contracts, in Alaska for pulp and paper, for example. These contracts have led to unsustainable logging, and, in fact, illegal logging at times because the pressure to produce the volume was so powerful. So we do not think that these kinds of long-term contracts are appropriate.

Another key idea is that these plants are going to need tax incentives and subsidies in order to continue forward, and I do not know if Congress is currently prepared to continue spending the billions of dollars that were appropriated last year, but that is precisely what would be necessary in order to keep a program like that moving. In our view, that money would be much better spent on other areas—improving energy efficiency, dealing with the private landowners, rather than logging on the public lands.

So those are some of our general concerns. I would be happy to answer any questions that you all might have about our testimony.

I did want to make one other comment, which has to do with post-fire salvage logging. The Forest Service has endorsed a report called the Beschta Report, which recommends the complete prohibition of salvage logging in severely burned areas. In our view, post-fire salvage should have no part in the hazardous fuel program or as a feedstock for biomass plants. Thank you for this opportunity to testify.

Mr. McINNIS. Thank you, Mr. Holmer, for your information and that of the other witnesses.

[The prepared statement of Mr. Holmer follows:]

Statement of Steve Holmer, Campaign Coordinator, American Lands Alliance

INTRODUCTION

In response to the wildfire season last year the Forest Service has announced a new National Fire Plan which the agency is using to justify a massive increase in yearly Congressional appropriations to pay for more mechanical fuels reduction treatments and more commercial "thinning" projects. The Plan sets the stage for the industrialization and mechanization of forest restoration by advocating a massive ten to fifteen year hazardous fuels reduction program that will eventually affect most National Forests. Without additional analysis, development of criteria and environmental safeguards, we are concerned that forest ecosystems will be put at risk by mechanical fuels reduction projects.

HAZARDOUS FUELS PROJECTS LACK ENVIRONMENTAL SAFEGUARDS

There is a real risk that ecologically harmful projects will be common place because there are no safeguards to exclude projects from roadless, old growth, and other ecologically important areas that don't need fuels reduction treatments. Projects are already emerging and there is growing concern about the emphasis on commercial commodity production and the lack of emphasis on doing projects—where the work needs to be done—in the urban/wildlands interface.

ROOT CAUSES NOT BEING ADDRESSED

According to a Dec. 5 Congressional Research Service report "Forest Fire Protection," historic grazing and logging practices (by encouraging growth of many small trees) and especially fire suppression over the past century, appear to have contributed to unprecedented fuel loads in many areas. However, under the current Fire Policy, it appears that grazing is being ignored and that more logging (mechanical fuels treatment) and fire suppression are being prescribed as the solution. This contradicts common sense and will in the end lead to further degradation of forest ecosystems. If we are to seriously talk about how to restore ecosystems it is necessary to reform the logging, grazing, and fire suppression programs that are at the root of poor ecosystem conditions.

URBAN/WILDLANDS INTERFACE UNDEFINED

An issue that is of primary importance in the Forest Service's presentation of the National Fire Plan is their unwillingness to define the urban/wildland interface zone. The Forest Service has failed to set hard criteria about how to choose the communities in most need for fuels reduction. One of the major components to the National Fire Plan is to carry out most of the first and second year projects in the communities most "at risk." However, the communities that the Forest Service is evaluating as the most "at risk" comes from a laundry list of communities published in the Federal Register on January 4, 2001. The Governors and the National Association of State Foresters created this community list without any criteria about what a community at risk is. We are very concerned that to date, the Forest Service has ignored the intent of Congress to focus fuel reduction projects on the urban/wildlands interface to save lives and property. Instead, the Forest Service recently admitted that only 25% of the current projects are in the area they define as the interface/zone. In addition, we are also concerned that the definition being by the agency is overly broad by including power lines, roads and other structures.

INCREASED PRIORITY NEEDS TO BE PLACED ON PROTECTING COMMUNITIES

Homeowners must be educated about the danger associated with the wildland-urban interface zone and the necessity to do their part to reduce the risks. Jack Cohen, research scientist at the U.S. Forest Service's Fire Sciences Lab in Missoula, Montana, has demonstrated that to reduce fire risks in the urban/wildland interface zone, removing fuels from within 40 meters of a structure and reducing the flammability of the structures are more effective and efficient than landscape wide thinning. According to Cohen, "The evidence suggests that wildland fuel reduction for reducing home losses may be inefficient and ineffective. Inefficient because wildland fuel reduction for several hundred meters or more is greater than necessary for reducing ignitions from flames. Ineffective because it does not sufficiently reduce firebrand ignitions."

Congress should encourage state and local governments to require homeowners living in the interface zone to protect their own private property through commonsense fire safety practices, such as the use of fire-resistant roofing material and the clearance of brush and other flammable materials near homes.

CONDUCT ECOLOGICAL ASSESSMENTS FOR ALL FUEL REDUCTION PROJECTS

The Forest Service should be required to identify restoration priorities before any restoration or fuels reduction activities take place. This assessment should involve the public and provide a broad array of alternatives—not just commercial thinning—to address priority needs in the area. For many areas, removing roads, invasive species, and cows combined with prescribed burning would the best prescription for ecological restoration.

HAZARDOUS FUELS PROJECTS SHOULD NOT MIX WITH THE TIMBER PROGRAM

We are concerned that fuels reduction projects are being conducted as part of or conjunction with timber sales. This could allow funds intended for fuels reduction to be used to subsidize logging on the National Forests. Mixing these funds, are allowing for the appearance that hazardous fuels reduction is being used to bolster the timber program could ultimately undermine public support and the program's effectiveness.

Attached to this testimony is a sign on letter endorsed by over seventy-five national, regional and local environmental and grassroots forest protection groups urging environmentally responsible direction for the fiscal year 2001 fuels reduction funding. It represents a consensus from the environmental community on the types of projects we will support. Projects that fall outside of these guidelines are considered fair- game by environmentalists for protests, appeals and litigation.

Congress should prohibit the use of commercial timber sales and stewardship contracts for hazardous fuels reduction projects. Commercial logging removes the most ecologically valuable, most fire-resistant trees, while leaving behind highly flammable small trees, brush, and logging debris. The use of "goods for services" stewardship contracts also encourages logging larger, more fire-resistant trees in order to make such projects attractive to timber purchasers. The results of such logging are to increase fire risks and fuel hazards, not to reduce them. The financial incentives for abusive logging under the guise of "thinning" must be eliminated.

ESTABLISH SEPARATE CONTRACTS FOR FIRE HAZARD REDUCTION PROJECTS

All fuels reduction projects should be paid for with appropriated dollars. Any material of commercial value must be sold in a separate contract and all revenues must be returned to the Treasury. This would eliminate the current incentive to include larger, more valuable, fire-resistant trees in order to make timber sales a.k.a. "fuels reduction projects" more attractive to timber companies.

COMMERCIAL LOGGING INCREASES FIRE RISK

There is strong evidence that commercial logging increases fire risk. According to the Congressional Research Service, the remaining limbs and tree tops or slash substantially increase fuel loads on the ground, at least in the short term, until the slash is removed or disposed of through burning. The government's Interior Columbia Basin Management Project found that logging slash increased fire risk for up to thirty years. The Sierra Nevada Ecosystem Project confirmed that commercial logging had been the single greatest contributor to higher fire risks in the region stating, "Timber harvest, through its effects on forest structure, local microclimate and fuel accumulation, has increased fire severity more than any other recent human activity."

POST FIRE SALVAGE LOGGING SHOULD BE PROHIBITED

There is no scientific evidence that post-fire salvage logging reduces the future risk or severity of wild fires. There is also substantial evidence that this form of logging causes significant environmental harm by disturbing already impacted soils and vegetation, removing canopy cover, removing woody debris needed to create new soils, harming wildlife and plants that depend on recently burned areas. Post-fire salvage logging should have no place in the hazardous fuels program.

The 1995 report, "Wildfire and Salvage Logging, Recommendations for Ecologically Sound Post–Fire Salvage Management and Other Post–Fire Treatments" known as the Beschta Report found considerable evidence that post-fire salvage logging would likely result in persistent, significant adverse environmental impacts. The Beschta Report was prepared by an expert team of agency and university sci-

entists and was endorsed the Forest Service. The report recommends the complete prohibition of salvage logging in severely burned areas, on erosive sites, on fragile soils, on steep slopes and any other sites where accelerated erosion is possible. The Six Rivers National Forest has released a Draft Environmental Impact Statement (EIS) outlining a proposal to salvage log in the 1999 Megram Fire area west of the Trinity Alps Wilderness. The proposed "Fuels Reduction for Community Protection–Phase I" project would log approximately 1,050 acres of ancient forests in the Mill, Horse Linto, Sharber, and Quinby Creek watersheds, including within unprotected roadless areas. Approximately 0.4 miles of new temporary roads would be constructed, and another 2.65 miles of previously used roads would be reconstructed, to facilitate the logging.

