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The Policy Setting

The Vermont Agency of Natural Resources (ANR) has proposed a “Vermont ANR Lands Management Planning Rule” (Moore, 2026) (the “Proposed Rule”), which is currently under public review pursuant to Vermont's Administrative Procedures Act (APA) (3 V.S.A. § 838). If adopted, the procedural rule would, among other outcomes:

- “establish a management planning framework and process, and to set forth the requirements for public input related to land management planning” (Proposed Rule §1.1(b))
- create a “Statewide Plan” including “universal management actions” that could apply to any ANR lands, including lands subject to an Interim Stewardship Plan (ISP), and those not yet subject to a Long Range Management Plan (LRMP), as well as lands subject to an LRMP if the actions are consistent with the LRMP (Proposed Rule §4.1.2(b),(c),(d))

- establish four land classification tiers — Highly Sensitive, Special Management, General Management, and Intensive Management — that govern what management activities are appropriate in a given area.
- define LRMPs as unit-scale planning documents that guide management of specific ANR land management units.
- require that LRMPs include a “Resource Analysis [covering] Legal Constraints; Ecological and Wildlife Resources; Forest Resources; Water Resources; Fisheries; Cultural Resources; Recreation; Infrastructure; and Climate Change Considerations (Proposed Rule §4.2.1(d))”
- require ISPs to include “Resource Assessments which **could** include one or more of “Historic, Cultural and Scenic Resources; Infrastructure and Access; Ecological Context and Natural Communities; Wildlife Habitat and Rare, Threatened, and Endangered Species; Forest Resources; Water Resources; Recreation and Public Use (Proposed Rule §4.3.1(a)) [emphasis added]”¹

Regarding these last two points, the Proposed Rule does not specify what the “Resource Analyses” and “Resource Assessments” should comprise, how ANR would conduct them, or what, if any criteria or benchmarks for the outcomes of resource management planners should use in their analysis.² This lack of specificity and guidance makes it impossible to know what the impacts of the Proposed Rule might be. Therefore, and at a bare minimum, ANR should replace the vague, inconsistent, and incomplete lists of topics for LRMPs’ “Resource Analyses” and ISPs’ “Resource Assessments” with robust guidance on the types and scopes of impacts to be analyzed/assessed.

In our view, this and other issues would have been surfaced by a thorough consideration of the Proposed Rule under APA, which requires an “economic impact analysis [that] shall analyze the **anticipated [emphasis added]** costs and benefits to be expected from adoption of the rule” (3 V.S.A. § 838.b.1) as well as an “environmental impact analysis [that] shall: (1) Analyze the **anticipated [emphasis added]** environmental impacts, whether positive or negative, from adoption of the rule. Examples of environmental impacts include the emission of greenhouse gases; the discharge of pollutants to water; and effects on the ability of the environment to provide benefits such as food and fresh water, regulation of climate and water flow, and recreation” (3 V.S.A. § 838.c).

In addition, APA requires that both the economic impact analysis and the environmental impact analysis “compare the [economic/environmental] impact of the rule with the [economic/environmental] impact of other alternatives to the rule, including having no rule on the subject” (3 V.S.A. § 838.b.1.B and § 838.c.2).

ANR’s analysis fails on both of these points.

First, the development of management plans (Statewide, ISPs, and LRMPs) is clearly the intended outcome of the Rule. Equally clearly, the implementation of those plans will have **anticipated** economic and environmental consequences. Similarly, Universal Management Actions to be either formalized within or added to ANR’s

¹ It is not clear why the list of resources for consideration in ISPs differs from the list of resources to be considered in LRMPs. Fisheries and Climate Change Considerations, for example, are missing entirely from the ISP list, and the LRMP list includes Cultural, but not Historical or Scenic Resources. These issues are not trivial. Under the Proposed Rule, ANR managers could write and take actions under an ISP that degrade resources to such a degree that they are no longer available for analysis when it is time to develop the LRMP. In our view, the Proposed Rule would be improved by providing compatible lists of resources for both types of management plans.

² It is also not clear what might distinguish between an “Analysis” (required in LRMPs) and an “Assessment” (required as part of ISPs) in the Proposed Rule. Analysis connotes a more detailed, thorough, and data-driven examination of the condition of the resource and the effects that a management action could have on them. Perhaps this is deliberate and intended to suggest that interim stewardship planning need not do as deep a dive on every impact of those plans. If that is the case, then the Proposed Rule should clarify expectations for the scope, specificity, metrics, etc. for “assessments” and for “analyses”.

practices³ would also have **anticipated** environmental and economic consequences. ANR, however, fails to consider what any of the reasonably foreseeable economic and environmental impacts of the rule might be. Some of what ANR ignores in its APA filing include:

- Enhanced recreational value, increased carbon sequestration and storage, better flood control and protection from extreme weather events, and other improvements in ecosystem service productivity from lands managed under “two new land classifications that prioritize resource protection and support development of old forest conditions” (Moore, 2026 para 8, Concise Summary).
- Increased private and public revenues, higher property values, reduced property losses, and other fiscal and economic benefits resulting from improved ecosystem service productivity on those lands.
- Greater efficiency achieved as a result of proper Analysis (or Assessment) of resources affected by management actions taken under LRMPs or ISPs, respectively. For example, a complete analysis of the comparative value of commodity and non-commodity uses of ANR land would help avoid wasteful allocation of land, management effort, and financial resources to supplying commodities readily (and competitively) available from private lands.

