

**Biomass Energy Development Working Group  
2011 Interim Report  
Draft November 8, 2010**

Pursuant to No. 37 of the Acts of the 2009 Session

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Legislative Council  
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**Biomass Energy Development Working Group  
Interim Report**

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**Biomass Energy Development Working Group  
Members**

One member of the House of Representatives .....Rep. Chris Bray

One member of the Senate .....Sen. Ginny Lyons

The secretary of natural resources or designee.....Secretary Jonathan Wood

The commissioner of the department of public service or designee.....Currently vacant

A representative of the biomass energy resource center.....Chris Recchia

Two representatives of the forest products industry.....Rocky Bunnell, Paul Cate

Two representatives of natural resources or environmental organizations.....  
.....Jamey Fidel, Robert Turner

Two representatives of an industry or utility that produces electricity or heat from  
biomass.....Peter Condaxis, Bill Kropelin

A representative of the Vermont woodlands association.....Sam Miller

A representative of a university or college with a focus on biomass.....Bill Keeton

A representative of the consulting foresters association.....Ben Machin

A representative of the forest guild.....Ehrhard Frost

## **Biomass Energy Development Working Group Charge**

No. 37 of the Acts of the 2009 Session

### Sec. 1. BIOMASS ENERGY DEVELOPMENT WORKING GROUP

(a) The biomass energy development working group is established to enhance the growth and development of Vermont's biomass industry while also maintaining forest health. In order to meet these goals, the working group shall analyze current issues in the biomass industry in order to develop a coherent body of recommendations. These recommendations may include incentives, harvesting guidelines, and procurement standards for the development and operation of biomass energy in the state of Vermont. The working group shall also include the following members:

- (1) One member of the house, appointed by the speaker of the house;
- (2) One member of the senate, appointed by the committee on committees;
- (3) The secretary of natural resources or his or her designee;
- (4) The commissioner of the department of public service or his or her designee;
- (5) A representative of the biomass energy resource center, appointed by the committee on committees;
- (6) Two representatives of the forest products industry that represent logging, processing, or wholesale operator interests, one appointed by the committee on committees and the other appointed by the speaker of the house;
- (7) Two representatives of natural resources or environmental organizations that represent wildlife and biodiversity and forest health and sustainability interests, one appointed by the committee on committees and the other appointed by the speaker of the house;
- (8) Two representatives of an industry, organization, utility, or corporation that either produces electricity or heat from biomass or purchases power from biomass, appointed by the governor.
- (9) A representative of the Vermont woodlands association appointed by the governor;
- (10) A representative of a university or college with a focus on biomass policy or research appointed by the speaker of the house;
- (11) A representative of the consulting foresters association of Vermont appointed by the governor; and
- (12) A representative of the forest guild appointed by the speaker of the house.

(b) The working group is authorized to operate for a maximum of three years in order to review the adequacy of its initial recommendations, continue research and analysis, and make additional recommendations to the legislature. The working group is authorized to hold four meetings each year during the interim between sessions of the general assembly. The working group shall elect co-chairs at its initial meeting, and one of the co-chairs shall be a member of the general assembly. For attendance at a meeting when the general assembly is not in session, legislative members of the commission shall be entitled to the same per diem compensation and reimbursement for actual and necessary expenses as provided members of standing committees under 2 V.S.A. § 406.

(c) The working group shall issue interim reports to the house and senate committees on agriculture and on natural resources and energy on or before November 15 of 2009 and 2010. The reports shall include:

(1) recommended fiscal and regulatory incentives for the promotion of efficient and sustainable uses of local biomass for energy production and opportunities for offering more predictability in the permitting process;

(2) recommended guidelines or standards for maintaining forest health, including model harvesting and silvicultural guidelines for retaining dead wood and coarse woody material; maintaining soil productivity, wildlife, and biodiversity and other indicators of forest health; and wood procurement standards. In reviewing and recommending standards for biomass procurement, the working group shall review whether:

(A) separate procurement standards are necessary for certain consumers of biomass, such as retail electricity;

(B) there are obstacles or policy considerations that need to be overcome to establish model procurement standards for biomass energy facilities;

(C) a uniform procurement standard for maintaining forest health would offer more predictability in the permitting process;

(D) procurement standards can be designed to effectively monitor whether the collective demand for energy produced from biomass does not impair long-term site productivity and forest health;

(E) it is feasible to coordinate with adjoining states to develop a regional procurement standard for biomass energy facilities.

(F) biomass procurement standards should require third-party certification; and

(G) a standard should be developed that would require biomass electricity generating facilities to provide for a fuel efficiency of at least 50 percent over the course of a full year.

(3) Recommend standards and policies for the design of new renewable energy from biomass that are designed to promote sustainable, efficient, local, and fair use of biomass supplies.

(4) Recommend additional research and analysis that is needed to ensure that forest health is maintained while providing for a sustainable, long-term supply of local biomass for the production of energy and forest products.

(d) On or before November 15, 2011, the working group shall submit to the house and senate committees on agriculture and on natural resources and energy a final report addressing the issues in subdivisions (c)(1)–(4) of this section.

(e) Prior to reporting to the general assembly under subsections (c) and (d) of this section, the working group shall allow for public review and comment of any proposed recommendations for incentives, guidelines, or standards for the development and operation of biomass energy. At a minimum, the working group shall allow the department of forests, parks and recreation; the department of fish and wildlife; the public service board; the agency of agriculture, food, and markets; the Vermont economic development authority; and the department of public service to review and offer comments on any proposed recommendations for incentives, guidelines, or standards. In addition, the working group should coordinate with the Forest Roundtable to hold a minimum of two meetings to collect stakeholder input and gather expert testimony on the issues included in this section.

(f) The working group shall seek funding from available funding sources to hire consultants and conduct research and analysis related to the issues included in this section. In no event shall the working group seek more than \$200,000.00 under this subsection. Funding acquired by the working group shall be administered by the office of legislative council.

(g) As used in this section, “biomass” means material from trees, woody plants, or grasses, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, farm, rangeland, or wildland-urban environment that is the product of forest management, land clearing, ecosystem restoration, or hazardous fuel reduction treatment.

(h) Legislative council shall provide legal and administrative services to the working group. The department of forests, parks and recreation shall provide technical and economic advice to the working group.

## I. Overview

No. 37 of the Acts of the 2009 Session of the Vermont General Assembly (Act 37) established a Biomass Energy Development Working Group (the Working Group) that would meet over the course of three years to address how to enhance the growth and development of the Vermont woody biomass industry while also maintaining forest health. Under its charge, the Working Group is to issue two interim reports and one final report to the Vermont General Assembly. The Working Group issued its first interim report in January 2010. This report is the second interim report of the Working Group.

The Working Group met nine times in 2010 to fulfill the statutory charge of Act 37 of the 2009 Session.<sup>1</sup> Section 1(c) of Act 37 requires the reports of the Working Group to address the following four issues related to the promotion, development, and health of Vermont's woody biomass industry and the forests of the state:

- 1(c)(1): Recommended fiscal and regulatory incentives for the promotion of efficient and sustainable uses of local biomass for energy production and opportunities for offering more predictability in the permitting process.
- 1(c)(2): Recommended guidelines for maintaining forest health, including model harvesting and silvicultural guidelines for retaining dead wood and coarse wood material; maintaining soil productivity, wildlife, and biodiversity, and other indicators of forest health; and wood procurement standards.
- 1(c)(3): Recommended standards and policies for the design of new renewable energy from biomass that are designed to promote sustainable, efficient, local, and fair use of biomass supplies.
- 1(c)(4): Recommended additional research and analysis that is needed to ensure that forest health is maintained while providing for sustainable,

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<sup>1</sup> The minutes of each meeting of the Biomass Energy Development Working Group are attached in Appendix B of the hard copy of this report. The minutes may also be accessed electronically at the Working Group's website, available at <http://www.leg.state.vt.us/workgroups/BioMass/>.

long-term supply of local biomass for the production of energy and forest products.<sup>2</sup>

In 2009, the Working Group formed three subcommittees to address the four issues that the Vermont General Assembly required under Act 37 to be included in each report of the Biomass Energy Development Working Group. The Working Group charged the Biomass Enhancement and Development Subcommittee with addressing Sections 1(c)(1) (recommended fiscal and regulatory incentives for the promotion of efficient and sustainable uses) and (3) (recommended standards and policies for the design of new renewable energy from biomass). The Working Group formed the Forest Health Subcommittee to focus on Section 1(c)(2), (recommended guidelines for maintaining forest health and for wood procurement standards). The Funding Subcommittee was formed to address issues related to Section 1(c)(4) (recommended additional research and analysis that is needed to ensure that forest health is maintained while providing for a sustainable, long-term supply of local biomass for the production of energy and forest products). In completion of its charge, the Funding Subcommittee focused on revisions and improvements to the Biomass Energy Resource Center (BERC) 2007 Vermont Wood Fuel Supply Model. As a result, the Working Group, as reflected in this report, now refers to the Funding Subcommittee as the Modeling Subcommittee.

