

**Recommendations in support of
Forest Health and Integrity
In response to Act 61 of 2015**

VERMONT
DEPARTMENT OF
FORESTS, PARKS
AND RECREATION

AGENCY OF
NATURAL
RESOURCES

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AND

**THE HOUSE COMMITTEE ON FISH, WILDLIFE,
AND WATER RESOURCES**

Acknowledgements

Vermont Department of Forests, Parks and Recreation

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1. BACKGROUND AND LEGISLATIVE MANDATE

Act 118 (S.100) was signed into law on May 6, 2014, acknowledging the many values of Vermont's forestlands and the importance of forests to Vermont's environment, economy and quality of life (see Appendix A). The findings of Act 118 recognize that large blocks of contiguous forests are essential for effective wildlife habitat, sustainable ecosystem functions, and preservation of both Vermont's timber-related industries and scenic character. The Act called for a report assessing the current and projected effects of fragmentation on Vermont's forestland and recommendations on how to protect forest integrity within the state.

The Commissioner of Forests, Parks and Recreation (FPR) presented the Vermont Forest Fragmentation Report in April of 2015. Known as the Act 118 Report or the 2015 Forest Fragmentation Report, the document outlined the enormous value and benefit provided by healthy forest blocks and summarized the causes and drivers of forest fragmentation in Vermont, identifying four categories of policy options to facilitate the wise use of Vermont's forests. These included:

- Support Outreach and Education on Forest Values and Benefits
- Increase Landowner Incentives to Keep Forests Forest
- Invest in Strategic Forestland Conservation
- Promote Sustainable Forestry and the Vermont Forest Economy

In Act 61 of 2015, the Vermont General Assembly directed the Commissioner of Forests, Parks and Recreation to consult with interested stakeholders and provide recommendations for implementing the policy options in the Act 118 Report, including statutory changes needed to promote forest integrity.

Accordingly, the Commissioner and staff of FPR together with the Fish & Wildlife Department (F&W), the Agency of Natural Resources (ANR) Office of Planning, and the Natural Resources Board, have identified a series of options that, if implemented, will help secure forest conservation – that is, the wise use of critical contiguous forest blocks within the state. These strategies, along with a series of steps that state agencies can carry out, will also raise awareness about the values and benefits forests provide Vermonters and the gradual and cumulative negative effects of forest fragmentation.

2. STAKEHOLDER ENGAGEMENT

Stakeholder engagement has continually guided the formation of our recommended approaches to protect forest integrity, health, and sustainability. Even before the first introduction of S.100 in February of 2013, ANR has sought input from those directly affected by and concerned with forest integrity -- from private landowners and members of the forest products industry (including foresters, loggers, truckers, sawmill owners, wood manufacturers, artisans, woodcrafters, and wildcrafters) to farmers and outdoor recreation businesses, sportsmen and sportswomen, municipal leaders and regional planners, as well as scientists, environmental advocates, academicians, legislators, the recreating public and even tourists.

Since passage of Act 61 on June 17, 2015, the FPR Commissioner and staff have taken feedback on the 2015 Forest Fragmentation Report and specific input on policy options from individuals and organizations. Stakeholders included:

Agency of Agriculture Food & Markets	Two-Rivers Ottauquechee Planning District
Agency of Commerce & Community Development	University of Vermont, Rubenstein School of Environment and Natural Resources
Agency of Transportation	University of Vermont Extension
Associated Industries of Vermont Forest Policy Task Force	USDA Forest Service
Audubon Vermont	Vermont Association of Planning & Development Agencies
Bennington County Sustainable Forest Consortium	Vermont Backcountry Alliance
Department of Environmental Conservation	Vermont Coverts: Woodlands for Wildlife
Department of Taxes	Vermont Forest Products Association
Fish & Wildlife Department	Vermont Housing and Conservation Board
George D. Aiken Forestry Sciences Lab	Vermont Land Trust
Green Mountain Club	Vermont Monitoring Cooperative
Green Mountain National Forest	Vermont Mountain Bike Association
Lyndonville Rotary Club	Vermont Natural Resources Council
Middlebury College: Environmental Studies	Vermont Staying Connected Initiative
Natural Resources Board	Vermont Trails and Greenways Council
The Nature Conservancy	Vermont Woodlands Association
Northern Forest Center	Vermont Working Lands Enterprise Board
The Trust for Public Land	and outdoor recreation retailers.

This report considers and reflects collective input from FPR's many stakeholders, even though it does not necessarily include all specific comments received. Additionally, it does not necessarily represent the views of any individual or association beyond the FPR and ANR.

3. STRATEGIES TO SUPPORT FOREST HEALTH, INTEGRITY AND PRODUCTIVITY

The strategies below are organized into four policy categories, as follows:

- 3.1 Support Outreach and Education on Forest Values and Benefits
- 3.2 Increase Landowner Incentives to Keep Forests Forest
- 3.3 Emphasize Targeted Forestland Conservation
- 3.4 Promote Sustainable Forestry and the Vermont Forest Economy

3.1 SUPPORT OUTREACH AND EDUCATION ON FOREST VALUES AND BENEFITS

Eighty percent of Vermont's forestland is held in private ownership, mostly by families. The choices, decisions and actions of Vermont landowners today will influence the integrity, health, productivity, and resilience of the state's forests for generations to come. The rightful actions of landowners stem from their experiences and values, as well as their understanding of options and impacts of their choices for their forest and its role in our lives. Therefore, a productive and valuable step towards protecting Vermont's working forest and its many public benefits must include high-quality, modern, effective, and adaptive outreach techniques including education and technical assistance to private landowners, town and regional planning commissions, and schoolchildren. Many of these people may be unaware of the value of forests to us as individuals or as a collective society, or of the negative impacts of forestland conversion and development of built infrastructure.

3.1.a Support landowner assistance and education

An estimated 65 percent of Vermont's private landowners of more than 10 acres of forest are over 55 years old. Within the next 25 years, most of these landowners will sell, donate or transfer their property to heirs or others -- often including subdivision and parcelization -- creating a large intergenerational land transfer that will have a profound and lasting influence on the Vermont landscape. Outreach, education, and technical assistance should be delivered to Vermonters of all ages, but customized

focus should specifically target this demographic of landowners for guidance on forest benefits, health, management, and options for estate succession planning.