Despite the name, the project has nothing to do with either fuels reduction or community protection. The proposed logging and road construction is located miles away from any community, and will more likely increase the risk of fire rather than decrease it. The forests and streams in the area provide critical refuge for a host of plants, fish and wildlife species, including rare orchids, salamanders, northern spotted owls, goshawks, fishers, steelhead, chinook, and coho salmon. The proposed logging and road construction threatens to severely impact these species, as well as domestic water supplies in Hoopa and other Trinity River communities. To avoid citizen challenges, the Six Rivers NF has announced that it is seeking an "Emergency Situation" determination that would exempt 863acres of the project from the appeals and litigation process. The Six Rivers NF is claiming that unless an emergency situation is declared, the administrative appeals process could prevent them logging for another year, at which point the burned trees would be so decayed that it would not be economical to log them. The Six Rivers NF is attempting to circumvent the ability of citizens to force the agency to obey the law, and are using a thinly-veiled "emergency" to get the cut out.

There is no need to log within the Megram Fire area. The agency should instead work to restore past impacts the area from logging, roads, grazing, and fire suppression. The Forest Service should also withhold the emergency exemption for the proposed timber sale. There is no "emergency" in the area, the only reason the Six Rivers NF is seeking the exemption is for economic purposes, and that the proposed exemption would seriously undermine the public's trust in the agency.

ENVIRONMENTAL LAWS AND PUBLIC PROCESSES MUST BE FOLLOWED

Environmental laws, the NEPA process or ESA consultation should not be suspended, expedited, or streamlined. According to the Congressional Research Service, the extent to which fuel management might reduce the extent, damage and control costs of wildfires has not been precisely quantified. Given this uncertainty and lack of scientific evidence that mechanical fuels reduction benefits forest ecosystems, it is necessary that a complete review of each project take place. Streamlining laws and shutting the public out of these projects will only lead to mistrust and a greater likelihood for public opposition, appeals, and litigation.

ROADLESS AREAS AND FIRE RISK

The roadless policy contains broad exemptions for fuel reduction and restoration projects and the Forest Service has testified that the roadless policy will not prevent the agency from meeting its firefighting responsibility. In addition, agency research indicates that roadless areas are in general not the areas most at risk and contain few communities nearby. In addition, increased human access leads to more fire ignitions—88% of the fires from 1988–1997 were caused by humans, with only 12% caused by lightning. Scientific analysis of the 2000 fire season revealed that the vast majority of burned acres were located in previously logged and roaded areas, not in roadless or wilderness areas.

BIOMASS POWER GENERATION

The American Lands Alliance views the combustion of agricultural and urban wastes to generate electricity as a potentially promising source of closed CO2-cycle power. The use of trees for this purpose, however, may pose many problems. We are opposed to any biomass proposals that involve the chipping of whole trees or the degradation of forest or other natural ecosystems. The growth of biomass for power generation should not result in harm to intact, recovering, or potentially recoverable natural ecosystems. Practices and outcomes that should not be part of the production of biomass for power generation include:

1. The harvest of natural ecosystems, e.g. primary or second growth natural forests.
2. The conversion of natural or recovering natural ecosystems to plantations, or of lands that are plausibly candidates for recovery.
3. The use of whole trees for biomass power generation.

4. The shortening of the rotation interval between timber harvests.

5. The increased use of herbicides, pesticides and fertilizers to accelerate the growth of trees, as these chemicals are likely to degrade water quality and ecosystem function, and to threaten populations of native fish, wildlife, and plants.

6. The use of genetically modified trees and/or invasive tree species. The ability of invasive species to harm natural ecosystems is well established. The impacts of genetically modified trees have not been adequately assessed, particularly in regards to their invasiveness potential, effects on the food chain, and possible unforeseen impacts.

7. The degradation of soil through erosion or other processes.

8. Negative impacts on the amount, timing, temperature, sediment load, and other measures of the quality of natural bodies of water. Some candidate tree species for biomass power generation are said to require intense irrigation.

[The letter submitted by Mr. Holmer follows:]

Alaska Rainforest Coalition ✻ American Lands Alliance ✻ Defenders of Wildlife ✻ Earthjustice Legal Defense Fund ✻ Endangered Species Coalition ✻ Friends of the Earth ✻ John Muir Project ✻ National Audubon Society ✻ National Catholic Rural Life Conference ✻ National Environmental Trust ✻ National Forest Protection Alliance ✻ Native Forest Network ✻ Natural Resources Defense Council ✻ Network for Environmental and Economic Responsibility of the United Church of Christ ✻ Pacific Rivers Council ✻ Sierra Club ✻ The Wilderness Society ✻ U.S. Public Interest Research Group ✻ World Wildlife Fund

The Honorable Dan Glickman
Secretary of Agriculture
Washington, D.C. 20250

The Honorable Bruce Babbitt
Secretary of the Interior
Washington D.C. 20240

Dear Sirs:

On behalf of the undersigned national and grassroots forest protection organizations, we are writing to express concern about provisions in the Interior Appropriations bill which threaten to increase logging and undermine good stewardship on the public lands. We were pleased with the Administration's efforts to underscore the importance of avoiding another salvage logging debacle, protecting roadless areas and prioritizing the noncommercial removal of brush and shrubs in the recent report to the President.

We feel that similar efforts are required in preparing for the expenditure of the significant funds provided for hazardous fuels reduction and rehabilitation in the Interior Appropriations bill. Of particular concern are the provisions concerning mechanical treatments for hazardous fuels reduction, timber sale funding levels and the stewardship contracting rider.

Hazardous Fuel Treatments Lack Environmental Safeguards

Our community strongly supports a scientifically sound fuels reduction program targeted to protect communities in the urban wildlands interface. However, the fuels reduction language lacks adequate environmental safeguards to protect Wilderness, roadless areas, old growth forests, endangered species habitat and riparian areas. We request the Secretaries issue a directive to ensure that these ecologically critical areas will be excluded from mechanical fuels reduction projects.

In addition, we believe direction is needed to ensure that fuels reduction projects focus on the fine and surface fuels which create the greatest fire risks. Forest Service fire staff indicate the priority for treatment should primarily be trees below 4" inches in diameter. We urge the Secretaries to direct the agency to develop ecologically-sound treatment criteria to prevent the logging of large trees.

The Interior bill also includes language providing the Administration with an option to develop expedited NEPA procedures within the next 60 days. We are strongly opposed to any weakening of the current NEPA procedures and public involvement in decision-making for fuels reduction projects. Instead, we urge you to utilize existing NEPA regulations, which have been carefully developed and time-tested, in

planning and reviewing projects to be conducted with these funds. Moreover, fuels reduction options entail great uncertainty about effectiveness and often — especially in cases of mechanical removal of vegetation — are accompanied by significant environmental harm. As practiced to date, therefore, they generally are among the land management activities most needing careful consideration and public input. We respectfully urge the Administration not to exercise this authority to expedite NEPA procedures.

We also believe the funding increase for fuels reduction could be better targeted to protect communities at risk from wildfire. Forest Service research indicates that to protect homes and communities, the focus for treatments should be within 200 feet of the structure, not in distant wildlands or forests located miles away. We urge the Administration to adopt this standard and to redirect emergency fuels reduction funds to support the Firewise program and other cooperative efforts for community protection. In addition, grants to property owners and communities to fireproof their homes and businesses are needed to help clear brush and replace wooden roofs with metal ones.

There is a significant increase in funding for preparedness activities. We urge the Administration to make the completion of fire management plans the top priority for these funds. Currently only 5% of the National Forests have completed fire management plans which were mandated by the Fire Management Policy of 1995.

The Interior bill directs that $15 million in fuels reduction funds shall be used to implement the Quincy Library Group Plan which could allow these funds to be used for commercial logging. This Plan calls for extensive logging in the name of fuels reduction in the Sierra Nevada and is strongly opposed by the environmental community. We are concerned that funds intended for fuels reduction will go instead for a logging program that will cause environmental harm and not reduce fire risks. We urge the Secretaries to direct that none of the Quincy funds, or other emergency hazardous fuels funds will be spent on or in conjunction with commercial timber sales.

We are concerned that the Forest Service and BLM will attempt to take old projects off the shelf, including timber sales, that are not environmentally sound fuels reduction projects. We urge the Secretaries to direct the agency to not spend emergency fuels reduction funds on timber sales and to ensure that all old projects are reviewed to ensure that they have an exclusive fuel reduction objective.

There is serious concern about language in the Administration's fire policy supporting salvage logging to recoup fuels reduction costs. There is strong scientific opinion that salvage logging does more harm to forest ecosystems than good. Focusing on economic recovery could undermine the ecological restoration goals of this program and encourage harmful resource extraction. We urge the Secretaries to exclude salvage logging from the fuels reduction program.