Section II includes subcommittee proposals adopted and approved by the Working Group as a whole as recommendations of the Working Group. The Appendices include a draft Recommended Guidelines for Maintaining Water Quality, Soil Productivity, and Biological Diversity on harvesting jobs in Vermont; a list of forest health monitoring activities in the state; and the minutes of the meetings of the Working Group.

It is worth emphasizing that the Working Group's charge pertains to *woody* biomass, that is, material from trees, or woody plants, including limbs, tops, needles, leaves, and other woody parts. The Working Group acknowledges that other forms of biomass hold promise as sources of energy; however, this report is limited to the scope of the Working Group's charge. Unless the context clearly indicates otherwise, references in this report to "biomass," with or without the word "woody," should be read to mean woody biomass.

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<sup>2</sup> Act No. 37, 2009 Sess., § 1(c).

## II. Working Group Findings

The Working Group formally voted to approve the following recommendations, standards, or guidelines proposed by the working group's subcommittees.

### A. The Modeling Subcommittee

1. Recommended Additional Research and Analysis to Ensure that Forest Health is Maintained while Providing for Sustainable, Long-Term Supply of Local Biomass for the Production of Energy and Forest Products.

#### *i. BERC Vermont Wood Fuel Supply Model*

In 2009, the Working Group voted to encourage the revision of the Biomass Energy Resource Center (BERC) 2007 Vermont Wood Fuel Supply Model. The BERC Wood Fuel Supply Model was developed in 2007 based on the most current U.S. Forest Service Forest Inventory and Analysis (FIA) data available, which were from 1997. New FIA data were issued in 2010, and the working group concluded that revision of the Wood Fuel Supply Model to reflect the more current data would be prudent and would be a valuable tool for evaluating opportunities for harvesting and biomass energy production in Vermont.<sup>3</sup> The Vermont Department of Forests, Parks and Recreation subsequently obtained funds and contracted with BERC to update the wood supply model using the new FIA data.

BERC has integrated the new FIA data into its model and is presently writing a final report detailing the updated findings. The report should be released sometime in December 2010. Preliminary results indicate that there are between 400,000 (conservative scenario) and 900,000 (intensive scenario) green tons of surplus low-grade wood grown annually in Vermont that could be used to further advance woody biomass energy in the state. The “intensive scenario” represents less than 10 percent of the total amount of new wood grown annually in Vermont’s forests and less than 20 percent of the annual low-grade wood growth. For the purposes of planning and this report, the committee assumed a “moderate scenario” presented in the BERC model of approximately 600,000 to 750,000 green tons of low grade wood that would

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<sup>3</sup> Revisions to the BERC Wood Supply Model are due to methodological changes in how the U.S. Forest Service calculated the 2010 FIA forest inventory. The methodological changes are described in the BERC report available at [link to be added when available]

be available annually. This analysis focuses on woody forest biomass only and does not include any agricultural-based biomass that might also be available for energy purposes.

*ii. Substantive Revisions of the BERC Vermont Wood Fuel Supply Model*

BERC acknowledged limitations in the methodology employed in the original Vermont Wood Fuel Supply Model. The Modeling Subcommittee, in collaboration with BERC and the Vermont Department of Forests, Parks and Recreation, is developing a plan to address these limitations. The plan will address: the methods used to grow the forest inventory; assumptions about supply curves, costs, and other factors influencing production; extending the time frame of the model to reflect the lifespan of a biomass facility; land use change over time; and the integration of system concepts to allow for interaction of the various components of the model. The Working Group believes that strengthening the model will allow for a more accurate quantification of net available low-grade growth (NALG) wood, thereby addressing the concern of the public regarding the sustainability of harvesting for biomass energy production. The Working Group expects substantive developments on this issue to be completed and presented to the group by the summer of 2011.

*iii. Additional Research and Analysis*

The Working Group believes that as the BERC Vermont Wood Fuel Supply Model is updated and the substantive inputs revised, additional research will be necessary to address gaps in data, monitoring, and analysis. As part of identifying these gaps, the Modeling Subcommittee requested a summary of existing monitoring efforts in place. Attached in Appendix C is a summary of identified ongoing monitoring activities. The Working Group recommends that this list be updated to include ongoing monitoring by other public and private entities and will recommend, at a later date, an entity to perform this updating. The Working Groups, through the Modeling Subcommittee, will review this existing monitoring for results and implications on forest policy. The Working Group recommends that monitoring data be linked to periodic model reassessments, and the resulting information be used to inform policy. An additional area for

analysis is monitoring the implementation of the woody biomass retention guidelines to gauge if and how they are being implemented.

## **B. Biomass Enhancement and Development Subcommittee**

In 2010, the Working Group voted to approve the recommendation of the Enhancement and Development Subcommittee. The findings of the Working Group related to enhancement and development are set forth below under a discussion section followed by headings that reflect the statutory charge to the Working Group.

### 1. Discussion

The enhancement and development of the woody biomass energy industry in Vermont should maximize efficiency while meeting energy goals and focus on three sectors of growth: commercial/industrial combined heat and power (CHP) systems; wood pellet manufacturing and use; and wood-fired electrical generation that improves plant efficiency through utilizing excess heat in the form of CHP or through new technology. The combined potential increased use of woody biomass for these three sectors is predicted to be 600,000 to 700,000 tons annually. This increase in wood use would likely occur incrementally over several years.

#### *i. Commercial/Industrial Thermal and Thermal-led CHP*

A major component of growth in the use of woody biomass for energy in Vermont will be the continued conversion by facilities that burn fossil fuels (typically oil and propane) to wood fuels (wood chips or wood pellets) in heating and cooling applications, and where appropriate, combined heat and power (CHP) systems. There have already been many successful conversions from oil to wood, particularly in: elementary/high schools, government offices, hospitals, industrial parks, and college campus facilities. Efforts are underway to successfully demonstrate municipal (district energy) applications in one or more communities in Vermont. The positive track record and financial benefits of these existing biomass conversions make the concept of wood energy more acceptable. This particular market to expand the use of woody biomass fits three important criteria when considering public acceptance in Vermont: small, local, and sited in (or near) existing facilities. The potential expansion of small to medium commercial/institutional systems in this category is 200,000–250,000 green tons annually.

*ii. Wood Pellet Manufacturing/Use*

There is potential for increased biomass use by the residential sector in the form of replacing home oil heating systems with wood pellet stoves, furnaces, and boilers. The spike in the price of heating oil in 2008 prompted a rush toward wood pellets; this has abated somewhat since oil prices have dropped, but pellet systems are still a viable alternative for many residential and smaller commercial applications. Wood pellet manufacturing would also provide an efficient year-round market for woody and potentially agricultural biomass. The appropriate number of new pellet plants is difficult to determine as the market for wood pellets will have to grow in kind, addressing the current “chicken or egg” situation. This report suggests that the potential expansion of wood pellet manufacturing/use is 200,000 green tons annually.