See Appendix B for *Agency Strategies: Support Landowner Assistance and Education*

LEGISLATIVE STRATEGIES: SUPPORT LANDOWNER ASSISTANCE AND EDUCATION

- Implement FPR recommendations in the Report on County Forester Staffing and UVA Delivery pursuant to Section 58 of Act 57 (H.489). The report recommends increasing efficiency within the UVA administration system, adding positions for county foresters, compliance and enforcement foresters, and a central UVA forestry data manager to enhance outreach and technical assistance to private landowners through improved administration of UVA, private land stewardship, and town forest assistance.
- Examine capacity in the F&W Department habitat technical assistance program to facilitate coordination with county foresters in order to incorporate wildlife related recommendations into UVA plans and provide fish and wildlife related assistance particular to connectivity and forest fragmentation to private landowners.
- Support the development of a centralized system that enables departments across ANR and partnering organizations to track landowner outreach, education, and technical assistance efforts and to monitor metrics reflective of on-the-ground results and impacts.
- Support forestland succession/estate planning efforts that encourage the maintenance of forest holdings as they pass from one generation to the next.
- Support landowner assistance programs such as Coverts, Vermont Woodland Owners Association, and University of Vermont Extension. Pass current legislation in support of forests and forestry to:
 - Codify Vermont forestland owners' right to conduct forestry operations.
 - Protect lawful forestry operations from nuisance lawsuits.
 - Limit municipal regulation of forestry operations.
 - Strengthen laws and penalties against timber trespass and theft.
- Evaluate proposed legislation for unintended impacts on forestland ownership.

3.1.b Provide technical assistance to towns, regional commissions and watershed groups

Only two to five percent of new development projects that may affect the state's natural resources actually fall under the jurisdiction of Act 250 and state review. As such, municipal and regional commissions must play a significant role in guiding the wise use of forests and in determining where and how development will occur in their respective towns and counties. Significant responsibility lies with regional planning commissions and volunteer town committees to guide local land-use policy. Access to professional guidance, expert advice and up-to-date resources is critically important for effective planning for development and conservation of forests.

See Appendix B for *Agency Strategies: Provide technical assistance to towns, regional commissions and watershed groups*

LEGISLATIVE STRATEGIES: PROVIDE TECHNICAL ASSISTANCE TO TOWNS, REGIONAL COMMISSIONS AND WATERSHED GROUPS

- Consider expanding the town planning cycle so that town plans must be rewritten every eight years instead of every five years in order to allow towns time to implement their plans before restarting the planning process.
- Strengthen Chapter 117 of Title 24 to:
 - Clarify and affirm that the long-standing exemption of accepted silvicultural practices from municipal regulation includes limited primary processing of on-site derived forest products, consistent with existing protections for accepted agricultural practices.
 - Encourage conservation commission and planning commission members to take the Agency of Natural Resources NR1 and NR2 orientation courses while serving.
 - Augment the statutory relationships that currently exists between ANR and Regional Planning Commissions (RPCs) to develop capacity for RPC staffing that supports proper planning for all natural resource concerns – water, fish and wildlife, and forestland management and conservation.
 - Recommend that towns and regional planning commissions use state-of-the-art tools, including ANR's Conservation Design map and Biofinder, to develop town plans, develop policy, and help prioritize conservation activities.

3.1.c Promote livable downtowns

The state's rural nature is central to Vermont's appeal to visitors and new residents. However, repeated small-scale development in forested areas is resulting in forest loss, conversion and fragmentation and the subsequent detrimental effects on the economic, cultural and ecosystem functions that intact forests provide. Broad coordination of strategies that promote village centers and livable downtowns will be an important strategy to reversing this trend.

See Appendix B for *Agency Strategies: Promote livable downtowns*

LEGISLATIVE STRATEGIES: PROMOTE LIVABLE DOWNTOWNS

- Incentivize towns/municipalities to require density-based zoning, instead of lot-sized zoning, to encourage clustering.
- Consider options to provide greater protection to large forest blocks outside of downtown centers.
- Encourage development in designated areas and ensure policies and regulation do not make it more costly to develop in these areas.
- Consider options to reduce costs and expedite state permitting in state-designated centers to help protect rural lands, natural resources and water quality.
- Consider options to further encourage the infill of parking lots and strip malls, avoiding increases in impervious surfaces, for example:
 - Increase funding for town greens, parks and urban forestry to better capture and retain storm water.
 - Promote multiple modes of transportation to reduce the amount of pavement needed to support auto-dependent development.
 - Help communities to plan for compact development and participate in the state designation programs (see ACCD -- Planning Manual).
 - Increase the Regional Planning Commission's capacity help communities develop strategies, make informed development decisions and implement best practices to improve water quality.
 - Support efforts by DEC to help communities review their infrastructure needs, plan and bond for needed improvements. Target funding to promote water, wastewater, and stormwater upgrades to designated areas.

3.1.d Engage schoolchildren

It is essential to engage the youngest Vermonters to ensure future stewardship of the forested landscape. Experiences in nature during childhood result in stewardship actions in adulthood.

See Appendix B for *Agency Strategies: Engage schoolchildren*

LEGISLATIVE STRATEGIES: ENGAGE SCHOOLCHILDREN

- Consider the merits of reinstating the state-wide Department of Education Science Coordinator position to work with the Agency of Natural Resources and non-profit organizations to coordinate curriculum and messaging related to natural resources, forests, and wildlife.
- Consider enabling legislation to create a Vermont *Forest To Schools* program similar to the successful *Farm To School* program that incorporates agricultural curricula in schools.

3.2 INCREASE LANDOWNER INCENTIVES TO KEEP FORESTS FOREST

Unlike the annual return on investment in agricultural land, profits from working forestland may span many years or decades. As such, the yearly carrying costs of private forestland, including property tax, are a major factor in determining if a large forest block can be owned, managed, and maintained into the future. Incentivizing stewardship of forested parcels through clear and targeted tax reductions, such as Use Value Appraisal, and compensation for the ecosystem services provided by their land (e.g. clean water, critical habitat and flood resilience functions) will promote maintenance of forestland among landowners who might otherwise consider subdividing, selling or developing their land.

3.2.a Support Use-Value Appraisal (UVA or “Current Use”)

The Use Value Appraisal (sometimes called “Current Use”) Program provides significant incentives for owners who keep their forests intact and productive, largely through reduced property taxes but also through opportunities for revenues from forestry operations.