In light of ANR’s failure to anticipate and address these and other impacts of the proposed rule, ANR’s contentions that the rule is “economically neutral in impact” (Moore, 2026 Economic Impact Analysis) and that the rule will have no impacts on greenhouse gas emissions, water, land, recreation, climate, or “ecological, wildlife, fisheries, and historic/cultural resources on ANR Lands” (Moore, 2026 Environmental Impact Analysis) are simply not credible. ANR’s analysis should have addressed these anticipated impacts and the Proposed Rule itself should do much more to enumerate likely impacts, as well as incorporate clear guidance for ANR managers on how to assess/analyze them as they develop plans under the rule.

Second, and with the exception of the status quo and an alternative version without Universal Management Actions and a Statewide Plan, ANR offers no substantive alternatives. In our view, ANR should draw from the experience of land and resource planning rules used by federal agencies and other states and offer an alternative that is specific about the environmental and economic impacts that will occur when the Rule is implemented and plans developed under the rule are in place.

Because the values at stake are significant, their complete and proper consideration cannot be left to the arbitrary, or at best undirected, process by which LRMPs will be developed. In the following sections, we review key values and consider examples of how these values have been addressed in various state and federal land management planning processes.

The Economic Value of Vermont’s Public Conservation Lands

In August 2025, Key-Log Economics completed a report for Standing Trees titled *The Economic Value of Vermont’s Public Conservation Lands* (Phillips, 2025). In that report, we investigate the economic value of Vermont’s public conservation lands, and argue that to whom that value accrues is important to the consideration of how those lands should be managed. While private financial gains from extractive uses such as timber are often prioritized, protected conservation lands provide significant, tangible ecosystem service values (ESVs), including flood control, water purification, climate regulation, biodiversity habitat, and recreation. To

³ In some places in its APA filing, ANR states that the planning framework “formalizes a category of routine management activities (Universal Management Actions)” (Moore, 2026 paras. 8 & 9), which suggests that such actions are already established as part of ANR’s management. Elsewhere, under the economic impact analysis, ANR casts the Universal Management Actions, as an **addition to** the proposed rule (Moore, 2026 Economic Impact Analysis, paras. 5 & 8). Both cannot be true.

date, we are not aware of any attempt by ANR to accurately account for ESVs, and the Proposed Rule does not address this issue at all. Without ESV accounting, land management planning will occur in an information vacuum, and ANR risks issuing plans that are detrimental to the public good and out of policy alignment with economic, climate, water quality, and myriad other goals.

Key-Log estimates the annual ecosystem service value (ESV) of Vermont's state and federally owned public conservation lands—comprising 331,268 hectares, or 13.3% of the state—using the Benefit Transfer Method (BTM), drawing per-hectare ESV estimates from the Ecosystem Services Valuation Database (ESVD) and applying them to Vermont's public lands, categorized by land cover type, management unit, and GAP status (Phillips, 2025).

GAP status is an internationally standardized measure of management intensity. GAP Status 1 lands are managed primarily for biodiversity conservation with natural processes predominating; GAP Status 2 lands are similarly managed but may be subject to uses or practices that degrade natural communities; GAP Status 3 lands are open to extractive uses such as logging or mining; and GAP Status 4 lands have no known mandates preventing conversion to anthropogenic uses. Roughly one-fifth (20.5%) of Vermont's public conservation land is GAP Status 1, meaning four-fifths is subject to management activities that could degrade ecological integrity. Of Vermont's state-owned conservation lands managed by ANR — State Forests, State Parks, Wildlife Management Areas, and others — 18.0% are GAP Status 1 (Phillips, 2025).

The report finds that Vermont's public conservation lands supply an estimated \$2.25 billion in ecosystem service value each year. The five most valuable services are Recreational Opportunities (\$529.7 million), Air Quality Regulation (\$503.1 million), Climate Regulation (\$410.4 million), Existence and Bequest Value (\$392.6 million), and Moderation of Extreme Events (\$143.9 million), together accounting for over 88% of the total estimated ESV (Phillips, 2025, Tables 3-5). State-owned ANR lands—State Forests, State Parks, and Wildlife Management Areas—contribute \$879.6 million of the total, with State Forests (\$559.5 million) and Wildlife Management Areas (\$273.9 million) generating the largest shares (Phillips, 2025).

The report also estimates the timber value generated by Vermont's public conservation lands. Vermont's public lands supply an average of 2.53% of the state's annual timber harvest volume, with state lands accounting for just 0.35% of that share. The raw material value supplied by Vermont's public conservation lands is estimated at \$2.95 million annually, approximately 0.13% of the economic value of the other ecosystem services (Phillips, 2025). Private timberlands supply 97.33% of Vermont's timber harvest, and Vermont's timber supply already exceeds in-state consumption by 47%, meaning that managing more ANR lands for ecological integrity rather than timber production would impose minimal opportunity cost on Vermont's forest products economy (Phillips, 2025).