*iii. Electrical Generation*

The Working Group supports the concept of one additional large-scale (20–25 megawatt) wood-fired electrical generating facility located in southern Vermont (south of U.S. Route 4). The location of such a power station should be coordinated with Vermont’s utilities and VELCO to maximize balance for their systems, and efforts should be made to utilize excess heat in the form of CHP or other technologies to improve plant efficiency. This type of power station would provide a year-round market for biomass fuel and “anchor” a wood supply network in the four southern Vermont counties. The potential expansion of electrical generation biomass use is 200,000 to 250,000 green tons annually.

2. Recommended Fiscal and Regulatory Incentives for the Promotion of Efficient and Sustainable Uses of Local Biomass for Energy Production and Opportunities for Offering More Predictability in the Permitting Process

Working Group recommendations on fiscal and regulatory incentives are set out immediately below. One issue that applies to most, if not all, of these recommendations is the need to determine the implementing entity and to identify the funding source for the recommended action. Examination of this issue will continue following publication of this interim report.

To promote the expanded use of woody biomass in commercial/industrial thermal and thermal-led CHP applications, an effective outreach program must be created to inform potential candidates. Many locations have already been identified; however, a more complete list should be compiled. High-priority sites are locations where a thermal load uses extensive amounts of heating oil or propane. An analysis of existing programs and organizations that reach out to potential biomass users should be done. A comprehensive information package explaining biomass energy and highlighting successful wood conversion projects should be produced and made available to potential conversion sites. The package should also contain information regarding how to begin and negotiate the state regulatory process. The Working Group further recommends that the General Assembly enact legislation that specifically enables municipalities to create and operate heating districts. The Working Group recommends as well that, as soon as feasible, the General Assembly lift the current suspension on applications for state aid for school construction<sup>4</sup> at least for the purpose of supporting school conversions to woody biomass energy, with the state providing between 60 and 75 percent of the funding for these conversions.

The Working Group supports the concept of new wood pellet manufacturing facilities in Vermont. Project developers should be provided with information and guidance regarding the state's regulatory process. With respect to residential use of wood pellets, enactment of legislation such as that proposed in the 111th Congress-the Home Star Energy Retrofit Act of 2010 (H.R. 5019, S.3177) – would support home conversions to efficient wood pellet heating appliances by providing rebates. Growth in residential pellet use will need to coincide with increased pellet production, which is difficult to predict (see above).

Woody biomass projects that produce electricity, such as a large generation plant in southern Vermont, would be subject to Vermont's "Section 248" permit process, which may take years from the initial application to project approval. As an example, Ryegate Power Station's Section 248 process took 2½ years from the time of application to final permit approval.

When considering expansion of the biomass industry in Vermont, it is important to improve the Section 248 application process to increase predictability and reduce processing time. Such improvement could result from a comparison of the Section 248 process with other permit programs, with a focus on helping developers in the preparation of their project

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<sup>4</sup> 2007 Vt. Laws No. 52 § 36.

applications. For example, the Act 250 program has crafted an application form that includes detailed guidance for an applicant. While the Public Service Board (PSB) has issued an application form for net metering systems – which by law are of limited size<sup>5</sup> – the PSB could create a form applicable to larger energy projects. The PSB also should consider the assignment of a person or persons who can assist the applicant in completing the application form in the same manner as Act 250 coordinators do today. In addition, incentives should be developed to provide model approaches to issues that can add further delay to a project if not handled in an appropriate way, such as procurement standards, forest health issues, air quality requirements, and other issues that are important to the affected public.

Enhancement of Vermont’s biomass industry should come in the form of incentives, including tax credits, low-interest loans, favorable power rates, and renewable energy credits. These incentives must be balanced to level existing “playing fields” and not to favor one form of biomass use over another, or at the exclusion of others.

3. Recommended Standards and Policies for the Design of New Renewable Energy from Biomass That are Designed to Promote Sustainable, Efficient, Local, and Fair Use of Biomass Supplies

Working Group recommendations on standards and policies for design are set out immediately below. The statements above regarding the issue of identifying the implementing entities and funding sources for the recommended actions, and for continued examination of this issue, apply to these recommendations as well.

While commercial/industrial thermal load or thermal-led CHP systems are the most efficient use of biomass for energy generation, supplying this type of facility with biomass fuel is complicated by the seasonal nature of its operations because more wood is needed during colder months. This complication negatively impacts biomass producers who need to keep their products moving year-round. The Working Group recommends the support and enhancement of the network of biomass suppliers located at various areas around the state, based on a business

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<sup>5</sup> 30 V.S.A. § 219a.

model similar to Lathrop Forest Products in Bristol VT, a successful wood fuel supply system that provides woody biomass products to a variety of markets on a year-round basis.

The siting of new wood pellet manufacturing facilities should be dispersed among various areas around the state. Wood availability numbers and existing supply infrastructure will have to be considered before pursuing multiple sites.

With regard to a new biomass electric plant, existing biomass suppliers in Windsor, Windham, Rutland, and Bennington Counties now must truck their wood chips to markets outside this area; a plant located in this region would significantly shorten haul distances making biomass production local, more economic, and “greener” by burning less diesel fuel.

The Working Group’s charge includes considering whether to require 50 percent efficiency for new woody biomass projects. This efficiency level is attainable with some CHP systems, but is not possible in a stand-alone electric generating facility given current technology. Every effort should be made to site and develop plants that make as much use of heat as possible. However, in the case of the one electric generating facility recommended in southern Vermont, a 50-percent efficiency requirement may not be achievable.

In addition, on the issue of fuel efficiency, there is a distinction between incentive and regulatory programs. To date, Vermont statutory requirements related to the fuel efficiency of woody biomass energy projects have come in the context of incentive and not regulatory programs. For example, the “standard offer” program administered by the Public Service Board, under which up to 50 megawatts of renewable energy may contract for energy prices that are set to incentivize renewable energy development, requires that an eligible woody biomass project must have a design system efficiency of at least 50 percent. 30 V.S.A. § 8005(j). It is reasonable to condition the provision of these incentives on achieving a fuel efficiency standard that the market may not otherwise produce. However, given the interconnection of the regional power grid, establishing a regulatory fuel efficiency standard in Vermont may not be productive in the absence of a regional standard.

Accordingly, rather than requiring 50 percent fuel efficiency for all woody biomass energy projects, the Working Group recommends that the General Assembly direct that the PSB, in its Section 248 proceedings, require that each woody biomass energy facility be designed for the optimum fuel efficiency. Woody biomass energy projects that are not subject to Section 248

review should also be required to meet this standard if they are subject to other siting or land use proceedings such as Act 250 or local land use review.

### **C. Forest Health Subcommittee**

Act 37 requires the Working Group to include in its reports recommended guidelines for maintaining forest health and recommended wood procurement standards. To fulfill this charge and to develop these recommendations, the Working Group established the Forest Health Subcommittee. In 2010, the Working Group voted to approve recommendation of the Forest Health Subcommittee. The findings of the Working Group related to Forest Health are set forth below under headings that reflect the statutory charge to Working Group.

#### 1. Recommended Guidelines or Standards for Maintaining Forest Health, Including Model Harvesting and Silvicultural Guidelines for Retaining Dead Wood and Coarse Wood Material; Maintaining Soil Productivity, Wildlife, and Biodiversity, and Other Indicators of Forest Health

Over the past 10 years, the traditional fossil-fuel based energy markets have fluctuated significantly. These fluctuations have led states, businesses, and individuals to reexamine their energy supplies. One potential energy supply is woody biomass, and Vermont is fortunate to have significant forest resources--with over 4.5 million acres of forest land.<sup>6</sup> As a result, there has been significant interest in utilizing available woody biomass in Vermont for energy and thermal production for uses once supplied by fossil fuels. The potential for these new and expanded woody biomass markets has prompted questions and interest regarding the possible impacts that increased timber harvests and associated disturbances would have on long-term site productivity, water quality, and biological diversity. To fulfill its statutory charge and to address questions raised regarding the potential impacts of increased harvests, the Working Group reviewed whether harvesting guidelines would be appropriate for Vermont. In its review, the Working Group examined: existing guidelines in Vermont, how other states and jurisdictions have addressed concerns regarding increased harvests, and the available science and research.