We are also concerned that funds intended to address hazardous fuels issues in Western forests, will be spent on Eastern forests which do not have the same ecological needs. The relatively moist Southern Appalachian forests, for example, naturally limit the spread of fire. Fuel reduction bears little relevance to the decline of native forest types, which is a major threat confronting the Southern Appalachians. We urge the Secretaries to not spend emergency fuels reduction funds in Forest Service regions 8 and 9.

Timber Target Language and Increased Subsidies Promote Irresponsible Logging

We appreciate that the Administration opposed and was able to remove the timber target bill language. However, the Interior bill still contains timber target language that attempts to urge the Forest Service to prepare for sale 3.6 billion board feet of timber. This represents a significant increase in timber sales above the current level of 2.1 billion board feet.

The timber targets language is backed up by a significant increase in funding for logging. The bill contains a $40 million increase in logging subsidies, including $5 million earmarked specifically targeting Alaska's Tongass National Forest. This $40 million in additional logging subsidies will lead to more harmful timber sales on the National Forests. We urge the Secretaries to use this un-asked for increase to mitigate the environmental degradation from timber sales by spending it on forest restoration through road decommissioning and obliteration.

Stewardship Contracts, New Vehicle for Increased Timber Production

We appreciate the Administration's efforts that resulted in the removal of two anti-environmental riders affecting the White River and White Mountains National Forests from the bill. However, the Interior bill still contains language that authorizes the Forest Service to enter into an additional 25 "end-result" stewardship contracts.

The "goods-for-services" authority in stewardship contracts allows the Forest Service to trade National Forest trees for contracted services and could encourage large-scale logging in conjunction with restoration projects. One current stewardship project in Idaho using goods-for-services proposes to log 173 million board feet in the name of "elk restoration." This is one of the largest logging projects in the nation right now. We urge Secretary Glickman to direct the agency to forgo this authority and not to issue any additional stewardship contracts, and to oppose the use of "goods-for-services."

When viewed together, the stewardship contracting rider and these substantial funding increases for timber sales and mechanical hazardous fuels treatments open the door to a significant increase in logging on public lands thereby threatening clean water and habitats for endangered fish and wildlife. We look forward to working with the Administration to mitigate the potential impacts of these provisions in the Interior bill.

Sincerely,

National Environmental and Religious Organizations and Coalitions

Alaska Rainforest Coalition, Matt Zencey, Washington, D.C.
American Lands Alliance, Steve Holmer, Washington, D.C.
Defenders of Wildlife, Mary Beth Beetham, Washington, D.C.
Earthjustice Legal Defense Fund, Marty Hayden, Washington, D.C.
Endangered Species Coalition, Brock Evans, Washington, D.C.
Friends of the Earth, Courtney Cuff, Washington, D.C.
John Muir Project, Rene Voss, Washington, D.C.
National Audubon Society, Dan Beard, Washington, D.C.
National Catholic Rural Life Conference, Robert Gronski, Des Moines, IA
National Environmental Trust, Robert Vandermark, Washington, D.C.
National Forest Protection Alliance, Jeanette Russell, Missoula, MT
Native Forest Network - Public Lands Project, Matthew Koehler, Missoula, MT
Natural Resources Defense Council, Nathaniel Lawrence, Olympia, WA
Network for Environmental and Economic Responsibility of the United Church of Christ (USA)
Pacific Rivers Council, David Bayles, Eugene, OR
Sierra Club, Melanie Griffin, Washington, D.C.
The Wilderness Society, Michael Francis, Washington, D.C.
U.S. Public Interest Research Group, Tiernan Sittenfeld, Washington, D.C.
World Wildlife Fund, Dominick Dellasala, Ashland, OR

Regional and Local Grassroots Forest Protection Organizations

100 Percent Natural Productions, Scott Whinery, Tarzana, CA
Allegheny Defense Project, Rachel Martin, Clarion, PA
Alliance for the Wild Rockies, Mike Wood, Missoula, MT
American Wildlands, Deb Kmon, Bozeman, MT
Audubon Society of Corvallis, Jim Fairchild, Corvallis, OR
Blue Mountain Audubon Society, Chris Howard, Walla Walla, WA
CAFIG (Corvallis Area Forest Issues Group), Claudia McCue, Monroe, OR
California Trout, Inc., R. Brett Matzke, Coarsegold, CA
California Wilderness Coalition, Paul Spitler, Davis, CA
Cascadia Fire Ecology Education Project, Catia Juliana, Eugene, OR
Cascadia Forest Alliance, Donald Fontenot, Portland, OR
Cascadia Wildlands Project, James Johnston, Eugene, OR
Center for Biological Diversity, Todd Schulke, Tucson, AZ
Center for Native Ecosystems, Jon Jenson, Boulder, CO
Center for Sierra Nevada Conservation, Craig Thomas, Georgetown, CA
Center for Social Justice and Global Awareness, James Facette, San Antonio, TX
Central Cascades Alliance, Kimberly Burkland, Hood River, OR
Central Oregon Forest Issues Committee, Steve Huddleston, Bend, OR
Citizens for Better Forestry, Susan Hope Bower, Hayfork, CA
Civilian Filibuster, Erik Holland, Reno, NV
Clearwater Biodiversity Project, Chuck Pezeshki, Moscow, ID
Coast Range Association, Chuck Willer, Corvallis, Oregon
Colorado Wild, Jeffrey Berman, Durango, CO
Columbia River Conservation League, Bob Wilson, Richland, WA
Cumberland Greens Bioregional Council, Howard Switzer
Dakubetede Environmental Education Programs, Laurel Sutherlin, Jacksonville, OR
Deerlodge Forest Defense Fund, Paul Richards, Boulder, MT
Drake Environmental Action League, Rose Winkeler, Des Moines, IA
Forest Conservation Council, Bryan Bird, Boca Raton, FL
Forest Guardians, Sam Hitt, Santa Fe, NM
Forest Unity Network, Jay Gerring, Seattle, WA
Friends of the Abajos, Dan Kent, Moab, Utah
Friends of the Boundary Waters Wilderness, Kevin Proescholdt, Minneapolis, MN
Friends of the Bitterroot, Larry Campbell, Hamilton, MT
Georgia ForestWatch, Randall F. White, Ellijay, GA
Green-Rock Audubon Society, Bill Hallstrom, Beloit, WI
Headwaters, Inc., Jim Ince, Ashland, OR
Heartwood, Alison Cochran, Bloomington, IN
Helping Expressions, Guy Errickson
The Highlands Chapter of the Western North Carolina Alliance, Dave Barstow, Highlands, NC
Hoosier Hikers Council, Suzanne Mittenthal, Martinsville, IN
Illinois Student Environmental Network, Laura Huth, Urbana, IL
International Primate Protection League, Shirley McGreal
Kalmiopsis Audubon Society, Jim Britell, Pt. Orford, OR
Kettle Range Conservation Group, Timothy J. Coleman, Republic, WA
Klamath Forest Alliance, Carol Wright, Etna, CA
Lake Region Audubon Society, John Perry, Lake Superior Greens, Jan Conley, Superior, WI

