

# State of Oregon Forest Biomass Working Group



A Report to the Governor's Renewable Energy Working Group

January 5, 2007

Compiled by the Oregon Departments of Energy and Forestry

## Report Contents

Executive Summary.....	1
Overview .....	5
Working Group Membership.....	7
<b>Sub-Group Reports</b>	
Shared Vision and Public Support.....	8
Predictable Supply.....	12
Harvesting and Transportation Infrastructure.....	18
Biofuels .....	25
Research and Development.....	29
Supportive Regulatory Environment.....	34
Conclusion.....	40
<b>Appendices</b>	
Enrolled Senate Bill 1072 (2005 session).....	42
ODF Senate Bill 1072 Implementation Plan .....	46
Oregon Renewable Energy Action Plan - Biomass Goals.....	52
Oregon Forest Biomass Workgroup Charter .....	56

# Executive Summary

## Introduction

Oregon's forest lands cover 45% of the state. Sixty percent of those forest lands are federally owned. Forests define the character of the state, providing us outstanding beauty, recreational opportunities, family wage jobs, tax base for schools and other social services. Oregon's forest, range, and agricultural lands are extraordinary in their diversity and contribution to the state's economy. Three of the top four Oregon industries are timber, agriculture, and tourism. Maintaining and enhancing the contribution of these forestlands is essential to the well-being of Oregonians.

This report is in response to concern for forest health particularly on federal forestlands in Oregon. The opportunities resulting from and the obstacles to reduction of excessive fire fuel loading by forest restoration and thinning are examined.

## Background

The 2005 Oregon Legislature passed SB 1072 empowering the Oregon Department of Forestry to provide policy input for the management of federal forestlands in Oregon, with particular concern for the threat of catastrophic fire. Governor Kulongoski adopted the Renewable Energy Action Plan in 2005 defining the states renewable energy goals including increased use of forest biomass. The Forest Biomass Working Group formed to identify how to improve forest health by reducing forest fuel loadings and accelerate the use of forest woody biomass as a value-added commodity and energy (fuel) supply.

The Forest Biomass Work Group is comprised of a multi-disciplinary group including industry, government, environmental organizations, tribal representatives, non-governmental institutions, academics and other stakeholder interests. Six subgroups formed to address the following key issues or needs:

- Shared Vision and Public Support
- Predictable Supply
- Harvesting and Transportation
- Biofuels
- Research and Development
- Supportive Regulatory Environment

The Forest Biomass Work Group believes it is essential and possible to have diverse forest biomass markets that: provide economic stability for businesses and communities; hold broad community support; provide for forest health; and reduce the risk of uncharacteristic wildfire, all while meeting the test of employing science based environmentally responsible stewardship of renewable forest resources. For example, considering management prescriptions taken at the stand or landscape level is important to understand the potential influences of fuel reduction projects on fish, wildlife, and their habitats. The planning for these projects calls for environmental assessment and compliance with appropriate state and federal laws. Those

include: Oregon Forest Practices Act, National Forest Management Act, National Environmental Policy Act, and the Endangered Species Act. Integration of these priorities with research, monitoring, public involvement, community economic development, and education are essential to further develop biomass use across Oregon. The group acknowledges there is much to learn as we seek to improve forest health.

The Forest Biomass Work Group's interactions, meetings, and findings in this report compliment the work done by Oregon Forest Resource Institute in its recent report, *Biomass Energy and Biofuels from Oregon's Forests*. The OFRI commissioned report provides extensive coverage of the subject as researched by energy and forestry experts. The Forest Biomass Work Group provides a broad public forum supporting the ideas expressed in the OFRI report, while developing a shared vision among a broader array of interest groups, regarding the appropriate development of biomass use in Oregon.

## **Recommendations**

This executive summary identifies key issues or concerns and makes recommendations that will accelerate Oregon along the critical path to improved forest health through the reduction of excessive fuel loadings, particularly on federal lands. The Forest Biomass Work Group understands that using biomass fuel to help Oregon meet renewable energy goals is an essential element of a healthy forest initiative. There are six key issue areas where policy makers and other decision makers will gain understanding of the issues and necessary actions that can either be taken now within existing authority or implemented anew.

In some cases, modifications to specific statutes or pending legislative concepts are referred to in this report. These references serve as examples of actions likely to address the issues, concerns or actions identified herein and do not mean this group supports nor endorses those mechanisms as the only means to move forward.

This report is to be delivered to the Renewable Energy Working Group (REWG) as a resource for the members to address market, legislative or other needs or actions they determine can address Oregon's renewable energy goals.

The following are recommendations for the six issues areas identified:

### Shared Vision and Public Support

The FBWG recognizes the substantial amount of independent work being done regarding forest health and biomass use. The group provides a forum where a broad array of interests develop a shared understanding of the issues and suggest a way forward. This subgroup is developing and implementing a communication plan regarding the role of biomass use in healthy forests. Already, a website, a template for discussing biomass in community meetings, a speaker's bureau, and an article in the *Western Forester* have resulted. Critical to increasing a shared vision and public support is to:

- Hold a dialogue with communities and the public at large on how biomass utilization can work to address forest health concerns. As a part of this effort a person needs to be tasked with coordinating meetings and pulling in other experts (hot team) as needed with staff support provided from other agencies.

### Predictable Supply

A consistent and level amount of biomass supply is essential for there to be a reliable, competitive, and sustainable biomass market. A balance of merchantable timber, small diameter value added production and biomass recovery is essential in today's marketplace to economically move biomass waste out of the woods. Key actions to assure a predictable and sustainable biomass supply include:

- Develop a better understanding of small-diameter supply potential and the costs of removal for high opportunity areas. Developing data layers for leveled supply like those created for the Coordinated Resource Offering Protocols (CROP) pilots are needed in key areas of the state to enhance market information.
- Address institutional capacity limitations of federal agencies by providing adequate staffing to accommodate the increased acreage under long-term stewardship contracts, provide for monitoring efforts, and develop collaborative principles to ensure efficient and effective NEPA processes and decrease NEPA costs. Work with Oregon congressional delegation and others to this end.

### Harvesting and Transportation Infrastructure

The harvesting workforce and infrastructure is being rapidly lost in regions of Oregon where forest restoration and biomass utilization needs and opportunities are the greatest. There is an urgency to address the disappearing infrastructure and attrition of the workforce if biomass utilization is to move forward in Oregon. Harvesting and transportation cost are a significant economic barrier to biomass utilization. These costs can be reduced through investments in research and outreach that include support for harvesting and transportation innovations. Key actions to build and support harvesting and infrastructure needs include:

- Use OFRI study and AOL survey to design an education program and to understand the existing infrastructure and the interest in moving towards restoration on federal lands. Hold a biomass harvesting workshop featuring operators skilled in biomass removal.
- Build on existing harvesting technology studies, fill in the critical research gaps, and develop transportation system guidelines.

### Biofuels

Oregon is well-positioned to play a major role in the development of cellulosic ethanol in this country. U.S. Department of Energy states that annual U.S. ethanol production must increase from 5 billion gallons in 2006 to about 60 billion gallons per year by 2015. USDOE expects that 45 billion gallons of that supply will be from cellulosic sources such as wood or agricultural wastes. Biomass converted to liquid fuels can generate six to seven times as much income, compared to biomass used directly as a fuel for power. Few technological hurdles remain to production of biofuels from Oregon's forest products. The long-term economic development in rural areas, in-state production of some of our transportation fuels, and forest health benefits are compelling reasons to proceed.

- Oregon should adopt cellulosic ethanol goals as state benchmarks with agencies accountable for supporting, promoting and using the fuel. Goals which are achievable, yet will accelerate this market may include: 5 million gallons by 2008, 25 million gallons by 2010, and 65 million gallons by 2012.
- Essential to achieving these goals is to build a cellulosic ethanol commercial demonstration facility in Oregon using public/private funds within the next 2 ½ years, as recommended by both the Oregon Forest Resource Institute study and the Renewable Energy Action plan.

### Research and Development

It is important to accurately characterize the forest biomass resource at the landscape scale and be able to quantify environmental, social and economic impacts of biomass extraction to determine the appropriate scale for a forest biomass energy industry in Oregon. It will also be critical to develop market applications for biomass. Key actions that will address research and development needs include:

- Continuing the work performed by ODF and PNW research station on the Interagency Mapping and Assessment Project (IMAP) that is slated to be completed in 2010
- Support an action that will help coordinate R&D advances with commercial technology development. One such effort the group is aware of is the Bio-Economy and Sustainable Technologies (BEST) Center proposed by the Oregon Innovation Council.

### Supportive Regulatory Environment

It is recognized that a number of uncertainties exist in the use of biomass as an energy supply. Lengthy interconnection agreements with utilities, non-negotiable avoided costs based contracts, and a range of local jurisdiction familiarity with siting energy facilities can slow development or even dissuade investment. While these and a host of other issues need attention as outlined by this subgroup, key actions that will attract market investment by:

- Consider addressing the inequity in federal production tax credits. The federal production tax credit for energy generated from open-loop biomass is less than for other renewable energy resources and is renewed for shorter time periods. The Oregon congressional delegation needs to be informed of the importance in extending these credits and to make these credits equitable.
- Considering providing an Oregon production or consumption credit for renewable resources. In particular provide additional state or federal incentives for forest biomass projects, due to the multitude of public benefits that stem from the efficient use of biomass to energy.
- Consider extending the existing public purpose charge in Oregon to further renewable energy development in Oregon.

## **Conclusion**

Failure to act on any of the recommendations will not stop the existing markets for biomass from occurring, however, it is clear that the existing markets are not sufficient to address the unnatural build-up of fuel in fire prone areas of the state. The current situation is worsening over time as more catastrophic fires occur.

Addressing the barriers identified in this report, the report commissioned by OFRI, and the work done by the Western Governor's task force on biomass can move us forward in addressing forest health concerns. Such actions will encourage biomass markets in forested areas that are significantly outside the historic natural range of fire variability, that have an elevated risk of losing key ecosystem components in the event of a wildfire. Most of this land is found in parts of southern and eastern Oregon where addressing the problem would also serve to inhibit further decline of existing infrastructure, and provide much needed jobs and other economic benefits to the rural communities.

# Overview

## Background

The 2005 Oregon Legislature passed SB 1072 empowering the Oregon Department of Forestry to engage and provide direction to federal land managers regarding forest stewardship needs in Oregon. At the same time, Governor Theodore Kulongoski adopted the Governor's Renewable Energy Action Plan. In that plan most natural resources and business development agencies commit to actions resulting in increased use of the entire range of renewable resources, including forest biomass.

Under the leadership of the Oregon departments of Forestry and Energy, the Forest Biomass Working Group was formed to examine ways to improve forest health by identifying needs and strategies necessary to accelerate the use of forest woody biomass as a value-added commodity and energy supply. A multi-disciplinary group comprising industry, government, tribal representatives, non-governmental organizations, academics and other stakeholder interests assembled by direct invitation and self-selection in October 2005 to develop a charter.

The working group met six times during 2006, first identifying barriers and then grouping them into six subject areas. Meetings of the Forest Biomass Working Group are publicly announced through Department of Forestry news releases and the Department of Energy web page.

The Working Group formed six subgroups to identify actions that address the barriers. As needed, the subgroups brought in experts to help them better understand the issues.

## Vision

The Forest Biomass Working Group envisions:

*Oregon enjoys healthy forests, clean air, expanded economic opportunity, and greater energy independence because of thriving industries that make the best use of the state's forest biomass.*

## Goal

The goal is to achieve the vision by helping remove existing barriers to the sustainable use of forest biomass in Oregon. To accomplish this, the group will:

- Provide a forum for cooperation, coordination and the exchange of ideas among government agencies, tribal interests, non-governmental organizations and the private sector, with an aim to leverage the information and resources of all participants.
- Inform the public, government, and environmental and business interests of the opportunities and benefits of developing forest biomass as a source of renewable energy and other products. This will be accomplished through integrated statewide education and consensus building.
- Act at the federal, state and local levels to accelerate the transfer of best forest biomass management practices and energy development practices as a means to chart a clear action plan forward.

## This Report

This report is a compilation of the work of the subgroups. Each subgroup addressed a key issue area identified by the Working Group at large. There exists a degree of overlap between the sections. For example, some actions that address barriers in the “Predictable Supply” findings might also be found under one or more of the other sections. There also exists some variability in format from subgroup to subgroup. While not all subgroups were able to assign priorities to their actions, where this was completed the detail was left to provide added insight to the reader. Key issue areas the subgroups addressed are:

Shared Vision and Public Support  
Predictable Supply  
Harvesting and Transportation  
Biofuels  
Research and Development  
Supportive Regulatory Environment

Observations, findings and options contained in this report are intended to augment, reinforce, catalyze and clarify strategies, tactics, work and research that are perceived as needs or are already being accomplished by higher education, the Oregon Forest Resources Institute, Energy Trust of Oregon, tribal enterprises, private interests, state agencies or federal land resource managers. It is not the intent of the Forest Biomass Working Group to duplicate or evaluate the work of these other entities, but rather to provide information from a very broad shared stakeholder perspective.

In some cases, modifications to specific statutes or pending legislative concepts are referred to in this report. These references serve as examples of actions likely to address the issues, concerns or actions identified herein and do not mean this group supports nor endorses those mechanisms as the only means to move forward.

This report is to be delivered to the Renewable Energy Working Group (REWG) as a resource for the members to address market, legislative or other needs or actions they determine to be relevant to the accomplishment of the REWG’s mission on behalf of the State of Oregon.

Readers of this report are encouraged to examine *Biomass Energy and Biofuels from Oregon’s Forests* (June 30, 2006), which was prepared for the Oregon Forest Resources Institute, with review and input from several members of the Forest Biomass Working Group. The report provides an in-depth look at Oregon’s biomass resources and examines barriers to and opportunities for their use. The report can be found at:

**Executive summary:** [www.oregonforests.org/media/pdf/Biomass\\_highlights.pdf](http://www.oregonforests.org/media/pdf/Biomass_highlights.pdf)

**Full report:** [www.oregonforests.org/media/pdf/Biomass\\_Full\\_Report.pdf](http://www.oregonforests.org/media/pdf/Biomass_Full_Report.pdf)

## Working Group Membership

Following is the list of participants who committed to attend Forest Biomass Working Group meetings, participate in subgroup work and become adequately informed to describe the fact-finding, methods, observations and findings of the group.

The State of Oregon and the Governor's Office extend appreciation and commendation to these individuals and their respective organizations for their significant, valuable and expert contribution to bettering public policy. Other staff from state and federal agencies, representatives of industry, NGO's, and others actively participated in the deliberations of the Working Group and subgroups. The Forest Biomass Working Group extends its sincere appreciation to those contributors as well.