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<sup>6</sup> Vermont Department of Forests, Parks and Recreation, State Forest Resource Assessment (2010), *available at* <http://www.vtfpr.org/htm/documents/assessments.pdf>

For over 30 years, Vermont has required its two wood-fired power plants to implement strategies to address public concern about forest health and other issues through procurement standards that require some review by the Vermont Department of Fish and Wildlife and professional foresters. The Vermont Department of Forests, Parks and Recreation has adopted Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont (AMPs),<sup>7</sup> and these practices, although not mandatory, have become an industry standard for timber harvests in Vermont. However, woody biomass retention standards do not currently exist for timber harvest operations in Vermont. Moreover, neither the AMPs nor the procurement standards for wood-fired power plants address soil productivity or biological diversity on harvest sites.

Six other U.S. states<sup>8</sup> have developed guidelines specifically for woody biomass harvesting. Other states address water quality, soil productivity, and biological diversity in comprehensive forest practices acts or rules.<sup>9</sup> Additional states have adopted voluntary forest management practices that address water quality, soil productivity, and the retention of a variety of forest structures.<sup>10</sup> Similarly, the Canadian provinces of Nova Scotia, New Brunswick, and Quebec are in the process of developing biomass harvesting guidelines addressing similar issues.<sup>11</sup>

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<sup>7</sup> Available at, <http://www.vtfpr.org/watershed/documents/Amp2006.pdf>.

<sup>8</sup> See, Maine, Biomass Retention Guidelines (2010), available at [http://www.maine.gov/doc/mfs/pubs/biomass\\_retention/report/biomass\\_report\\_lr.pdf](http://www.maine.gov/doc/mfs/pubs/biomass_retention/report/biomass_report_lr.pdf); Michigan, Michigan Woody Biomass Harvesting Guidance, available at [http://www.mi.gov/documents/dnr/WGBH\\_321271\\_7.pdf](http://www.mi.gov/documents/dnr/WGBH_321271_7.pdf); Missouri, Missouri Woody Biomass Harvesting, Best Management Practices Manual, available at <http://mdc4.mdc.mo.gov/Documents/19813.pdf>; Minnesota, Biomass Harvesting on Forest Management Sites in Minnesota (2007); Pennsylvania, Guidance on Harvesting Woody Biomass for Energy in Pennsylvania (2008), available at [http://www.dcnr.state.pa.us/pa\\_biomass\\_guidance\\_final.pdf](http://www.dcnr.state.pa.us/pa_biomass_guidance_final.pdf); Wisconsin, Wisconsin's Forestland Woody Biomass Harvesting Guidelines (2008), available at <http://council.wisconsinforestry.org/biomass/pdf/BHG-FinalizedGuidelines12-16-08.pdf>.

<sup>9</sup> See, e.g. California Forest Practice Rules, 4 Cal. C.F.R. chs. 4, 4.5, and 10.

<sup>10</sup> See, e.g. New Hampshire Division of Forests and Lands and the Society for the Protection of New Hampshire's Forests, New Hampshire Forest Sustainability Work Team, Good Forestry in the Granite State: recommended Voluntary Forest Management Practices for New Hampshire (1997), available at [http://extension.unh.edu/resources/files/Resource000294\\_Rep316.pdf](http://extension.unh.edu/resources/files/Resource000294_Rep316.pdf).

<sup>11</sup> See, Forest Guild, Alexander M. Evans, Robert T. Perschel & Brian A. Kittler, Revised Assessment of Biomass Harvesting and Retention Guidelines pp. 13-14 (2010) (discussing biomass guidance and policy in Canada).

According to scientific research, the retention of forest structures, such as snags, cavity trees, and down material, provide wildlife habitat that helps protect and foster biodiversity.<sup>12</sup> In contrast, consistent and quantifiable data on the relationship between removal of harvest residual and the resultant impact on forest soils are either absent, or at times, conflicting. One conceptual understanding, however, is that harvest residues and residual vegetation provide organic matter and nutrient inputs that sustain soil productivity.

Based on the lack of harvesting guidelines in Vermont, the guidelines in other states, available scientific research, and the conceptual understanding of soil productivity, the Biomass Energy Development Working Group adopted the *voluntary* recommends the guidelines set forth in Appendix A of this report for maintaining water quality, soil productivity, and biological diversity on all harvesting jobs in Vermont. The Working Group concluded that the guidelines should be general, flexible, and easily understood and implemented by an operator working in the forest. The Working Group also concluded that the recommended guidelines would help protect Vermont's forests and ensure a sustainable supply of a variety of products from those forests. The guidelines are not designed to be overly technical, nor are they designed to be mandatory.

To protect water quality, the Working Group recommends implementation of the Vermont Department of Forests, Parks and Recreation's Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont as necessary. Similarly, the Working Group recommends that landing size should be minimized to the extent possible and that, as is required under the AMPs, a functional buffer be maintained between lands and water resources. In addition, the Working Group recommends that a logger should minimize erosion on a trail after a harvest.

To protect soil productivity, the Working Group recommends that leaf layer disturbance at a harvest site be minimized unless required for regeneration. Stumps and roots should be retained intact, except as necessary for road landing and trail construction. Tree tops should be utilized as necessary to increase equipment flotation, and the proportion of retained tops should

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<sup>12</sup> See, e.g., Katherine Manaras Smith, William S. Keeton, Therese M. Donovan & Brian Mitchell, Stand-Level Forest Structure and Avian Habitat: Scale Dependencies in Predicting Occurrence in a Heterogeneous Forest, *Forest Science* 54(1) pp. 36-46 (2008).

increase as harvest intensity increases or the cutting cycle decreases. Additionally, chipper waste should be returned to the forest on return skidder trips as practical and necessary.

To protect biological diversity, the Working Group recommends that a harvest operator retain as many snags, as safety, access, and land owner or harvesting permit. The Working Group recommends a minimum target for retained decaying trees and snags per harvest size. The group also recommends that down wood material be retained in place, and that incidental breakage on whole-tree harvests be retained in place as safety and aesthetics allow. In addition, a harvest operator should consider retaining newly cut material on site if large wood material is lacking. The Working Group also recommends that at least five percent of the stand be retained when performing salvage harvests unless such a practice would be contrary to state or federal government guidelines.

A full copy of the Forest Health Subcommittee's Recommended Guidelines for Maintaining Water Quality, Soil Productivity and Biological Diversity on Harvesting Jobs in Vermont is located in Appendix A of this report.

## 2. Recommended Guidelines or Standards for Wood Procurement

Section 1(c)(2) of Act 37, in part, requires the Working Group to include in its reports recommend wood procurement standards. In reviewing and recommending standards for biomass procurement, Act 37 requires the working group to review whether:

- (A) separate procurement standards are necessary for certain consumers of biomass, such as retail electricity;
- (B) there are obstacles or policy considerations that need to be overcome to establish model procurement standards for biomass energy facilities;
- (C) a uniform procurement standard for maintaining forest health would offer more predictability in the permitting process;
- (D) procurement standards can be designed to effectively monitor whether the collective demand for energy produced from biomass does not impair long-term site productivity and forest health;
- (E) it is feasible to coordinate with adjoining states to develop a regional procurement standard for biomass energy facilities;

- (F) biomass procurement standards should require third-party certification; and
- (G) a standard should be developed that would require biomass electricity generating facilities to provide for a fuel efficiency of at least 50 percent over the course of a full year.<sup>13</sup>

The Working Group reviewed these criteria and approved the following recommendations.