League of Women Voters, Pat MacRobbie, Sequim, WA
Leavenworth Audubon Adopt-a-Forest, Pat Rasmussen, Leavenworth, WA
Madison Audubon Society, Karen Etter Hale, Madison, WI
Madison Greens, John E. Peck, Madison, WI
Magic, Robin Bayer, Stanford, CA
Marion County Water Watch, Barbara Warner, Lebanon, KY
The Minnesota Project, John Lamb, MN
Montana Wildlife & Habitat Conservation Project, Seth Wilson, Missoula, MT
Mt. Adams Adopt-A-Forest, Marc Harvey, Lyle, WA
Northcoast Environmental Center, Tim McKay, Arcata, CA
Northeastern Californians for Wilderness, Carl H. Schwarzenberg, Etna, CA
Northeastern Minnesotans for Wilderness, Will Rhodes, Duluth, MN
Northwest Environmental Defense Center, Eric Wilborn, Portland, OR
Oregon Natural Resources Council, Ken Rait, Portland, OR
Pacific Crest Biodiversity Project, Michael Clossen, Seattle, WA
Palos Verdes/South Bay Audubon Society, Jess Morton, Palos Verdes Peninsula, CA
Pennsylvania Audubon Society, Carmen T. Santasania, Harrisburg, PA
Physicians for Social Responsibility-Oregon Chapter, Catherine Thomasson, MD, OR
Regional Association of Concerned Environmentalists, Mark Donham, Brookport, IL
RESTORE: The North Woods, Michael Kellett, Concord, MA
Rev. Douglas B. Hunt, Ph.D., Wheaton MD
Rocky Mountain Recreation Initiative, Roz McClellan, CO
Rogue Valley Audubon Society, Ted Cassidy, OR
SAFE: Save Our Ancient Forest Ecology, Dr. Rob Schaeffer, Modesto, CA
Seattle Audubon Society, Helen Ross, Seattle, WA
Siskiyou Project, Kelpie Wilson, Grants Pass, OR
Sky Island Alliance, Matt Skroch, Tucson, AZ
South Carolina Coastal Conservation League, Caitlin Winans, Charleston, SC
South Carolina Forest Watch, Kathy McDeed, Westminster, SC
South Yuba River Citizen's League, Shawn Garvey, Nevada City, CA
Southern Appalachian Biodiversity Project, Andrew George, Asheville, NC
Southern Oregon Nature Excursions, Jack Leishman, Talent, OR
Southwest Forest Alliance, Todd Schulke, Flagstaff, AZ
Sublette Riders Association, Jonathan Ratner, Pinedale, WY
The Fyke Nature Association, Hugh Carola, Ramsey, NJ
The Lands Council, Mike Petersen, Spokane, WA
The Ecology Center, Inc., Jeff Juel, Missoula, MT
The Waldo Inn, Robert E Lee Jr., OR
Threatened & Endangered Little Applegate Valley, Chant Thomas, Jacksonville, OR
TN Forest Defense Council, Katey Culver, Nashville, TN
Trillium Community Land Trust, Susanna Bahaar Thomas, Jacksonville, OR
Umpqua Watersheds, Inc., Francis Eatherington, Roseburg, OR
Western Fire Ecology Center, Timothy Ingalsbee, Ph.D., Eugene, OR
West Virginia Rivers Coalition, Jeremy Muller, Elkins, WV
Wild Wilderness, Scott Silver, Bend, OR
Wild Alabama, Lamar Marshall, Moulton, AL
Wildlands Center for Preventing Roads, Bethanie Walder, Missoula, MT
WildLaw, Ray Vaughan, Montgomery, AL
Yosemite Area Audubon, Richard Kuntsman, Mariposa, CA

Mr. MCINNIS. If you request that exhibits be entered into the record—one of them a half-an-inch thick—we are not putting that in the record, but we will put it in the file. But your comments are certainly noted, and if you have smaller documents in length, those certainly can be submitted.

Mr. HOLMER. Yes. This document is only a couple pages long, actually. I provided extra copies for everybody.

Mr. MCINNIS. Oh, those are extra copies. You had me in fear we were going to use a lot of logs printing that thing up.

Mr. HOLMER. We use only 100 percent post-consumer waste paper.

Mr. MCINNIS. That is my guy right there. We will go to Mr. Peterson to proceed with questions.

Mr. PETERSON. Just one quick question for Mr. Holmer. How would you deal with the fire threat in our forest land?

Mr. HOLMER. Well, as this letter indicates, in the urban-wildlands interface, we are willing to support thinning, provided the right environmental safeguards are attached to that, I think that that is the most likely response, since reintroducing prescribed burning in some of these areas is going to be very difficult, if not impossible.

But for the rest of the landscape, we do think ultimately restoring fire regimes, natural processes, is the way to go. There is a debate on whether thinning is required before you do burning. I think that the evidence is a little sketchy on that. In some places that might be necessary. But in any case, we think the thinning should only take place once and then prescribed burning should then take care of the job.

There has been a lot of discussion about putting forests into a particular condition. Logging does not mimic fire in a lot of very important respects. Most of them are chemical. Fire does a lot of work in terms of recycling nutrients that does not happen when you log. Logging also is known to have very severe impacts on soils, on wildlife. Removing the forest canopy can actually dry out the forest and lead to an increased risk of fire. And historically, there has been a terrible problem where slash has not been cleaned up after logging operations and that greatly contributes to the fire risk.

Mr. PETERSON. Would you like to react to that, Mr. Carlson?

Mr. CARLSON. Yes. Thank you, Mr. Peterson. I mean, you can talk all you want about that thinning may introduce some stress on the land temporarily, but not nearly the stress you see from the large-scale wildfires we see today, as we found out on seven million acres of the West last summer. And basically, my personal opinion is that we have about 20 years to do this job if we are going to have a national forest left in the West, because this problem just continues to escalate.

The word "logging" continues to be used to describe the process of thinning the forest, but that is really a substantial misnomer because what you are trying to do is create a desired forest condition and you mark the trees that you want to save, the healthiest, the largest, the species that you prefer on that site, which will get it as close to its natural condition before we started suppressing fires 100 years ago. And if you remove the excess of that, the analogy,

really, that logging is more similar to when you raise your radishes in your garden. I mean, you always plant more seeds because you know they are not all going to come up. When they do come up, you want to remove some of those so that the others that are left can have more nutrients, more sunlight, more water and grow to be a substantial product. That is what this process does, rather than the traditional logging.

Mr. PETERSON. If Mr. KenCairn could go a little further, you made a comment toward bringing the—I am reaching in my mind what you were talking about—

Mr. MCINNIS. He spoke about bringing the study of it out to the rural areas.

Mr. PETERSON. Yes, and not having this done in the research universities. Could you expand on that just a little more?

Mr. KENCAIRN. Yes. In the project that I am working on, my organization is actually currently sponsored by Northern Arizona University and I have worked with the lab for now almost 8 years, as well. And so the project that we are doing, I think it is an example of what I am trying to illustrate.

We have connections with the School of Engineering, the School of Business, and the School of Forestry at NAU and the ASU School of Architecture. However, the research that we are doing is really out on the ground, and when we establish the manufacturing enterprise that will actually be doing product development and testing, it will be in the community. It will provide jobs in that community and most of the innovation will be directly witnessed by the people and simulated by them. If that were taking place in Flagstaff, 50 miles from the Navajo nation, it would be like worlds away.

And so what we are encouraging is that we actually move the research and development sites into the communities themselves, continue to have very close linkages with the lab and other academic institutions, but have that innovation going on directly located near the places where we are going to put this into business.

Mr. PETERSON. Thank you. Is my time up?

Mr. MCINNIS. Go ahead, Mr. Peterson.

Mr. PETERSON. Megan Smith, the Department of Energy's Natural Renewable Energy Laboratory located in Colorado has been doing research in the area of biomass ethanol since the oil embargoes of the 1970's. Can you tell us where that research has led us?

Ms. SMITH. Yes. Actually, because of the innovative technologies, there have been incremental improvements in that area. They started out making biomass ethanol about $4 a gallon and today it is down to about $1.20. Industry wants to drive that down further so that within five to 7 years, it could be competitive with gasoline. Therefore, you could take biomass ethanol off of the ethanol subsidy that many in Congress are concerned about. Thank you.

Mr. PETERSON. What will it take to triple the use of biomass by 2010, as has been suggested, and how important would supplies from the Federal lands be in helping to achieve that goal?

Ms. SMITH. It is going to take a lot of Congressional support. It is going to take appropriations for research, development, and deployment. It is going to take the tax incentives that we have talked

about for the biomass tax credit and other things that are contained in my testimony.

I am sorry, the second part of your question?

Mr. PETERSON. Is it important that Federal land be available?

Ms. SMITH. I believe so. Certainly, the private is going to be limited, and for long-term feedstock contracts, which are really necessary to get these biomass power and ethanol and chemical plants off the ground, we are going to need those long-term contracts, because when you get into the financial community, they want to know that you have these long-term contracts in place.

Mr. PETERSON. Thank you, and I thank the Chairman for his patience.

Mr. MCINNIS. I might add, Mr. Peterson, we have got to include Federal lands out in the West because that is about all we have. I mean, we have a lot of them, and for us to receive a benefit, regardless of the fire plan, we need to have it in the West, as well.

Mr. Otter?

Mr. OTTER. Thank you, Mr. Chairman. It seems to me that everybody here thus far today has been dividing up the money we have not gotten yet. But we are in Washington, D.C., so I suppose that is part of the options as that goes on here.

Let me just give you a few figures. In Idaho, we have got 21.5 million acres of ground that is called Federal ground and we also have quite a little bit, in other words, another 14 million acres of BLM land. So roughly 65 percent of the State's land mass is property, is ground that basically is controlled by somebody other than those of us in the State.

However, in its benevolence, when we became the 43rd star in that American flag, the Federal Government gave us two sections out of every township, Section 16 and 36 out of every township, and the result from that is supposed to go into our education fund. Interestingly enough, a lot of that ground for our endowment of education is now locked up and worthless because there were not many roads built across that Federal ground that surrounds our sections. So we have lost the possibility or will lose the possibility of being able to manage those grounds to maximize the return to our endowment funds for our children's education.