Rolf Anderson – Bear Mountain Products  
Scott Aycock – Central Oregon Intergovernmental Council  
Rep. Chuck Burley – District 54  
Linc Cannon – Oregon Forest Industries Council  
Nils Christofferson – Wallowa Resources  
Mike Cloughesy – Oregon Forest Resources Institute  
Greg Corbin – Stoel Rives LLP  
Martin Desmond – Lane Microbusiness  
Brian Finneran – Oregon Department of Environmental Quality  
Jim Geisinger – Associated Oregon Loggers  
Jon Germond – Oregon Department of Fish & Wildlife  
Jim Hallberg – Bureau of Land Management  
Doug Heiken – Oregon Wild (formerly ONRC)  
Russ Hoeflich – The Nature Conservancy  
Dr. Loren Kellogg – Oregon State University  
Mark Kendall – Oregon Department of Energy  
Bill Kluting – Carpenters Industrial Council  
Sandy Lonsdale – Silvan Power Company  
Tad Mason – TSS Consultants  
Catherine Mater – Mater Engineering  
Greg Miller – Weyerhaeuser Company  
Joe Misek – Oregon Department of Forestry  
Glenn Montgomery – Oregon Economic & Community Development Department  
Sen. David Nelson – Senate District 29  
George Ponte – Oregon Department of Forestry  
Larry Potts – Warm Springs Forest Products Industries  
Eugene Rosolie – Pacific Northwest Generating Cooperative  
Ron Saranich – USDA Forest Service  
David Schmidt – Sustainable Northwest  
Bill von Segen – USDA Forest Service  
Adam Serchuk – Energy Trust of Oregon  
David Van't Hof – Governor's Sustainability Office  
Rick Wagner – Oregon Department of Forestry  
Mike Ziolko – Oregon Department of Forestry

# Shared Vision and Public Support Subgroup

## Background

Clear, accurate, consistent, timely and fully informative data are essential communication needs for increasing appropriate biomass use in Oregon. It is understood that multiple stakeholders provide data to interested parties and that there are multiple interests that need to be addressed in various forums. The Shared Vision and Public Support Subgroup has developed a collaborative strategy to inform and educate the public on the potential benefits of fostering a forest biomass industry in Oregon. To that end, the subgroup drafted the Forest Biomass Working Group Communication Plan. This subcommittee report consists chiefly of elements drawn from the plan.

## Goal

To engage the public, government, environmental organizations and business interests in a dialogue on the opportunities, benefits and challenges of forest biomass utilization as a source of renewable energy and for other uses through integrated statewide education and consensus building.

## Objectives

The subgroup identified the following objectives as steps to accomplish the goals:

1. Inform state and federal decision makers about both the obstacles and opportunities that, if addressed, will encourage forest biomass energy development in Oregon.
2. Increase public understanding that biomass utilization, if carefully implemented, may be an effective tool for restoring forests and revitalizing rural economies, given appropriate ecological circumstances and sound management.
3. Establish and maintain a central clearinghouse for information on forest biomass energy and biofuels production via web pages and other tools.
4. Support strategies that provide for habitat needs and clean air and water, while meeting social and economic needs.

## Key Messages

In order to maintain consistency and clarity of communication, the subgroup framed key messages that are being conveyed to the various publics. In abbreviated form, these are the key messages:

1. Expanded use of forest biomass could reduce the wildfire risk to Oregon's forests and benefit the economy.
2. Reducing the amount of small fuel in forests that today are much denser than the historical norm could improve forest health and resiliency.
3. Biomass harvest and utilization must be conducted in a sustainable manner. Care must be taken to make sure that the harvest meets ecological and social objectives and is not driven only by economics. These fuel treatments should be conducted with care, since opening up

tree stands can also have the deleterious effect of accelerating brush growth. In addition treating fuels is not without impact on the land, so factors such as soil sensitivity, stream protection, effects on fish and wildlife, and the spread of invasive weeds, should be carefully considered before initiating treatment.

4. A thriving forest biomass industry would increase Oregon's output of renewable energy consistent with the Governor's Renewable Energy Action plan.
5. Capturing and calculating the indirect societal benefits of renewable energy produced from forest biomass could make it more competitive with fossil fuels.
6. Technological advances are reducing the environmental impact of forest biomass harvest. However, some impacts of biomass extraction are unavoidable.
7. In collaboration with state and federal governments, business interests are beginning to make the financial investments that are crucial to develop a robust forest biomass industry in Oregon.
8. Biomass harvest and utilization has the potential to employ skilled workers in harvesting, transporting, engineering and other areas.

## **Accomplishments**

1. Completed Forest Biomass Working Group Communication Plan.
2. Created Forest Biomass web page located at:  
<http://www.oregon.gov/ENERGY/RENEW/Biomass/OBCG-FBWG.shtml>.
3. Developed a template, for conducting community meetings to discuss biomass plans.
4. Organized Oregon Woody Biomass Conference, co-sponsored by FBWG (Jan. 3, 2007 - World Forestry Center).
5. Developed an Oregon Woody Biomass Speakers Bureau presentation.
6. Led the development of an issue of the Western Forester (Nov/Dec 2006) on woody biomass with several articles written by members of the FBWG.

## **Barriers**

1. Biomass-to-energy conversion is one of the lowest-value uses of wood from our forests and currently is only marginally economically competitive with other sources of electricity.
2. Developing and integrating infrastructure for higher value forest biomass utilization is needed to help offset the low value of biomass-to-energy.
3. A lack of consensus exists on how to manage forests sustainably, including how much biomass can be removed from a given forest while balancing concerns about soil, water, wildlife, invasive weeds, and fire hazards.
4. For support of forest biomass harvest to occur, an effort needs to be undertaken to hold a dialogue with communities and the public at large on how biomass utilization can work to address forest health concerns.
5. The wildfire risk to Oregon's forests due to high levels of forest fuels is increasing. A sense of urgency for the work outlined by the Forest Biomass Working Group to reduce un-natural

fuel buildups must be instilled. However, fire has been shown to be one of the least costly and most effective methods of treating excess fuel. In the future as fuel loadings become more normalized, biomass treatment might involve a greater use of prescribed or natural fire instead of mechanical removal.

## **Actions**

**Priorities to remove remaining barriers** (including likely impacts, difficulties, and how to accomplish each action Item):

1. Develop partnerships of communicators of natural resources organizations to continue communicating on forest biomass. Partners include all members of the FBWG and other interested organizations.

*Impact: **Medium***

*Difficulty: **Low***

*How:* ODF, ODOE and OFRI will take the lead in formalizing the partnership of communicators that has been established through the Oregon FBWG.

2. Produce and distribute an OFRI Special Report on Woody Biomass in Oregon.

*Impact: **Medium***

*Difficulty: **Low***

*How:* The special report is scheduled to be put together following the January 3, 2006 Woody Biomass Conference. The report will summarize the OFRI study and the work of the Oregon FBWG. Several FBWG members will be featured in sidebars. Members of the FBWG and the newly formed communications partnership could greatly help in distribution of this publication.

3. Recruit speakers from among the partners to deliver the Woody Biomass Presentation under the auspices of the OFRI Speakers Bureau.

*Impact: **High***

*Difficulty: **Low-Medium***

*How:* OFRI already runs a speakers bureau in partnership with the OSU College of Forestry and the Oregon Society of American Foresters that schedules speakers to give a number of forestry presentations throughout the state. A Woody Biomass presentation has already been developed and is being given by an OFRI representative. A commitment by FBWG members is necessary to broaden the delivery of this talk. Individual presenters will be encouraged to adapt the talk to their audiences.

4. Bring community organizations such as Willowa Resources, Lake County Resources Initiative and Applegate Partnership into the partnership.

*Impact: Medium - High*

*Difficulty: Low*

*How:* These community organizations can be asked to join the partnership of communicators described above and they should also be involved in biomass-related community forums.

5. Develop a mechanism to facilitate community forums where opportunities exist for biomass harvests and utilization to improve forest health conditions.

*Impact: High*

*Difficulty: Medium*

*How:* One of the members of the Oregon Forest Biomass Working Group will need to take the lead in convening community forums. The template will have already been developed prior to the forums, but this process will function best if there is a clearly defined point of contact for interested communities. Suggested points of contact are: ODF Biomass Specialist, UO Resource Innovations Program, or Sustainable Northwest's Healthy Communities Healthy Forests program. The designated convener need not participate in or lead all forums but must work with community partners to ensure they take place. The convener should also suggest speakers for the forums.

6. Develop a portable biomass display and other outreach tools that could be used at community meetings.

*Impact: Medium*

*Difficulty: Low*

*How:* It is suggested that the ODF Public Affairs staff (Rod Nichols) in conjunction with the ODOE Communications staff (Kathy Shinn) take the lead on developing the display.

## **Subgroup Membership**

Rod Nichols, co-convener, ODF  
Mike Cloughesy, co-convener, OFRI  
Jim Hallberg, BLM  
Doug Heiken, Oregon Wild (formerly ONRC)  
Loren Kellogg, OSU  
Tad Mason, TSS Consultants  
David Schmidt, Sustainable Northwest  
Kathy Shinn, ODOE  
Lorette Ray, USFS

# Predictable Supply Subgroup

## Background

Oregon forestry markets have experience with what it takes to provide predictable, levelized, affordable or otherwise consistent supplies of biomass energy. Historically many biomass supply issues have not been planned as much as they have been influenced by interdependent market forces. Trends in harvest scheduling, legislative policies, litigation on federal forests, product demand, natural gas price, and milling capacity, among other influences impact the predictability of biomass supply.

## Goal

To identify and address barriers to a predictable supply for biomass markets that can improve sustainable supply confidence and attract investment.

## Barriers

1. Data Uncertainty: Without thorough, consistent estimates of biomass availability and anticipated removal costs, it is difficult for businesses or community groups to make investment decisions or for land managers to plan for or promote biomass utilization opportunities. Key components of the data gap include:
  - Volume estimates tend to be based on inventories rather than on actual agency capacity to produce supply;
  - Volume estimates from inventories are also often based on equations that are questionable for smaller trees;
  - Volume estimates also remain uncertain because we lack a complete scientific understanding of forest health and how to achieve it across different ecotypes.
  - It is difficult to create cost estimates for biomass removal due to localized access conditions, contractor inexperience with small-diameter harvesting equipment (which are often modifications of old equipment), agency inexperience planning and implementing projects which produce small diameter material, and wide variation in the net contribution of sawlogs (if any) to project economics.
2. Lack of Consistent Small-diameter Supply Provision Process: Many public and private land managers are inexperienced with providing small-diameter material supply and have not created consistent systems to supply it on a levelized basis. This creates uncertainty for businesses and community groups. Key components of this barrier include:
  - Lack of awareness of, commitment to, and/or tools to implement USFS Biomass Strategic Plan (now under development);
  - Insufficient number and extent of long-term stewardship contracts encompassing significant volumes of material;
  - Lack of CROP-like processes to coordinate the provision of a “levelized” supply of small-diameter material and woody biomass;
  - Lack of commitment to integrated supply planning among multiple ownerships; and;

- Lack of agency performance measures for acres treated/volumes removed and utilized. Those measures that exist were developed for timber sales or non-harvesting service contracts which are a disincentive to biomass utilization.
3. Lack of Stakeholder and Public Agreement on Desired Future Conditions in Oregon Forests: Small-diameter timber supply is a byproduct of restoration projects and timber sales. Without a clear public and stakeholder agreement on desired future conditions towards which management should be aimed, small-diameter supply-producing projects are threatened by interruption or termination due to appeals and lawsuits. This is further exacerbated by a lack of public and stakeholder understanding of the dynamic nature of Oregon's forests, and the role that small-diameter utilization and active management can play in sustaining them. This has a chilling effect on the number, character, and extent of projects, and generates uncertainty. Key components of this barrier include:
- Lack of a public consensus on forest health and how to achieve it and lack of a collaborative forum at the statewide level to bring diverse stakeholders together to develop a vision for forestlands in Oregon;
  - Local and regional strategic collaborative efforts are not continuous across the state, networked together, or supported with sufficient resources;
  - Lack of meaningful, two-way communications programs aimed at providing information about forest and range ecosystems to the public and, in return, to directly communicate general public values to land managers;
  - Lack of pre-project planning opportunities involving diverse stakeholders; and
  - Insufficient commitment to, and understanding of, the principles of stakeholder collaboration among land management line officers and staffs.
4. Institutional Capacity Limitations: The federal agencies need to better integrate and complement collaborative requirements in, NEPA, HFRA, stewardship contracting, the Executive Order on Cooperative Conservation, and the new planning rules. Downsizing has hindered the agencies' ability to prepare projects that properly balance ecological and social objectives. Developing timely biomass removal projects on federal lands requires that the agencies have adequate staff and a commitment to cost-effective NEPA compliance while respecting the public's right to be informed, involved, and hold federal land managers accountable.
5. Economics and Funding: Managing and providing small-diameter trees as a resource is a relatively new concept for many land managers and businesses. Supply systems and markets are undeveloped and tenuous. The development of these systems and markets will require the strategic application of funds and effort on a consistent basis. Key components of this barrier include:
- Lack of a strategic business plan, at the national, regional, and local level, outlining anticipated costs and benefits of creating a system to supply small-diameter material to markets;
  - Lack of appropriations authorized by the Energy Policy Act of 2005 to support commercial use of biomass;

- Inconsistent federal and state funding for biomass utilization research and development, feasibility studies, and project development; and
  - Lack of and/or unfamiliarity with mechanisms to incorporate positive, un-priced environmental externalities (e.g. carbon sequestration, water yield, habitat improvement, and other ecosystem benefits) into project economics.
6. **Contractor Capacity:** Small-diameter supply is usually the byproduct of restoration projects that incorporate diverse objectives in addition to volume removal. In some locations, predictable supply is constrained by a lack of local contractor capacity to successfully bid on and implement restoration contracts, and subsequently provide supply to local businesses. This can mean that small-diameter material flows out of the local area, or that it is not generated in the first place. Key components of this barrier include:
- Lack of education/information and training opportunities to assist contractors and local businesses in securing new contract types;
  - Lack of interest on the part of some contractors to respond to restoration contracts or to partner with other small contractors (and a lack of public and private efforts to assist the development of these partnerships);
  - Many contractors do not have the equipment necessary to implement these projects.