- i. § 1(c)(2)(A): Whether separate procurement standards are necessary for certain consumers of biomass, such as retail electricity.*

No, separate procurement standards are not necessary for certain consumers of biomass. However, the Working Group recommends adoption of a uniform procurement standard for all forest product facilities as discussed under subsection (iii) below. The group shall attempt to formulate such standards as it continues its work in 2011. The group recognizes that application of a procurement standard to out-of-state consumers of Vermont forest products is an issue that the group would need to address in developing a uniform procurement standard.

The group also recognizes that harvesting practices, such as those required under the use value appraisal program and land conservation agreements, do benefit forest land and forest health. Landowners and harvesters implementing harvesting practices such as those under the use value program or emulating the biomass procurement requirements of Burlington Electric Department and the Ryegate Power Station will encourage a high standard of management for harvests in Vermont. The Working Group believes that the Recommended Guidelines for Maintaining Water Quality, Soil Productivity, and Biological Diversity proposed by the Working Group will encourage harvesters and buyers to voluntarily implement such improved harvesting practices or standards, and should be used by all sectors involved in forest management.

- ii. § 1(c)(2)(B): Whether there are obstacles or policy considerations that need to be overcome to establish model procurement standards for biomass energy facilities*

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<sup>13</sup> Act No. 37 of the 2009 Adj. Sess. (2010), § 1(c)(2)(A)-(G).

Yes, obstacles and policy considerations do exist that must be addressed in establishing model procurement standards. For instance, there is significant support for development of a model procurement standard, but there are issues and obstacles to such adoption. There is debate regarding whether such standards should be voluntary or mandatory. In addition, the standards for procurement currently vary greatly from state to state across the region. Buyers and the market in general do not recognize state lines and are not limited to the procurement standards in any one state. Consequently, as discussed in subsection B(2)(v) below, the Working Group recommends that the state pursue a policy of regional coordination on a procurement standard.

*iii. § 1(c)(2)(C): Whether a uniform procurement standard for maintaining forest health would offer more predictability in the permitting process*

If a uniform procurement standard existed, it could provide predictability in the permitting process, but the permitting process or permitting standards for activities would need to be altered to incorporate a procurement standard. Biomass electric production in the state is currently the only activity subject to procurement standards as part of the Public Service Board permitting process. If the pool of permits subject to standards was increased or if a land use permit, such as an Act 250 permit, required procurement standards, a good, quality procurement standard could assist in permitting predictability, and compliance with such a standard might be given deference by a regulatory or permitting authority. However, establishing a procurement standard that would allow for presumptions of permit compliance or presumptions of no environmental harm will be difficult to develop.

*iv. § 1(c)(2)(D): Whether procurement standards can be designed to effectively monitor whether the collective demand for energy produced from biomass does not impair long-term site productivity and forest health*

No, procurement standards alone cannot be designed to effectively monitor whether demand for biomass energy does not impair site-productivity and forest health. Additional monitoring independent of demand for biomass energy and independent of harvests in general is necessary to adequately monitor forest health and productivity.

- v. *§ 1(c)(2)(E): Whether it is feasible to coordinate with adjoining states to develop a regional procurement standard for biomass energy facilities*

Yes, from the perspective of the working group, it is feasible and desirable to coordinate with adjoining states to develop regional procurement standards. Adoption of regional procurement standards would have substantial benefit for biomass energy facilities and forest resources. The Vermont department of forests, parks and recreation has pursued such regional coordination, most recently through the New England Governors' Conference. However, the timing and implementation of a regional standard are difficult and additional groundwork and negotiation are necessary before any foreseeable implementation.

- vi. *§ 1(c)(2)(F): Whether biomass procurement standards should require third-party certification*

No, if a procurement standard is established, the standard should not require third-party certification. However, the Working Group encourages land management and harvesting under the use value appraisal program, land conservation agreements, or third-party certification systems or subject to the advice and services of a professional forester, all of which could elevate the quality of forest practices and improve management of the state's forest resources.

- vii. *§ 1(c)(2)(G): Whether a standard should be developed that would require biomass electricity generating facilities to provide for a fuel efficiency of at least 50 percent over the course of a full year*

No. Using forest resources in the most efficient way possible is desirable, but a standard of 50 percent fuel efficiency over the course of a full year may not be possible for certain biomass energy facilities in certain locations in the state. The Working Group does not want to discourage the location or operation of such facilities. The Working Groups also recommends that the Public Service Board require each biomass energy facility to design for the optimum fuel efficiency. In addition, the Working Group recommends that economic incentive programs for biomass energy development incorporate strong fuel efficiency standards.

### **III. Further Working Group Action**

The Working Group will continue to meet in 2011 during the legislative session. In 2011, the working group intends to focus on multiple issues including:

1. The State Energy Plan and its interplay with the recommendations of the Biomass Energy Development Working Group.
2. Whether and how to quantify or account for carbon impacts from biomass energy use in Vermont.
3. The siting and permitting process for biomass energy facilities in the state as described by representatives of the proposed biomass facility in Pownal.
4. Alternative funding sources for the development of biomass energy in Vermont.
5. Monitoring of forest health, harvests, and woody biomass use.
6. Harvest practices at sites in Northern New England and New York as detailed by University of Vermont Professor Bill Keeton's recent research.

## **Appendix A: Recommended Guidelines for Maintaining Water Quality, Soil Productivity & Biological Diversity on Harvesting Jobs in Vermont**

### Introduction

The potential for new and expanding markets for woody biomass fuels has prompted renewed interest in the possible impacts that increased removals and associated disturbance might have on long-term site productivity, sustainability and biological diversity. These concerns have led six states and three Canadian Provinces to develop or work toward development of biomass harvesting guidelines.

Vermont has nearly 30 years of experience with biomass harvesting standards required for its two in-state wood-fired power plants. However, these standards only apply to harvesting jobs that deliver wood to these two facilities; standards do not currently exist for harvesting jobs within the state that deliver wood elsewhere. In addition, the existing standards that apply to the state's two wood-fired power plants do not specifically address maintaining soil productivity or biological diversity.

Scientific support for provisions that address soil productivity and biodiversity is based on the concept that harvest residues and residual vegetation provide organic matter and nutrients that sustain productivity. Consistent and quantifiable data on the relationship between removals and residuals and the resulting inputs and outflows on forest soils is lacking, and at times conflicting. Scientific support for retaining forest structures such as snags, cavity trees and down material is based on research that evaluates the role these elements provide for a variety of wildlife and ecological functions. Unfortunately, there are too few studies, and too little baseline data or long-term monitoring to provide clear direction.

The Vermont Biomass Energy Development Working Group developed the following guidelines to provide recommended practices on protecting soil productivity and biodiversity for all wood harvests in Vermont. The guidelines are general, flexible, understandable, and easily implemented in the field. These are recommended guidelines, not mandatory, for protecting Vermont's forests and to ensure a sustainable flow of products.

### A. Water Quality

1. Implement “Acceptable Management Practices for Maintaining Water Quality on Logging Jobs in Vermont” (AMPs) as necessary.
2. Minimize landing size to the extent possible for the operation.
3. Maintain a functional buffer between landings, streams and wetlands.
4. Minimize erosion on trails after harvesting is completed.

### B. Soil Productivity

1. Minimize disturbance of the litter layer except as required for regeneration.
2. Retain stumps and roots intact except as necessary for road, trail and landing construction.
3. Use tops as necessary to increase equipment floatation and stabilize harvest trails.
4. Retain organic matter on nutrient-impaired sites by partial cutting, leaving a portion of tree tops, or skidding after foliage has dropped. Increase the proportion of retained organic debris when cuts are heavy or rotations short.
5. Return chipper waste (broken stems, limbs, unutilized wood accumulated on the landing) on active operations to the harvest site on return skidder trips.

### C. Biological Diversity

1. Retain as many snags as safety, access and owner objectives will permit. Refer to Table 1 below for target levels of retained structure.
2. Retain all pre-harvest down wood in place.
3. Retain breakage incidental to harvesting (broken branches, unutilized trees) within constraints of safety and aesthetics.
4. Consider retaining some newly cut material on site if large woody debris is lacking.
5. Salvage harvesting should leave at least 5% of the affected stand unharvested unless contrary to state or federal guidelines.

