

NEW ENGLAND SOCIETY OF AMERICAN FORESTERS
YANKEE DIVISION
CONNECTICUT — MASSACHUSETTS — RHODE ISLAND



Representing the Forestry Profession in Southern New England

June 16, 2012

Mark Sylvia, Commissioner
Massachusetts Department of Energy Resources
100 Cambridge Street, Suite 1020
Boston, MA 02114

Commissioner Sylvia:

The Yankee Division of the Society of American Foresters (SAF) is the regional (CT, MA, RI) division of the nation's oldest and largest professional society for foresters. The mission of the Society of American Foresters is to advance the science, education, technology, and practice of forestry; to enhance the competency of its members; to establish professional excellence; and, to use the knowledge, skills, and conservation ethic of the profession to ensure the continued health and use of forest ecosystems and the present and future availability of forest resources to benefit society. These comments are submitted by the Yankee Division, representing members in Massachusetts, Connecticut and Rhode Island; and the Massachusetts Chapter of the SAF.

We welcome the opportunity to comment on the final regulations (225 CMR 14.00) pertaining to Massachusetts' Renewable Energy Portfolio Standard, particularly with respect to criteria for both woody biomass facilities and fuel eligibility. We appreciate some of the changes made between the draft regulations (upon which this group commented in October 2010) and this final version. However, we continue to have deep concerns about the way in which the regulations will affect the viability of forest land ownership and management, and rural economies in Massachusetts and the surrounding states.

1. *Many of the guidelines for timber harvesting and forest biomass utilization are nominally forestry regulations. M.G.L. Chapter 132 §40-46 (Forest Cutting Practices Act) provides for a balanced framework – the State Forestry Committee – to develop forest cutting practices and guidelines. DOER has circumvented this process and has crafted regulations that are unbalanced, unrealistic, and not inclusive of the forestry community.*

a. With respect especially to the Advisory Panel established in 14.05(8)(b)(1), it is absolutely imperative that both a Massachusetts Licensed Timber Harvester and an owner of forest land be included on the advisory panel. These key stakeholders – the producers of woody forest biomass – are important stakeholders that should be included in the adaptive management process of updating these regulations. Over 70% of Massachusetts' forest land is privately owned¹, and all timber is harvested by private harvesting firms. To impose provision and craft regulation affecting the production of a public good, renewable energy, on these groups without representation risks the integrity of the process.

¹ de la Crétaz, A.L., L.S. Fletcher, P.E. Gregory, W.R. VanDoren, P.K. Barten, 2010. An assessment of the forest resources of Massachusetts. UMass Amherst and Massachusetts Department of Conservation and Recreation. Amherst, MA.

b. Furthermore, foresters may be hired simply to prepare cutting plans to fulfill only a regulatory role, and may not be actively supervising the harvest. To hold those foresters accountable for utilization decisions out of their control is inappropriate.

2. *We continue to have serious concerns about the both the utilization limits and ability for their verification as proposed in 14.05 (8) and the accompanying Biomass Eligibility and Certificate Guideline. These guidelines as written will reduce the economic viability of family forest land ownership.*

a. Forest nutrient cycling may be adversely impacted, and the economic viability of family forest land ownership put at risk, by these low utilization limits for RPS markets. Based on over 40 years of research using clearcutting and whole tree harvesting on a variety of soil types; careful, long-term measurement of the soils in the harvest areas compared to control watersheds shows little or no effect to warrant this level of restriction on the utilization of forest biomass.^{2,3}

b. Utilization limits for a particular harvest will be quickly met by utilizing the tops and waste of larger-diameter, high quality sawlog trees and straight polewood in a given harvest. These regulations indirectly support and further an economic environment which encourages maximizing current profit while sacrificing future forest health, value, and ability to provide the variety of forest products present and future generations depend upon. As written these regulations create a disincentive to remove poorer-quality trees, because the biomass associated with these less-efficiently harvested trees would be in excess of the utilization limit. Sustainable forest management benefits from stable markets for low-grade forest products, which these proposed regulations fail to address this situation.