Now, quite frankly, everybody has got something to do with those Federal grounds in the State of Idaho, and so do we. But the most important thing to us is that revenue stream. Clearing a half a million acres of Federal ground in Idaho right today means $17.3 million. That is 80 cents an acre. However, Potlatch and Boise Cascade and Plum Creek and all of these free enterprises, these terrible free enterprise companies, pay us an average of $8.82 into our local tax base.

Now, members of the panel and Mr. Chairman, I quite frankly am at the point that everybody has got some more things to do with these lands than I do. I am just saying, if everybody else that wants to do something with these lands will pay their tax bill, equivalent to what we make, $800 a year on a 10-year average off of our State lands, $8.82 average off of our private grounds, we will bring the Federal Government's tax bill and all the rest of the States paying to the State of Idaho paying for the land mass within our State to $173,728,000. Quite frankly, you can do whatever you

want to with it. But until we arrive at that point, you are chipping away at the local tax base.

Now, you can make $1 million, Mr. KenCairn, you can make a $1 million plant, and that would be great, two or three megawatts, whatever it is, and add that to the grid. I think that would be great, and your taxes on that would be about $10,000 a year, roughly 1 percent of the value.

But quite frankly, if I can get a $60 million piece of equipment in there to support my education system, my fire department, my local infrastructure, my town that is there, I would rather have the $60 million mill.

So I am kind of frustrated with not only what I hear other members of this Committee talking about the assets that are taken away from my school children in Idaho, that have shut down 44 lumber mills in the last administration, that have continued to take more and more acreage out of production and, therefore, the only monies we used to get was when they cut a log off the ground. We are losing. Now, we are really starting to lose some stuff that ought to be important to everybody else.

The Clearwater elk herd was the most famous gene pool in the Western United States, in fact, probably in the contiguous 48, and that was because we produced 28 calves per every 100 cows of calf-bearing age. Today, we are down to three calves per 100 cows. Reason? Several. Wolves, number one, but the biggest part is our loss of habitat. And every time you talk about this ground out West, you always talk about how crowded the floor is and stuff like that. Quite frankly, that is our problem. Our problem is that we have got way too many great big trees on just a few acres, and so we do have a canopy that closes off the sunlight efficiency to the ground for the browse for the elk, or certainly at least the habitat. And heaven forbid we should cut a log off that and get $320 a thousand foot, which returns some money to our school children, returns some money to our local fire department and police department.

So it is quite frustrating for me, and I am sure it is for other members of our Western group, to sit up here and listen to how everybody has got something planned while my tax base continues to drop and go away and my poverty levels continue to increase. Everybody seems concerned about the poverty except the poverty in Idaho, and it just keeps growing. Every time you close down a mill, another little town dies or tries to die.

I guess I really do not have a question, but what I would like you to do is while you are putting stuff in our record, put what I just said in your record, and when you take that back, put that into your scheme of things on what to do with 1,222,000 people and their livelihood in the State of Idaho. Thank you, Mr. Chairman.

Mr. HOLMER. May I comment, please?

Mr. PETERSON. [Presiding.] Briefly. You do not get as much time as he did. You can get 5 minutes.

Mr. HOLMER. Regarding roadless areas, there are some broad exemptions in the roadless plan, both to allow for road construction and to access inholdings. The agency does retain discretion on how the actual route would be planned to do that. And there is also discretion for the agency to do thinning in roadless areas. We were

not happy about that exemption, but it is in there. They can even build roads if they feel that public health and safety are at risk. So we feel that the roadless plan is pretty wide open in terms of being able to take care of things that need to be taken care of, and which is something that is under debate.

In terms of the citizens of Idaho, the environmental community would strongly support an expanded restoration program for the forests in Idaho. We feel that there is extensive work that could be done fixing roads, for example. There is huge problems with weeds and invasive species. And so when we look at the landscape, we see a lot of work that could be done out there, and rather than shifting money into a further expansion of mechanical fuels treatment, we do see alternatives out there that could create jobs and improve the landscape.

So we are cognizant of these issues and are trying to do our best to develop an ecologically sound restoration program that the scientific community, the worker outfits, like Bradis Wood, can support these things, and so I think that there are people seriously looking at these issues and trying to work on it.

Mr. PETERSON. Would anyone else like to make a comment.

Mr. CARLSON. I would if I could, please.

Mr. PETERSON. Mr. Carlson, please proceed.

Mr. CARLSON. The program that I described, Mr. Otter, would, over time, probably reopen those 34 sawmills that you are talking about. They would do it with much smaller logs in recognition that the world has changed out there. We are not going after the big logs anymore. Those trees are going to be left standing. It would thin the forests over time. At the rate that I was talking about, a 20-year program, 21.5 million acres, we would be thinning about a million acres a year in Idaho. I would expect those calf counts to go back up as you open the forests back up and the grass grows again.

We thinned about a million acres using these techniques in Northern California over the last 15 years and the results are basically spectacular, and you ought to all come and see them because we are encompassing exactly the same things that you talked about. The restrictions become greater all the time and the Forest Service is basically a non-participant in that program now, but the private landowners have continued to participate in it, and their lands, quite honestly, are in far superior shape to the Federal lands, and I know they are in Idaho, as well.

Mr. PETERSON. Yes, Brett?

Mr. KENCAIRN. Mr. Chair, I deeply respect your frustration. I work in a community that has 50 percent unemployment and 50 percent poverty. I have worked in the Northwest in communities that had comparable numbers. I have been in the midst of the conflicts directly between environmentalists and loggers. I am intimately familiar with this.

I am also intimately familiar with the fact that there is a substantial amount of the public that no longer trusts commercial motives on public lands. It has been my sense and my experience as a community development specialist that our best hope is to create smaller-scale, ecologically-scaled, community-scaled enterprises and a vaster network of them that may, in fact, distribute those

benefits, not that we are trying to create one boutique effort in one community, but that we are actually trying to create a network of such enterprises that can begin to demonstrate to the American public that we can have responsible levels of utilization that are ecologically and community scaled.

Mr. PETERSON. Does anybody else have a comment? Take a whack at it.

Ms. SMITH. Sure.

Mr. PETERSON. Go on, take your best shot.

[Laughter.]

Ms. SMITH. ABA supports what Brett KenCairn's group is doing with the smaller scale, and I think that is great, but we cannot afford to do that because economies of scale a lot of times are that the smaller entrepreneur type of projects in small communities, they cannot even afford a small power plant. Ethanol plants at that scale are very difficult.

So I kind of see both working at the same time. Where they can do it at a smaller scale, that is great. Where there is public support and local support for the larger projects, I think those should be carried out, as well.

Mr. PETERSON. Does the gentlelady from Minnesota have any questions?

Mrs. MCCOLLUM. No.

Mr. PETERSON. One final question. Do you agree that the mechanical fuels reduction treatments and commercial thinnings will lack environmental safeguards and put national forests at risk?

Mr. KENCAIRN. I believe our experience is very varied on this topic. I can tell you, as a member of a community that is in the midst of one of the most highly researched and publicly watched efforts at forest restoration, that I have watched as the best science has attempted to implement forest restoration treatments and been surprised themselves at their own results.

So I think that we can do mechanical thinning that is ecologically compatible and responsible. However, I do not think it is as easy as some people have portrayed, and I think that the crux of this issue is substantial monitoring, and that one of the things we must be doing, in fact, is increasing the agency's budgets in monitoring and increasing the involvement of all parties in that monitoring so that we can be certain that those treatments are responsible.

Mr. PETERSON. I would like to thank the panelists. I hope this hearing can be the starting point for this Subcommittee to work with the Forest Service, the panelists, and others to develop any legislation that we may need to help achieve the dual goals of reducing hazardous forest fuels and to make such actions affordable for the taxpayers. Contributing to energy and other economic uses while reducing fire risk is a win-win situation. I look forward to working with my colleagues toward this end and I again would like to thank all the panelists for their time today and the Committee for its participation.

This hearing is adjourned.

[Whereupon, at 4:37 p.m., the Subcommittee was adjourned.]

[A statement submitted for the record by Craig Thomas, Conservation Director, The Sierra Nevada Forest Protection Campaign, follows:]

APR-03-01 08:14 AM CRAIG.THOMAS.CSNC

Sierra Nevada
Forest Protection Campaign

March 30, 2001

Testimony for the Hearing on **Developing Economic Uses for Forest Fuels** for the Forests and Forest Health Sub-Committee of the House Resources Committee, United States House of Representatives.

From: Craig Thomas, Conservation Director
The Sierra Nevada Forest Protection Campaign

The Sierra Nevada Forest Protection Campaign is a coalition of 73 conservation organizations in California focused upon the long-term sustainability of all forest resources in the Sierra Nevada mountain range. We are strongly supportive of the use of biomass harvesting to reduce excessive forest fuels. We believe that biomass for co-generation of electricity and ethanol production as a fuel additive are both important uses of forest fuels and should be encouraged in the West.