**TABLE 1**

<b>Structure</b>	<b>Minimum Target/Ac*</b>
Live decaying trees 12- 18” DBH	4
Live decaying trees > 18” DBH	1
Snags >10” DBH	5
*Retain smaller trees when suitable trees of these size classes are not present. <u>The highest priority must be safety, with specific regard to OSHA regulations.</u>	

It is recommended that the State consider a means for monitoring harvest operations for woody biomass and wildlife tree retention, and review/amend these guidelines every ten years as new information becomes available.

## **Appendix B: Biomass Energy Development Working Group; Minutes of Meetings**

BioE: Biomass Energy Development Working Group  
 MINUTES for January 12, 2010  
 1:00 p.m. – 4:00 p.m.  
 Room 410, 133 State Street

MEMBERS PRESENT: Rep. Chris Bray, Rocky Bunnell, Paul Cate, Peter Condaxis, Jamey Fidel, Erhard Frost, Bill Kropelin, Kelly Launder, Sam Miller, Chris Recchia, Robert Turner; Sec. Jonathan Wood.

MEMBERS NOT PRESENT: Sen. Ginny Lyons, Ben Machin,

STAFF PRESENT: Leg. Council Michael O’Grady, Asst. Catherine Russell, Leg. Intern Graham Leitner

### **Convened**

Co-Chair Rep. Chris Bray convened the working group.

### **Minutes Reviewed**

The working group voted to accept the minutes from the previous meeting on Nov., 3, 2009.

### **Discussion of Interim Report**

The working group discussed Bill Keeton’s edits to the interim report:

- Appendix A
  - Bullet three: What is the definition of regional coordination? The group agreed that this should be more specific and include the language “regional coordination may or may not include procurement guidelines” – the goal should be to keep topics specific yet flexible
  - Bullet four: include language “the working group supports legislative action to increase truck weight limits for the transportation of forest products”

The group unanimously accepted the draft of the interim report with the edits on agreement that it was a work in progress and able to be altered throughout the discussions.

### **Discussion of Work Plans**

#### *Forest modeling*

The group discussed several topics relating to modeling. It was stated that the most current data on forest modeling is not yet available for the U.S.D.A. Forest Inventory and Analysis (FIA), but when the data becomes available it will become an important part of biomass harvesting because it will be used to determine supply. The group then discussed whether the whole development of a biomass industry should be institutionalized using models that would show industry impacts over time, help with public outreach campaigns, and determine the logistics of the program including who pays for it and who provides updates to the models. Market modeling was also discussed as a way to help build a stable industry. The model should show how biomass markets respond to price fluctuations and what policies would support a biomass industry and which policies would support other forestry activities. Carbon modeling was discussed in terms of promoting carbon neutrality and long term carbon storage. Bill Keeton spoke on modeling that

UVM is engaged in. Carbon neutrality is based on time and special scales. Bill Keeton stated it would not be good policy to state that “biomass” is carbon neutral because it is a loaded term.

### *Enhancement and Development of Biomass Industry*

The work plan for enhancing and developing a biomass industry should emphasize simplification. There should be incentives to start biomass projects that are relatively free of complications. Standards for efficiency of biomass projects are necessary to a sustainable industry. In addition, stability and consistency of markets promotes a viable industry that is diversified and supports individuals in the forest products industry. Members of the group stated concerns regarding the globalization of the biomass market. This is undesirable because it increases transportation of biomass material, decreasing its end efficiency. This would also be undesirable for local markets and local employment. Regional cooperation could help to resist the pressures of an overseas biomass market.

### *Maintaining Forest Health*

The group discussed stewardship as the most efficient way to promote healthy forests. Start by determining what we want to retain in the forests versus what we want to remove from them. Include ongoing monitoring programs into the biomass industry objectives. The group discussed using procurement standards to encourage good forestry practices on the ground. Procurement standards will level the playing field if they can encourage the development of markets that favor sustainable harvesting methods. Using the standards, biomass purchasers would pay higher premiums for wood that is grown and harvested according to certain management standards. The greater the consistency in procurement standards, the greater the consistency in best management practices. The committee will set aside more time at a later date to further discuss procurement standards and best management practices. The forest health subcommittee will report more specific findings at the next meeting.

### **Concepts that apply to all work plans**

- Public outreach--the greater the public knowledge and involvement, the more successful the program will be.
- Policy Objectives:
- Promoting industry growth and monitoring activities go hand-in-hand.
- ASME certification legislation
- Contingency plans for salvage operations – to deal with diseased forests
- Current use/use value appraisal
  - This is likely to be modified soon by the legislature
  - The group agrees that the Use Value Appraisal program is an integral part of maintaining a forested landscape and promoting growth of forest industries, the disagreement is in how changes to the program will affect enrollment of forest lands.

### **Future Meetings**

Next meeting: Presentation of interim report and case studies to the legislature. (Joint Nat. Res. and Ag. committees) – Wed. 1/20/10 9-11:30am Rm. 11 State House

- Subcommittees to present the different work plans
- Case studies to follow

Next full working group meeting – Monday, February 8, 2010 1-4pm @ the statehouse

BioE: Biomass Energy Development Working Group

MINUTES for Tuesday, March 16, 2010

1:00pm – 4:00pm

Room 410, Tax Building 166 State St.

**MEMBERS PRESENT:** Rep. Chris Bray, Rocky Bunnell, Jamey Fidel, Ehrhard Frost, Bill Kropelin, Ben Machin, Chris Recchia, Sec. Jonathan Wood, Bill Keeton, Kelly Launder, Robert Turner.

**MEMBERS NOT PRESENT:** Sen. Ginny Lyons, Peter Condaxis, Paul Cate, Sam Miller

**STAFF PRESENT:** Leg. Counsel Intern Graham Leitner, Asst. Catherine Russell

**Convened**

Co-Chair Rep. Chris Bray convened the working group.

**Old Business:** No minutes to approve from last meeting. Review of last month's meeting regarding modeling and discussion of forest health.

**New Business:** Change of location for the next meeting. The new location will be the Governor's Conference room in the Pavilion Building.

**Subcommittee Presentations:**

*Forest Health Subcommittee* – Bill Kropelin

- A look at past Vermont harvesting data and current harvesting guidelines from various states.
  - “Report on Chip Harvester Operations in Vermont, 1990” (see report)
  - Compare Burlington Electric Department's (BED) harvesting policies to that of other Midwestern and Eastern states (see chart and BED policies)
    - In-house policies at BED monitoring costs \$1-2/ton of material
- Discussion of Biomass Guidelines
  - Third party certification could provide monitoring and standards that would ensure good forest practices
  - Good forestry practices would build public support for biomass energy and industry
  - The Forest Guild has been working on recommendations for biomass harvesting guidelines that should be finished by next meeting
    - Components: density of debris (# pieces/acre coarse woody debris vs. mass/acre), Forest Guild is working on across the board indicators of stand health specific to forest stand development conditions

*Modeling Subcommittee:*

- BERC is completing the Forest Inventory Analysis (FIA)
  - FIA uses the same counties as previous study

- Report can be complete by next meeting
  - Harvesting data is collected by county, whereas available biomass will be more site specific

*Enhancement and Development Subcommittee – Chris Recchia*

Basic Principals

- Facilities in this region seek to switch from oil to wood
  - Municipalities, schools, hospitals, homes, etc.
  - Outreach to facilities with the potential to convert to renewable heat and cogeneration systems
- One or more new electric facilities (25-50 MW)
  - Southern part of the state has excess supply of biomass
    - Citing of a facility is resource driven, not demand driven. 50 MW is not a significant portion of the electric demand of the state
- State Energy Plan (see pie chart)
  - Additional 1,000,000 tons of in-state harvest will only provide 1-2% of Vermont’s energy (heat and electric)
  - What are state incentives/disincentives?
    - Invite VEDA to committee
    - Use of municipal bonds – if you get public support, people will invest
      - Energy Czar – not popular, not efficient
        - Overused at federal level
        - Need for information dissemination, not a policy driver
- Green Energy Program (Clean Energy Development Fund)
  - Green zones (Montpelier/Randolph district heating plans require 3rd party certification to qualify)
  - Vermont is looking to build “green energy” infrastructure
- Questions to answer(sequential)
  - Find out how much wood?
  - What type of infrastructure do we want to invest in? (electric vs. thermal vs. cogeneration)
  - Decide where to provide incentives?