Current Use was created to stabilize property tax rates and assess working lands at their value for either agricultural or forestry use. Further, it was specifically intended “to enable the citizens of Vermont to plan its orderly growth in the face of increasing development pressures in the interests of the public health, safety and welfare.” That was more than thirty years ago. Today more than 1.9 million acres of forestland in some 15,000 parcels are enrolled and actively managed according to a written management plan approved by FPR. This has allowed continued ownership of forestland without selling, parcelizing, or developing. Increasing enrollments and administrative burdens without commensurate increases in staffing threaten program delivery. Repeated legislative attempts to modify current use threaten stability. Opportunities exist to strengthen the program and to widen its influence and effectiveness.

See Appendix B for *Agency Strategies: Support Use-Value Appraisal*

LEGISLATIVE STRATEGIES: SUPPORT USE-VALUE APPRAISAL

- When considering changes to strengthen and improve the program, recognize the importance of stability and predictability to landowners enrolled in current use.
- Implement FPR recommendations in the Report on County Forester Staffing and UVA Delivery pursuant to Section 58 of Act 57 (H.489). The report recommends increasing efficiency within the UVA administration system, adding positions for county foresters, compliance and enforcement foresters, and a central UVA forestry data manager to enhance outreach and technical assistance to private landowners through improved administration of current use (UVA), private land stewardship, and town forest assistance.
- Allow clustered housing to be exempt from the current requirement for a 2-acre exclusion zone around each dwelling.
- Consider a tiered eligibility with reduced property tax savings for certain additional enrollment categories, including parcels less than 25 acres when they are managed in aggregate through cooperative agreement and with shared management plans.

3.2.b Modernize Vermont's property tax system

The Use Value Appraisal program is a vehicle within the current tax system, to help us achieve current use taxation for working forest and agricultural lands, but sustaining the program over the long-term should not be our sole objective. Instead, we could view the UVA program as a short-term fix to a larger problem (wrong tax system model for Vermont), while we design, and then transition to, a better system.

Vermont needs an approach to property taxation that is fair, logical, simple and uniformly applied. An alternative approach to property taxation could base the value of all land on its actual use, rather than its potential use for development. This could apply to all categories of land and apply in all towns. Such a system could include categories such as "managed forest," "unmanaged forest," "managed agriculture," "unmanaged agriculture," and then the standard "residential," "commercial" and "industrial" categories, which are already taxed based on their use value.

The goal would be to develop a logical, simple and fair system of use value property taxation that rewards management and does not discourage development, but at the same time will not create a financial incentive to develop forest and agricultural land. If a given landowner wants to develop their land, he or she would be able to, but the landowner would not be forced to do so by high property taxes.

See Appendix B for *Agency Strategies: Modernize Vermont's property tax system*

LEGISLATIVE STRATEGIES: MODERNIZE VERMONT'S PROPERTY TAX SYSTEM

- Consider creating a Vermont Blue Ribbon Tax Structure Commission similar to the one in 2009 to develop a new approach to valuing undeveloped land for property taxation.
- If major restructuring of the current ad valorem tax structure is to take place, eliminate the current use program, in favor of taxation at the current use value of all parcels (i.e. different rates for parcels based on their actual use value as residential, commercial, industrial, agricultural, forestlands, etc.).

3.2.c Reduce tax burdens during intergenerational land transfer

Outreach and education to landowners planning transfer of their land to their children or grandchildren ensures that intact forest blocks remain as they are. The addition of financial incentives that lessen the impact of estate taxes on the new generations of landowners will further promote the importance of forests as integral parts of working landscapes in Vermont.

See Appendix B for *Agency Strategies: Reduce tax burdens during intergenerational land transfer*

LEGISLATIVE STRATEGIES: REDUCE TAX BURDENS DURING INTERGENERATIONAL LAND TRANSFER

- Consider estate tax options to incentivize conservation easement donations on forest lands.

3.2.d Monetize ecosystem services

Healthy forests provide a range of ecological benefits and services including air and water quality protection, carbon sequestration and flood resilience. Tracking and monetizing these services would provide income streams or further tax benefits to landowners who individually or collectively maintain intact forest blocks that provide the greatest ecosystem services. These funds would further incentivize ownership patterns that support forest integrity.

See Appendix B for *Agency Strategies: Monetize ecosystem services*

LEGISLATIVE STRATEGIES: MONETIZE ECOSYSTEM SERVICES

- Explore whether a tax credit system that compensates landowners for maintaining or restoring ecosystem services on their land could work in Vermont. For example, recent legislation in Virginia created a payment scheme in which forestland owners are monetarily compensated for the value of the trees they do NOT harvest within riparian zones when logging on their properties.
- Consider creating the capacity at FPR to develop a carbon offset project on a state forest. Use this to model carbon offset projects with private land owners.

3.3 INVEST IN STRATEGIC FORESTLAND CONSERVATION

Vermont has a long and successful history of permanently conserving important farmland, managed forests, natural areas and recreation lands – much of it under the stewardship of ANR, particularly FPR and FWD. A network of skilled, private land trusts have developed across the state that partner with local, state and federal government to conserve land by placing easements on private land or transferring land into public ownership. Great opportunities exist to deploy Vermont’s established network of conservation organizations on an enhanced and targeted conservation campaign focused on forest integrity. Permanent conservation of forestland, whether on private or public land, provides the strongest form of protection for the state’s most important lands and the values and benefits they provide. While private landowners may seek to conserve forestland for varied reasons including for the financial benefit of their children or grandchildren, many are reacting to a growing awareness of forestland’s importance to wildlife habitat, ecosystem connectivity, and the local economy, both in terms of forestry jobs and product sales as well as tourism revenues.

3.3.a Create a robust funding source for forestland conservation

Targeted conservation of high-value forestland requires adequate funding both for the transaction costs of the initial acquisition as well as the ongoing stewardship costs associated with long-term monitoring, protection and management. Vermont has established conservation funding sources, primarily through the Vermont Housing and Conservation Board. These sources should be maintained and additional resources should be identified that target the conservation of lands that support forest integrity or are at risk of fragmentation. Forestland conservation should be additive to our existing conservation efforts.