We understand and agree that due to past fire suppression and past logging practices millions of acres of our forests in the West are outside the range of natural variation in terms of fuel loading and stand density.

THE PROBLEM

We also understand that the April 1999 GAO Report called for a Cohesive Strategy for Western National Forests. As cited in the report, "areas with commercially valuable timber are often not these where the greatest wildfire hazards exist. In addition, the agency's fuels reduction program rewards managers for the number of acres on which they reduce fuels, without taking into account the relative hazards on those acres; it does not reward managers for reducing fuels on the most hazardous acres." GAO/RCED-99-65 at page 41. (emphasis added)

Also cited in the 1999 Report, "[T]he agency relies on timber production to fund many of its programs and activities, and all three of its budget allocation criteria for timber activities relate solely to the volume of timber produced or offered. As a result, as forest officials told us, they tend to (1) focus on areas of high-value commercial timber rather than on acres with high fire hazard or (2) include more large, commercially valuable trees in a timber sale than are necessary to reduce the accumulated fuels." (GAO/RCED-99-65 at page 43)

THE SOLUTION

The often-cited GAO Report honestly points to the real problem: There are a lot of acres at risk **AND** the past timber program was not the way to deal with it. Speaking for California, large severe fires and excessive large tree logging both pose a serious threat to at-risk species.

We write to the Sub-Committee today to first state our support for the biomass industry in California. We lend our support to the creation of a sustainable biomass and ethanol industry that is built around sustainable forest ecosystems.

Regarding the sustainability of forest biomass harvesting, two issues are of key concern to the conservation community. **First**, forest soil health standards must not be violated. This means that soil compaction must be prevented through the use of low ground pressure equipment and scientifically determined soil standards for compaction and woody material retention to maintain soil health.

Second, it is critical that the Forest Service or Bureau of Land Management provide a reasonable estimation of material volume for the biomass operator but these agencies should not be bound by a volume quota that overrides sustainable ecosystem values.

We believe a key issue for biomass to be successful is for the biomass plants to be of two types. Larger plants focused around sawmills and large communities that produce significant wood waste. The second is smaller portable plants that can locate in the woods, near the grid, and utilize forest fuels within specific watersheds. Portable plants are important for two reasons, 1) they eliminate the travel cost of chip vans having to move materials from deep in the forest zone where biomass can become non-economical with a 50-mile haul distance and, 2) portable plants eliminate the fear that some plants, once built at great expense, will require more material than is sustainable.

BIOMASS VOLUME FROM THE SIERRA NEVADA FRAMEWORK DECISION

The biomass volume from Sierra Nevada Forests has fluctuated from year to year based upon market demand (electricity prices). Availability of material is

controlled by the economics of the plant location and the haul distance. In other words, there are few plants in the Sierra Nevada to utilize the large volume of material and the locations of those plants, and their related haul distances, make it often uneconomical to collect and haul the chips. (see attachment Table 5.9h. from the Sierra Nevada Framework FEIS Vol. 2, Chapter 3, Part 5.9--page 524).

It should be noted that lack of availability of material in the Sierra Nevada is not the problem when you examine the economics of the biomass industry as demonstrated by the following facts from the Sierra Nevada Framework Record of Decision and Final Environmental Impact Statement:

1) The Forest Service in Region 5 (California) on Sierra Nevada national forests offered nearly double the volume the timber and biomass industry choice to purchase in that period. From 1994 to 1999 under the California Spotted Owl Interim Guidelines (CASPO), the Forest Service has continued to offer significantly more volume than the timber industry has bought. The Forest Service **offered** an average of **372 million board feet** from 1994-1999. The timber industry **bought** an average of **179 million board feet** per year for the same period 1994-1999.

2) Sierra Nevada Framework Probable Sales Quantity 2001-2010 continues to offer significantly more volume than the timber industry has purchased historically from 1994-1999.

For the 11 national forests affected by the decision, a revised allowable sales quantity (ASQ) will be established for each Forest Plan. Until those revisions are complete the total annual Probable Sales Quantity (PSQ) in green volume for the 11 national forests is estimated to be 191* million board feet for the first five years, including 137 million board feet from the pilot project for the Herger-Feinstein Quincy Library Group. The estimated volume for the ensuing 5 years is approximately 108** million board feet. An additional 91 million board feet of salvage harvest per year may also be available.

(From: Sierra Nevada Framework Record of Decision Page-11)

* For the first 5 years of the Framework Plan the total timber volume is 282 million board feet/year (green and salvage). This is over 100 million board feet/year more than the timber industry bought on yearly average from 1994-1999.

**Even in the second 5 years as treatments are accomplished and the overall volume decreases to 108 million board feet/year green harvest and 91 million board salvage, the overall volume is approximately the same as the volume the timber industry purchased from 1994-1999 under the CASPO Guidelines.

Whether you look at the first or second half of the decade 2001-2010 the Forest Service will offer more volume than the industry has purchased in recent history (1994-1999).

It is true that this volume will be in generally smaller diameter trees than under the CASPO Interim Guidelines, that have been in place since 1993. But it is exactly this small diameter material (small trees, brush and fuel bed materials) that contributes most to the fire hazard in the Sierra Nevada. Also, it is this material that is cited in the 1999 GAO Report (GAO/RCED-99-65 at page 41 & 43) on the need for a Cohesive Fire Strategy in the Forest Service where GAO states the failure of the commercial timber program that misses the mark on treating the less merchantable, high hazard forest landscapes (see page 2 top paragraph).

This small material should be a boost to the biomass industry considering today's electricity prices.

3) In attached Table 5.9f it shows the total Commercial Non-Timber Woody Biomass produced from Sierra Nevada Region National Forests 1990-1999.

Table 5.9f. Commercial Non-Timber Woody Biomass Produced from Sierra Nevada Region National Forests in Bone Dry Tons, Calendar Years 1990-1999.

National Forest	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Eldorado	-	-	3,225	393	-	-	15	2,205	8,500	-
Inyo	-	-	-	25	-	-	-	-	-	-
Lassen	34,248	10,543	1,010,404	177,366	2,321	131,549	34,064	111,123	74,597	73,765
Modoc	2,645	455	6	2,959	73,908	68,109	17,105	35,756	14,694	2,500
Plumas	18,485	8,660	76,628	13,632	22,586	30,144	34,724	40,958	50,027	28,682
Sequoia	-	-	-	1,188	-	-	-	-	-	-
Sierra	3	6	8	2,625	-	7,771	775	2,538	406	-
Stanislaus	9,665	13,043	26,030	7,939	1,615	17,742	16,028	12,635	1,320	4,818
Tahoe	-	55	9,582	35,851	-	55,748	80,413	23,242	3,703	17,324
LTBMU	-	-	-	-	6,875	-	-	3	-	-
Humboldt-Toiyabe	-	-	-	-	-	-	-	-	-	-
TOTAL	65,047	32,821	1,125,883	241,977	107,303	323,238	183,174	228,457	157,931	125,126

Source: USDA Forest Service, Regions 4 and 5 Cut and Sold Reports

From: the Sierra Nevada Framework FEIS Vol. 2, Chapter 3, part 5.9f--page 523)

***The average amount of biomass sold from Table 5.9f for the 10-year period 1990-1999 is 258,000 dry tons per year.**

****The attached Table 5.9n shows the estimated amount of woody biomass by alternatives in the Sierra Nevada Framework FEIS assuming a 50-mile haul radius. Modified Alternative 8 (the Forest Service Preferred Alternative) will supply 270,510 dry tons to the biomass market over the 10-year planning period. As you can see above this amount is greater than the 10-year average. This is more biomass (with the exception of 1992 and**

1995) than has been sold within any year of the 10-year period (Table 5.9f, p. 523)

*****If you look at the actual amount of biomass generated under the CASPO Guidelines and sold since 1994, the average was 187,000 dry tons. The projection from Modified 8 (the preferred Framework Alternative) exceeds this value (average since 1994) by 30%.**

It should be noted that other alternatives in the Sierra Nevada Framework show that they produce more biomass on paper but it is highly unlikely that our current infrastructure can support the wildly high estimates of biomass production under alternatives 4 & 7 in the Framework. These alternatives also carry with them significantly higher degrees of environmental harm and therefore were not chosen.

FACTS REGARDING THE CLOSURE OF THE WENDEL BIOMASS PLANT IN LASSEN COUNTY

1) It is clear form the enclosed article in the San Francisco Chronicle that the Wendel Biomass Plant owner chose not to buy biomass material offered for sale from the Lassen National Forest in the summer of 2000 when electrical market prices were low. See quote from Ed Cole, Lassen National Forest Supervisor where he states the Lassen NF sold 38 million board feet of biomass last year. Although sawlog size and volume is decreasing do to environmental concerns, dry wood chips for biomass is increasing, according to the article, from 259,000 tons/yr. to 350,000 tons.