**Discussion:**

- What type of industry should the state promote?

- Choose the best, most sustainable uses: local, useful, best practices, combined heat and power
- Year round markets to avoid seasonal fluctuations in biomass industry
- Citing considerations
  - CHP systems should be located where heat can be utilized (urban areas)
- What are incentives for CHP?
  - Current policy and incentives are for electricity production
    - Tax credits for production and investments
  - No thermal incentives beyond those provided by the Clean Energy Development Fund

**For Next Time:**

- Discussion of Procurement vs. Harvesting Guidelines
- Each member to bring in outside information
- ANR to provide facilitator
- Attempt to form consensus on moving forward on development of standards to protect forest health

**Schedule for upcoming meetings:**

- Tuesday, April 13th – Pavilion Building
- Monday, May 17th
- Thursday, June 10th

BioE: Biomass Energy Development Working Group  
 MINUTES for Tuesday, April 13, 2010  
 1:00pm – 4:00pm  
 4th Floor Conference Room, Pavilion Building, Montpelier, VT

**MEMBERS PRESENT:** Rep. Chris Bray, Rocky Bunnell, Jamey Fidel, Ehrhard Frost, Bill Kropelin, Ben Machin, Chris Recchia, Sec. Jonathan Wood, Bill Keeton, , Robert Turner, Peter Condaxis, Paul Cate, Sam Miller.

**MEMBERS NOT PRESENT:** Sen. Ginny Lyons, Kelly Launder

**STAFF PRESENT:** Leg. Counsel Intern Graham Leitner, Asst. Catherine Russell, Ed O’Leary, Department of Forests, Parks, and Recreation

**Convened**

Co-Chair Rep. Chris Bray convened the working group.

**Old Business:**

- Motion to Approve last month’s minutes with minor revisions – Chris Recchia, 2nd – Bill Kropelin

**New Business:**

- Confirm dates for next meetings (May and June) – Catherine Russell to reserve rooms.
- Announcement by Graham Leitner regarding participation in working group to fulfill requirements for a Vermont Law School George Perkins Marsh Fellowship. Graham will be working with Michael O’Grady and the Bio-E Working Group over the summer to help draft the group’s recommendations and report to the Legislature.
- Announcement of Middlebury Biomass facility tour. Bio-E group would like to tour the facility and speak with staff regarding procurement standard development and hold our July meeting at the Middlebury campus.

Hand-out:

1. *Biomass Procurement at Middlebury College: Assessments and Recommendations* - Environmental Studies Senior Seminar, Middlebury College Fall 2009

**Subcommittee Presentations:**

Forest Health Subcommittee

Hand-outs:

1. *Elements of a Wood Procurement Standard* – Bill Kropelin
2. *Summary of the Forest Guild’s Forest Biomass Retention and Harvesting Guidelines* – Ehrhard Frost
3. *Environmental factors in woodfuel production: Opportunities, risks, and criteria and indicators for sustainable practices* (B. Lattimore, C.T. Smith, B.D. Titus, I. Stupak, G. Egnell) – via Bill Keeton

4. *Promoting Ecological Sustainability in Woody Biomass Harvesting* (Maria K. Janowiak and Christopher R. Webster) – via Bill Keeton

Modeling Subcommittee

No new business

Enhancement and Development Subcommittee

No new business

### Facilitated Negotiation

- The topic for April's meeting is Procurement Standard vs. Harvesting Guidelines. Ed O'Leary has been asked to join the group for today's meeting as a facilitator to guide the discussion.
- Definitions:
  - *Procurement Standard*: These are purchasing requirements that a facility must adhere to when purchasing biomass materials. They ensure that materials are sourced according to certain standards. One element of the procurement standard might be harvesting guidelines. Procurement standards may be voluntary or compulsory.
  - *Harvesting Standards*: These guide what happens in the field. They ensure that certain practices are followed by foresters, loggers, and/or landowners when harvesting biomass. The main purpose of harvesting guidelines should be to ensure that certain aspects of forest health are protected. They may be voluntary or compulsory.
- The voluntary vs. compulsory nature of procurement standards or harvesting guidelines was not part of the discussion, even though this may be important to the outcome. Instead, the focus was on listing the pros and cons of each.
- To begin the discussion, each member of the group was asked to spend five minutes listing the pros and cons of both Procurement Standards and Harvesting Guidelines.
- Next, all pros and cons were listed on white boards at the front of the room – approximately 30 minutes were spend listing pros and cons for each type of standard.
- Consideration of pros and cons: group was asked to hot dot five *cons* for each type of standard that had the potential to halt the development of that standard.
  - Issues that are most controversial:
    - Procurement Standards:**
      1. Cost to state
      2. Inconsistent with other state programs (for biomass harvests)
      3. Complexity for field foresters
    - Harvesting Guidelines:**
      1. Regional consistency
      2. Monitoring and Enforcement in difficult and expensive
      3. Divisive to forest industry

BioE: Biomass Energy Development Working Group  
 MINUTES for Wed., June 10, 2010  
 1:00 p.m. – 4:00 p.m.  
 Room 10, State House, Montpelier, Vermont

**Members Present:** Rep. Chris Bray (co-chair), Rocky Bunnell, Paul Cate, Peter Condaxis, Jamey Fidel, Ehrhard Frost, Bill Kropelin, Sam Miller, Robert Turner

**Members Not Present:** Bill Keeton, Kelly Launder, Sen. Ginny Lyons, Ben Machin, Chris Recchia, Sec. Jonathan Wood (co-chair)

**Staff Present:** Aaron Adler (Legislative Counsel), Grahm Leitner (Intern, Leg. Council)

**Others Present:** Barbara Burns (DFPR), Bob DeGeus (DFPR), Sandy Wilmot (DFPR), Adam Sherman (BERC), Sarah Galbraith (BERC)

MINUTES:

Co-chair Rep. Bray convened the meeting. The minutes of May 17, 2010 were approved.

Barbara Burns and Sandy Wilmot of the Department of Forests, Parks and Recreation (DFPR) made a presentation on forest health and DFPR activities on forest health, including a power point. Following the presentation, the working group discussed DFPR's role and activities related to data-gathering and promoting forest health.

The working group then discussed draft biomass harvesting guidelines produced by the Forest Health (FH) subcommittee.

There was no report from the modeling committee. A. Sherman reported that BERC is moving to complete the basic update and refine relevant data sets.

The working group then discussed the written report of the enhancement and development working group dated June 10, 2010, including possibly adding an ad hoc working group member with knowledge of development and energy issues. B. DeGeus suggested contacting Alex Ibey, which P. Condaxis volunteered to do.

J. Fidel reported on the ongoing public forums sponsored by BERC, VNRC and others.

NEXT MEETINGS:

July 20, 2-6 p.m. – Middlebury College, information to be distributed by G. Leitner.

August 17, 1 – 4 p.m. – Montpelier, location TBA.

September 16, 1 – 4 p.m., Montpelier location TBA.