See Appendix B for *Agency Strategies: Create a robust funding source*

LEGISLATIVE STRATEGIES: CREATE A ROBUST FUNDING SOURCE

- Consider alternative funding mechanisms for long-term efforts by exploring conservation bonding and authorizing transferable tax credits.
- Fully fund the Vermont Housing and Conservation Board (VHCB) at levels set forth in statute.
- Consider redirecting a portion of Property Transfer Tax Return (PTTR) revenue toward a forest integrity program at the Vermont Housing and Conservation Board after the three year dedication of PTTR revenue to the Clean Water Fund sunsets in 2019 (32 V.S.A. § 9602a).

3.3.b Establish a common goal and clear conservation priorities

Targeted forestland conservation that discourages fragmentation and enhances forest integrity can happen at many levels of government through work with a broad range of private partners. However, with limited resources, these efforts should be focused on protecting a clear suite of forestlands and values. In farmland conservation, investments are driven by certain metrics like the percent of primary agriculture soils, proximity to other conserved farmland, and the level of agricultural business activity. Similar metrics should be set to direct the investment of funds and efforts in targeted forestland conservation.

Currently, a range of effective tools exist to prioritize conservation areas that include Vermont Conservation Design, habitat block assessment, The Nature Conservancy's Resilient Sites for Terrestrial Conservation, the Forest Action Plan, the Forest Legacy Assessment and Need Document, the Vermont Land Trust and University of Vermont's working forest productivity assessment, rare species and natural community data, and Staying Connected resources. Additionally, DEC is working to prioritize areas of floodplain forest that provide the greatest ecosystem values for flood resilience and floodplain protection.

See Appendix B for *Agency Strategies: Establish a common goal and clear conservation priorities*

NO LEGISLATIVE STRATEGIES: ESTABLISH COMMON GOALS AND CLEAR CONSERVATION PRIORITIES

3.3.c Enhance forestland conservation tools and programs

Land conservation organizations will need new and expanded tools and incentives to protect high-value forest blocks prior to parcelization, especially during intergenerational land transfer. It is likely that future conservation of discontinuous small parcels will have less environmental and economic benefit and higher cost. To date, no conservation coalition coordinates and executes the economic incentives necessary to encourage conservation in estate planning.

See Appendix B for *Agency Strategies: Enhance Forestland Conservation Tools and Programs*

LEGISLATIVE STRATEGIES: ENHANCE FORESTLAND CONSERVATION TOOLS AND PROGRAMS

- Support development of enhanced tools (e.g. Lidar) for tracking forestland cover and condition and for evaluating and ranking highly productive and high-risk forests to better guide targeted conservation in high-priority forest blocks.
- Support efforts to include forestland conservation strategies in estate planning.
- Obtain support from congressional delegation to allow more forestland to be included in NRCS-funded farm easements.

3.4 PROMOTE SUSTAINABLE FORESTRY AND THE VERMONT FOREST ECONOMY

Vermonters depend on forests for the \$1.5 billion that forest products inject into the state's economy each year and the fundamental role they play in our tourism and recreation economies. We are increasingly aware of the many non-monetized value our forests contribute, including air and water quality protection, carbon sequestration, flood resilience, and habitat diversity and connectivity, all of which provide natural infrastructure for which we would otherwise have to pay.

We now understand that one of the best ways to avoid development of forestland is to employ careful and local forestry practices on a working landscape. Owing to many factors, including increased globalization,

prohibitive costs of energy, labor, and insurance, various regulatory burdens, and a shifting culture that does not consistently value working forests, Vermont's forest and wood products sector has been in a years-long decline.

Bolstering the forest sector of Vermont's economy, improving market conditions for Vermont's forest products (including low-grade wood) and recognizing the economic value that forests have for recreation and tourism will strengthen the forest-based economy and promote a future of diverse, intact and healthy forests.

3.4.a Support and improve training for loggers

The journey back to a thriving forest economy must include reform at all levels of the value chain that brings wood products from the forest to the consumer. Early in this chain are loggers, a stakeholder group that faces high insurance rates, limited access to professional and business development training, and frequently meets with negative public sentiment. By ensuring that loggers receive technical services that enhance their skills in business as well as in the woods, the Vermont forest economy will profit.

In Vermont, logger training is provided by the Logger Education to Advancement Professionalism (LEAP) program. LEAP is a non-profit entity governed by a board of directors and run by a steering committee composed of representatives from the Vermont Forests Products Association, FPR, University of Vermont Extension and Vermont's forest industry. The mission of LEAP is "to promote a professional approach to logging by providing the knowledge necessary for LEAP participants to work safely, efficiently, and in an environmentally conscientious manner while harvesting timber in Vermont." Expansion of the offerings and reach of the program is worthy of support because of the significant and cascading positive impact it can create.

See Appendix B for *Agency Strategies: Support and improve training for loggers*

LEGISLATIVE STRATEGIES: SUPPORT & IMPROVE TRAINING FOR LOGGERS

- Strengthen the pipeline of loggers through in-state training programs, including vocational programs at the high school and post-high school levels through apprenticeship programs.
- Support expansion of LEAP and develop a Master Logger program to promote, highlight, and incentivize excellence in logger professionalism.
- Appoint a Legislative Committee to study cost containment opportunities and recommendations changes to Workers' Compensation law. The current formula is prohibitively disadvantageous to loggers.
- Incentivize and support a partnership between the Vermont Technical College (VTC) and University of Vermont's (UVM) 2+2 program, creating a forest technician program at VTC to feed into UVM's Forestry Program.
- Create "Stars" based rating program for loggers and others in the forest sector.

3.4.b Protect and improve infrastructure that supports the local wood industry

Surveys of the Vermont forest and wood products sector identified a lack of sufficient infrastructure to support a robust marketplace. An aging workforce, older equipment, the lack of reinvestment, and uneasiness regarding the long-term supply of and demand for forest products all add to producers' reluctance to expand. State regulations, especially Act 250, make additions to existing processing or manufacturing facilities and construction of new forest products processing facilities difficult.

See Appendix B for *Agency Strategies: Protect and improve infrastructure to support the local wood product industry*

LEGISLATIVE STRATEGIES: PROTECT AND IMPROVE INFRASTRUCTURE TO SUPPORT THE LOCAL WOOD PRODUCT INDUSTRY

- Recognize the regional and international nature of wood products transactions.
- Ensure that economic development policies and practices acknowledge the role strong forest products markets have in economic development.