By the methods used, our report suggests that management intensity directly determines ESV productivity. GAP Status 1 lands (those with the highest degree of ecological protection) generate the maximum ESV output per hectare, while GAP Status 3 and 4 lands generate the minimum. For state-owned ANR lands, the vast majority of total ESV (\$794.8 million of \$879.6 million) flows from GAP Status 1 lands alone (Phillips, 2025). This relationship between management regime and ESV productivity maps directly onto Vermont's proposed land classification tiers—Highly Sensitive, Special Management, General Management, and Intensive Management—and has direct implications for how ANR's rule should require LRMPs to analyze and account for the economic consequences of management decisions.

ANR's economic impact statement for the proposed rule cites no economic literature, no ecosystem service science, and no quantitative analysis of the values at stake in its planning decisions. The sections that follow draw on Key-Log's findings and other federal and state examples of planning rules to describe the anticipated

costs and benefits of the Proposed Rule and recommend economic analysis criteria that ANR should require in LRMPs going forward.

Rule-Level Economic Impacts

Procedural planning rules have anticipated economic consequences.

ANR's economic impact statement characterizes their Proposed Rule as "procedural in scope and economically neutral in impact." Meanwhile, federal agencies responsible for public land management planning have confronted and rejected this same characterization, because the process that a procedural planning rule establishes shapes the information considered, the criteria applied, and ultimately, the decisions made on the ground: all of which warrant conducting an economic analysis of the Proposed Rule.

When the Bureau of Land Management evaluated its 2016 Planning 2.0 rule (the primary federal framework governing resource management planning on BLM lands) it acknowledged that the rule would not directly dictate land management decisions, but concluded that "it is possible that considering these impacts could lead to different planning decisions than would be made under the current planning rule" (Bureau of Land Management, 2016, p. 7). The USDA Forest Service reached this same conclusion when finalizing its 2012 Planning Rule (the framework for land management planning across all National Forest Service units), and that even if the analysis is primarily qualitative, "the benefits derived from land management plans developed, revised or amended under the different alternatives [should be assessed] qualitatively for procedural or programmatic efficiency" (National Forest System Land Management Planning, 2012). ANR should follow this federal precedent.

The economic stakes of existing timber-harvesting decision-making, that would be codified by the rule, are real: For example, Universal Management Actions (which would apply to all ANR lands without an LRMP) have no requirements to comply with Vermont's Acceptable Management Practices (AMPs), and vegetation management has no defined scope or limits. Moreover, as Standing Trees demonstrated in a 2025 report by FB Environmental Associates, the AMPs are inadequate for protecting water quality and mitigating flooding (FB Environmental Associates, 2025). Authorizing management activities without economic analysis makes their potential economic consequences go unexamined until it's too late to account for their impact.

The status quo has economic costs.

ANR's alternatives analysis acknowledges that without the Proposed Rule, "multiple policies and guidance documents will continue to guide this work, which has caused confusion amongst members of the public"—a clear cost of the status quo. But the economic costs go beyond confusion and inefficiency. Without a binding rule governing how LRMPs are developed and updated, real economic costs are imposed through inconsistent planning, missed opportunities for adaptive management, and foregone ecosystem service value across ANR lands that currently lack management plans.

Once again, federal experience bears this out. The USDA Forest Service found that its predecessor planning rules were "too complex, costly, and procedurally burdensome," resulting in many National Forests continuing to operate under plans written between 1983 and 1993, decades out of date, because updating them was so cumbersome (Nie, 2018; USDA Forest Service, 2012). The BLM similarly found that under its existing planning framework, it took an average of 8.25 years to move from initial public notice to final approval of a resource management plan (Bureau of Land Management, 2016, p. 3). While these are implementation-level

observations, they illustrate the broader, rule-level point that a better rule makes the development of plans more efficient, lowering administrative costs.

ANR's own rationale for the Proposed Rule implicitly acknowledges that the status quo produces uneven planning coverage across ANR lands. The question therefore, is not whether to have a rule, but whether the Proposed Rule does enough to ensure that its costs and benefits are accounted for.

ANR must analyze the costs and benefits of alternative versions of the rule.

Vermont's Administrative Procedures Act requires that ANR's economic impact analysis "compare the economic impact of the rule with the economic impact of other alternatives to the rule" (3 V.S.A. § 838(b)(1)(B)). ANR's alternatives section identifies three scenarios—no rule, the rule without UMAs and a Statewide Plan (status quo), and the rule as proposed—but does not analyze the economic consequences of any of them. Not only does ANR fail to conduct the required economic analysis, but it also presents an inadequate range of alternatives.

Federal and state planning frameworks establish a clear precedent for how this analysis should look. The USDA's Forest Service's Final Programmatic Environmental Impact Statement for the 2012 Planning Rule evaluated multiple alternative planning frameworks at the rule level, not just within the planning process itself (U.S. Department of Agriculture, 2025). The BLM's economic analysis of its Planning 2.0 rule went further, identifying each rule change section by section and assessing its potential economic effects, including changes to public involvement, new planning steps, and requirements to consider environmental, ecological, social, and economic impacts (Bureau of Land Management, 2016). This level of analysis is most in line with ST's standard for the rule. At the state level, New York's General Environmental Impact Statement for its Strategic Plan for State Forest Management analyzed the framework's economic effects alongside a no-action alternative, a direct state-level model for the kind of alternatives analysis ANR should conduct (Division of Lands and Forests, Bureau of Forest Resource Management, 2021).