## Key Outcomes and Actions

1. **Data Uncertainty:**
  - a. *Better understanding of small-diameter supply potential and costs of removal:*
    - Develop CROP like analyses for investor landscapes across Oregon (Mater Engineering – completed in Central Oregon, Harney County, Lakeview, etc.)
    - Develop CROP like analyses of actual agency capacity to produce supply (done in central Oregon – do in other areas);
    - Improve biomass supply volume estimates with additional samples using destructive sampling (COIC, Delaney Forestry Consultants – study in progress);
    - Implement biomass removal demonstration projects in diverse settings (OSU; USFS/BLM; etc);
    - Gather data on costs when projects are designed for removal vs. non-removal from the very beginning (RVCC/Sustainable Northwest)
      - Communicate findings to all levels of USFS and BLM
    - Incorporate all timber harvests (including biomass) into the Oregon Timber Harvest report and convert from Scribner to cubic feet (ODF – Gary Lettman)
2. **Lack of Consistent Small-diameter Supply Provision Process:**
  - a. *A fully-supported and implementable strategic USFS/BLM National Biomass Strategic Plan:*
    - Fully fund and support development of the USFS Biomass Strategic Plan and the commensurate BLM plan (Congress, USFS, BLM);
    - Revise federal performance measures to support biomass strategic plan desired outcomes; create dovetailed state agency performance measures (Ed Gee, Wildland Fire Leadership Council, Sustainable Northwest/RVCC);

- Develop a business plan incorporating costs (create sustainable supply systems, increase stewardship projects, monitoring activities, etc.) and anticipated benefits (private investment/development of small-diameter utilization infrastructure and resulting increases in material value to the agencies) over time;
- b. *Full experimentation with CROP and other predictable supply systems:*
- Full implementation (beyond initial study) of CROP initiative, including cross-agency supply levelization system, in sites currently experimenting with it – central Oregon, Lakeview, southern Oregon, Colorado, Utah, New Mexico, South Carolina, and Vermont – with study and communication of results (under way in central Oregon) (COIC, Mater Engineering, R6, Ore./Wash. BLM, local forests and BLM districts)
  - Network with nationwide CROP pilots (Mater Engineering; COIC);
  - Develop multi-agency memoranda of understanding (MOUs) or other coordinating devices to implement supply stability in individual investor landscapes (federal agencies, state forestry, local partners: see Warm Springs, Lakeview)
  - Investigate feasibility to use CROP as a template for accessing voluntary carbon credit markets (under study by Mater Engineering, COIC)
    - Identify markets, their data requirements and their desired geographic scale/tonnage
- c. *Expanded use of and volume in credible, enforceable long-term supply contracts:*
- State provides clear expectations to federal agencies (ODF/USFS/BLM: June 9, 2006 meeting);
  - Create a website clearinghouse presenting examples of instruments that have worked successfully to offer, award, and utilize biomass (including project and contract design) (ODF, USFS, BLM).
    - Intended audience: agency personnel, contractors, restoration and supply consensus groups, primary and secondary wood products businesses;
    - This website could build on the following resources: 1) [www.sustainablenorthwest.org/programs/psc.php](http://www.sustainablenorthwest.org/programs/psc.php); 2) [www.fs.fed.us/r6/nr/fp/FPWebPage/FP70104A/Stewardship.htm](http://www.fs.fed.us/r6/nr/fp/FPWebPage/FP70104A/Stewardship.htm); 3) USFS Report: Forest Service Contracting. A Basic Guide for Restoration Practitioners; 4) RVCC Report: Stewardship Contracting Issue Paper; 5) RVCC Report: Community-based Perspectives. Supporting Traditional and Multiparty Monitoring; 6) RVCC effort to quantify cost differences between utilization and pile burn projects (when utilization is incorporated at the early planning stage); 7) Lassen National Forest, Eagle Lake District 8); Apache-Sitgreaves National Forest, White Mountain Stewardship Project; 9) USFS Biomass Desk Guide – under review (Ed Gee).
    - Craft a letter from the ORFBWG/State Forester/OR Governor to USFS Chief, cc: Marcia Patten-Mallory (USFS National Biomass Utilization Coordinator), and others requesting that the USFS/BLM create this website
3. Lack of Stakeholder and Public Agreement on Desired Future Conditions in Oregon Forests:
- a. *Increased stakeholder and general public understanding of forest ecosystems.*
- Communicate the actions and outcomes described in b., below, to help build public understanding of the dynamic nature of forest ecosystems (ORFBWG web site; ODF; OFRI; local consensus/community forestry groups)

*b. Increased stakeholder and general public consensus on long-term desired future conditions and on the role of active management and small diameter/woody biomass utilization in restoring Oregon forests and rangelands. Decrease in appeals and litigation.*

- Develop a statewide collaborative forum to create overarching guiding principles for forest and rangeland restoration with the following intent: If local “visions” are consistent with the statewide guiding principles, they will be supported from a broad array of stakeholders (ORFBWG; ODF, Governor’s Office, ODF&W, USFS, BLM, other federal agencies, Consensus/Negotiation Practitioners (e.g. OR Consensus Program, Oregon Solutions, Rural Development Initiatives Inc., Sustainable NW, Wallowa Resources, etc.)
  - Needs to be somewhat flexible to accommodate local social, political, economic, and environmental situations while providing strong environmental, economic, and social guidance
  - Compile agency needs, principles, and requirements and then compile the same for various stakeholder groups. Transparent list of “sticking points” from all interest groups. Negotiate a middle ground or “workable way.”
  - See OFRI report regarding the need for consensus
- Seed the development of local/regional desired future condition “visions” using the statewide outcome as sideboards (COIC, Wallowa Resources, LCRI, Sustainable NW, etc. as leads, with state and federal agency support)
- Create local/regional multi-party monitoring programs as part of the local visions, which then roll up to a statewide monitoring network
  - Develop a publicly accessible database to provide information on forest restoration activities and impacts (ODF, ORFBWG website, SNW)
  - Use local monitoring as a means to increase citizen involvement in and understanding of forest and rangeland ecosystems, restoration needs, and the role of active management.
  - Use local monitoring to promote adaptive management and statewide monitoring to modify policies.
- Use collaborative principles and monitoring efforts to ensure effectiveness of NEPA processes and decrease NEPA costs. Avoid controversial (i.e. non-restorative) projects to reduce number and extent of appeals and litigation.

*c. Increased agency capacity to collaborate; create a “culture of collaboration”*

- Develop a coordinated policy system among state and federal agencies and programs;
- Re-issue and emphasize direction to line officers and field staff on the use of collaboration (USDA FS and BLM WO’s and Regional Offices); (has already been directed by USFS and BLM leadership);
- Increase agency training programs for collaboration and use of stewardship contracting;
- Combine FS and BLM stewardship contracting tools and process to simplify understanding by agency personnel and forest contracting community.

4. Institutional Capacity/ Limitations:

a. *Adequate agency staffing and resources*

b. *Cost effective use of NEPA*

- Create internal agency incentives and direction to use collaboration as a tool concurrent with NEPA, so that project planners can anticipate and accommodate stakeholder concerns up front;
- Research “best practices” for project designs that reduce NEPA costs;
- In locations where collaborative desired future condition “visions” and multi-party monitoring are in place, develop cost-effective means of NEPA compliance. (Congress; local stakeholders; environmental groups).

5. Economics and Funding:

- Incentivize restoration and reduced costs through biomass utilization.
- Monetize values that we get from not burning material (environmental and local economic services).
- Look at alternatives that pay their way out of the woods as options in local CROPs.
- Confer with ODOE for continuance/enhancement of ideas for Oregon’s incentives.
- Encourage funding of development/ expansion of carbon credits’ use in forestry.

6. Contractor Capacity:

a. *Information on tools to increase contractor and local processor capacity to secure supply is available and disseminated to all interested parties*

- Locate and link web resources for contractors to use for federal contracting (USFS/BLM, ORFBWG web site, local networks, capacity-building organizations (e.g. Sustainable NW, NNFP, etc.);
- Compile list of service providers capable of assisting contractors with federal contracting regulations;
- ODF/FS/BLM ensures local extension, stewardship, and consulting foresters are made aware of this information;
  - Continue stewardship contracting training through ODF/FS/BLM-supported workshops for agency personnel and forest contracting industry
- FS/BLM ensures agencies’ local stewardship contracting leads are identified for the public.

## **Subgroup Membership**

Scott Aycock, convener, COIC

Jim Hallberg, BLM

Gary Lettman, ODF

Sandy Lonsdale, Silvan Power

Joe Misek, ODF

Ron Saranich, USFS

David Schmidt, Sustainable NW

William VonSegen, USFS

# Harvesting and Transportation Infrastructure Subgroup

## Background

Multiple harvest strategies and tactics exist in Oregon on private, state and federally owned forestlands. Some of those methods provide better assurance of biomass recovery from the forest than others. Best practices for harvest and transportation of merchantable forest products are well developed and to a lesser degree for optimized biomass byproducts. Transportation of woody forest biomass is costly and can pose constraints on supplies due to geography, distance or biomass preparation.

## Goal

Identify the barriers, obstacles and opportunities for developing effective and appropriate forest woody biomass recovery from Oregon forests. Identify best practices, actions to be taken and on-going needs for cost competitive recovery that helps biomass recovery become a complement to forest health.

## Barriers

1. Harvesting and Transportation Costs: Extraction cost rises significantly as biomass piece size decreases. It is currently uneconomical to extract small biomass for stand alone energy or biofuel markets; additional value-added products from forest restoration treatments are needed to offset these costs to make forest biomass harvesting economical. The key components of harvesting cost barriers include the following:

*a. Planning*

- Production targets and economics related to site and stand characteristics;
- Education and outreach of current technology and contractor experiences;
- Contract constraints, e.g. need for long-term contracts; timeframes flexible to meet fuel moisture content goals.

*b. Technology and extraction methods*

- Using old technology in different ways;
- New technology and/or retrofits to existing equipment ;
- Equipment manufacturers involvement with biomass extraction barriers/obstacles
- Road access and conditions;
- Transportation costs including rising fuel cost;
- Sorting and handling integration for multiple markets – who pays for extra moves?;
- Identify production efficiencies that can be applied in the field; e.g. logging slash handling for biomass energy may be economically viable because some costs have already been incurred in moving the slash to roadside; also the per acre treatment cost needs to be considered because some silviculture activities, such as removing forest

fuels, can be covered by the value offset from other higher-valued wood products being removed in the silviculture treatment.;

- Identify the forest restoration impacts from biomass harvesting, such as fire hazard reduction, and appropriate mitigation measures such as tilling compacted skid trails.

2. Workforce Capacity: Much of the harvesting expertise (logging contractors and agency logging specialist) has been lost in eastern Oregon. There is a high degree of urgency to address the disappearing infrastructure and the attrition of the workforce if biomass harvesting and production is to move forward in Oregon. In addition, future biomass extraction operations will require some different workforce knowledge including how to be successful in obtaining biomass extraction contracts; understanding ecological restoration objectives and value added markets, and using different types of equipment and extraction techniques for harvesting small biomass. The key components of workforce capacity barriers include the following:

- Recruiting workers with benefits comparable with other similar jobs.
- Workforce training needs.
- A rare skill set is needed and not available for monitoring biomass extraction and production operations.
- Lack of knowledge about production capabilities in various conditions.
- Biomass harvesting requires contractors to be successful at extraction and production from all tree diameter classes, not just small-diameter trees.
- Capacity of local contractors to get contracts.
- Land management agency staffing to plan and implement treatments is rapidly diminishing.

3. Production Infrastructure: Limiting factors include:

- Availability of extraction equipment in eastern Oregon.
- Contractor interest and understanding of new ways of obtaining biomass utilization and service contracts, small-wood markets, and forest operations management.
- Synergies between extraction and biomass production technologies, e.g. portable plants to reduce transportation costs; transportation efficiencies with different integrated markets.

## Key Outcomes

1. Improve forest biomass harvesting economics by identifying harvesting and transportation technologies and operational efficiencies that reduce the cost of operation. Increase the financial support for research and development, and extension programs. Key elements include:
  - Prove that this works – tie into pilot projects and showcase them (*link with education and outreach subgroup*).
  - Transport incentives and efficiencies in transporting networks (e.g. loaded back-hauls).

- Sharing treatment cost incentives (e.g. agencies, contractors, public) to accomplish fuel reduction objectives.
  - Go beyond 1 – 1 economic argument – look at social, economic and environmental impacts (*link with other subgroups*).
2. Provide information for contractors to enable them to be successful at forest biomass harvesting in eastern Oregon. Key elements include:
    - How biomass extraction fits in with the bigger picture of forest harvesting operations.
    - Understanding biomass service contracting versus timber sales contracting.
    - Merchandizing biomass for a range of markets to generate value from extraction operations.
    - Insuring everyone in the production/marketing chain gets paid.
    - Improve economics to provide family wage jobs.
  3. Obtain greater awareness of the importance of a biomass extraction infrastructure in eastern Oregon in order to meet societal goals including forest health, wildfire fire hazard reduction and biomass utilization for community employment benefits (*link with Shared Vision and Public Support subgroup*).
  4. Identify synergies between end users and between forest biomass extraction and biomass energy and biofuels production.

## Key Actions

1. **Use the OFRI study, *Biomass Energy and Biofuels from Oregon's Forests*, to help design and present new education and training programs for Oregon's harvest contracting workforce.**

*Impact: Medium*

*Difficulty: Low*

*How:* The OFRI study has been completed and published. A biomass workshop is scheduled for January 3, 2007. The potential impacts of these projects will be increased with a designed plan for accomplishing additional education and training programs based on recommendations from these projects. OFRI, OSU and others are to move forward.

2. **Expand demonstration projects with contractor involvement to better describe harvesting and transportation efficiencies and economics (*links with the Shared Vision and Public Support subgroup*).**

*Impact: High.* A greater understanding of biomass utilization through education and involvement with Oregonian's is one of the most critical issues to move forward. More complete information on the harvesting and transportation component including contractor involvement needs to be included in demonstration projects.

*Difficulty: **Medium.*** As new demonstration projects are developed, it should be relatively easy to proactively obtain the expertise to collaboratively include the harvesting and transportation component.

*How:* Form a task force specifically charged with moving new demonstration projects forward. Continue addressing FBWG Shared Vision and Public Support, and Harvesting and Transportation actions through OFRI, OSU and other organizations.

- 3. Build on research projects that have already been completed with new studies to fill** the information gaps that will help forest managers and contractors better understand the appropriate harvesting technologies (local modifications and new equipment types) and the economics of forest biomass utilization.

*Impact: **High.*** Harvesting efficiencies through modified or new technology, and new smallwood operation methods on forest restoration projects are needed to economically utilize biomass for energy and biofuels.

*Difficulty: **Medium.*** The OSU College of Forestry has the requisite expertise and researchers have the appropriate background and experience. Research and development funding is needed to sustain these efforts.

*How:* The OSU College of Forestry should develop a comprehensive Forest Biomass Utilization Research Program including harvesting technologies. A harvesting research and development funding level of \$1 million/year is needed over a five-year time period.

- 4. Develop transportation system guidelines from available information and new research** that identifies the best practices for vehicle selection, transportation networks, and road reconstruction and new construction methods for different site and vegetation conditions..

*Impact: **High.*** The transportation cost component is the most significant harvesting economic barrier along with additional challenges in some areas such as transporting biomass on steep terrain road systems and juniper rangelands.

*Difficulty: **Medium.*** Same as No. 3 action item

*How:* Same as No. 3 action item

- 5. Engage OSU Extension in developing and delivering more education and training** programs on biomass harvesting and forest restoration contracting opportunities. Also develop and deliver specific extension programs to help educate the workforce about available information and resources such as websites, links with experienced contractors, extension events, specialty wood product and value data, success in securing new types of contracts, etc.

Refill the currently vacant OSU Forestry Extension positions in (1) Timber Harvesting and (2) Forest Economics with a portion of these positions devoted specifically to developing and delivering outreach education programs on biomass utilization in Oregon.

*Impact: High.* There is already a fair amount of available information and practical experience that could be accessed for a stronger focus on biomass utilization. Also, the relatively new Wood Innovation Center is in place.

*Difficulty: High.* Financial and people resources are extremely limited and other extension activities must be balanced with any “new” biomass utilization programs. With a new OSU Forestry Extension Program Leader on-board, Dr. Jim Johnson, this would be a good time to have these discussions.