c. It will be impractical and overly expensive for the private sector to comply with, and for regulators to verify compliance with the utilization limit. The stumpage value for forest biomass in eastern Massachusetts – part of the state where biomass markets are most robust – has averaged \$0.77 per ton since 1983, just one-third of one percent of the average value per thousand board feet of red oak sawlogs.⁴ Verifying utilization under these regulations will require substantial time and efforts far beyond the current requirements of verification of volumes. The cost of complying with these regulations is out of line with the value of the product. The standards in M.G.L. Ch. 132, its associated regulations, the skill, experience and judgment of professional foresters – both practicing in the private sector and providing guidance in the public sector – provide the best mechanisms to ensure harvest practices do not degrade the harvest area.

d. The monetary value of biomass to landowners is often negligible – but there are numerous aesthetic and silvicultural benefits associated with increased management opportunities. Biomass markets are just one part of a fully developed forest products industry, utilizing sawlogs, firewood, pulp, and biomass. Well-developed biomass markets, for example, help provide forest managers the opportunity to remove poor quality trees and create the conditions necessary to regenerate key native tree species. In some very poor-quality stands, RPS biomass markets may be the only market available for rehabilitation treatments. Elimination of these RPS markets creates a significant disincentive for forest landowners and could contribute to the conversion of these forest lands to non-forest uses – resulting in significant losses of carbon storage opportunities.

² Johnson, C.E., R.B. Romanowicz, T.G. Siccamo, 1997. Conservation of exchangeable cations after clear-cutting of a northern hardwood forest. Canadian Journal of Forest Research 27: 859-868.

³ USDA Forest Service, 2007. Long-term trends from ecosystem research at the Hubbard Brook Experimental Forest. General Technical Report NRS-17, 41 p.

⁴ UMass Extension. Southern New England Stumpage Price Reports, 1983-2012. Last accessed June 16, 2012. Available at <http://masswoods.net/stumpage>.

3. *The framework which the regulations and the Biomass Eligibility and Certificate Guideline establish for evaluating the eligibility of biomass fuels in the generation of renewable power creates disincentives for sustainable forest management and family forest ownership, and are vaguely worded and un-implementable.*

a. The regulations consider biomass fuels sourced from land-use change activities – specifically conversion of forest to residential, commercial, or industrial use – as eligible for receiving credit in the generation of renewable power. This regulation seems to create a preference and incentive for land-clearing over sustainable forest management.

b. The definitions of the various fuel types in 14.02 are vague and unclear, even when supplemented by information in the *Biomass Eligibility and Certificate Guideline*. For example, the definition under 14.02 of Eligible Biomass Woody Fuel to include “Other woody vegetation that interferes with regeneration or the natural growth of the forest, limited to locally invasive native species and non-native invasive woody vegetation” is vague. This could, for example, be construed to include beech, as it is native and is certainly locally invasive. Further, it is unclear how cordwood in tops of trees with sawlog products should be entered into the *Guideline*. Finally, the scientific link between harvested weight of roundwood forest products and nutrient cycling benefits related to the proportion of these materials sequestered on-site is tenuous at best.

4. *The overall efficiency requirements for generation facilities under 225 CMR 14.05(8)(c)(3) are too high, and the timeline and standards for compliance of previously qualified biomass generation units under 14.05(8)(c)(e) is inappropriate and nearly impossible to achieve for electric-only facilities.*

It should be noted that programs that people tend to laud, i.e. the “Fuels for Schools” program in Vermont whereby a distributed network of small-scale, high-efficiency combined heat & power plants did not thrive without several large-scale power-only plants to encourage investment in the logging equipment, technology, and infrastructure necessary to fuel such plants. Southern New England requires such plants – it is a “chicken-and-egg” problem – to encourage enough harvesters to acquire whole-tree harvesting and chipping technology to sustain a network of smaller-scale combined heat and power plants.