At a minimum, ANR's analysis should compare three alternatives: the status quo, the proposed rule, and a stronger version that requires LRMPs to quantify ESVs, analyze opportunity costs, guarantee binding public input, and apply consistent economic criteria across all land classification tiers. New York's Strategic Plan for State Forest Management (which establishes mandatory and enforceable management criteria, ESV tracking, and public engagement standards) is the closest existing model for what the stronger alternative should look like in practice. As documented in Section I, Vermont's public conservation lands generate an estimated \$2.25 billion in annual ecosystem service value (Phillips, 2025). The choice between alternatives is decidedly not neutral and determines whether that value is systematically protected or left unaccounted for.

Improving public knowledge, incorporating the best available science, and installing accountability measures enhance efficiency.

The economic case for a stronger rule is not only about avoiding costs. It is also about the long-run efficiency gains that come from clear criteria, public accountability, and adaptive management. A rule that mandates public input, requires application of best available science, and establishes strong accountability measures reduces uncertainty for all stakeholders, lowers litigation risk, and produces better planning decisions over time.

The USDA Forest Service designed its 2012 Planning Rule explicitly "to enable land managers to consistently and efficiently respond to social, economic, and ecological conditions" (USDA Forest Service, 2012, p. 21164). The Forest Service's own analysis demonstrates the logic: rules produce planning frameworks, which produce efficiency, and efficiency produces adaptive responsiveness that generates economic value over time (USDA

Forest Service, 2012, pp. 21251–21253). The BLM again reached a parallel conclusion in its Planning 2.0 analysis, finding that publishing clear planning criteria “improves feedback and accountability” while also avoiding “unnecessary data collection and analyses”, a direct administrative cost benefit (Bureau of Land Management, 2025, p. 76). The BLM found that “any additional costs due to increased public involvement in a given planning effort should be at least partially offset by reduced costs at other steps in the planning process or by a reduced number of plans overall” (Bureau of Land Management, 2016). Even without a binding public engagement mandate, Pennsylvania’s State Forest Resource Management Plan drew nearly 4,800 public comments during its four-month comment period, evidence that meaningful public participation at scale is realistic, and that a binding rule requiring it would generate even more substantive input (Pennsylvania Bureau of Forestry, 2016).

New York’s Strategic Plan for State Forest Management operationalizes this logic at the state level through its Generic Environmental Impact Statement, which establishes environmental impact thresholds that trigger site-specific review for individual management activities (Division of Lands and Forests, Bureau of Forest Resource Management, 2021). This framework absorbs the analytical burden at the rule level so that individual LRMPs do not have to repeat it. ANR’s Proposed Rule establishes land classifications but attaches no equivalent analytical criteria to them, forgoing precisely this kind of long-run efficiency. A rule that requires ANR to apply consistent economic and ecosystem service criteria across its land classification tiers would reduce uncertainty, improve decision quality, and lower the risk of litigation that has affected comparable state forestry programs, such as in Pennsylvania, where disconnection between revenue accounting and management planning has generated legal challenges to the State Forest Resource Management Plan (*State Forest Resource Management Plan and Two Faces of Our State Forest Lands*, n.d.).

Project-Level Guidance & Criteria

The following section addresses what economic guidance and prioritization criteria ANR should provide to land managers developing LRMPs and making subsequent project-level decisions.

The rule should establish a land classification system that informs management criteria.

Vermont’s Proposed Rule already establishes four land classification tiers: Highly Sensitive, Special Management, General Management, and Intensive Management, but attaches no economic analysis requirements to any of them. This is a significant gap. The classification tier assigned to a given unit of ANR land determines what management activities are appropriate there, which in turn determines the ecosystem service value, timber revenue, and recreation value that unit will generate over time. Without criteria specifying what economic analysis each tier requires, land managers have no consistent framework for evaluating those tradeoffs and comparing units.

Other states have addressed this directly. Massachusetts’ Forest Resource Management Plan establishes three landscape designations—Reserves, Parklands, and Woodlands—that all existing and future Forest Resource Management Plans must align with, governing what management activities are appropriate at the unit level (Massachusetts Department of Conservation and Recreation, 2012). For example, the Central Berkshire District Forest Resource Management Plan (FRMP) shows how this tiered framework translates into unit-level planning: “The FRMP process is based on the concept of stepping down in scales: from the regional landscape to the Central Berkshire District to the individual forest and park or reservation” (Rassman et al., 2007). New York codifies the same principle at the rule level, with its Strategic Plan serving as a binding guide for all individual

Unit Management Plans developed thereafter (Division of Lands and Forests, Bureau of Forest Resource Management, 2021).

Vermont's rule should do the same. Each of its four classification tiers should connect to analysis requirements, specifying, at a minimum, which ecosystem service values must be quantified and what opportunity costs must be identified before an LRMP for that unit can be approved. This is the logical extension of the classification system that the rule already establishes.

Long-Range Management Plans (LRMPs) should account for costs by each program area.

A well-designed rule should require LRMPs to account for the full costs of managing state lands by program area (i.e. staff time, infrastructure maintenance, restoration, and monitoring) as well as the financial returns generated by timber sales, permits, leases, and other revenue sources. Without this requirement, ANR has no consistent basis for evaluating the fiscal performance of individual land management units or for making economically informed decisions about how to allocate management resources across its portfolio.