*How:* OSU College of Forestry and Extension and interested parties

- 6. Obtain more specific information on accessibility, location, amount and type of supply** to help existing and new contractors make long-term investment decisions that will strengthen the harvesting infrastructure in Oregon (*links with the FBWG predictable supply subgroup and CROP expansion*)

*Impact: High.* Predictable supply and understanding the specific characteristics of the biomass supply related to the economics (harvest cost and value) for different markets, are the biggest obstacles. These must be overcome to enable contractors to develop business plans, hire and train workers, purchase new equipment, and experiment with new harvesting technologies that have the potential to reduce the cost of biomass harvesting and transport.

*Difficulty: Medium.* Some of this work has already been completed and there is experience with appropriate methodology for biomass supply assessment.

*How:* This recommendation links with more detailed information presented in the FBWG Predictable Supply subgroup report and expansion of CROP like supply information.

- 7. Complete a logging industry survey of the Associated Oregon Loggers (AOL) chapter** members in eastern, central, and southern Oregon to obtain a “snapshot” of the current extraction infrastructure including existing workforce capacity with specific equipment types and capabilities for retrofits; interest in forest restoration contracting; and workforce education/training needs.

*Impact: Medium.* Well-designed and conducted surveys are needed to obtain credible information, and these surveys take time to design and implement. However, they can provide very useful information to better understand the interest and issues for the contracting workforce that would likely expand into more forest restoration and biomass utilization projects. Appropriate education, training, research and development, and outreach programs can then be developed from this base-line information.

*Difficulty: Medium.* Resources (funding and people) are needed to complete this activity. The expertise is largely available through the AOL and the OSU College of Forestry. Additional financial support is needed to design and conduct the survey, as well as to summarize information, and prepare reports and presentations.

*How:* AOL and OSU College of Forestry

8. **Invite people/organization representatives with biomass extraction and production** experience to share their experiences on what works and what doesn't work to provide real world examples of support for the recommendations generated by the FBWG.

Examples:

- Logging contractors (Scott Melcher, Mike Wiedeman, Gary Wright, M&S Timber; northern California and southern Oregon experiences; include a biomass extraction workshop topic at the April, 2007 International Mountain Logging Conference at OSU).
- Case studies on the economics of biomass utilization.
- Equipment manufactures/distributors (John Deere/Timberjack; Caterpillar, etc.)
  - Financial commitment needed to start a forest biomass harvesting operation.
  - Technology developments including retrofits or adaptations to conventional equipment vs. new equipment technology.

*Impact: Medium.* Practitioners provide an excellent reality check from their experiences and they can provide excellent support to help move recommendations forward from groups such as the FBWG.

*Difficulty: Low.* Practitioners appreciate sharing their experiences in most cases, and the FBWG has already connected with many of these folks. The issue currently is how to sustain these efforts in the future.

*How:* OSU College of Forestry and other recommendation from the FBWG.

## Summary

The following are additional recommended actions in order of priority for how attention to Oregon harvesting and transportation infrastructure will accelerate biomass use in Oregon.

1. Financial commitments to research and outreach are needed to hire the necessary people, design and conduct scientifically credible studies, and develop associated transfer technology to further biomass utilization in Oregon. Harvesting and transportation cost are a significant economic barrier to biomass utilization. These costs can be reduced through investments in research and outreach that include support for harvesting and transportation innovations.
2. The harvesting workforce and infrastructure is being rapidly lost in regions of Oregon where forest restoration and biomass utilization needs and opportunities are the greatest. There is a high degree of urgency to address the disappearing infrastructure and attrition of the workforce if biomass utilization is to move forward in Oregon. This further indicates the

significant need for research and outreach program commitments for better understanding and development of new biomass utilization opportunities.

3. Lack of both a predictable biomass supply and long-term contracts represents the most significant barriers that limit harvesting contractors interest and commitments to develop new business plans, hire workers and invest in training, purchase new equipment, and experiment with new harvesting technologies to reduce the cost of biomass harvesting and transport.

The action items presented in this report are summarized into the following three priority categories to further biomass utilization in Oregon

First Priority (relatively easy to accomplish with important payoffs)

Action items Nos. 1, 7, and 8

Second Priority (relatively high potential impacts but also relatively difficult to accomplish)

Action items Nos. 3, 4 and 6

Third Priority (relatively high potential impacts but more difficult to accomplish)

Action items Nos. 2 and 5

### **Subgroup Membership**

Loren Kellogg; convener, OSU

Jim Geisinger; AOL

Rick Wagner; ODF

# Biofuels Subgroup

## Background

Refining woody biomass into liquid fuels using hydrolysis or pyrolysis and subsequent distillation has been technically proven. (Hydrolysis is chemical decomposition in which a compound is split into other compounds by reacting with water. Pyrolysis refers to the decomposition of organic compounds by subjecting them to very high temperatures.) Oregon has vast woody and agricultural biomass feedstocks that lend themselves well to these technologies. Leading in this new emerging market can benefit Oregon in a number of economic and environmental ways.

## Goal

Develop strategies, tactics and action items which identify a low-risk path for Oregon to develop biorefinery value-added products, such as biofuel, using Oregon biomass resources. Further maintain Oregon as a leader in production of refined woody biomass into pellet fuels.

## Barriers

The U.S. Department of Energy convened a group of 50 scientists from around the country for a workshop to identify the barriers to cellulosic ethanol production in December 2005. Their findings are found in a 200-page document entitled *Breaking the Biological Barriers to Cellulosic Ethanol*, which was published in June 2006 by the USDOE.

Rather than reinvent the wheel, the subgroup accepts the major findings and recommendations for the development of a viable cellulosic biomass-to-biofuels industry. One of the key barriers is the natural recalcitrance of the plant cell to allow for an easy breakdown of its cellulose and hemicellulose into five- and six-carbon sugars.

The USDOE has identified a number of key issues and goals to solve:

1. **Feedstock interface** – Develop sustainable technologies to supply biomass to bio-refineries.
2. **Sugar platform** – Develop biochemical conversion technologies to produce low-cost sugars from lignocellulosic biomass.
3. **Thermochemical platform goal** – Develop thermochemical conversion technologies to produce chemical building blocks from lignocellulosic biomass.
4. **Product goal** – Develop technologies to produce fuels, chemicals, and power from biobased sugars and chemical building blocks.
5. **Integrated refinery goal** – Establish integrated biorefineries through private/public partnerships.

There are a number of technical and logistical issues to be resolved. Oregon, with its intact forest and agricultural collection system still in reasonably good shape can provide low-cost feedstocks for the cellulosic ethanol facilities.

## Key Outcomes

Production goals for cellulosic ethanol in Oregon:

<u>Year</u>	<u>Goal</u>
2008	5 million gallons
2010	25 million gallons
2012	65 million gallons (Oregon will provide one-fourth of the 250 million gallon goal established by the U.S. Congress in the Energy Act of 2005.
2030	According to the USDOE, annual U.S. production must increase from about 4 billion gallons of corn grain ethanol to about 60 billion gallons per year from a variety of plant materials. Oregon will provide 10 percent of the nation's needs. <i>(REAP calls for 100 million gallons of ethanol produced annually, although there is no timeline and no differentiation for cellulosic ethanol production)</i>

Right-sized distributed cellulosic ethanol facilities built throughout all of Oregon – particularly in rural parts of the state. A 5 million gallon facility would require approximately 100,000 bone dry tons (BDT) of biomass annually. Assuming that the plant operated six days a week to accept biomass, the facility would require approximately 333 BDT per day, or approximately 18-20 log truck equivalents per day.

Employees, rural communities, and stockholders share in the wealth generation from the cellulosic ethanol facilities.

Encourage development of small and mid-sized biomass and biofuels companies.

There will be a significant reduction of greenhouse gases by the substitution of cellulosic ethanol for fossil fuels such as oil, natural gas, and coal. Life-cycle analysis at Argonne National Laboratory shows carbon dioxide emissions from cellulosic ethanol to be 85 percent lower than those from gasoline.

## Key Actions

1. S Support an action that will help coordinate R&D advances with commercial technology development. One such effort the group is aware of is the Bio-Economy and Sustainable Technologies (BEST) Center proposed by the Oregon Innovation Council. Support \$5 million funding level. *(The \$5 million request is a \$2 million increase over the recommendation of the Oregon Innovation Council, because there is a need for Oregon to recognize the key role played by the state's forest and agricultural industries).*

***Impact:*** **Moderate.** There will be a need to help coordinate research-and-development efforts with commercial technology, and the BEST center could serve as a clearinghouse. This coordination is important, but will likely be uneven due to the different demands of both private industry and public funding.

*Difficulties: Moderate.* The economic climate of Oregon is brightening, so there is a possibility of attracting funds to the development of a center like the proposed BEST center.

*How:* Organizations will need to approach the Oregon Legislature for funding a center.

2. Request that the U.S. Department of Energy offer solicitations for funding of research focusing on the conversion of biomass, such as poplars and grass straw, to cellulosic ethanol. (*Similar to USDOE's \$250 million funding for switchgrass research that is currently being offered for bid.*)

*Impact: High.* Oregon public institutions and private sector companies could receive tens of millions of dollars from the federal government over the next few years as the country gears up for alternative fuels.

*Difficulties: High.* Oregon is a small-population state. The vast majority of biofuels funds for research and development have been going to the Midwest. Oregon does not have much influence at the federal level. We need to emphasize that one-third of the expected 1 billion tons of biomass is projected to come from forest biomass.

*How:* Contact the Oregon congressional delegation and ask that they write letters to encourage funding research contracts for softwood conversion into ethanol.

3. Attract \$100 million in private equity and venture capital over the next five years to build cellulosic ethanol facilities in Oregon.

*Impact: High.* The majority of the cellulosic ethanol facilities that will be built in Oregon will be privately funded. We need to attract private-sector funding for the actual construction of these facilities.

*Difficulties: High.* The June 2006 issue of Oregon Business Magazine has an informative article about the difficulties Nancy Floyd of Nth Power experienced in trying to attract venture capital renewable energy projects in this state. Oregon lags behind many other states in this regard.

*How:* Work with a firm like Stoel Rives LLP, which recently held a very successful renewable energy venture capital forum in Seattle. (Stoel Rives is a leading provider of legal services to developers of renewable energy throughout the West.) Try to link up private venture capitalists with individuals and companies wanting to build biofuels facilities in Oregon.

4. Build a cellulosic ethanol commercial demonstration facility in Oregon within the next two-and-a-half years using public/private funds.

*Impact: High.* Oregon needs to start down the path of building cellulosic ethanol facilities. Both the OFRI study and REAP propose the building of a cellulosic ethanol

facility. This facility could serve as a public laboratory to encourage the replication of multiple, right-sized facilities throughout the state.

***Difficulties:*** **High.** The building of a public/private commercial cellulosic ethanol demonstration facility has no precedent in the U.S. There will be multiple, substantial challenges associated with this joint effort.

***How:*** Seed funding from OECDD would help to initiate this process, then to be followed by funding from either the USDA Rural Development Agency's 9006 or 9008 programs, ODOE's small-scale energy loan program, or seed funding from venture capitalist firms.

5. Increased incentives may improve the business climate for bio-refining of biomass resources in Oregon. Existing incentives provide encouragement but have not yielded investment for a number of reasons. The un-costed public benefits such as local jobs, lower long-term energy costs, retention of energy dollars in the state, reduced emissions and reduced uncharacteristic wildfire may justify consideration of additional incentives, including federal, state and local.

***Impact:*** **Moderate.** Companies will be making decisions to invest based primarily on the projected cash flow from the project. Based upon one 20-year discounted cash flow analysis, BETC helps improve the cash but is not a deal-killer or maker by itself.

***Difficulties:*** **Low.** The Governor supports an increase in the BETC tax credit, and we assume that the State Legislature will be willing to accept or add to the concept.

***How:*** Key parties to approach the Legislature to gain support for passage of the bill.

## **Subgroup Membership**

Martin Desmond, convener, Lane Microbusiness

Glenn Montgomery, Oregon Economic and Community Development

David Schmidt, Sustainable Northwest

(strong support in subgroup meetings from the biofuels community)

# Research and Development Subgroup

## Background

The Research and Development (R&D) sub-group was convened to identify R&D barriers (needs and opportunities), key outcomes and action items related to the development of bioenergy and biofuels industries in Oregon. Also, in 2005 the Oregon Forest Resources Institute (OFRI) commissioned a comprehensive report, *Biomass Energy and Biofuels from Oregon's Forests* (referred to hereinafter as the "OFRI report," published in June 2006) which has helped to inform the deliberations of the R&D subgroup.

## Goals

The goals of the R&D subgroup are to identify and prioritize the following areas: (1) the barriers to biomass power and fuels that exist due to a need for research, (2) current research efforts, and (3) gaps where further research is needed. Based on those findings, the R&D subgroup recommends key research and development outcomes that are needed and has identified action items linked to those outcomes.

## Barriers – Research & Development Needs

The R&D subgroup identified four broad categories in which research and development is needed to overcome barriers and obstacles to the development of bioenergy and biofuels industry in Oregon: (1) Resource Supply, Forest Health, & Environmental Tradeoffs, (2) Technology & Infrastructure, (3) Markets & Economics, and (4) Social Acceptance. The following sections expand on those categories, and attempt to identify existing and future research needs.

### 1. Resource Supply, Forest Health, and Environmental Tradeoffs

Assured access to affordable long-term supplies of forest biomass is a necessary prerequisite for the realization of a biomass energy industry in Oregon. Restoration of forest health and environmental concerns are key drivers in the current discussions about forest biomass energy in Oregon. All of these issues must be addressed. To be publicly acceptable, any solutions must be based in research and the best available science. Areas identified by the R&D workgroup in which research is needed to inform those decisions are listed below.

#### ***Resource Supply***

Landscape-Scale Resource Assessment – A good quality, spatially explicit, statewide landscape-scale assessment of forest inventory and conditions is a necessary prerequisite to address questions relative to forest biomass supply, availability, economic costs and impacts, and to assess forest health impacts of biomass harvesting activities. In a current research effort that may provide this kind of information, ODF is cooperating with the Pacific Northwest Research Station (PNWRS) and other governmental and non-profit agencies on the Interagency Mapping and Assessment Project (IMAP). Mapping down to a fifth-field watershed basis, it will provide landscape-scale baseline forest data. IMAP was implemented for use by federal agencies in their forest planning processes and ODF in its forest assessment work. IMAP is currently underway and is targeted for completion in 2010.

Landscape-Scale Resource Availability – With potential biomass resources at the landscape level (e.g., by IMAP, or some other process) identified, the next researchable question is how much of that resource is available for biomass energy and fuels production. First eliminating from consideration forestlands on which biomass harvests are not feasible due to physical, accessibility, legal, regulatory, or other constraints, the challenge is to identify where harvest activities are necessary and at what level to achieve forest health goals (“desired conditions”) in the remaining forestland base. Biomass harvest opportunities will be greatest where current conditions deviate from desired conditions. Chapter 2 of the OFRI report – an assessment of biomass potential – adopted the approach utilized by the Western Governor’s Association (WGA) Biomass Task Force (2006), using the Fuel Treatment Evaluator (FTE) model to identify the forestland base and appropriate treatments. The report concludes that in a base-case scenario, over a 20-year period, treating 212,500 acres per year, annual harvests of 410 million board feet of merchantable timber and 1 million bone dry tons (BDT) of biomass (at an average cost of \$59/BDT) could be realized. As finer resolution forest assessment products become available, future research may be able to refine those estimates further.