- Support current legislation bolstering forests and forestry, including:
 - Forester licensing to ensure consumer (landowner) protection and forest health through requirements for adequate qualifications, experience, and professional conduct.
 - Strengthening statutes relating to timber trespass and theft, to provide enhanced landowner recourse, including institution of criminal penalties.
 - Implementing timber harvest notification system and trip-ticketing requirement for log transport to provide greater accountability and professionalism, as well as to optimize wood supply to Vermont manufacturers.
- Invest in three-phase power as critical infrastructure for wood-using industries.
- Extend existing sales tax exemptions for agricultural equipment to logging equipment.
- Support the efficient trucking of wood products by modifying VTrans restrictions on forest equipment, providing adequate road and infrastructure maintenance, and creating consistency among all trucks and weight limits on town roads.
- Consider changes to legal and regulatory requirements to support wood products industry, including:
 - Streamlining permitting for forest-based enterprises and/or reform permitting for wood processing and manufacturing facilities.
 - Establish, in statute, the right to conduct forestry operations.
- Continue and increase financial support for the Working Lands Initiative and forest viability assistance programs.
- Increase technical assistance and business planning along the forest economy value chain.
- Consider the creation of a permit specialist position within FPR to support businesses in the forest products sector to meet regulatory permit requirements.

3.4.c Expand modern wood heating in Vermont

Despite a long and continuing tradition, only fifteen percent of Vermont's heating demand is currently met with wood. The wood energy subsector can expand to increase consumer demand for wood energy by improving the availability of high-quality wood chips, wood pellets and firewood. With the high availability of efficient, clean-burning technologies and a statewide mandate to require modern wood heat in all new construction built after 2020, the state is primed to promote opportunities for forestry practices that supply low-grade wood while improving standing timber quality and enhancing prospects for value-added durable wood products over time.

See Appendix B for *Agency Strategies: Expand modern wood heating in Vermont*

LEGISLATIVE STRATEGIES: EXPAND MODERN WOOD HEATING IN VERMONT

- Implement a state sales tax exemption on the purchase of qualifying modern wood heating equipment.
- Support state agencies as they consider adopting a goal of reaching thirty-five percent modern wood heating by 2030, and incorporating this goal into future state energy, carbon mitigation, working landscape, and economic development plans and strategies.
- Realign Efficiency Vermont thermal energy performance metrics to count units of fossil fuel reduction in addition to energy savings. Under the current metrics used there are "thermal energy savings" when an old oil boiler is replaced with a new, more efficient oil boiler – so they offer incentives on fossil fuel boilers. State goals are to dramatically reduce the use of fossil heating fuels so there needs to be better policy alignment.
- Reconsider Act 56 and the Tier 3 program. The current program design will result in one hundred percent compliance by the utilities installing electric powered heat pumps to displace fossil fuels, which runs counter to the original intent.
- Encourage Vermont Department of Public Service to track and report cordwood, woodchip, and bulk wood pellet prices in the same way they do with fossil heating fuels in the monthly fuel price report.

- Consider establishing commercial building codes with renewable energy targets and building efficiency benchmarks (e.g. ninety percent of heating and electricity needs of all new construction completed after 2020 will be supplied by renewable energy).
- Recognize European boiler safety standards in addition to ASME standards for boilers under 1.0 million Btu/hr.
- Explore whether LiHEAP funds could be used to install modern wood heating systems.
- Examine whether a Thermal Renewable Portfolio Standard for commercial buildings would be effective to incentivize renewables, reduce carbon emissions and diversify low grade wood markets.
- Support efforts to establish a wood energy forester position within FPR.

3.4.d Expand markets for Vermont wood products

Avenues to sell Vermont wood products, particularly to out-of-state markets, are largely under-represented in state-wide marketing efforts. They are also scattered throughout private companies, non-profit organizations, and government agencies that do not always maintain optimal relationships with buyers along the value chain (e.g. buyers of furniture and solid wood products, construction lumber, or low-grade wood for heating). Effective coordination of marketing of Vermont wood products will involve skills including practical visioning, systems thinking, trust and relationship building, business savvy, access to technical skills and management capabilities. Engaging the media to target landowners wishing to sell their goods and residents or tourists looking to buy them will also reframe the importance of buying Vermont-made products in a world that is also considering impacts of climate change, energy security, local economics and cultural heritage. By strengthening state-led support for private forest enterprises, Vermont will see an increase in wood-based commerce both inside and out of the state.

See Appendix B for *Agency Strategies: Expand markets for Vermont-made wood products*

LEGISLATIVE STRATEGIES: EXPAND MARKETS FOR VERMONT-MADE WOOD PRODUCTS

- Support modern wood heating as outlined above in the expansion of markets for low-grade wood.
- Promote the branding of products made from Vermont wood that recognizes consumers' interest in forest health and sustainability.
- Increase the prioritization of wood for public building projects and grants. The state should be a lead innovator in the use of forest-based building products using regional species to support and highlight the role of wood in construction. Look at whether the state's institutional procurement policy could incentivize the use of Vermont wood for building projects.
- Support collaborative research, testing and verification services in both industry and state government to grow the market for Vermont-made engineered wood products.
- Support an increased in-state sawmill capacity to produce Vermont-sourced wood for in-state secondary processors.
- Support development of a statewide wood supply database tool to improve efficiency, availability of raw materials, and enable just-in-time delivery.
- Encourage expansion of entry-level furniture products and flooring from native species.
- Enhance marketing of Vermont forest products and cross-promote with ongoing efforts to market Vermont food products.

3.4.e Recognize and promote the value of forests in outdoor recreation and tourism

Outdoor recreation and tourism are major factors in Vermont's economy and they rely heavily on the attraction people have to the working landscape of the state. Visitors to Vermont contribute \$1.9 Billion to the state's economy each year, an economic value that is often not captured by the forest and wood product businesses that sustain the working landscape visitors come to see. Managing forests correctly will ensure the long-term rural nature of the many portions of the state used for forest-based recreation and tourism. Further, public recreational use of public and private forestlands fosters a connection with land that will result in broader support for sustaining the forested landscape.