New York's Strategic Plan for State Forest Management establishes economic benefit as one of five co-equal statewide management goals, alongside ecological health, asset maintenance, recreation, and a legal framework for sustainable management (Division of Lands and Forests, Bureau of Forest Resource Management, 2021). The inclusion of economic benefit as a coordinate goal, rather than a subordinate consideration, is itself significant: it reflects a planning philosophy in which financial returns, ecosystem service values, and public benefits are analyzed together rather than treated as competing priorities.

The feasibility of unit-level cost and revenue accounting is already demonstrated in practice. Massachusetts' Central Berkshire District Forest Resource Management Plan includes a detailed outputs and costs table breaking down annual timber output by treatment type, annual revenue, operating costs, backlog road maintenance costs, and ten-year forest inventory data, despite Massachusetts regulations not requiring this level of financial accounting. The plan also acknowledges that "the feasibility of thinning many of these acres is dependent upon economic market conditions", recognizing that market-contingent revenue must be analyzed rather than simply projected (given changing conditions) (Rassman & et. al., n.d., p. 8). The fact that a state without a binding economic analysis requirement produced this level of detail is evidence that Vermont's rule can and should require it.

The BLM's Land Use Planning Handbook provides a replicable framework for how this analysis should be structured, including an eight-step impacts analysis process (BLM Land Use Planning Handbook, Chapter 6). Critically, the BLM's framework situates financial returns within a broader value calculation: the goal of multiple use management is "harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output" (Bureau of Land Management, 2025, p. 5). Timber revenue is one input in that calculation, not the primary metric. Vermont's rule should reflect the same principle, requiring LRMPs to account for costs and revenues of myriad ecosystem values.

LRMPs should quantify ecosystem service value.

Requiring LRMPs to account for timber revenue and management costs is necessary but not sufficient. The vast majority of the economic value generated by Vermont's public conservation lands flows from ecosystem services

(carbon sequestration, water quality regulation, flood mitigation, wildlife habitat, recreation, etc) that are invisible in conventional financial accounting. Indeed, we found that timber value accounts for only 0.13% of total ecosystem service value across Vermont's public conservation lands (Phillips, 2025).

Vermont's planners should analyze the effect of Land Management Classifications (LMCs) on ecosystem service productivity. It stands to reason that lands under "Highly Sensitive Management" (similar to GAP status 1 lands) would be highly productive of some ecosystem services (water quality, aesthetics, backcountry recreation, and others) and less productive of timber or motorized recreation. "Intensive Management" areas (like GAP Status 4) might produce more timber and less water quality or carbon storage. Ongoing monitoring and evaluation of the biophysical and economic output from lands in different LMCs would create a robust base of information for future planning as well as for adaptive management between plan revisions.

Massachusetts' Forest Resource Management Plans voluntarily recognize ecosystem services, directing "the management of forests that will provide key ecosystem services such as: water, habitat, recreation, wood products and carbon sequestration". But without codified criteria at the rule level, that recognition is discretionary and inconsistent across districts (Massachusetts Department of Conservation and Recreation, 2026). The New York State *Strategic Plan for State Forest Management* urges planners to consider forest values beyond timber, including carbon sequestration, recreational value, aesthetics, and watershed protection. And while the Plan does not prescribe specific methods for quantifying the economic value of such ecosystem services, it does suggest that definition of "non-timber products" be modified to include the value of storage on state forest lands (Division of Lands and Forests, Bureau of Forest Resource Management, 2021).

For Vermont, LRMPs could quantify ecosystem service values by land cover type and mapping them to the rule's existing land classification tiers so that management intensity decisions are made with full knowledge of their ESV consequences. This is not a novel requirement. The USDA Forest Service's 2012 Planning Rule already requires plans to consider social and economic sustainability, taking into account social, cultural, recreation, ecosystem service, and historic resource values alongside timber and other direct returns (National Forest System Land Management Planning, 2012). And the BLM has developed dedicated guidance for estimating nonmarket environmental values that provides a replicable methodological foundation for exactly this kind of analysis (Roberson & Williams, 2013).

LRMPs should analyze opportunity costs and cumulative impacts.

Accounting for costs, revenues, and ESVs at the unit level is necessary but not sufficient if those figures are evaluated in isolation. Management decisions on ANR lands involve tradeoffs—between timber revenue and ecosystem service productivity, between intensive use and long-term ecological integrity, between site-specific actions and landscape-level consequences; a rule that does not require LRMPs to analyze opportunity costs and cumulative impacts will continue to undercount the full economic consequences of those tradeoffs.

On opportunity costs, Massachusetts' Central Berkshire District Forest Resource Management Plan acknowledges directly that "the tension between the need to generate adequate financial returns and the principles of responsible forest operations can be reduced through efforts to market forest products for their best value", recognizing that management choices foreclose alternative uses and values (Rassman et al., 2007). Notably, this consideration was not mandated by Massachusetts regulation but by FSC certification requirements, illustrating precisely why Vermont's rule needs substantive criteria: without them, opportunity cost analysis is left to the discretion of individual managers rather than required across all ANR lands. The BLM's Land Use Planning Handbook addresses this through its effects analysis framework, which focuses on how "the likely effects of the different management strategies identified under the alternatives, if implemented, would affect resources and

resource uses in the planning area", using comparative analysis of management regimes to surface opportunity costs (Bureau of Land Management, 2025, p.106).