### ***Forest Health***

Forest Restoration Science – (from the OFRI report, pp. 5-19 to 5-20)

“While there appears to be a general agreement among scientists on the need for forest restoration in Oregon, the science of forest restoration is relatively new. There has been relatively little research on the effects of restoration treatments on environmental values. For example, questions remain around:

- The historic range of variability that describes pre-settlement conditions;
- Differences between forest types needing restoration treatment (mixed conifer forests in southwest Oregon versus inland Ponderosa pine, for example);
- The ability of mechanical treatments to replace the ecological functions of fire;
- Whether biomass removal is good for the forest;
- How to achieve conditions in which forests are resilient to short-term disturbances such as fire and long-term forces such as climate change.”

Disagreements also arise over the specifics of treatments. For instance:

- Under what conditions are restoration treatments needed?
- How should treatments be implemented?
- To what extent should larger trees be removed?
- How is effectiveness measured?”

Forest restoration science is an area in which additional research is needed.

Monitoring Landscape-level Effects of Biomass Harvesting - The Nature Conservancy (TNC) has completed work in this area using LANDFIRE, a nationwide fuel-assessment mapping project. TNC is refining and testing LANDFIRE data in real-world situations in several landscape-scale projects that have been selected across the United States, including a

project in the upper Deschutes Basin. These projects will provide feedback to the LANDFIRE team on the usefulness and accuracy of its products to landscape-level applications, and will form a foundation for testing the utility of LANDFIRE data for monitoring ground-based accomplishments at landscape scales through time. The products tested by projects include reference models and biophysical settings, existing vegetation, and historical fire regime maps. More information is available at <http://www.landfire.gov/index.php> and [http://www.tncfire.org/training\\_landfire.htm](http://www.tncfire.org/training_landfire.htm)

### ***Environmental Tradeoffs***

The environmental consequences of forest health restoration activities need to be quantified and compared with the alternative of not undertaking major forest health restoration efforts. Estimates of these impacts and a review of current literature on this subject can be found in the OFRI report, pp. 1-129 to 1-141., which concludes that major net environmental and economic benefits result from forest restoration activities.

## 2. Technology & Infrastructure

The OFRI report summarizes the state of current technology (pp. 1-48 to 1-65.) Combined Heat and Power (CHP, or Cogeneration), the most economically efficient form of energy production for forest products manufacturers, is a fairly mature technology. But research can still spur marginal improvements in areas such as preprocessing of feedstocks, higher steam temperatures, and turbine efficiencies. The need for major new research initiatives lies more in the areas of biofuels and biochemicals, including:

- Product potential of different forest species (biofuels/biochemicals) -- e.g., hardwood, juniper, pine, Douglas-fir, et al.
- Refining hydrolysis/fermentation processes for softwoods – including “enzyme cocktails” – for converting cellulose to bioproducts. Lower cost and improved efficiency will make cellulosic bioproducts more economically feasible.
- Potential of pyrolysis to produce bioproducts.
- Economic efficiency of processing/preprocessing feedstocks.

## 3. Markets & Economics

Equalize R&D funding for Biomass – The energy R&D playing field is not level. From 1973 through 2003, 50 percent of federal energy R&D spending was on nuclear, 25 percent on fossil fuels, 14 percent on renewables, and 11 percent on energy efficiency (the OFRI report, page 5-14). More emphasis needs to be placed on renewable-resource R&D funding.

Identify gaps in existing research to help forest managers and contractors with selecting economically efficient and environmentally appropriate harvesting technologies for biomass removal.

Develop opportunities for symbiotic bioproducts production – Research opportunities to co-locate bioproducts plants with pulp and paper or wood processing facilities vs. standalone facilities.

FIA Biosum – The FIA Biosum model developed by PNWRS (Fried. et al.) is an analytical tool that uses FIA inventory plot data, forest simulation models, and GIS modeling of existing road networks to:

- Identify best locations for siting biomass cogeneration or wood-processing facilities;
- Assess likely impact of fuel treatments on plot-level wildfire hazard;
- Estimate amounts of removed material by size class;
- Explore tradeoffs among costs, area treated, and treatment effectiveness;
- Optimize location of facilities relative to biomass availability and markets biomass deliverable at different values/ton.

Financial Analysis – Develop toolbox for analysis of projects, investment and funding. Model conditions necessary for profitability for a 15- to 30-megawatt plant.

Subsidies – Research the marginal effect of different types/levels of subsidies in achieving desired outcomes, e.g., \$#/green ton transportation subsidy, does that achieve desired results in different regions and ecotypes?

Alternative uses – Investigate alternative uses of small-diameter trees for other products to increase financial returns for forest restoration treatments.

#### 4. Social Acceptance (public license)

Experience has shown that a collaborative approach based on science is essential to overcome public concerns over the development of forest bioenergy projects.

Public acceptance – The section of the OFRI report that deals with “Public Perceptions on Woody Biomass Utilization in Oregon” concludes that, “is widespread support for removing excess biomass from Oregon forests by means of mechanical thinning.” However, “further research will be needed to conclusively determine how the public at large perceives using forest biomass for energy. Research will also be needed to determine the parameters of socially acceptable biomass thinnings.”

Pilot Projects – Research should be conducted in the Wildland Urban Interface (WUI) where stewardship contracting activities are being conducted to gauge public acceptance of biomass harvesting projects and to identify obstacles, barriers and solutions to public acceptance of biomass harvests. ODF has determined that the current national WUI maps being used are insufficient, and is in the process of developing better Oregon WUI maps.

Certification – Research is needed on how current certification standards and processes fit into bioenergy projects.

## **Key Outcomes**

- Accurately characterize the forest biomass resource at the landscape scale.
- Quantify environmental, social and economic impacts and appropriate scale for a forest biomass energy industry in Oregon.

- Address infrastructure issues (workforce, harvesting/transportation, processing, markets).
- Identify and support economically and ecologically feasible biomass energy pilot projects.
- Develop research infrastructure, strategy, and funding to address bioenergy research and development needs.

## **Key Actions**

1. ODF should continue to work with the PNW Research Station to develop the IMAP project so that it will accurately characterize the forest biomass resource at the landscape scale, and work to ensure that the results and models are compatible with the LANDFIRE project.
2. ODF, Oregon Dept of Energy (ODOE), and the Wood Innovation Center at OSU should work together to develop a matrix of existing and potential research funding sources.
3. Promote long-term research into forest restoration and juniper control, and examine opportunities to develop environmental service credits (carbon credits, etc.) as market incentives for recognized environmental health benefits and reduced fire suppression costs.
4. Promote the establishment of a pilot cellulose-to-ethanol softwood plant.
5. Research public perceptions of BLM Stewardship contracts in WUIs.
6. Support an action that will help coordinate R&D advances with commercial technology development. One such effort the group is aware of is the Bio-Economy and Sustainable Technologies (BEST) Center proposed by the Oregon Innovation Council.
7. Take advantage of OSU's status as a regional Sun Grant Center. Support university research on alcohol fuels produced from cellulosic materials, including the establishment of a cellulosic ethanol pilot research lab at OSU. The Wood Innovation Center and the Forest Products Department of the College of Forestry should look for opportunities to partner with the Ag Sciences and Chemical Engineering departments.
8. The Wood Innovation Center should engage the pulp and paper industry in research efforts into potential for co-production of biofuels and biochemicals.
9. ODF should convene a Biomass Energy, Fuels, and Bio-products Research and Development Committee to develop strategies for prioritizing and developing a strategy to address research needs (including funding).

## **Subgroup Membership**

Linc Cannon, convener, Oregon Forest Industries Council  
 Jamie Barbour, Pacific Northwest Research Station  
 Doug Heiken, Oregon Wild (formerly ONRC)  
 Loren Kellogg, Forest Engineering Dept., Oregon State University  
 Scott Leavengood, Wood Innovation Center, Oregon State University  
 Steve Buttrick, The Nature Conservancy (ex-officio)

# Supportive Regulatory Environment Subgroup

## Background

Many regulations ranging from land use planning, harvest allowances, rural road standards, electric energy production conditions, and air emissions permits play a significant role in how, where and how well Oregon's biomass resource is used. These various regulations, along with the perspectives of regulators and constituency interest all affect how well the biomass market can operate. Opportunity exists to collect and organize appropriate regulatory streamlining opportunities in this complex market. Categorizing the discussion into forest supply, business development, and markets was agreed to by the subgroup members to be helpful.

## Goal

This subgroup evaluated whether regulations or procedures in Oregon forest products marketplaces are supportive of a competitive and robust forest biomass market, or if they pose barriers. The objective was to identify actions needed for development of an appropriate, expedited and accountable forest biomass market that first and foremost provides varied value-added wood products and, as a byproduct, a predictable supply of biomass as an energy supply.

This subgroup neither supports nor endorses legislation being considered or proposed by others, nor is any implied herein. We evaluated known issues, mechanisms for regulating, providing incentives or expediting the market and have simply provided observations on possibilities for enhancement of the intended outcomes.

## Barriers

Current logging activity in Oregon, ranging from commercial cutting of industrial forest lands to thinning for forest management or stewardship contracts, is meeting Oregon's forest byproducts needs as they pertain to existing energy supply. However, detailed forestland analysis indicates there is significant forest fire fuel loading that is going unaddressed, and that certain regulatory obstacles must be addressed to increase the pace at which we reduce the risk of uncharacteristic wildfire and improve forest health. Existing markets for small-diameter merchantable timber and biomass fuel provide marginal help but are not sufficient to accelerate forest health treatments.

Most Oregon biomass markets rely on wood products industry wastes, some close-in forest chip recovery, and to a lesser extent urban wood waste recovery. Forest stewardship on federal lands in Oregon is constrained by too few acres having the necessary environmental impact studies that lead to NEPA pre-approval. Also, designing units for bidding under stewardship guidelines is complex, time-consuming and requires certain expertise. Federal land managers are staff resource constrained for this increased level of activity. In some cases forest stewardship has more up-front cost, and on a per-acre basis may cost more to treat than there is revenue in the contract.

Federal land managers need to have a wider inventory of lands ready for stewardship contracting so they can blend a portfolio of cost-competitive contracts. Given the amount of biomass supply on federal lands and the increased interest in siting biomass plants in Oregon, unless federal

agencies have the ability to increase the number of acres under stewardship contracts, increasing demand for biomass energy fuels may outstrip supplies, causing price volatility.

There are many un-costed public benefits of appropriate biomass removal from forests. That those benefits are not directly priced causes forest stewardship markets to have problems with cost-competitiveness. Recent studies indicate escalating firefighting costs may become prohibitive, yet forest stewardship and treatment funding for federal lands is not given the same priority as emergency appropriations for fire fighting after the fact. Proactive forest restoration benefits can include: reduction in uncharacteristic catastrophic fires, reduced smoke and carbon dioxide emissions from poor combustion, and appropriate habitat or riparian zone maintenance.

By increasing Oregon biomass markets increased environmental health, reduction in risk to taxable properties, increased rural employment, transferal of exported energy costs to income for local energy suppliers, and business economic stability may be expected. There currently is not clear recognition of these public benefits demonstrated in our funding policy for forest health.

In addition to un-costed benefits, biomass removal could also impose some external costs on the public in the form of potentially impaired ecosystem values. These should also be accounted for an internalized to the project if possible.

It is recognized that a number of uncertainties exist in the use of biomass as an energy supply. Lengthy interconnection agreements with utilities, non-negotiable avoided costs based contracts, and a range of local jurisdiction familiarity with siting energy facilities can slow development or even dissuade investment. Developing biomass as an energy fuel for export, such as pellets or bricks for instance, or using it directly in combined heat and power applications in industry, faces environmental permit restrictions. Currently in Oregon biomass plants are not recognized as a part of the emissions Production Tax Credit trading system, while other states have biomass as a part of the mix. Credit for net reductions in overall carbon dioxide emissions do not offset or alleviate regulation on other emissions. This is the case in part due to air quality issues in certain airsheds where pollutants or permitting requirements are not mitigable, since compromise for the sake of biomass market development may weaken other public interests.

## **Key Outcomes and Actions**

### ***Increase Biomass Supply***

1. Expedite forest stewardship contracting on federal lands  
Specific pilot projects have been successfully completed in Oregon. However, of the 70,000 acres identified on federal lands that could have been treated under stewardship contract only 9,000 acres were treated in 2005. Specific tasking to accelerate stewardship contracts and automate the complex budget management methodologies is indicated. Given the existing staffing levels and newness of the program, the existing staff has done a good job of trying to roll out the program; however, specific appropriations to staff federal lands management agencies are required.
2. Continue to develop administrative collaboration under Oregon Senate Bill 1072  
Oregon's directive to the Department of Forestry, with assistance from other state agencies, to develop and maintain co-management relationship with federal forest land management

agencies in Oregon will support development of small-diameter wood products markets and energy by-products. It should be continued as an effort that is specifically tasked, led and funded rather than merely added as discrete tasks to multiple existing work loads.

3. Address cost of forest biomass

Unlike wind and other renewable energy sources, there are significant costs associated with obtaining forest biomass ( e.g. extraction and transportation costs). The federal transportation credit for biomass transportation that was authorized by Congress but not funded would relieve some of the cost differential.

Establishing environmental service credits can work to create markets for the public benefits that are un-costed in current commodity retail prices. Incentives to offset the capital cost of equipment necessary to conduct new wood gathering and treatment activity on forest land, at landings or in mill settings would accelerate this market. In addition, offsetting the cost to produce quantities of biomass for energy fuels would address the other intensive operations costs, business model changes and management responsibilities associated with developing new approaches to slash management, smaller-diameter logging and stewardship. Public benefits of reduced urban-rural-forest interface fire risk, reduced slash burning emissions, rural jobs, unique niche wood products development, and others need be recognized.

4. Uniform regulatory definitions of biomass

Oregon should work to achieve consistency within Oregon, across the western states, and with the federal government, and green power certification groups, to adopt a uniform definition of biomass. The Western Governors Association recommends using the Federal Energy Regulatory Commission definition of biomass at 18 CFR Part 292.202 as "any organic material not derived from fossil fuels." According to the WGA, this broad definition gives "biomass energy projects the greatest opportunity and flexibility to use technology innovation to create productive uses for all types of biomass materials."

5. Secure supply

In eastern and southern Oregon, the bulk of potentially available forest biomass is located on federal land in Oregon. However federal lands account for little of the forest biomass supply currently utilized. Existing authorities ( e.g. Stewardship Contracting), if fully utilized, could increase federal biomass supply as part of a sustainable forest land management strategy.

Direction needs to be provided to federal land managers to work within economic regions to develop agreed upon Coordinated Resource Offering Protocols (levelized supply) to assure longer term reliable resources suitable to business planning. To ensure that biomass removal on federal lands remains uncontroversial, efforts must be made to ensure that treatments achieve real restoration and avoid or minimize adverse environmental impacts.

***Biomass Business Development***

Land-use planning, environmental, energy facility siting and other local jurisdiction permitting and allowances are relatively mature in Oregon.