See Appendix B for *Agency Strategies: Recognize and promote the value of forests in outdoor recreation and tourism*

LEGISLATIVE STRATEGIES: RECOGNIZE AND PROMOTE THE VALUE OF FORESTS IN RECREATION AND TOURISM

- Develop and expand recreation and tourism uses within the forest economy by:
 - Incentivizing public access to private lands (consider models such as the Public Benefit Rating System), providing funding for a grants program to help private landowners manage the public use of their lands, considering public education about existing landowner liability laws, and offer private landowner ombudsman services in the Attorney General’s Office to provide advice regarding timber trespass, nuisance wildlife, and liability;
 - Explore possible new funding mechanisms to support expanded recreation and tourism;
 - Clarify that trails in the VT Trail System are considered public assets under ACT 250 and thus are subject to public project jurisdiction thresholds;
 - Consider ways to streamline the permitting process for minimal impact recreation projects;
 - Lift the gas tax cap on the in-state recreation trail program funds.

4. CONCLUSION

Forests provide Vermonters with enormously valuable benefits and a range of critically important services. Functioning natural systems and a thriving forest economy, including the tourism, outdoor recreation, and Vermont quality of life it supports, all rely on maintaining blocks of healthy, contiguous forests across Vermont’s landscape.

But Vermont’s forests are increasingly being parcelized and fragmented. We lack sufficient legal, economic, and institutional policy frameworks to ensure that the many benefits of forest health, integrity and productivity will continue to accrue in society.

Our forests have the potential to provide an abundance of economic, ecological, and social benefits long into the future; decisions and actions taken today will influence Vermont's forests and their value to Vermonters for generations to come. We will need to be proactive, strategic, and multifaceted in sustaining forest health, integrity and productivity.



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APPENDIX A: THE VALUE AND BENEFITS OF HEALTHY FORESTS

As set forth in the Act 118 2015 Vermont Forest Fragmentation Report, intact and healthy forests provide Vermonters with vast ecological benefits and critical economic and social services. Forests are the foundation of the region's ecosystems, providing the free and seemingly invisible services that support our health and well-being, including carbon sequestration, flood resilience, habitat diversification, water quality control, and climate change mitigation. At the same time, forests also provide economic benefits garnered from timber harvests for wood fuel and the manufacturing and sale of wood products, and from recreation and tourism dollars spent because of the leaf-peeping, hunting, fishing, hiking, skiing, snowmobiling, and wildlife viewing that intact forests afford.

Yet for the first time in a century, Vermont is losing forestland again. There is no credible assurance that this trend of forest conversion and loss will cease, and despite our forests' remarkable history of resilience, there is no guarantee that forest losses will be reversed or forest integrity restored. The rate of new development is increasing twice as fast as the state's population, primarily in rural areas.

Forest fragmentation is breaking larger, contiguous forested areas into smaller pieces, typically through the construction of roads, utility corridors, subdivisions or agricultural development. The demographics of the state's landowners also shed light on the future of forestland ownership and management with respect to inter-generation land transfers. The majority of primary forest owners in Vermont are males over the age of 55; in addition, 15% of all forestland is owned by people over the age of 75, representing a particularly immediate threat of forest conversion and loss. Social and economic factors will likely deter a number of these older landowners from passing on their ownership within the family and to instead sell their holdings, many of which will become smaller parcels owned by many different people.

The impact of forest fragmentation goes beyond the simple number of forest acres lost to human occupation or harvest. Fragmentation increases isolation between forest communities, diminishing the connectivity that plants and animals require to maintain viable populations with sufficient genetic diversity. Additionally, small forest parcels are subject to increased "edge effects," or changes in light, moisture, temperature, and wind conditions in the forest interior that occur when forestland is converted to agricultural use or developed. The dominating effect of neighboring non-forest land affects the health, growth and survivability of trees, flowers, ferns, and lichen that create the ecological communities found within interior forests. Changes in these communities further impact the species that need the diverse vegetation structure of

interior forests for their unique nesting, feeding and other habitation requirements.

While state policy encourages forestry practices that sustain the critically important ecosystem goods and services that forests provide, practicing responsible forestry in small forest fragments is operationally impractical, economically nonviable, and increasingly culturally unacceptable. As these viable practices are lost, so too are the environmental, economic and social benefits that come from them. As landowners consider the future of their forests, the state is at a critical point where the drivers of forest fragmentation, including parcelization and subsequent development of contiguous forest blocks, could easily offset the practice of responsible forestland conservation.

APPENDIX B: AGENCY STRATEGIES

3.1 SUPPORT OUTREACH AND EDUCATION ON FOREST VALUES AND BENEFITS

Staff in ANR, including the county foresters, state lands foresters, forest health specialists, wildlife and wetland biologists, watershed coordinators, and many other staff scientists, encourage and assist landowners in maintenance of the working landscape and wise stewardship of their forests and associated terrestrial habitats and aquatic resources. Through delivery of the UVA program, on-the-ground technical assistance, financial incentives, and broad array of educational outreach strategies, ANR staff deliver many forms of landowner assistance. ANR also supports the work of outside partners and existing peer-to-peer programs such as the Tree Farm Program run by the Vermont Woodland Association and Vermont Coverts, which offer alternative ways to provide landowner assistance and education, and develop lasting relationships in support of wise forest management. All of these efforts are valuable, though the growing understanding of the causes and impacts of fragmentation necessitates coordination within ANR and among partners, and requires focused strategies and investments to promote forest integrity and thwart fragmentation.

3.1.a Support landowner assistance and education

- Develop key messages around the concept of forest fragmentation and the economics of conservation and incorporate them into the delivery of Agency programs.
- Increase crossover, communication and coordination for landowner technical assistance efforts within the Agency of Natural Resources to minimize redundancy and build synergy. This may include the development of metrics and design of systems to monitor departmental program success and improve the management of ANR education and assistance efforts.
- Expand support of landowner assistance programs such as Coverts, Vermont Woodland Owners Association, Vermont Audubon, and UVM Extension through allocation of FPR and F&W staff time to partnerships on outreach events, grant opportunities, and development of educational materials and programs to reach forestland owners. Support of, and partnership with, these organizations will unify messaging and leverage outside support to advance common forest conservation objectives to reach more landowners and inform management choices on more forest acres.
- Promote estate succession and planning efforts with partner organizations through the development and delivery of succession planning tools, resources

and pursuit of grant opportunities in order to reduce the parcelization and fragmentation that occurs through intergenerational transfer of land.