On cumulative impacts, New York's Strategic Plan establishes a tiered review process in which its Generic Environmental Impact Statement sets the environmental impact thresholds that trigger more in-depth, site-specific SEQR review for individual management activities (Division of Lands and Forests, Bureau of Forest Resource Management, 2021). This structure ensures that the combined impact of management actions across a unit is evaluated at the landscape level, not just action by action. Pennsylvania's State Forest Resource Management Plan similarly references cumulative impacts of oil and gas development across state forest lands, acknowledging that the full extent of those impacts remains incompletely understood: a cautionary example of what happens when cumulative impact analysis is not considered (*State Forest Resource Management Plan and Two Faces of Our State Forest Lands*, n.d.).

The rule should provide project-level decision criteria that flow up from land classification.

LRMPs are not endpoints; they are frameworks within which individual project-level decisions are made. A rule that establishes land classifications and requires LRMPs but provides no criteria for how those plans should guide subsequent project-level decisions leaves a critical gap in the planning framework. Without project-level criteria that flow directly from land classification, the analysis required at the LRMP level has no binding influence on the individual decisions (timber sales, road construction, trail development, habitat management, etc.) that actually determine outcomes on the ground.

Massachusetts' Central Berkshire District Forest Resource Management Plan explicitly states the connection between management guidelines provided in Forest Resource Management Plans (FRMPs) and on-the-ground actions. "By following the management guidelines, the managers can base their daily work on the planning framework, in consideration of the larger landscape and regional and local issues, and with DSPR-wide consistency" (Rassman et al., 2007, p. 10). Vermont's Proposed Rule establishes land classifications but provides no equivalent project-level criteria, meaning that two land managers working in General Management areas on opposite sides of the state could make fundamentally different decisions about the same type of project, with no consistency or accountability.

The USDA Forest Service's 2012 Planning Rule provides a federal template for project-level assessment criteria, listing required content for plan assessments covering ecological integrity, multiple uses, sustainable recreation, watershed conditions, and social and economic sustainability (National Forest System Land Management Planning, 2012, p. 21264). Vermont's rule should establish equivalent criteria at the project level, explicitly tied to the land classification tier of the unit in question, so that the economic and ecosystem service analysis conducted at the LRMP level carries forward into every subsequent project-level decision.

The rule should require monitoring and adaptive management tied to specific economic indicators.

A rule that requires economic analysis at the planning stage but establishes no monitoring requirements will not produce durable economic efficiency. The USDA Forest Service's 2012 Planning Rule reflects this directly, structuring its costs and benefits analysis around a three-part framework of assessment, development and revision, and monitoring: treating monitoring not as an optional add-on but as a required component of the planning cycle with its own economic value (National Forest System Land Management Planning, 2012, p.

21252). New York's Strategic Plan operationalizes adaptive management as an explicit economic value, defining it as a process that "helps science managers maintain flexibility in decisions, knowing that uncertainties exist and they need latitude to change direction," that "will improve the understanding of ecological systems to achieve management objectives," and that "is about taking action to improve progress towards desired outcomes" (Division of Lands and Forests, Bureau of Forest Resource Management, 2021, p. 43). Flexibility, understanding, and action, balanced with substantial transparency and accountability, are the mechanisms through which a planning framework can generate sustained economic value over time rather than locking in decisions made under outdated conditions.

Vermont's rule should require LRMPs to establish baseline economic and ecosystem service indicators at adoption, define the monitoring protocols by which those indicators will be tracked, and specify thresholds that may trigger revision.

Conclusion

Vermont's public conservation lands currently generate an estimated \$2.25 billion in ecosystem service value each year. The Proposed Rule, as written, provides no framework for accounting for that value — or for ensuring it is protected and enhanced in the planning decisions that will determine how those lands are managed for decades to come. The federal and state precedents reviewed here demonstrate that this analysis is both required and achievable. ANR should revise the Proposed Rule accordingly.

Following our analysis above, we recommend that the rule require, inform, and lay out procedures for the following:

1. Connect the land classification system to management criteria and require assessment of the different environmental and economic impacts of land classification decisions.
2. Account for the full costs of management by program area (personnel, monitoring, infrastructure, et al.) so that the fiscal effects of management decisions are fully considered.
3. Employ the ecosystem services framework for analyzing (or assessing) resources in Statewide Plans, LRMPs, ISPs, and in individual projects. This framework is well established in the scientific and economic literature and it provides a common and comprehensive means of ensuring that the full spectrum of anticipated environmental impacts and their reflections in economic effects are considered as plans are developed.

Because the methods, techniques, and tools for conducting ecosystem services assessment and ecosystem service valuation are constantly improving, it would be unwise to dictate any particular methods. Instead, we recommend that the rule require the use of the best available science/economics in the completion of the analyses/assessments.

4. Require that analyses/assessments consider opportunity costs (tradeoffs among various management alternatives) and cumulative impacts.
5. Include decision criteria, such as direction to retain or enhance key ecosystem values and functions.
6. Require monitoring and adaptive management, including for key economic indicators.