6. Promote the voluntary Oregon energy facility siting model for local jurisdictions

The largest energy generation facilities follow procedures for energy facilities siting which consist of a consolidated (one-stop-shop) for codes and standards review and approval. Small

biomass energy generation facilities are either exempt or fall under the threshold where that siting requirement applies. Local jurisdictions often have little experience with siting and permitting energy facilities. Oregon has developed a voluntary model for energy facility siting at the county and local jurisdiction levels. This enables local jurisdictions to focus on expediting the approval of such facilities without having to develop their own checks and balances or accountability testing means. Promotion of that model to counties and cities would accelerate development of biomass energy markets.

7. Adopt uniform interconnection standards

Technical standards, procedures and agreements for interconnection of small generators (under 20 megawatts) with utility systems are not consistent across all utility service territories. Clear and best practice uniform technical standards statewide would provide consistent expectations for developers. No fewer than a dozen other states have adopted such standards.

OPUC staff has begun workshops toward development of uniform standards, procedures and agreements for investor owned utilities. The 2005 Energy Policy Act sets August 2007 as the deadline for the Commission to hold a hearing on IEEE 1574 standards and best practices. Consumer-owned utilities are participating in workshops and are interested in coordinating development of standards. OPUC staff also is considering proposing interconnection standards in forthcoming rules on net metering related to increasing eligible size.

8. Consider Oregon incentives to off-set capital cost of biomass energy facilities

Oregon Business Energy Tax Credits have provided significant encouragement to development of energy efficiency and renewable resources for nearly three decades. The growth in the biomass energy production market represents little growth over the decadal trend in development of conventional energy supplies. The current incentive does not overcome some of the market cost barriers we have identified which show Oregon developers that local biomass energy supplies are a preferred resource, in addition to merely offsetting potential incremental cost or perceived cost risk. Incentives can inform markets by establishing momentum through price signals that identify preferred path of development.

***Developing Biomass Markets***

Gathering, treating and delivering new sources of biomass energy supplies pose their own barriers and costs. In addition, the cost to produce electrical or thermal energy from biomass resources is affected by plant size, market sales scale, geographic location and maturity.

9. Address inequity in production tax credits

The federal production tax credit for energy generated from biomass is less than for other renewable energy resources and routinely is renewed for too short a period of time to assure orderly market investment. There should be parity among renewable resources such as wind and geothermal. Credit for existing facilities should be extended to 10 years to match current provisions for new facilities or even 15 years toward greater parity with “clean” fossil fuel resources.

10. Consider rate and pricing issues

Rates for backup and supplemental power for the power plant host may not properly reflect actual costs. Tariffs should be reviewed to ensure they appropriately reflect actual costs. The OPUC completed this work for investor-owned utilities.

11. Refine Oregon's Public Utility Regulatory Policy Act Implementation (PURPA)

PURPA policies should reflect current market conditions and utility resource acquisition activities. Such refinements may benefit the development of small biomass energy facilities. OPUC issued in May 2005 an initial decision that updates its PURPA policies, focusing on generators 10 megawatts and less. A subsequent order was issued in September 2006 on the utilities' compliance filings. An order also will be issued shortly on issues related to larger generators. This development, articulation and continued addressing of developers' needs is indicated.

12. Develop competitive electricity sales conditions

Biomass electricity producers can't easily sell power from onsite generation to the utility through a competitive bidding process, to a marketer or to other customers directly. Competitive bidding policies should be explored to ensure they are fair for biomass facilities. The Commission issued an order on competitive bidding in August 2006 that applies to investor owned utilities. At a later date, the Commission intends to explore issues related to customer-generators selling power to other retail customers over the distribution system.

13. Enhance Utility Integrated Resource Planning

Energy and capacity needs assessment is done in isolation from distribution and transmission system planning, and neither generally assesses or values distributed generation. Utility planning processes should better incorporate distributed generation to meet energy, capacity, distribution and transmission system needs at the lowest cost. The Oregon Public Utility Commission is considering this issue in a proceeding on utility resource planning. A decision is expected soon. At a later date, the Commission intends to explore "non-wires" alternatives to transmission and distribution system investments, including distributed generation.

14. Decouple renewable distributed generation

Electric utility revenues in Oregon are based on how much power the utilities sell and move over their wires, and they lose sales when customers develop generation on site. Utilities also do not earn a return on non-utility resources or make profits on them through operational efficiencies. Mechanisms should be put in place that remove disincentives for utilities to facilitate cost-effective distributed generation. For example, a utility could be allowed to earn a return on its capital investments in customer-owned distributed generation, similar to that previously approved for investments in conservation. The Commission is investigating performance-based ratemaking to mitigate concerns about a bias toward owning resources..

15. Clarify ownership of tradable renewable certificates

When a utility purchases energy and capacity from Qualifying Facilities, ownership of Renewable Energy Certificates (RECs, or "green tags") may be ambiguous. The Federal Energy Regulatory Commission has determined that Qualifying Facility purchases do not themselves convey associated RECs. Clear policies are needed that address REC ownership.

The Commission addressed the issue for Qualifying Facilities in recent rulemaking. The issues may be reconsidered by the Legislature or the OPUC if the state adopts a Renewable Portfolio Standard.

16. Consider an Oregon production or consumption credit for renewable resources

The price utilities and others are willing to pay for power from biomass resources often is too low to compensate for the risk of feedstock price variability in a developing market. Provide additional state or federal incentives for forest biomass projects in consideration of the multitude of benefits.

The price for Renewable Energy Credits (REC's) from biomass resources is low. Consumers interested in green power may be skeptical of forest biomass energy projects. Utilities, third-party REC suppliers, and environmental groups should work together to educate consumers about the additional benefits supported by RECs from forest biomass facilities.

PGE and Pacific Power are prohibited from including in customer rates the above-market costs of new renewable resources. Oregon's public purpose charge on customers' bills helps pay for above-market costs. That funding is limited and set to expire in 2012. Bonneville Power Administration provides consumer-owned utilities with rate credits if they buy power from new renewable resources. These vehicles have proven effective, albeit limited, in supporting development of biomass facilities. Continued public purpose investment is indicated if a healthy, economically integrated forest biomass energy market is to grow in Oregon.

### **Subgroup Membership**

Greg Corbin, Convener, Stoel Rives LLP

Lisa Schwartz, Oregon PUC

Mark W. Kendall, ODOE

David Schmidt, Sustainable Northwest

# Conclusion

This report is packed with findings on actions that can be taken to move forward with improving forest health by reducing the risk from catastrophic fire through thinning of smaller forest biomass material. At the same time, opportunities exist to utilize this material to meet national and state renewable energy goals in Oregon.

The public supports improving forest health and developing renewable energy in the state; however, it is clear they want it done in a way that sustains natural resources for the enjoyment and use of current and future generations. If we are to achieve this goal, federal land management agencies will need to receive increased appropriations, and state and federal efforts to improve data layers for analysis must be provided for. It is also important that adequate opportunities for public input be provided as use of biomass is developed in Oregon.

Currently, use of stand-alone forest biomass to provide renewable electrical energy is not cost-competitive with the less expensive forms of power found in the Pacific Northwest. Many of the current biomass facilities are cogeneration plants that also provide steam for use in drying lumber or for other uses. Developing a market for forest biomass use will likely entail cogeneration use of the steam, along with local creativity, to produce higher valued forest products or other uses to offset harvesting and transportation costs. Forest biomass, however, in addition to being a renewable energy source, also provides a host of other public benefits. If these values are recognized and supported through changes in public policy at the state and federal levels, markets will be created for forest biomass utilization, and Oregon will move closer to meeting forest health and renewable energy goals.

Biofuels development is expanding rapidly with investment from large oil companies and many other interests. The ecologic and economic gains that could be made from producing our fuel in this state are significant. With the amount of cellulose Oregon farms and forests produce, this state should be aggressive in pursuing construction of a commercial demonstration facility in Oregon for the production of cellulosic ethanol and developing uses for any resulting waste products.

Increased support for research and development with a tie to technology for energy, biofuels, and other products is essential to help Oregon continue as a leader in renewable energy development. The Bio-Economy and Sustainable Technologies (BEST) Center, along with findings for other research needs, should be supported.

This report was produced by a broad array of interests. It contains findings that decision-makers at many levels can draw from. There are findings that require policy changes, but there are many findings that chart a course for actions within existing authorities. The members of the Forest Biomass Work Group encourage you to make a difference and work to move Oregon forward in this endeavor to improve forest health and develop renewable energy and other market opportunities.

# Appendices

Enrolled Senate Bill 1072 (2005 session).....42

ODF Senate Bill 1072 Implementation Plan .....46

Oregon Renewable Energy Action Plan - Biomass Goals.....52

Oregon Forest Biomass Workgroup Charter .....56

# Enrolled Senate Bill 1072

Sponsored by Senator NELSON

CHAPTER .....

AN ACT

Relating to forestry policy.

Whereas forested lands comprise some of the most important environmental, economic and recreational resources in the State of Oregon; and

Whereas some of Oregon's forested lands are increasingly jeopardized by vulnerability to drought stress, the risk of severe insect and disease outbreaks and catastrophic wildfires fed by overstocking and unprecedented accumulation of forest fuels; and

Whereas reducing vulnerability to drought stress and the risk of severe insect and disease outbreaks and catastrophic wildfires is of interest to all Oregon residents; and

Whereas such active forest management may restore structural diversity of forest stands, enhance wildlife habitat and create other ecological, economic and social benefits; and

Whereas federal and state funds are not sufficient to carry out the management activities necessary to restore forest resilience and reduce the risk of severe insect and disease outbreaks and catastrophic wildfires; and

Whereas suppressing catastrophic wildfires affects federal, state and county treasuries; and

Whereas increased participation by the residents of this state and by state agencies in the development of federal forestland policies and management plans may improve the management of those lands; and

Whereas the development of a means to utilize biomass harvested from federal lands in an ecologically beneficial manner may assist in reducing the wildfire risk while reducing costs to the state; and

Whereas changes in the management of federal forests may produce a range of benefits to all Oregonians; and

Whereas the State Board of Forestry is charged by ORS chapter 526 with the supervision of all matters of forest policy and management under the jurisdiction of the state; now, therefore,

**Be It Enacted by the People of the State of Oregon:**

**SECTION 1. The Legislative Assembly finds and declares that:**

**(1) The State Forestry Department is well-positioned, due to experience in managing Oregon forests and its understanding of science-based, active forest management, to facilitate state government participation in forest management on federal lands located within the state.**

**(2) The State Department of Fish and Wildlife has expertise with fish and wildlife habitat and the Department of Environmental Quality has expertise with water quality. Both departments have an important role to play in the management of federal forests located within the state.**

(3) A collaborative relationship between the State Forestry Department, the federal government, other agencies of the executive department, as defined in ORS 174.112, interested persons and nongovernmental organizations may restore the health, diversity and resilience of federal forests by increasing the information shared and by providing a variety of perspectives on site-specific and landscape-level determinations.

(4) In cooperation with the State Forestry Department and the federal government, many communities in wildfire-prone areas have completed a community wildfire protection plan that identifies priority areas for hazardous fuel removal from federal lands.

(5) The federal government has provided opportunities for agencies of the executive department, as defined in ORS 174.112, to become involved, to a greater extent, in the management of federal lands.

**SECTION 2.** In furtherance of the policy established in section 1 of this 2005 Act, the State Board of Forestry, in consultation with the Governor, may:

(1) In conformance with federal law, including Public Law 108-7, direct the State Forester to facilitate the development of stewardship contracts utilizing private contractors and, when appropriate, to seek and enter into a stewardship contract agreement with federal agencies to carry out forest management activities on federal lands. The State Forester may, under the stewardship contract agreements:

- (a) Perform road and trail maintenance;
- (b) Set prescribed fires to improve forest health, composition, structure and condition;
- (c) Manage vegetation;
- (d) Perform watershed restoration and maintenance;
- (e) Restore wildlife habitat;
- (f) Control exotic weeds and species; and
- (g) Perform other activities related to stewardship.

(2) Create a forum for interagency cooperation and collaborative public involvement regarding federal forest management issues that may include, at the discretion of the board, the appointment of advisory committees, the use of existing advisory committees and procedures for holding public hearings.

(3) Provide guidelines for the State Forestry Department and State Forester to follow that contain directions regarding the management of federal lands and that specify the goals and objectives of the board regarding the management of federal lands.

(4) Participate, to the extent allowed by federal law, in the development of federal forest policies and the forest management planning processes of federal agencies.

(5) Provide guidelines for the department to follow in implementing this section.

(6) Coordinate with Oregon State University, the State Department of Fish and Wildlife, the Oregon Forest Resources Institute, the Department of Environmental Quality, the Economic and Community Development Department, the State Department of Energy and other agencies of the executive department, as defined in ORS 174.112, to assist the State Forestry Department in carrying out the provisions of this section.

**SECTION 3.** The Legislative Assembly finds and declares that:

(1) Forestlands in federal, state and private ownership comprise some of the most important environmental, economic and recreational resources in the State of Oregon. However, federal lands, and to a lesser extent state and private lands, are increasingly jeopardized by the risk of drought-induced mortality, severe insect and disease outbreaks and catastrophic wildfires.

(2) Enhancing forest health, wildlife habitat and other ecological values and reducing the risk of severe insect and disease outbreaks and catastrophic wildfires through forest management are of interest to the residents of this state. Federal and state funds have not proved sufficient to carry out the management activities necessary to achieve these goals on federal lands, and it is unlikely that the funds will be available on a continuous basis.

(3) The development of new market-based solutions to reduce the risk of severe insect and disease outbreaks and catastrophic wildfires may reduce the requirement for public funding. The development of biomass markets, including energy markets, that use forest biomass unsuitable for lumber, pulp and paper products as a primary source of raw material may assist in the creation of a sustainable, market-based model for restoring complexity and structure to Oregon's forests.

(4) A biomass-based industry may provide a renewable source of energy, reduce net greenhouse gas emissions, reduce air pollution from wildfires, improve fish and wildlife habitat, create jobs and provide economic benefits to rural communities. Through the collection and conversion of forest biomass, ancillary benefits may be realized through the improvement in forest health, the protection of infrastructure and the stabilization of soils within critical watersheds.

(5) The collection and conversion of forest biomass diminishes fuel loads and is an ecologically and economically sustainable practice where the reintroduction of fire is not appropriate.

(6) The policy of this state is to support efforts to build, and place in service, biomass-fueled energy production facilities that utilize biomass collected from forests or derived from other sources such as agricultural crop residue when:

(a) The facilities utilize sustainable supplies of biomass from cost-effective sources;

(b) The use of woody biomass for energy maintains or enhances the biological productivity of the land, taking into consideration transportation costs, existing forest conditions, management objectives, vegetation growth rates and the need to sustain water quality and fish and wildlife habitat; and

(c) The set of forest values to be sustained, in addition to wood and biomass for energy, is considered. Forest values include forest products, water, wildlife and recreation.

(7) As used in this section and section 4 of this 2005 Act:

(a) "Biomass" means any organic matter, including woody biomass, agricultural crops, wood wastes and residues, plants, aquatic plants, grasses, residues, fibers, animal wastes, municipal wastes and other waste materials.

(b) "Woody biomass" means material from trees and woody plants, including limbs, tops, needles, leaves and other woody parts, grown in a forest, woodland, farm, rangeland or wildland-urban interface environment that is the by-product of forest management, ecosystem restoration or hazardous fuel reduction treatment.