5. *The net lifecycle Greenhouse Gas (GHG) Emission analysis requirement in 14.05(1)(a)(7)(f)(iii) and 14.05(8)(d) is flawed.*

a. Biomass fuels sourced from the conversion of forest land – an activity that results in the release of carbon to the atmosphere – are treated as more favorably in the GHG lifecycle analysis than fuels sourced from the execution of sound silvicultural activities that keep forested land forested and encourage family forest ownership. Thinnings are necessary to control stand density and manage for myriad forest products and ecosystem services. To meet the GHG lifecycle requirements, facilities are forced to rely on some amount of chips from residues, and therefore landclearing chips. By extension, a facility that relies completely on chips from conversion of forest to non-forest appears to have a greater net reduction in GHG emissions than one that relies on forest derived thinning.

b. While many benefits of forest land accrue at the tract level, its public goods largely accrue at a landscape level. A disturbance that results in unoccupied growing space might allow for a stand to be a net source of carbon releases, relative to a scenario in which the disturbance had not occurred. Massachusetts should encourage policies that encourage shifts in the *landscape* resiliency and diversity of forests. Policies that take away and disincentivize sound forest management for family forest owners may result in high-grading⁵ and the

⁵ The definition of high grading is the removal of the most commercially valuable trees (high-grade trees), often leaving a residual stand composed of trees of poor condition or species composition —note high grading may have both genetic

perpetuation of a forested landscape that is largely homogenous and even-age, and less resilient to disturbance and supporting diverse wildlife habitats.

c. In the Overall Efficiency and GHG Analysis Guideline, woody biomass is held to the same standard as natural gas. However, natural gas did not undergo the same comparison to a business-as-usual scenario with respect to its extraction and production. Natural gas production, extraction, and transmission have their own environmental footprint that has not been considered in the comparison to forest biomass. We feel that this is inappropriate.

d. The production of solar and wind energy can qualify for the RPS under these regulations without any other assurances of sustainability on the same tract of land or analysis of the opportunity costs of production. For example, no carbon accounting is made for the land that may have to be cleared to erect wind turbines or chemicals used in the production of solar panels is made in the regulations, while the use of forest biomass is subject to a full lifecycle analysis.

e. The difference in quality between the two fuel types established in these regulations is substantial. Wood chips generated from bolewood – primarily thinnings – are typically a much higher-quality chip than that generated from the tops and branches of trees. These higher-quality chips are relied upon nearly exclusively by often-lauded small-scale (“Fuels for Schools”-size), combined heat and power (CHP) biomass generation facilities because they cannot afford the equipment to process poorer-quality chips. The GHG lifecycle requirement sets a dynamic that requires plants to use residues – a poorer quality chip and costlier to use for the smallest and most efficient CHP facilities which can least afford it – or bolewood chips from landclearing – patently unsustainable.

f. This speaks to issue of relying on opinion rather than science for regulation that will shape forest product markets. An important part of science is peer review – something which the Manomet study (3), upon which this regulation is largely based, has not received.

6. *We have specific concerns about many of the provisions of the Biomass Eligibility and Certificate Guideline.*

a. No biomass is allowed to be harvested from old growth forest stands. The Guideline defines old growth forest stands as “...forests that approximate the structure, composition, and functions of native forests prior to European settlement. They vary by forest type, but generally include more large trees, canopy layers, standing snags, native species, and dead organic matter than do young or intensively managed forests.” This definition is excessively vague and the use of the word “approximate” leaves far too much leeway in this clause’s interpretation, and this is in general impossible to accurately and consistently apply and may have unintended consequences. In fact, within the forestry community old growth can be defined as having a process-based definition⁷, or can be defined using structural characteristics such as live trees, canopy conditions, snags, and coarse woody debris; and due to large differences in forest types, climate, site quality, and natural disturbance history (e.g., fire, wind, and disease and insect epidemics), old-growth forests vary extensively in tree size, age classes, presence and abundance of structural elements, stability, and presence of understory.⁸ We strongly suggest revising this definition using scientifically and professionally accepted principles.

b. No eligible biomass fuel removal is permitted from steep slopes. The guideline’s definition of steep slopes, 30% over 200 feet, is far too conservative and impacts some 130,000 acres of land in Massachusetts

implications (i.e., dysgenic effects) and long-term economic or stand health implications. Available at: www.dictionarofforestry.org.