With these improvements to the rule and with a new and complete evaluation of the anticipated economic and environmental impacts of an improved Rule, ANR and Vermont can join and even lead other jurisdictions in providing for comprehensive public land and resource planning.

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About

[Key-Log Economics, LLC](#) is an independent, employee-owned consultancy that believes that better (more efficient, more just, more sustainable) outcomes are attainable when complete information is available to and used in making decisions that affect human and natural systems. Accordingly, we completed this report, commissioned by Standing Trees to augment the amount and quality of information available to Vermont’s Agency of Natural Resources, stakeholder groups, and the broader public regarding certain ecological-economic implications of the proposed “Vermont ANR Lands Management Planning Rule”. We have used the best available data and employed appropriate and feasible estimation techniques and broader research methods throughout. While Key-Log Economics remains solely responsible for the content of this document, we make no claim regarding uses others may make of this information. Beyond the conclusions stated herein, any inferences or uses of the reported estimates are the responsibility of the reader.

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Appendix A: Highlights of Land and Resource Planning Processes from other Jurisdictions

Scope	Title / Source	Key findings / quotes
Federal	USDA Forest Service 2012 Planning Rule https://www.fs.usda.gov/sites/default/files/2012-planning-rule-stelprdb5362536.pdf	• Governs how the Forest Service develops and revises land management plans for NFS units • Most direct comparison to VT ANR's rule • Need: Neither 2000 nor 1982 rule met the Agency's "social, economic, and ecological needs across the diverse and highly variable systems of the NFS" (best available science / holistic planning / public knowledge) • Older rules both "too complex, costly, and procedurally burdensome" (21164) (internal costs and benefits / reduction of uncertainty / LR efficiency) • Purpose: "enable land managers to consistently and efficiently respond to social, economic, and ecological conditions" (21164) (adaptive management / LR efficiency) • PEIS considers multiple alternatives (Federal precedent to analyze alternatives to a planning rule) (costs and benefits of alternative versions of the rule) • "The benefits derived from land management plans developed, revised, or amended under the different alternatives are not quantified, [. . . but] assess qualitatively for procedural or programmatic efficiency" (21252), as well as agency costs, distribution impacts, consideration of small entities, energy effects, environmental impacts, consultation with tribal gov, and other factors (qualitative economic analysis / alternatives / internal costs and benefits) ◦ PDF pg 90-92: The value of planning itself: rules → efficiency → adaptation and responsiveness → economic value (LR efficiency / reduction of uncertainty) • Cost and benefits of final rule evaluated with three-part framework: assessment, development/revision/amendment, and monitoring (21252) (accountability / adaptive management / LRMP process criteria) • "Content of the assessment for plan development or revision" (21264) lists criteria for assessment (LRMP-level criteria) • 21265: requires plans to consider social and economic sustainability, taking into account social, cultural, recreation, ESVs, historic resources, etc (public benefits / ESVs by land type / management regime)

Scope	Title / Source	Key findings / quotes
	BLM Land Use Planning Handbook https://www.blm.gov/sites/default/files/docs/2025-01/H-1601-1_Rel_1-1836.pdf Edited Jan 2025 (Trump-era)	• Specifies the purpose of land use planning writ large is to engage diverse stakeholders, assess ecological, cultural, scenic, social, and economic values, manage at appropriate scales, and integrate management between resources and their uses. (public knowledge & benefits) ○ “How the BLM develops resource management decisions that respond to problems and opportunities and articulate trade-offs among environmental, social, and economic values” (2) (opportunity cost of management regime choices) • FLPMA Section 202c requires the BLM to: ○ Integrate physical, biological, economic and other sciences (best available science) ○ Rely on inventories of resources and other values (ESVs by land cover type/ Unit-scale LRMP criteria) ○ Consider present and potential uses (project-level) ○ Consider scarcity and alternative ways to realize values (alternatives / opportunity costs) ○ Weigh long-term public benefits against short-term ○ Provide meaningful involvement of stakeholders (reduction of uncertainty / public knowledge) • Multiple use means: ○ Management best meets present and future needs of public, accounts renewable and non-renewable resources (public benefits / ESVs by management regime) ○ “Harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with consideration given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output” (5) (financial return on timber & revenue sources / opportunity costs) • Public involvement clearly outlined on page 20, table 2.1 • Chapter 6 – Planning Criteria and Analysis of the Management Situation ○ “The planning criteria set out the framework for the impacts analysis plan that will guide the NEPA analysis of your issues” (75). (Unit-scale LRMP & project-level criteria / accountability) Publishing them improves feedback and accountability. Also avoids unnecessary data collection and analyses (internal costs & benefits / LR efficiencies) ○ 8-step impacts analysis framework (unit-scale LRMP & project-level decision-making criteria) ■ 1. Present your analytical question