**SECTION 4.** In furtherance of the policy established in section 3 of this 2005 Act, the State Forester shall:

(1) Establish a policy of active and inclusive communication with the federal government, public bodies as defined in ORS 174.109, residents of Oregon and interested parties regarding the utilization of woody biomass produced through forest health restoration. The State Forester shall actively utilize the statutory provisions of the National Forest Management Act of 1976, the Forest and Rangeland Renewable Resources Planning Act of 1974, the National Environmental Policy Act of 1969, the Federal Land Policy and Management Act of 1976 and the Healthy Forests Restoration Act of 2003 that allow the state to participate in federal policy development in a manner that expresses the policy established in section 3 of this 2005 Act.

(2) Promote public involvement in the identification of the areas of interface between urban lands and forestlands that pose the highest potential to threaten lives and private property.

(3) Solicit public comment on the location of biomass-based energy projects and conversion facilities.

(4) Promote public understanding, through education and outreach, of forest conditions, forest management options, the potential benefits and potential consequences of woody biomass utilization, the quality and quantity of woody biomass on federal lands and the po-

tential for woody biomass utilization to assist in reducing wildfire risk and in enhancing forest health, diversity and resilience. The State Forestry Department may coordinate with the State Department of Energy, the Economic and Community Development Department, Oregon State University, the State Department of Fish and Wildlife, the Department of Environmental Quality and other entities in any education and outreach performed pursuant to this subsection.

(5) Allow the State Forestry Department to conduct inventories of the types of woody biomass available and to serve as an information resource for persons seeking to utilize woody biomass for energy development. Notwithstanding ORS 192.501, reports on any inventories of biomass conducted by the department shall be made available for public inspection.

(6) Promote public understanding that woody biomass utilization may be an effective tool for restoration of forest health and for economic development in rural communities.

(7) Develop and apply, with advice from the forestry program at Oregon State University, the State Department of Fish and Wildlife, the Department of Environmental Quality and other sources, the best available scientific knowledge and technologies pertaining to forest and wildlife habitat restoration and woody biomass utilization when developing rules under ORS 527.630.

(8) Seek opportunities to provide a source of woody biomass from federal, tribal, state and private forests.

(9) Prepare a report every three years utilizing, to the greatest extent practicable, data collected from state and federal sources that specify the effect of woody biomass collection and conversion on the plant and wildlife resources and on the air and water quality of this state. The report shall identify any changes that the State Forester determines are necessary to encourage woody biomass collection and conversion and to avoid negative effects on the environment from woody biomass collection and conversion. The State Forester shall submit the report to the Governor and to an appropriate legislative interim committee with jurisdiction over forestry issues.

**SECTION 5.** The State Forester shall prepare a report referred to in section 4 (9) of this 2005 Act no later than October 1, 2008.

Passed by Senate July 26, 2005

Received by Governor:

Repassed by Senate August 4, 2005

.....M.,....., 2005

Approved:

.....  
Secretary of Senate

.....M.,....., 2005

.....  
President of Senate

.....  
Governor

Passed by House August 1, 2005

Filed in Office of Secretary of State:

Repassed by House August 4, 2005

.....M.,....., 2005

.....  
Speaker of House

.....  
Secretary of State

# Oregon Department of Forestry SB 1072 Implementation Plan

Draft 10/7/05

General organizational, resource and communication elements:

1. Provide federal agency leadership with information about SB1072 and related Forest Vitality Work Plan. Share draft SB 1072 implementation work plan with interest groups to get input. Finalize work plan by Dec. 2005. Individual project plans to be developed by assigned lead by the end of Dec. 2005.
2. Develop overall external advisory structures (see sections below for specific groups).
3. Apply for and receive federal grant to fill “biomass coordinator” position to be located in Protection from Fire Program.
4. Assign department lead (field position) for Stewardship Contract Project development.
5. Evaluate President’s Energy Bill for new opportunities to support Oregon’s efforts related to bioenergy development.
6. Capture endorsement of Oregon Business Council through the 2006 Forest Cluster Biomass Energy Initiative (improve forest health and provide renewable energy by using woody biomass for electric energy, bio-fuels and bio-products).

Bill Sections Requiring Specific Board of Forestry or State Forester Actions	Key Tasks	Assigned To	Coordination With
2.1. In conformance with federal law, including Public Law 108-7, [the Board of Forestry may] direct the State Forester to facilitate the development of stewardship contracts utilizing private contractors and, when appropriate, to seek and enter into a stewardship contract agreement with federal agencies to carry out forest management activities on federal lands. The State Forester may, under the stewardship contract agreements: <ol style="list-style-type: none"> <li>(a) Perform road and trail maintenance;</li> <li>(b) Set prescribed fires to improve forest health, composition, structure and condition;</li> <li>(c) Manage vegetation;</li> <li>(d) Perform watershed restoration and maintenance;</li> <li>(e) Restore wildlife habitat;</li> <li>(f) Control exotic weeds and species; and</li> <li>(g) Perform other activities related to stewardship.</li> </ol>	Form Stewardship Contract advisory committee – labor, local government AOL, OFIC, OSWA, Watershed Council/SWCD and environmental interests.  Learn about the Stewardship contracting process. Scope current effort in Lake County in field trip organized by KL District  Identify and prioritize opportunities for Stewardship Contracts  Facilitate or enter into stewardship contracts for management on federal lands.	Protection From Fire Planning Staff and Field Managers	Governor’s Office  State and Federal Agencies  Contractors  Regional groups/ Community fire planning circles/Watershed councils

<b>Bill Sections Requiring Specific Board of Forestry or State Forester Actions</b>	<b>Key Tasks</b>	<b>Assigned To</b>	<b>Coordination With</b>
2.2. [The Board of Forestry may] create a forum for interagency cooperation and collaborative public involvement regarding federal forest management issues that may include, at the discretion of the board, the appointment of advisory committees, the use of existing advisory committees and procedures for holding public hearings.	Develop a public involvement process for addressing federal forest management issues	Kevin Birch/ Forest Vitality Work Plan	Governor's Office  Congressional Delegation  Legislature  State and Federal Agencies
2.3 [The Board of Forestry may] provide guidelines for the State Forestry Department and State Forester to follow that contain directions regarding the management of federal lands and that specify the goals and objectives of the board regarding the management of federal lands.	Development of Board of Forestry vision and principles regarding the management of federal lands, consistent with the <i>Forestry Program for Oregon</i> .	Kevin Birch/ Forest Vitality Work Plan	Governor's Office  Congressional Delegation  Legislature  State and Federal Agencies
2.4. [The Board of Forestry may] participate, to the extent allowed by federal law, in the development of federal forest policies and the forest management planning processes of federal agencies.	ODF involvement in federal forest policy and management plan development	Kevin Birch/ Forest Vitality Work Plan	Governor's Office  Congressional Delegation  Legislature  State and Federal Agencies
2.5. [The Board of Forestry may] provide guidelines for the department to follow in implementing this section.	See 2.3	Kevin Birch/ Forest Vitality Work Plan	Governor's Office  Congressional Delegation  Legislature  State and Federal Agencies
2.6. [The Board of Forestry may] coordinate with Oregon State University, the State Department of Fish and Wildlife, the Oregon Forest Resources Institute, the Department of Environmental Quality, the Economic and Community Development Department, the State Department of Energy and other agencies of the executive department, as defined in ORS 174.112, to assist the State Forestry Department in carrying out the provisions of this section.	Interagency coordination on Oregon state government involvement in federal forest planning and management	Kevin Birch/ Forest Vitality Work Plan	As listed

<b>Bill Sections Requiring Specific Board of Forestry or State Forester Actions</b>	<b>Key Tasks</b>	<b>Assigned To</b>	<b>Coordination With</b>
<p>4.1. [The State Forester shall] establish a policy of active and inclusive communication with the federal government, public bodies as defined in ORS 174.109, residents of Oregon and interested parties regarding the utilization of woody biomass produced through forest health restoration. The State Forester shall actively utilize the statutory provisions of the National Forest Management Act of 1976, the Forest and Rangeland Renewable Resources Planning Act of 1974, the National Environmental Policy Act of 1969, the Federal Land Policy and Management Act of 1976 and the Healthy Forests Restoration Act of 2003 that allow the state to participate in federal policy development in a manner that expresses the policy established in section 3 of this 2005 Act.</p>	<p>Section 3 of the bill lays out a policy framework for state involvement in promoting forest biomass utilization. Promoting these policies needs to be woven into the broader direction for greater state government involvement in federal forest planning and management.</p>	<p>Biomass Coordinator (Joe Misek for now) and Kevin Birch/ Forest Vitality Work Plan</p>	<p>Governor’s Office Congressional Delegation Legislature State and Federal Agencies Oregon Forest Biomass Work Group</p>
<p>4.2. [The State Forester shall] promote public involvement in the identification of the areas of interface between urban lands and forestlands that pose the highest potential to threaten lives and private property.</p>	<p>Continue to use National Fire Plan and HFRA resources for Identification and prioritization of interface threats from wildfire</p> <p>Public involvement in identifying interface fire prone areas</p>	<p>Protection From Fire Program</p>	<p>Agency Affairs and Urban and Community Forests Programs</p>
<p>4.3. [The State Forester shall] solicit public comment on the location of biomass-based energy projects and conversion facilities.</p>	<p>Public involvement process for biomass plant locations and for biomass projects</p>	<p>Biomass Coordinator (Joe Misek for now)</p>	<p>Oregon Department of Energy Oregon Forest Biomass Work Group</p>
<p>4.4. [The State Forester shall] promote public understanding, through education and outreach, of forest conditions, forest management options, the potential benefits and potential consequences of woody biomass utilization, the quality and quantity of woody biomass on federal lands and the potential for woody biomass utilization to assist in reducing wildfire risk and in enhancing forest health, diversity and resilience. The State Forestry Department may coordinate with the State Department of Energy, the Economic and Community Development Department, Oregon State University, the State Department of Fish and Wildlife, the Department of Environmental Quality and other entities in any education and outreach performed pursuant to this subsection.</p>	<p>Form and implement “Biomass Work Group.” See attached charter.</p> <p>Implement OFRI’s biomass/energy project to</p> <ul style="list-style-type: none"> <li>Assess potential in Oregon for production of electric energy and biofuels from wood biomass, including available wood supply and environmental, energy, forest health and economic effects.</li> <li>Assess constraints and challenges to development</li> </ul>	<p>OFRI/Dan Postrel/ OSU Forestry Extension</p>	<p>Agencies listed plus: Oregon Forest Resources Institute Oregon Forest Biomass Work Group Federal land management agencies</p>

Bill Sections Requiring Specific Board of Forestry or State Forester Actions	Key Tasks	Assigned To	Coordination With
	<p>of biomass energy and biofuels from Oregon forests, including economic, environmental, legal, policy, infrastructure and other barriers.</p> <ul style="list-style-type: none"> <li>• Develop recommendations on how Oregon can best overcome the barriers to production of wood-based biofuels.</li> </ul> <p>Develop and Review RFPs and select Researchers. Review existing research on potential for production of biomass energy and biofuels from Oregon forests. Conduct interviews with Oregon biomass stakeholders to be selected in consultation with OFRI.</p> <p>Review and summarize efforts underway to promote electric energy and biofuels from wood biomass. Identify gaps in existing efforts. Produce scientifically based paper assessing opportunities, barriers and recommendations on development of biomass energy and biofuels from Oregon wood</p> <p>Use OFRI paper, other existing information and future assessment information to promote public understanding of forest conditions, trends, and options with benefits and consequences outlined.</p>		

Bill Sections Requiring Specific Board of Forestry or State Forester Actions	Key Tasks	Assigned To	Coordination With
4.5. [The State Forester shall] allow the State Forestry Department to conduct inventories of the types of woody biomass available and to serve as an information resource for persons seeking to utilize woody biomass for energy development. Notwithstanding ORS 192.501, reports on any inventories of biomass conducted by the department shall be made available for public inspection.	Collect and conduct inventories of biomass available. Develop web based links from ODF or Oregon Department of Energy websites. This action is consistent with <i>Forestry Program for Oregon Action B.8.</i>	Gary Lettman/ Forest Assessment Project	PNW Research Station  Forest industry  community fire planning
4.6. [The State Forester shall] promote public understanding that woody biomass utilization may be an effective tool for restoration of forest health and for economic development in rural communities.	Use existing information and future assessment information to promote public understanding	Dan Postrel/ OSU Forestry	Oregon Forest Resources Institute  Oregon Forest Biomass Work Group  Federal land management agencies  Forest Resources Planning  Oregon Economic and Community Development Department
4.7. [The State Forester shall] develop and apply, with advice from the forestry program at Oregon State University, the State Department of Fish and Wildlife, the Department of Environmental Quality and other sources, the best available scientific knowledge and technologies pertaining to forest and wildlife habitat restoration and woody biomass utilization when developing rules under ORS 527.630.	If and when any forest practice rules are developed that address forest and wildlife habitat restoration and woody biomass utilization, interagency coordination is required. ORS 527.714 requirements would also apply which would require a strong scientific basis for any new rules	Paul Bell	Agencies listed  Regional Forest Practice Committees

<b>Bill Sections Requiring Specific Board of Forestry or State Forester Actions</b>	<b>Key Tasks</b>	<b>Assigned To</b>	<b>Coordination With</b>
4.8. [The State Forester shall] seek opportunities to provide a source of woody biomass from federal, tribal, state and private forests.	Also see Section 4.5  Expand on Coordinated Resource Offering Protocol concept already negotiated in Central Oregon	Biomass Coordinator (Joe Misek for now)	Local governments  Forest industry  Federal land management agencies
4.9. [The State Forester shall] prepare a report every three years utilizing, to the greatest extent practicable, data collected from state and federal sources that specify the effect of woody biomass collection and conversion on the plant and wildlife resources and on the air and water quality of this state. The report shall identify any changes that the State Forester determines are necessary to encourage woody biomass collection and conversion and to avoid negative effects on the environment from woody biomass collection and conversion. The State Forester shall submit the report to the Governor and to an appropriate legislative interim committee with jurisdiction over forestry issues.	Every three years give a report based on available information effects of biomass management.  Focus will be on biomass inventory status, systematic evidence review of scientific information on this topic, and a summary of actions accomplished.  Provide to Governor and appropriate Legislative interim committees.	Forest Resources Planning Program	State and Federal agencies  Private forest landowners  PNW Research Station  Institute for Natural resources
5. The State Forester shall prepare a report referred to in section 4 (9) of this 2005 Act no later than October 1, 2008.	A preference would be to delay the first report until 2010 and combine it with the statewide forest assessment report planned as a first step to a new <i>Forestry Program for Oregon</i> .	David Morman	

SB 1072 Implementation Plan DM.doc/Jaz D (RP)

# Oregon Renewable Energy Action Plan

## Biomass Goals

### **Biofuels – Ethanol – Biodiesel**

Ethanol is a renewable fuel currently distilled primarily from corn. In the future, ethanol will be produced from lignocellulosic feedstocks such as wood waste and agricultural residue, which are abundant in Oregon. Throughout North America, ethanol is used as a gasoline additive for a wide variety of purposes, including the reduction of exhaust pollutants that become precursors to ground level ozone. The ethanol content in gasoline can be as high as 15 percent without the need to modify standard engines. Slight modifications to a vehicle's fuel system have to be made to run on E-85 (85 percent ethanol). In Oregon, ethanol is the predominant oxygenate in the gasoline supply. In 2002, up to 60 million gallons of ethanol were used to oxygenate the 1.6 billion gallons of gasoline used by Oregonians. That ethanol, which accounts for up to 4 percent of Oregon's gasoline supply, was produced in the Midwest. The summer nighttime temperatures in Oregon are not ideal for growing the high sugar corn or hard red wheat preferred by ethanol distillers. There are currently no distillers or refiners located in Oregon. Other Oregon biomass feedstocks such as barley or cellulosic wastes (grass straw or wheat stubble) can be used to make ethanol, but at higher cost. There is no market-pull mechanism in place with mandated goals to increase the use of ethanol. Consumer awareness is low. Better incentives are needed to make ethanol plants using Oregon grown crops economically viable.