2) The accusation that restrictions for the California spotted owl are leading to sawmill and biomass plant closures is misleading for several reasons. One, there are very few spotted owls on Eastside forests where the two closures have occurred (Loyalton and Wendel). Two, the closures occurred prior to the Framework being implemented. Three, the Framework decision exempted huge amounts of acres and projects from the Framework standards and guidelines in 2001 where these same plant closures occurred therefore the argument of scarcity of material is flawed. Forth, foreign log supply has much more to do with the depressed log and lumber market than environmental restrictions.

3) The Sierra Nevada Forest Protection Campaign opposed the Earth Island lawsuit that attacked old existing timber sales (under the old CASPO guidelines). The shutdown of existing plants due to the loss of material was extremely unfortunate. The Committee should understand that the majority of the conservation community in California supports biomass thinning and the use of biomass products for energy and ethanol production.

In Conclusion:

We would like to work with all stakeholders to support the use of ecologically sound and sustainable biomass thinning on national forests in California.

We would like to work with the Committee to support the examination of portable biomass generation in the Sierra Nevada as a partial solution to the problems related to haul distance described in our testimony.

We believe that currently the number of plants in and near the Sierra Nevada are too few to meet the need for the adequate biomass removal due to the economics of the haul distances.

We support the use of biomass fuels conditioned upon the plants running with the best available air pollution control equipment and that mandatory quotas for material not be used. There is plenty of material and a good electricity market with no need to waive environmental protection measures in the Sierra Nevada Framework decision.

The Committee staff may be interested in visiting California this spring to attend a portable commercial biomass meeting April 20th in Auburn, California. Please contact us or the High Sierra Resources Conservation District at (530) 823-5687 x-115 for more information.

Thank you for this opportunity to submit written testimony.

Sincerely,

Craig Thomas, Conservation Director
The Sierra Nevada Forest Protection Campaign
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Table 5.9h. Biomass Power Plants Using Forest Wood Waste in the Sierra Nevada Region, 2000.

Subregion County	Community	Cogeneration Plants: Number of Facilities	Capacity (in Megawatts): Current	Capacity (in Megawatts): Full	Associated with Lumber Mills
Sierra-Cascade Axis					
Butte	Oroville	1	18	18	No
Lassen	Bieber	1	5	7.5	Yes
	Susanville	1	10	15	Yes
	Wendel	1	30	35	No
	Westwood	1	10.5	11.5	No
Plumas	Chester	1	12	12	Yes
	Quincy	1	20	27.5	Yes
Shasta	Anderson	3	62.8	152.9	yes
	Burney	3	55.8	62	yes
Sierra	Loyalton	1	10	20	Yes
Subtotal		14	234.1	361.4	
Gold Country					
Placer	Lincoln	1	8	11	Yes
	Rocklin	1	25	7	
Subtotal		2	33	11	
Mother Lode					
Amador	Ione	1	7	18	
	Martell	2	27	38	yes
Tuolumne	Jamestown	1	22	25.4	No
	Sonora	1	3	3	yes
Subtotal		5	52	84.4	
Southern Sierra					
Fresno	Auberry	1	7.5	9	No
	Rio Bravo	1	25	7	No
Tulare	Terra Bella	1	Closed	9.3	Yes
Subtotal		3	32.5	18.3	
Sierra Nevada Region Total		24	351.6	475.1	530.2

Source: California Biomass Energy Alliance, California Energy Commission

Other facilities in Sierra Nevada Region counties that currently use only orchard wood waste are located in Delano (Kern County) and Mendota (Fresno County). Other facilities near the Sierra Nevada are in Sacramento, San Joaquin, and Yolo Counties.

Most facilities in the Sierra-Cascade subregion rely on wood biomass no more than 50 miles distant from a power plant. If transportation costs are comparatively high, commercially feasible biomass may drop to as low as 30 miles trucking distance. This constraint can limit the ability of the Forest Service to dispose of wood biomass via shipping to cogeneration plants, particularly in the Southern Sierra and Eastside Sierra subregions.

New Options for Economic Uses for Small-Diameter Forest Trees and Shrubs

Discussion of future uses of non-timber woody biomass produced from mechanical fuel-reduction and other treatments must include information about emerging or advancing technologies and the policies implemented or likely to be implemented in the coming decade. The following subsections describe some of the policy instruments, programs, and key State and Federal government agencies that are working to diversify sources of sustainable energy from multiple products. Predicting the ultimate outcome of uses for forest biomass is difficult given the fluid policy environment and rapid technological advances in chemical engineering for new products from woody biomass.

Table 5.9f. Commercial Non-Timber Woody Biomass Produced from Sierra Nevada Region National Forests in Bone Dry Tons, Calendar Years 1990-1999.

: Average For 10 yr Period 258,000 Tons Per year

National Forest	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Eldorado	-	-	3,225	393	-	-	15	2,205	8,500	-
Inyo	-	-	-	25	-	-	-	-	-	-
Lassen	34,248	10,543	1,010,404	177,388	2,321	131,549	34,064	111,123	74,597	73,765
Modoc	2,645	495	6	2,959	73,906	68,109	17,105	35,759	14,664	2,590
Plumas	18,485	8,680	76,628	13,632	22,586	30,144	34,724	40,956	50,027	26,682
Sequoia	-	-	-	1,188	-	-	-	-	-	-
Sierra	3	6	8	2,625	-	7,771	775	2,538	406	-
Stanislaus	9,665	13,043	26,030	7,939	1,615	17,742	16,028	12,535	1,320	4,618
Tahoe	-	55	9,582	35,851	-	55,748	80,413	23,242	3,703	17,324
LTBMU	-	-	-	-	6,875	-	-	3	-	-
Humboldt-Toiyabe	-	-	-	-	-	-	-	-	-	-
TOTAL	65,047	32,821	1,125,883	241,977	107,303	323,236	183,174	228,457	157,931	125,126

Source: USDA Forest Service, Regions 4 and 5 Cut and Sold Reports

Table 5.9g. The Value of Commercially Produced Non-Timber Woody Biomass Produced from Sierra Nevada Region National Forests in 1995 dollars, Calendar Years 1990-1999

National Forest	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Eldorado	-	-	50,830	2,168	-	-	8	853	150	51
Inyo	-	-	-	39,88	-	-	-	-	-	-
Lassen	177,769	273,454	634,255	1,892,811	445	2,223,705	378,358	1,978,985	1,294,213	1,156,672
Modoc	1,128	649	43	1,770	1,227,630	4,256,966	292,629	234,021	184,912	1,195
Plumas	16,901	11,782	1,668,464	277,914	424,939	672,079	180,938	285,726	523,518	283,150
Sequoia	-	-	-	237	-	-	-	-	-	-
Sierra	11	20	26	1,369	-	302,805	38,627	14,648	198	-
Stanislaus	2,648	38,245	604,878	727,920	1,177	21,845	12,697	6,141	565	2,948
Tahoe	-	217	118,999	719,487	-	799,148	186,147	19,833	2,653	19,251
LTBMU	-	-	-	-	2,726	16,412	262	43	88,883	242
Humboldt-Toiyabe	-	-	-	-	-	-	-	-	-	-
TOTAL	198,457	324,366	3,087,494	3,623,716	1,657,116	8,292,961	1,089,666	2,540,250	2,095,103	1,462,609

Source: USDA Forest Service, Regions 4 and 5 Cut and Sold Reports

Woods-produced fuel chips, or "woody biomass" harvests, do not substitute in the marketplace for "clean" wood chips, which are produced in lumber mills when wood is sawn into lumber. Many cogeneration facilities are adjacent to or part of lumber mills in the region. These facilities serve to dispose of clean chips because there are no chip mills in the Sierra Nevada region. Table 5.9h lists the cogeneration facilities in Sierra Nevada Region counties using or capable of using either clean chips or in-woods chips for energy cogeneration. Most wood biomass cogeneration takes place in the Sierra-Cascade Axis subregion. The Modoc Plateau, Carson Range, and Eastside Sierra subregions have no cogeneration facilities.

Table 5.9n. Estimated Woody Biomass in Bone Dry Tons Available for Biomass Energy Generation, Assuming a 50-mile Radius of Feasible Access from Existing Biomass Power Plants

National Forest	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Mod. 8
Eldorado	22,678	-	46,421	47,013	5,553	26,827	109,083	12,414	31,221
Inyo	-	-	-	-	-	-	262	-	-
Lassen	93,328	-	9,430	68,739	7,532	27,179	46,977	11,959	20,953
Modoc	39,854	149	5,029	46,853	13,349	-	46,130	-	14,054
Plumas	115,523	270	25,165	117,640	22,387	35,566	58,955	24,259	52,114
Sequoia	19,455	-	35,580	56,686	3,928	33,230	69,602	5,632	35,224
Sierra	29,130	-	6,219	45,790	1,071	23,387	113,892	12,581	38,050
Stanislaus	13,312	-	12,375	52,403	22,472	21,934	59,392	9,749	37,055
Tahoe	120,075	9,010	19,994	74,436	10,182	40,090	37,626	14,532	41,454
LTBMU	-	-	-	-	-	-	2,646	-	303
Humboldt-Toiyabe	878	299	515	1,175	532	611	946	486	83
TOTAL	454,231	9,728	157,727	510,735	87,006	210,825	545,512	91,713	270,510

Sierra Nevada Framework Preferred Alt.