BioE: Biomass Energy Development Working Group  
MINUTES for Tues., July 20, 2010  
2:00 p.m. – 6:00 p.m.  
Middlebury College, Middlebury, Vermont

**Members Present:** Rep. Chris Bray (co-chair), Sec. Jonathan Wood (co-chair), Rocky Bunnell, Paul Cate, Peter Condaxis, Bill Kropelin, Sen. Ginny Lyons, Ben Machin, Sam Miller, Robert Turner

**Members Not Present:** Jamey Fidel, Ehrhard Frost, Bill Keeton, Kelly Launder,  
**Staff Present:** Aaron Adler (Legislative Counsel), Michael O’Grady (Legislative Counsel), Catherine Russell (Committee Assistance)

MINUTES:

Co-chairs Rep. Bray and Sec. Wood convened the working group.

The working group visited sites at Middlebury College related to the College’s use of woody biomass to produce heat and electricity. The group visited willow groves that the College planted to provide fuel. The group then toured the College’s power plant, viewing the equipment in the plant related to fuel intake and biomass energy production.

The working group then met at the College’s Franklin Environmental Center.

During this meeting, the working group discussed the following topics:

1. Draft biomass harvesting guidelines produced by the Forest Health subcommittee.
2. Public forums sponsored by the Biomass Energy Resource Center, Vermont Natural Resources Council and others and the relationship of the forums to the group’s work.
3. The Biomass Sustainability and Carbon Policy Study prepared by the Manomet Center for Conservation Sciences for the Massachusetts Department of Energy Resources.
4. Preparation of the working group’s interim report due later this year. Directions were given to the subcommittees to move forward with their reports for discussion by the full group and potential inclusion in the interim report.
5. Scheduling of future meetings.

No formal actions were taken by the working group during the meeting. The group adjourned the meeting at approximately 6:00 p.m.

BioE: Biomass Energy Development Working Group  
MINUTES for Tues., Aug. 17, 2010  
1:00 p.m. – 4:00 p.m.  
Room 11, State House, Montpelier, Vermont

**Members Present:** Rep. Chris Bray (co-chair), Sec. Jonathan Wood (co-chair), Rocky Bunnell, Paul Cate, Peter Condaxis, Jamey Fidel, Ehrhard Frost, Bill Keeton, Bill Kropelin, Sam Miller, Robert Turner

**Members Not Present:** Kelly Launder, Sen. Ginny Lyons, Ben Machin, Chris Recchia,

**Staff Present:** Mike O'Grady (Legislative Counsel)

**Others Present:** Adam Sherman (BERC)

MINUTES:

Co-chair Rep. Bray convened the meeting. The minutes of July , 2010 were not yet complete, and the group passed over approval of the minutes of the previous meeting.

Pat Bartlett, a consulting forester and wildlife management consultant for Bartlett Forestry and Wildlife, presented a video to the group regarding whole tree harvesting for biomass energy production. Mr. Bartlett discussed the economics of whole tree harvests for biomass energy production. Mr. Bartlett also discussed the forest health and animal habitat benefits of whole tree harvests. In addition, Mr. Bartlett recommended that foresters and loggers complete a workshop regarding the proper planning and layout of a harvest site in order to maximize harvest and reduce cost. Mr. Bartlett also recommended newspaper notification and other community notifications of upcoming whole tree harvests for biomass.

The working group then discussed the work of the working group subcommittees.

Peter Condaxis of the development and enhancement subcommittee stated that due to recently revised wood supply estimates, the subcommittee needed to revise the proposals of the subcommittee. The revised proposal will be presented to the group at the September meeting.

Ehrhard Frost of the Forest Health Subcommittee presented to the group the revised Recommended Guideline for Maintaining Water Quality, Soil Productivity and Biological Diversity on Harvesting Jobs in Vermont (previously titled Recommended Woody Biomass Retention Guidelines). The group discussed a new guideline advising that whole tree harvesting be avoided on low-nutrient sites as well as steep slopes and erosion prone sites. The group recognized that consideration of this concept and its underlying rationale is worthwhile, but the language may need to be revised in order to address concerns of group members and to make the guideline workable for foresters and loggers. Suggested edits of the language will be sent to Bill Kropelin for potential revision by the Forest Health Subcommittee.

Jamey Fidel of the Forest Health Subcommittee then circulated notes with preliminary proposals from the subcommittee addressing each of the issues set forth in Act No. 37 of the 2009 Session that the subcommittee is charged with addressing. The working group reviewed the notes and agreed that they were helpful, but significant additional time was necessary for group discussion of the proposals. Time will be scheduled for this discussion at the September meeting.

Robert Turner of the Modeling Subcommittee reported that BERC will issue in October the revised Vermont Wood Fuel Supply Model contracted for by Department of Forests Parks and Recreation. The group discussed preliminary results of the BERC revision and the fact that the U.S. Forest Service Forest Inventory and Analysis (FIA) from 1997 overestimated the forest inventory in Vermont.

Michael O'Grady then discussed with the working group the format and schedule for the second interim report of the group. A preliminary draft of the second interim report will be presented to the group at the September meeting.

The group then rescheduled the September meeting to Sept. 9, from 9:00 a.m. until 3:00 p.m. in Room 10 of the State House.

J. Fidel reported on support for additional public forums on biomass use and development in Vermont.

#### NEXT MEETINGS:

September 9, 9:00 a.m. – 3:00 p.m., Montpelier, State House Room 10.

BioE: Biomass Energy Development Working Group  
 MINUTES for Fri., Oct. 8, 2010  
 10:00 a.m. – 4:00 p.m.  
 Room 10, State House, Montpelier, Vermont

**Members Present:** Rep. Chris Bray (co-chair), Sec. Jonathan Wood (co-chair), Rocky Bunnell, Paul Cate, Peter Condaxis, Jamey Fidel, Ehrhard Frost, Bill Keeton, Bill Kropelin, Sen. Ginny Lyons (by phone), Ben Machin, Sam Miller, Chris Recchia

**Not Present:** Robert Turner

**Staff Present:** Michael O’Grady (Legislative Counsel), Aaron Adler (Legislative Counsel), Catherine Russell (Committee Assistance), Rosalind Daniels (Committee Assistance)

MINUTES:

Co-chairs Rep. Bray and Sec. Wood convened the working group.

The working group approved the minutes of its July 20, 2010 meeting with the following revision: The phrase “harvest land site size” is changed to “landing size.”

The working group approved the minutes of its August 17, 2010 meeting with the following revision: In the paragraph beginning “Ehrhard Frost of the Forest Health Subcommittee presented,” third sentence, strike the phrase: “The group recognized that consideration of this concept and its underlying rationale is worthwhile, but” and keep the remainder of the sentence.

The working group reviewed and discussed the preliminary draft of its second interim report prepared at its request by legislative counsel. The working group made various changes to the draft interim report during the meeting. The working group also directed legislative counsel to make other changes for which counsel would suggest draft language for review by the working group at the next meeting.

On the draft report, the working group set up the following process and schedule. Members will provide legislative counsel with further comments and information by October 13, 2010 and legislative counsel will circulate a revised draft by October 15, 2010. In the revised draft, legislative counsel will highlight all changes made, noting the source of each change.

Co-chair Rep. Bray identified several possible topics for the working group’s future consideration, including:

- The status of the comprehensive energy plan prepared by the Department of Public Service and the relationship of the working group’s reports and work to that plan.
- Draft legislation to enable municipalities to establish heating districts.
- The relationship of the working group’s reports and work to the 25 by 25 initiative endorsed by resolution of the General Assembly (R-409 of the 2005-06 biennium).

- Research into how to account for and quantify the carbon impacts of using woody biomass for energy production.
- Alternative funding sources to support energy production from woody biomass.
- Presentation by member Bill Keeton on harvesting.

Legislative counsel provided the members with copies of the biomass section of the Department's current draft comprehensive energy plan.

The working group discussed future scheduling. In addition to the schedule discussed above for revisions to the draft report, the working group will hold its next meeting at the State House on November 8, 2010 starting at 1:00 p.m. and will convene a public hearing on the draft interim report on November 30, 2010 from 7:00 to 8:30 p.m., location to be determined.

The meeting adjourned at approximately 4:00 p.m.

**Appendix C. Identified Forest Monitoring Activities in Vermont**

[To be provided by Vt. DFPR at a later date]