⁷ Oliver, C.D., B.C. Larson, 1996. Forest Stand Dynamics: Update Edition. John Wiley and Sons.

⁸ Available at <http://dictionarofforestry.org>.

alone⁹: terrain in the northern part of the areas affected by this guideline (i.e., NH, VT, ME) is even more rugged. Steep slopes are areas where, in fact, regeneration needs to be promoted by removing poor-quality interfering vegetation – a perfect application of biomass harvesting and RPS markets – to promote regeneration and a diversity of species. This will ensure resilience in the face of disturbances by having long-lived tree roots to be continually present to anchor soils against erosion.

c. The manner in which the number of live cavity trees, den trees, and snags per acre is prescribed is both unclear and excessive. The language should be clarified to indicate these are average conditions across an ownership so snags are relatively evenly distributed; not that each acre of a harvested area must retain each of these categories snags, cavity, and den trees. Forest landowners should, however, be allowed to manage for whatever goals they want. While neighbors may engage in harvesting simultaneously, relatively few adjacent landowners will manage at any given time and most forest holdings in Massachusetts are so small as to only transiently and relatively unsubstantially affect wildlife habitat on a landscape scale. This requirement also take away the flexibility that is necessary given species-specific habitat requirements, site capability, rotation length/cutting cycle, and stand area; often requiring as little as one snag every 50 acres.¹⁰ Further, retaining 5 decaying trees per acre interferes with the retention of 12 seed trees 14-20” dbh required under 304 CMR 11.05 (1)(a)(3) and further interferes with the AGS/UGS cruise system that DCR Service Forestry spent valuable taxpayer time, effort, and money on to distinguish long-term from short-term harvests.¹¹ Retaining snags – also defined as danger trees by OSHA¹² – runs counter to the idea and standards of safe woods workmanship. While accommodations can be made to retain and work around snags, it imposes time, cost, and risks that will ultimately be borne by forest landowners and timber harvesters.

d. The requirement that, “In all harvests of Eligible Biomass Fuel, forest litter, forest floor, roots, and stumps must be retained and protected” is also unclear. This could be construed to mean that to protect the forest floor no logging equipment may operate on it. We encourage you to remove or reword this provision to ensure that operators do not get penalized for leaves caught in equipment tracks and to remove “...and protected.”

e. Tallying timber by soil map unit is not feasible due to a lack of readily accessible soils data.. This represents an unnecessary and virtually unverifiable unit of management for the purposes of forest management. The requirement that harvest volumes be entered into the Guideline by soil map unit is not how forest management is conducted and how timber sales are planned currently because of a lack of reliable soils data. In addition, it is usually only by chance that stand and harvest area boundaries coincide with soil map unit boundaries. Soil map unit boundaries often occur in the field as gradients across large distances – landform boundaries, for example – rather than hard lines further exacerbating the complexity of these regulations.

f. The standards to which timber and forest products to be harvested should be tallied are unclear. For example, it would seem that topwood that is to be harvested be counted in the “Harvest Volume Cords” section.

g. Tonnage report preparers are required to use the web soil survey tool. This application is cumbersome and tonnage report preparers should be allowed to use SSURGO GIS data in GIS desktop software if desired.

⁹ Gesch, D.B., 2007, The National Elevation Dataset, in Maune, D., ed., Digital elevation model technologies and applications: The DEM Users Manual, 2nd Edition: Bethesda, Maryland, American Society for Photogrammetry and Remote Sensing, p. 99-118.

¹⁰ USDA Forest Service, 1987. Guide to Wildlife Tree Management. General Technical Report NE-118, 34 p.

¹¹ Massachusetts DCR:DSRP, Bureau of Forestry, 2004. Ch. 132 Guidance Document, Appendices B,C.