- Expand target audiences for conservation education and technical assistance to include professions providing services to landowners that facilitate fragmenting activities. This will increase the capacity of these professionals to develop and present options to landowners that would limit fragmentation or degradation to forest health. Audiences may include estate lawyers, engineers, realtors, developers, and loggers.
- Develop outreach strategies to engage landowners with contiguous forest across parcels to increase the numbers of landowners receiving education and technical assistance, and support neighbor-to-neighbor collaboration to achieve landscape level impacts in priority forest blocks.
- Develop outreach strategies to inculcate landowners with the same attachment to and support for forestland conservation that they now routinely feel for farmland conservation. This will require a “values” initiative.
- Work cooperatively with F&W to reach out to sportsmen and sportswomen and promote awareness of the benefits forests provide.

3.1.b Provide technical assistance to towns, regional commissions and watershed groups

- Ensure ANR staff is trained and available to provide technical assistance, including the use of model language to support municipal and regional planning processes that guide development patterns and have implications for forest integrity. Planning processes that may be supported include development of town plans, subdivision and zoning regulations, and landscape prioritization efforts.
- Increase crossover, communication and coordination between the Agency programs and external watershed groups and Regional Planning Commissions (RPCs).
- Integrate ANR anti-fragmentation messaging into the watershed basin planning contract with the RPCs and recognizing the benefits of large forest blocks to clean water and flood resiliency.
- Use the Conservation Design map created by F&W to identify key corridor protection areas that also provide protection for water quality. Train staff to use these maps and support their use in other planning efforts. Integrate these key corridor protection areas into the Tactical Basin Plans.

- Work with the Association of Vermont Conservation Commissions to incorporate anti-forest fragmentation concepts and large block conservation into their trainings and communications.
- Continue to provide education to realtors, attorneys, engineers etc. on land use planning, succession planning, silviculture, and conservation easements.
- Support and collaborate with both the Vermont Center for Geographic Information and the Rubenstein School of Environment and Natural Resources Spatial Analysis Lab to maintain and regularly update a comprehensive conserved lands map that includes The Nature Conservancy, the Vermont Land Trust, Conservation Fund, and state, local, and private properties to produce updated maps every five years. If funding is available, use Lidar to develop these tools further and incorporate a process for tracking changes in forestland and quantifying fragmentation over time.
- Support staff (three additional habitat biologists) to enhance outreach to towns and regional commissions and leverage the work of UVM Extension, the Association of Vermont Conservation Districts, the Vermont Natural Resources Council, the Vermont Monitoring Cooperative and other research groups.
- Continue to apply for and leverage federal State and Private Forestry competitive grants that look at landscape-scale conservation management and planning.

3.1.c Promote livable downtowns

- Coordinate with the Agency of Commerce and Community Development and DEC market and regulatory strategies, including tax-based and regulatory incentives, that promote compact and livable downtowns. Foster additional investments in town infrastructure, such as shared septic, that will increase clustered development.
- Continue to work with partners including Vermont Natural Resource Council to provide workshops that educate towns, developers, engineers and others to the benefits of clustering built infrastructure and minimizing forest fragmentation.
- Support FPR's Urban and Community Forestry Program and efforts to build municipal capacity.

3.1.d Engage schoolchildren

ANR is engaged in many outreach and educational programs for youth of all ages already addressing the issues of forest conservation and land use. These current programs can be strengthened and augmented by additional information and tools to

engage teachers and students in issues of land use, planning, and forest fragmentation. Some of the current programs are Forest For Every Classroom, Project Learning Tree, Envirothon, Arbor Day, the Wildlife Management for Educator's course, Project Wild, Project WET, the park interpreter program, and conservation camps for youth.

- Work cooperatively with other conservation education organizations to create supplemental activities and curriculum materials based on anti-forest fragmentation content we can all use with our existing programming. Partner organizations that would benefit from this are UVM Place, Four Winds Nature Institute, Statewide Environmental Education Programs, Vermont Tree Farm, Shelburne Farms, and Marsh-Billings-Rockefeller National Historical Park.
- Supplement existing teacher professional development workshops with Biofinder, the state's biodiversity mapping tool. This addition to current professional development opportunities will provide teachers and students with high level information on ecosystem services and conservation issues locally and statewide.
- Create incentives for municipal planning bodies to recruit secondary students into their organizations. Provide training tools, including the current NR1 and NR2 courses, to participating municipal planning bodies to prepare and train secondary school students.
- Develop an annual statewide competition or "green certification" program for schoolchildren who complete specified forest- and forest-health related projects.
- Create Vermont specific habitat connectivity and working forest materials to integrate into existing pre-K-12 conservation education and outdoor recreation programs in ANR (e.g., hunter education, Let's Go Fishing, Project WILD, Project Learning Tree, etc.).
- Take advantage of the new federal funding sources for environmental education in K-12 education and standards development from the *Every Student Succeeds Act—21st Century Schools*.
- To sustain momentum on this issue, create a campaign to share current Vermont land use, working landscape, and forest connectivity information with all of ANR to encourage continued focus on this important issue in all outreach and education programming.
- Assist technical high school natural resource instructors to ensure students at their schools achieve competency in the employability categories, particularly those addressing application of "Best Management Practices with Land, Soil and Water Conservation" on the Vermont Forestry and Natural Resources Competency List.

3.2 INCREASE LANDOWNER INCENTIVES TO KEEP FORESTS FOREST

3.2.a Support Use-Value Appraisal ("current use")

Currently, the FPR implements policies and programs that assist forestland owners through the role of the FPR County Forester. Serving as the Department's public face in its work with private landowners, county foresters provide a myriad of services to forestland owners, consulting foresters, schools and municipalities to maintain forest health and the ecologic, economic and social benefits provided by forests. With 80 percent of Vermont's forest in private ownership, it is critical that the state aid in providing forestland owners with the information and tools they need to make informed decisions on this valuable assets. County foresters, working with landowners and consulting foresters, aim to strike a balance between protecting private rights and providing for public interests. Additionally, county foresters try to support local economic activity from forestry operations while protecting environmental quality.

One of the key functions of a county forester is to encourage and assist landowners in the maintenance of their productive forestland, an opportunity made possible through the administration of the UVA. The Forestland and Conservation land aspects of UVA are delivered by the county foresters in partnership with the Division of Property Valuation and Review at the Department of Taxes.