#### The Renewable Energy Working Group will consider to:

- Support Oregon university system's research on alcohol fuels produced from cellulosic materials.
- Continue and enhance efforts to work with the national Governor's Ethanol Coalition.
- Support policies and actions to promote government and private purchases of hybrid vehicles fueled with E-85.

#### The Oregon Department of Energy will:

- Continue and enhance efforts to work with the national Governor's Ethanol Coalition.

#### The Department of Agriculture will:

- Assist growers and cooperatives, in coordination with Oregon State University research and extension programs and agricultural organizations, in the development of biofuel crops for ethanol production, including varietal development, growing and harvesting practices, development of business plans, facilities for processing, siting, market development and promotion.

#### The Department of Forestry will:

- Assist, jointly with ODOE, the forest products industry to get federal funds for biomass-to-ethanol development through demonstration of cellulose-to-glucose conversion.

#### The Department of Administrative Services will:

- Make sure that its fleet fuel use will meet the short and long-term goals for the use of ethanol.

## **Woody Biomass**

Biomass facilities may need a production-based tax credit in addition to the fuel cost reduction incentives to be economically viable. Such combined incentives would be a reflection of the full realm of societal benefits as outlined above.

### The Renewable Energy Working Group will:

- Help determine whether financial support (such as a per ton transportation incentive) for forest treatment projects is needed to move biomass feedstock from the forest to renewable energy plant sites. Particular attention should be paid to 1) existing facilities for which utility contracts expire, and 2) how the cost of such projects can be spread out over a larger geographic area than the local utility's service territory.
- Help the formation of partnerships between private companies and consumer owned utilities to develop energy systems for local communities.
- Support efforts to develop integrated bio-refineries that produce liquid fuels, high value chemicals and materials, and electric power within the same facility.
- Encourage the development and utilization of small energy efficient biomass heating and electrical systems for heating and providing power to institutions, state offices, schools, etc., especially in rural Oregon.
- Help identify and address barriers to securing stable, long-term biomass supplies from federal forestlands.
- Promote greater public awareness of the primary and secondary benefits of biomass energy production.
- Support efforts to develop Material Recovery Facilities (MRF) to remove the biomass from municipal solid waste and convert the biomass into fuel.
- Investigate the feasibility and desirability of a biomass Emission Reduction Credit (ERC) initiative to encourage development of a private market for trading of Biomass ERCs.

### The Oregon Department of Energy (ODOE) will:

- Reach out, jointly with the Oregon Department of Forestry (ODF), to local governments and biomass energy developers and assist them in locating potential facility site locations.

### The Oregon Department of Forestry will:

- Expand its ongoing, statewide Forest Assessment Project to include a comprehensive assessment of forest biomass supply and demand relationships.
- Identify federal, state, and private forestlands where proximity and non-timber biomass production potential provide long-term opportunities for biomass recovery for energy generation.
- Cooperate with biomass energy developers in locating potential facility site locations on Board of Forestry forestlands and, consistent with other management plans for these lands, work to develop expedited leasing processes for such sites.
- Assist in the development of long-term forest health restoration contracting mechanisms with the USDA Forest Service and USDI Bureau of Land Management to assure affordable and

predictable access to forest biomass on federal forestlands in regions surrounding biomass generation sites.

- Assess, in cooperation with federal agencies, the sustainable level of biomass generation necessary to maintain healthy forests.
- Promote congressionally approved pilot projects in Oregon where local communities with mature, successful histories of collaboration are empowered to demonstrate their stewardship of federal forestlands.
- Promote active fuels and vegetation management, along with aggressive fire suppression on public and private forestlands, as key tools to produce biomass for energy generation and to manage forest health.
- Promote alternatives to prescribed burning through the administration of the

#### Department of Forestry Smoke Management Plan.

- Monitor, jointly with ODOE, available federal funds for biomass projects and provide this information to stakeholders. Where needed, they will provide assistance with the application process for federal funds.
- Work with federal agencies to promote forest biomass energy opportunities through administration of the National Fire Plan, the Healthy Forests Restoration Act and the Tribal Forest Protection Act.
- Facilitate the use of the federal Environmental Quality Incentive Program to provide matching funds for forest fuel reduction projects that will provide feedstock for biomass energy plants.
- Investigate the benefits of reduced and avoided carbon dioxide emissions from forest fuel reduction projects in conjunction with biomass energy generation.

#### The Oregon Economic and Community Development Department will:

- Develop, jointly with the ODF, a comprehensive forest sector economic development strategy for Oregon that will encourage continued investment in forestlands by public and private landowners and that promotes biomass energy production along with timber and non-timber forest products.
- Work with biomass developers to identify siting opportunities especially on sites of retired or abandoned wood processing facilities in rural communities.

#### The Department of State Lands will:

- Cooperate with biomass energy developers in locating potential facility site locations on state lands where it can be accommodating taking into account the Department's Trust obligations and current lease commitments.

#### The Oregon University System and Community Colleges will consider to:

- Research and identify Oregon's potential for bio-refinery industry. Identify opportunities where bio-refineries can produce liquid fuels, high-value chemicals and materials, and electric power within the same facility.

## **Goals for 2007**

### Transportation Fuels

- Diesel sold in Oregon will contain 2 percent biodiesel (on average). All biodiesel will meet applicable ASTM standards.
- Fifteen million gallons of biodiesel will be produced annually from Oregon crops or products and waste oils collected in Oregon.
- Gasoline sold in Oregon will contain 2 percent ethanol (on average).
- One hundred million gallons of ethanol will be produced annually.

### Demonstration Projects

To highlight the benefits of renewable electricity generation and fuels, the following projects will be completed:

- Five public or private energy-efficient buildings that make use of passive solar design features.
- One biodiesel plant using mustard, other agricultural products or “waste” products.
- One ethanol plant.
- Projects that generate electricity either singularly or through any combination of the sun, wind, geothermal sources, irrigation district micro-hydro, biomass burning, on farm dairy waste digesters, municipal anaerobic digesters, waste heat recovery systems and renewably fueled fuel cells.
- One industrial park or renewable energy cluster that integrates renewable energy and sustainability related products or services.

# Oregon Forest Biomass Workgroup Charter

## Oregon Department of Forestry / Oregon Department of Energy Forest Biomass Workgroup Charter

Chartering Group	Sponsors	Forest Biomass Workgroup Co-chairs	Kick Off Date	Committee Type Sunset Date
<i>Oregon Biomass Coordinating Group</i>	<i>Depts. of Forestry/Energy</i>	<i>TBD – ODF TBD-Private Interest</i>	<i>October 12, 2005</i>	<i>Ad Hoc Sunsets June, 2007</i>

<b>Vision</b>	Oregon enjoys healthy forests, clean air, expanded economic opportunity, and greater energy independence because of thriving industries that make the best use of the state's forest biomass.
<b>Goal</b>	<ul style="list-style-type: none"> <li>To achieve the vision by addressing the barriers that exist for sustainable use of forest biomass in Oregon</li> </ul>
<b>Background Drivers</b>	<ul style="list-style-type: none"> <li>Over 21 million acres of Oregon's forestlands are overstocked, in Fire Condition Class II or III, and subject to catastrophic wildfire, drought stress, and insect and disease outbreaks which impact forest productivity, air quality, and the safety of rural communities.</li> <li>Federal, state, and local initiatives are resulting in on-going, long-term forest health and fuel reduction projects. Offsetting costs of these projects would extend limited funds.</li> <li>Federal land management agencies have been given stewardship contracting authority which allows for the long-term exchange of goods for services and which can be used to establish a sustainable supply of biomass raw material.</li> <li>Oregon annually produces in excess of 9 million bone dry tons of biomass from forest residues.</li> <li>Disposal of forest residues by open burning is increasingly restricted because of concerns about air quality, public health, and visibility. Alternatives to burning strategies are now mandated by federal regulations, and in state smoke management programs.</li> <li>Providing non-traditional markets for forest biomass will increase forest management options for landowners and encourage forestland ownership.</li> <li>Protection of forestlands and their environmental, economic, and social values from catastrophic disturbances and maintenance of the forestland base are key elements of Oregon's forest policy.</li> <li>Rural communities hurt by the decline in traditional forest products industries will benefit at multiple levels from forest biomass energy and biochemical industries.</li> <li>Increasing costs, supply reliability, and sustainability of fossil fuels coupled with concern about global warming encourages the development of renewable energy alternatives.</li> <li>The Governor's Renewable Energy Action Plan specifies specific targets for the development of biomass facilities in the state.</li> <li>Current state and federal policies do not provide adequate incentives that promote the sustainable use of forest biomass for energy production.</li> <li>Lack of coordination resulting in diverse stakeholder consensus is a barrier which is key to address.</li> </ul>

<b>Success Indicators</b>	<ol style="list-style-type: none"> <li>1. Oregon has healthy forests and the state is on-track to meet, or has met or exceeded the biomass energy targets in the Governor’s Renewable Energy Action Plan and Oregon Strategy for Greenhouse Gasses.</li> <li>2. The public understands the benefits and consequences of using forest biomass for products and energy production, and supports strategies that are environmentally, economically, and socially balanced.</li> <li>3. Oregon makes maximum use of federal and non-governmental grant dollars that promote the use of forest biomass as a sources of renewable energy and other value-added products.</li> </ol>
<b>Milestones &amp; Deliverables (bold)</b>	<p>2005</p> <ul style="list-style-type: none"> <li>• October: Draft <b>Charter</b> developed by workgroup</li> </ul> <p>2006</p> <ul style="list-style-type: none"> <li>• January: Strategic issues identified, “<b>critical path</b>” developed</li> <li>• February: Consolidated web information on-line</li> <li>• March – November: Subcommittees/ full committee meet to address issues</li> <li>• November – December: Begin pulling aspects of <b>written report to submit to Biomass Coordinating Group</b>. Biomass Coordinating Group to submit report to Legislature covering Forest, Agriculture, and Urban aspects to Bioenergy development needs.</li> </ul> <p>2007</p> <ul style="list-style-type: none"> <li>• January – June: Subcommittee and committee work to address issues</li> <li>• June: Prepare to sunset group and make <b>recommendations on resources and actions needed to address the work that remains</b>.</li> </ul>
<b>Commitment</b>	<p>The Forest Biomass Workgroup accepts responsibility to:</p> <ol style="list-style-type: none"> <li>1. Keep stakeholders informed and engaged when appropriate,</li> <li>2. Facilitate decisions at the appropriate level on a timely basis to address key barriers</li> <li>3. Monitor and coordinate with the other Biomass Workgroups and the state Biomass Coordinating Group</li> <li>4. Perform quality control of all outputs</li> </ol>
<b>Stakeholders</b>	<ul style="list-style-type: none"> <li>• Forest Landowners</li> <li>• Forest Products Industry</li> <li>• Public Utilities</li> <li>• Power Companies</li> <li>• Local Governments/Districts</li> <li>• Environmental and NGO groups</li> <li>• Community groups</li> </ul> <ul style="list-style-type: none"> <li>• State Agencies</li> <li>• Federal Agencies</li> <li>• Tribal Governments</li> <li>• The Governor’s Office</li> <li>• The Legislature</li> <li>• Universities and research centers</li> <li>• Citizens</li> <li>• Congressional staff</li> </ul>
<b>Decision Making Process and Decision Communication</b>	<p>The Workgroup will strive to make decisions by consensus. Failure to participate will not be grounds for blocking consensus. If consensus cannot be attained the co-chairs may elect to use other decision making methods. Communication is through meetings, meeting summaries, in published documents and by email. Meeting frequency will be set as needed by the group.</p> <p>The co-chairs may appoint subcommittees for specific aspects of the group’s work.</p>
<b>Selection of Co-chairs</b>	<ul style="list-style-type: none"> <li>• One co-chair shall be an agency representative appointed by the state Biomass Coordinating Group.</li> <li>• One co-chair shall be a Workgroup member representing the private sector and selected by the Workgroup.</li> </ul>

<b>Membership</b>	<ol style="list-style-type: none"> <li>1. Scott Aycock - Central Oregon Intergovernmental Council</li> <li>2. Representative Chuck Burley – District 54</li> <li>3. Linc Cannon - Oregon Forest Industries Council</li> <li>4. Nils Christofferson – Wallowa Resources</li> <li>5. Mike Cloughesy – Oregon Forest Resources Institute</li> <li>6. Greg Corbin – Stoel Rives</li> <li>7. Martin Desmond – Lane Microbusiness</li> <li>8. Brian Finneran – Oregon Department of Environmental Quality</li> <li>9. Jim Geisinger – Associated Oregon Loggers</li> <li>10. Rod Kraemer – Oregon Dept of Fish &amp; Wildlife</li> <li>11. Mary Gautreaux – Senator Wyden’s Portland staff</li> <li>12. Jim Hallberg – BLM</li> <li>13. Doug Heiken – Oregon Natural Resources Council</li> <li>14. Russ Hoeflich – The Nature Conservancy</li> <li>15. Dr. Loren Kellogg – Oregon State University</li> <li>16. Mark Kendall – Oregon Dept of Energy</li> <li>17. Bill Kluting – Carpenters Industrial Council</li> <li>18. Sandy Lonsdale – Silvan Power Co</li> <li>19. Tad Mason – TSS Consultants</li> <li>20. Sarah Masterson – Congresswoman Hooley’s Salem staff</li> <li>21. Catherine Mater – Mater Engineering</li> <li>22. Greg Miller – Weyerhaeuser Company</li> <li>23. Joe Misek – Oregon Department of Forestry</li> <li>24. Glenn Montgomery – Oregon Economic &amp; Community Development Dept.</li> <li>25. Senator David Nelson – Senate District 29</li> <li>26. Larry Potts – Warm Springs Forest Products Industries</li> <li>27. Justen Rainey – Congressman Walden’s Bend staff</li> <li>28. Eugene Rosolie – Pacific Northwest Generating Cooperative</li> <li>29. Ron Saranich – Us Forest Service</li> <li>30. David Schmidt – Sustainable Northwest</li> <li>31. Lisa C. Schwartz – Public Utility Commission</li> <li>32. Bill von Segen – US Forest Service</li> <li>33. Adam Serchuk – Energy Trust of Oregon</li> <li>34. Jim Trost – Oregon Department of Forestry</li> <li>35. David Van’t Hof – Governors Office</li> <li>36. Rick Wagner – Oregon Department of Forestry</li> </ol>
-------------------	---