¹² The Occupational Safety and Health Administration (OSHA) rule 29 CFR §1910.266 (h)(1)(vi) states that: Each danger tree shall be felled, removed or avoided. Each danger tree, including lodged trees and snags, shall be felled or removed using mechanical or other techniques that minimize employee exposure before work is commenced in the area of the danger tree. If the danger tree is not felled or removed, it shall be marked and no work shall be conducted within two tree lengths of the danger tree unless the employer demonstrates that a shorter distance will not create a hazard for an employee. A danger tree includes any standing tree that presents a hazard to employees due to conditions such as, but not limited to, deterioration or damage to the tree, and direction or lean of the tree.

h. Franklin County, Massachusetts has no digital soil survey information available. While the area of this county may be limited, this county is responsible for over 18% of the timber harvesting activity (as measured by number of Forest Cutting Plans, 1983-2004¹³) in Massachusetts and 17.9%-20.8% of the volume of forest products harvested under Forest Cutting Plans.

7. *Under 14.05 (8)(a)(3)(a), it is unclear whether a timber harvest in Massachusetts has to be both long term and/or under FSC/SFI/Current Use to qualify as eligible.*

Current use and Stewardship program requirements vary significantly from state to state. Further, the American Tree Farm System, which offers strong and inexpensive third party forest certification (in contrast to the high cost of other programs) is ignored by the regulations. There are approximately 124,000 acres enrolled in the Tree Farm program and Massachusetts, while a far smaller amount of private forest land is certified by either FSC or SFI. We strongly recommend you rely on the certification of a licensed professional forester.

In summary, Yankee SAF and Massachusetts SAF believe these regulations:

- Create an incentive for the conversion of forest land to uses more detrimental to carbon sequestration, wildlife habitat, and water quality, by considering woody fuel from land clearing to have a lower carbon debt than fuels from thinning.
- Impose excessive penalties on fuels from sustainable forestry thinning without similar regulation on chips from land clearing. Land clearing deforestation should be held to similar oversight and low-impact development practices – *at a minimum* – for chips from land use change to be eligible.
- Create an incentive for high grading by setting arbitrarily low utilization limits based on percentages of merchantable forest products.
- Have a high cost of compliance for public benefits borne exclusively by family forest owners. The financial viability of forest land ownership in southern New England is already tenuous, and some experts agree that forest land ownership can only be made viable through recognition of public benefit in the form of current use tax programs and conservation easements¹⁴. Rather, we feel that the cost of production and verification of production of renewable energy – a public good – should be shared by RPS monies generated from electric customers.
- Are difficult to comply with and enforce. Tallying timber by soil map unit is not feasible because map unit boundaries rarely have hard edges in the field, but often occur as gradients over tens or hundreds of feet. Verifying compliance with the retention requirements is difficult. These regulations will lead to altering harvest volumes for compliance or worse, abandonment of RPS markets. Excess tonnage from forestry projects may simply be counted as tonnage from land clearing activities to fraudulently be considered as eligible fuels.
- Contain language that is vague, unclear, confusing, and contradictory with respect to technical forestry matters, standard operating procedures, and standards of workmanship and safety.
- Do not rely on peer-reviewed science.

As we stated in our October 2010 comments, the Yankee Division SAF collectively represents hundreds of years of practical, technical, academic, and local forestry experience and expertise, and would welcome the opportunity to work with a variety of stakeholders to collaboratively draft better regulations that would enhance forestry in

¹³ Kittredge, D., D. Foster, R. McDonald, 2009. Massachusetts Timber Harvesting Study. Harvard Forest Data Archive: HF080.

¹⁴ D'Amato, A.W., P.F. Catanzaro, D.T. Damery, D.B. Kittredge, K.A. Ferrare, 2010. Are family forest owners facing a future in which forest management is not enough? *Journal of Forestry* 108:32-37.

southern New England. Both the Yankee Division and Massachusetts Chapter of the SAF thank the DOER for consideration of our comments and hope to work with DOER to revise these regulations to foster robust forest-based rural economies and sustainable forest ecosystems.

Respectfully submitted,



William R. VanDoren
Mass. Lic. Forester #380
Conn. Cert. Forester #691
Chair, Yankee Division,
Society of American Foresters



John R. Clarke
Mass. Lic. Forester #357
Conn. Cert. Forester #982
Past-Chair, Yankee Division,
Society of American Foresters

Keith Ross
Mass. Lic. Forester #211
SAF Certified Forester #2906
Chair, Massachusetts Chapter
Society of American Foresters