Estimating energy output from woody biomass harvested in Sierra Nevada national forests requires assumptions about production. Claggett and Wolfe Associates (1998) estimated that one pound of bone dry wood used for biomass energy production yields on average 6,070 British thermal units (BTUs). A more conservative yield of 5,000 BTUs applies here to account for the diverse mix of tree species, added bark materials, and wood quality. This yield extrapolates to 2.93 megawatts per bone dry ton. At a rate of $0.025 per kilowatt, one bone dry ton- produces $73.25 of energy.

The range of energy production by national forest by alternative also depends on the effective access distance from existing power plants using woody biomass. Tables 5.9o and 5.9p respectively show the range of monetary value of energy produced from timber harvested in Sierra Nevada national forests at 30- and 50-mile radii from power plants. The total (direct, indirect, and induced) amounts of wages and numbers of jobs generated from energy produced at wood biomass plants under low and high scenarios follow in tables 5.9q through 5.9t. Estimates come from the model IMPLAN, Version 2.0.

When a 30-mile radius determines the economic use area for national forest biomass for energy production, considerable areas of national forest lands (outside of wilderness areas) lie beyond the radius. More than half of the Eldorado, Inyo, Modoc, Sequoia, Lake Tahoe Basin, and Humboldt-Toiyabe National Forests remain outside the feasible-use area. Forests such as the Lassen and Plumas National Forests are easily accessible to biomass cogeneration facilities, however. These facilities are disproportionately located in the Sierra-Cascade Axis subregion.

Increasing the feasible haul distance to 50-miles allows more than two-thirds of available land area (that is, outside of wilderness areas) of Sierra Nevada national forests to be within haul distance for biomass power plants, except for the Inyo, Lake Tahoe Basin, and Humboldt-Toiyabe National Forests. This analysis assumes that energy prices are higher than modeled or that a policy decision implements subsidies to cover costs of small-dimension timber extraction for biomass supplies and (1) that the Delano (Kern County) biomass facility can retool to use forest biomass and (2) that the Terra Bella (Tulare County) biomass plant reopens. Otherwise, accessing biomass from the Southern Sierra for use in cogeneration plants, and particularly the Sequoia National Forest, would be difficult to accomplish. Another technical challenge in retooling for increasing capacity is the high likelihood of mixed species and high bark content in Forest Service biomass supplies to biomass energy facilities (Shelley et al. 2000).

Rosenberg, Erica

From: Craig Thomas [cthomas@innercite.com]
Sent: Friday, March 30, 2001 11:35 AM
To: Rosenberg, Erica
Subject: Logging Cutbacks Lead to Power Plant Closure - Environmental laws dried up

SF Gate
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Monday, February 19, 2001
San Francisco Chronicle
CHRONICLE SECTIONS

Logging Cutbacks Lead to Power Plant Closure
Environmental laws dried up Lassen boilers' fuel source

Carl Nolte, Chronicle Staff Writer

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Wendel, Lassen County -- In the middle of the worst energy crisis in California history, one of the state's most modern electric generating plants has shut down, a victim of economics and a battle over the future of the forests.

The HL Power Co. plant here in the high desert near Honey Lake on the Nevada border normally produces enough electricity to power a city nearly the size of Berkeley. But it shut down Feb. 5 because it ran out of fuel. Management does not plan to reopen the plant until early summer.

The problem helps illustrate how complicated the California energy crisis really is, and how the economic needs of one part of the state conflict with other interests.

It pits concerns about vanishing species, such as the spotted owl, with concerns about powering up California's economy.

The facility, known as a biomass plant, in the shadow of the Skedaddle mountain range in an obscure corner of California, is caught in the

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middle.

Biomass plants are supposed to be shining examples of the new energy technology, right up there with solar and wind power.

They burn waste matter, such as wood chips, crushed wooden pallets and salvage timber. The heat makes steam, which turns turbines, which generate electricity -- in effect, power made from castoff waste.

Biomass plants produce far less pollution than plants fired with fossil fuel and do not require harnessing rivers by building large dams and reservoirs necessary to produce hydroelectric power.

But biomass plants depend on waste wood and chips from logging operations on national forests. Last year, 75 percent of the Wendel plant's fuel came from Northern California forests.

Without logging, the plant can't run. The plant is fairly small -- only 35 megawatts -- but in times of crisis, Californians have been told, every bit counts.

This winter, there was a major cutback in timber cutting on public land, and the supply of fuel dried up just as electric power became scarce and expensive.

The Wendel plant, which has a long-term contract with Pacific Gas and Electric Co., had to buy fuel from sources outside California, including broken pallets from Nevada and wood chips from the Rocky Mountain states. According to plant manager Ralph Sanders, no fuel was available from California forests, not even from trees damaged in forest fires.

Two other biomass plants in the northern mountains are in the same shape and have shut down because they can't get fuel.

This winter's shutdown was part of a long decline in forest production -- and a head-on collision between power needs and concerns

secret glee.

Democrats say Davis accepts rate boost.

Inquiry over price gouging expanded.

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about the environment.

"They have reduced the amount of materials out of the national forests by about 90 percent compared to what it was 10 years ago," said Sanders. "To me, it's criminal."

There is wide agreement with this sort of thinking in the state's northern counties, which depend heavily on forest products.

"These wacko environmentalists from San Francisco and Santa Monica relate to the spotted owl and think it's more important than humans," said Richard Parker, a director of the Lassen Municipal Utility District, which just had to double electric rates because of the power crunch.

But environmentalists say that logging has driven the spotted owl and a minklike creature called the California fisher to the brink of extinction.

"Biomass timber sales are a serious threat to the forest," said Chad Hanson,

executive director of the Pasadena-based John Muir Project, which filed suit to stop logging in Northern California national forests and succeeded in getting a monthlong moratorium on logging this winter.

"National forests are not waste," he said. "Are we to cut down our national forests so auto malls can operate stadium-size lights that blaze all night? Give me a break."

However, California's power crisis is much more complex than just an argument over endangered owls. The HL plant at Wendel also is affected by economics, politics and major changes in forest management practices.

Although the plant has a long-term contract with PG&E, the utility is so short of cash because of the energy crisis that it is paying only 15 cents on the dollar for power it bought from HL.

In addition, the U.S. Forest Service says that last

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summer, just before the energy crisis hit, the price of power was so low that the HL plant's suppliers did not bid on timber sales offered by the Lassen National Forest.

Now, when the power price has gone up, the fuel is not available. "It is a question of timing and economics," said Lassen Forest supervisor Ed Cole.

"We would like to see that biomass plant stay in operation," Cole said. Last year, the Lassen forest sold 68 million board feet of lumber, 38 million of it to biomass plants.

This year, the situation has changed. The Forest Service has adopted a new Sierra Nevada management plan, designed to protect old-growth forests and wildlife, particularly the spotted owl and the California fisher.

The heart of the plan is a National Forest prohibition on cutting trees more than 30 inches in diameter -- essentially, big old-growth trees. The result, the forest service says, is to cut Sierra timber harvests in half in the next 10 years and, at the same time, increase the amount of dry wood chips for biomass energy production from 259,000 tons a year to 350,000 tons.

"The direction," said Cole, "is to manage to protect old-growth forest habitat." Cutting smaller trees, Cole says, would increase biomass production. The Forest Service, he says, favors biomass energy.

But the lumber industry -- and the biomass plants are closely tied to lumber -- strongly disputes this view. In their view, the Sierra Nevada plan is an attempt to stop logging altogether, a political ploy in the final days of the Clinton administration.

The forest plan, announced in January is now official government policy. It can be reversed, but the procedure is long and complex.

Meanwhile, Gov. Gray Davis has made some proposals for the use of timber on private lands,

including extensive holdings owned by PG&E. The company has sold timber to biomass plants in the past, but it is unclear what effect the governor's plans would have on the fuel supply in the near future.

OUTLOOK

Stage 2 After 32 days on Stage 3 power alert, the state went to Stage 2 on Saturday and is projected to remain there at least through today. That still means that energy reserves are below 5 percent and that power may be interrupted to some heavy users.

E-mail Carl Nolte at cnolte@sfchronicle.com.

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"If people in the Bay Area are so life-affirming, then why don't they affirm their own lives and look