- Continue to provide administrative support to the UVA program, emphasizing ways to improve delivery and outcomes including healthy forests and healthy forest economies.

3.2.b Modernize Vermont's property tax system

- Support efforts and programs outlined in the 2016 Vermont Forest Action Plan and 2016 Wildlife Action Plan.
- Support conservation organizations and landowner associations in evaluating, tracking and developing programs to address forest fragmentation.

3.2.c Reduce tax burdens during intergenerational land transfer

- Explore potential incentives for maintaining land in forestry after intergenerational transfer (e.g. reduced estate tax obligation following certification that land will be managed in forestry for a set period of years following transfer).

3.2.d Monetize ecosystem services

- Develop a carbon offset trading project on ANR forestland

3.3 EMPHASIZE TARGETED FORESTLAND CONSERVATION

3.3.a Create a robust funding source

- Engage the private sector.
- Engage the insurance sector regarding the risk-reduction benefits of forest integrity.
- Create a stewardship endowment fund for ANR lands and conservation easements. The process of acquiring land or conservation easements, whether through purchase, donation or mitigation, must account for necessary land stewardship and management costs. An effective way to protect public investments in conservation is to establish investment funding mechanisms designed to receive deposits and grow over time. These funds help pay for ongoing stewardship activities on ANR lands and ANR-held conservation easements.

3.3.b Establish a common goal and clear conservation priorities

- Assemble a steering committee of local and national conservation groups to establish clear forestland conservation priorities focused on preservation of contiguous forest blocks and important connecting lands by:
 - creating agreed upon sets of data, maps, and criteria for prioritizing conservation investments;
 - targeting land for conservation based on a wide range of forest values, including forest productivity and biological diversity values;
 - enabling a mechanism or organization to accept donations of forestland or easements that do not fit well into existing partners' portfolios;
 - aligning goals of participating planning agencies, e.g. goals of the Comprehensive Energy Plan and Agency of Transportation;
 - reviewing floodplain prioritization tools created by DEC to identify and prioritize forestlands for conservation in a consistent and transparent way; and
 - enhancing partnership with Green Mountain National Forest and USFWS, Silvio Conte Wildlife Refuge.

3.3.c Enhance forestland conservation tools and programs

- Revise the ANR Land Conservation Plan to consider how targeted state land conservation can reduce forest fragmentation and support forest integrity and function. The need to redefine ANR land conservation priorities was recently identified during the December 2015 “Lean” event which focused on streamlining the Agency’s land acquisition process.
- Encourage more landowners to enroll their land as Ecologically Significant Treatment Areas, thereby providing opportunities for maintaining biological diversity that meet landowners conservation priorities.
- Use goals and priorities established by a steering committee to target easement and fee acquisition paired with adequate funding.
- Establish new funding priorities focused on forest integrity and enhance ANR support to partners developing applications for high priority projects.
- Enhanced forest management standards in easements to reflect the best current science, technology and law.
- Develop conservation design and low impact development tools to show how built infrastructure development can occur in large forested areas without compromising forest integrity and productivity.
- Support the federal State and Private Forestry’s Forest Legacy Program and investigate strategies to ensure adequate stewardship monitoring funding.
- Empower conservation partners and the Working Lands Enterprise Board with additional funding and authority.

3.4 PROMOTE SUSTAINABLE FORESTRY AND THE VERMONT FOREST ECONOMY

3.4.a Support and improve training for loggers

- Encourage LEAP to engage Vermont’s forest industry in developing a long-term plan to enhance and promote logger education.
- Provide Vocational High School Technical Centers with training and education to Vermont’s future loggers. Work with the Technical Centers to establish a mentoring program matching students with professional logging contractors.
- With Vermont Woodlands Association, promote a “Call Before You Cut” effort that promotes contracting with trained professional loggers.

- Promote business plan development for logging contractors to assist in seeking financing for new or expanding businesses.
- Promote logger recognition programs that highlight exemplary timber harvesting and forest management practices. Use ANR state lands as potential demonstration sites.
- Similar to what exists in Maine and New Hampshire, support forester licensing to increase the capacity of the industry.
- Similar to what exists in Maine and New Hampshire, implement a volunteer harvest notification system to collect data on harvest location and volume.
- Invest in workforce development along the value chain – in land management, logging, primary and secondary processing, and facilitators – to provide professional pathways for new and existing workers.

3.4.b Protect and improve infrastructure that supports the local wood industry

- Consider developing a certification program and licensing or registration requirements for scalers to insure appropriate compensation of forest products to forestland owners and loggers.
- Promote the development of a check-off program for Vermont’s primary and secondary producers to support branding and marketing efforts.
- Enhance FPR staffing in its marketing and utilization section that provides information, education and technical assistance in both the primary and secondary sectors. Enhance staff assistance to the Working Lands Enterprise Board and supports the efforts of trade associations such as the Vermont Forest Manufacturers Association and the Vermont Furniture Guild.
- Continue and strengthen the Memorandum of Understanding between the Agency of Commerce and FPR to support coordinated efforts to promote the forest products sector through business recruitment and retention, market analysis and technical support provided to new initiatives and existing facilities.

3.4.c Expand modern wood heating in Vermont

- Support collaboration between FPR and UVM to develop a shared program between the Schools of Engineering and Natural Resources to promote expanded uses of Vermont wood products in engineering and building.

3.4.d Expand markets for Vermont wood products

- Focus investments by the Working Lands Enterprise Board to better position forest products companies for success and increase market opportunities.
- Amend the language of the statewide Comprehensive Economic Development Strategy to identify fragmentation as an impairment to sustainable sourcing of local material.
- Develop partnerships with research institutions to support greater innovation around engineered wood products that use raw materials from Vermont.

3.4.e Recognize and promote the value of forests in outdoor recreation and tourism

- Develop and expand recreation and tourism uses within Vermont's forest economy by creating a Vermont-specific cost/benefit analysis of recreation on forest health.
- Create recommendations for BMPs for trail management and standards that identifying critical recreation areas.
- Support the recreation trails impact study conducted by the Vermont Department of Tourism and Marketing.
- Develop landscape level approach to recreation management.
- Connect Vermont recreationalists to Leopold land ethic through FPR and F&W workshops, seminars, kiosks, interpretive trail signs, etc.



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