Scope	Title / Source	Key findings / quotes
		■ 2. Identify your geographic and temporal scope for analysis ■ 3. Identify all relevant assumptions... ■ 4. Describe the methodology and techniques you will apply ■ 5. Identify the units of measure your analysis will use ■ 6. Identify the data that provides the facts and evidence needed ■ 7. Describe the analytical conclusion your analysis will answer ■ 8. Describe you you intend to display the data to support your analysis ● Alternatives: describe those you analyze in detail, including the no action alternative and any alternatives considered but eliminated from further analysis. (alternatives / opportunity costs / project-level criteria). Must present the environmentally preferable alternative (does not need to be in detail or the preferred alternative but must be included) (public benefits) ● “The focus of effects analysis for land use planning is on the likely effects of the different management strategies identified under the alternatives, if implemented, would affect resources and resource uses in the planning area. In this way, you provide meaningful disclosure of impacts anticipated from on-the-ground actions implementing the proposed plan decisions that can be compared across the range of alternatives” (106) (management regime effects analysis / project-level decision-making / cumulative impacts)
	BLM Planning 2.0 Economic and Threshold Analysis blm.gov/sites/blm.gov/files/documents/files/PlanningandNepa_Planning_FinalPlanningRuleEconomicAnalysis.pdf	● Evaluates the economic effects of BLM’s 2016 Planning 2.0 final rule (since rescinded) ○ Goal: to understand potential cost and benefits, recognizing that not all benefits can be described in monetary or even in quantitative terms, doesn’t require perfect monetization. (qualitative economic analysis / costs & benefits of alternatives) ○ Statement of need: to improve BLM governmental process (internal costs and benefits, LR efficiency) ● Shows that even procedural planning rules warrant economic analysis because it changes the process, information considered, efficiency of planning, public participation, and possibly future decisions (internal benefits / LR efficiency) ● “Currently, it takes an average of 8.25 years to move from the initial public notice that begins the planning process to final approval of the resource management plan” (3) (administrative burden / reduction of uncertainty / LR efficiency) ● “Achieve three goals: (1) improve the BLM’s ability to respond to change in a timely manner; (2) Increase meaningful opportunities for other Federal agencies, State and local governments, Indian Tribes, and the public to be involved in the development of the BLM resource management plans (adaptive management / public knowledge & benefits); and (3) Improve

Scope	Title / Source	Key findings / quotes
		the BLM's ability to apply landscape-scale approaches to resource management [advancing] the role of science in the planning process and [emphasizing] the importance of evaluating the resource, environmental, ecological, social, and economic conditions before preparing a resource management plan" (3) (Best available science, econ/eco/social baseline analysis / Unit-scale LRMP criteria / Reduction of uncertainty) ● Potential model to follow: BLM identifies each rule change and its economic effects, section-by-section. "Possible effects" include: requiring consideration of env/eco/social/resource impacts; new planning steps, earlier public involvement/changing procedures (rule-level / public input / better information) ● Benefits and costs section also concludes the rule does not directly affect land-management decisions and will not create direct monetary impacts. Then, it identifies 7 rule elements that may affect participants. (evidence of procedural rule → qualitative effects) ○ "because public involvement remains a voluntary action, and opportunities for involvement will generally increase or stay the same, we estimate no significant burden from this change" (8), in regards to changes to the public involvement process/removing default planning area. (costs and benefits, efficiency can just shift burdens on others) ○ "The changes to public involvement are intended to improve the overall efficiency of the planning process and make plans more responsive to public input. Any additional costs due to increased public involvement in a given planning effort should be at least partially offset by reduced costs at other steps in planning process or by a reduced number of plans overall" (9) (LR efficiency / public knowledge / reduction of uncertainty) ○ "These potential effects are not quantifiable, so this section provides a qualitative analysis" (7) ● "Neither the existing nor final rule dictates land management decisions. However, it is possible that considering these impacts could lead to different planning decisions (LRMP criteria) than would be made under the current planning rule" (7) then names affected groups (industries, interests, public users, etc) (public benefits / distributional effects) ● See 'Conclusion' for recommendation guidelines for a qualitative rule-level analysis. While some impacts are hard to quantify, the work shouldn't stop there.

Scope	Title / Source	Key findings / quotes
	Other Federal-Level Sources Subpart A - National Forest System Land Management Planning Forest Service Final PEIS for the 2012 Planning Rule BLM Guidance: Economic Methods for Estimating Nonmarket Environmental Values • Instructional memo from 2013 BLM PLanning 2.0 (2016) • Passed both chambers and Trump, then rescinded via CRA The Evolution of Economic Analysis of Public Land Management The Forest Service's 2012 Planning Rule and its Implementation • Many NFs continue to be managed under plans written from 1983-93 because the 1982 rule was so cumbersome Approach of the US Forest Service Exploring the Use of Ecosystem Services Conceptual Models to Account for the Benefits of Public Lands (Romero et al.)	
State	NY Strategic Plan for State Forest Management Part 1: https://extapps.dec.ny.gov/docs/lands_forests_pdf/strategicplanforstateforestmgmt1.pdf Part 2: https://extapps.dec.ny.gov/docs/lands_forests_pdf/strategicplanforstateforestmgmt2.pdf Part 3: https://extapps.dec.ny.gov/docs/lands_forests_pdf/strategicplanforstateforestmgmt3.pdf	• Still operative, strongest Northeast state-level example. • Important: operational and substantive criteria, translating to real management decisions (proof-of-concept) • Shows what you get with more substantive content • “As individual Unit Management Plans (UMPs) are developed, this plan will serve as a guide and will be included by reference [. . .] revised every ten years” (23) (adaptive management / internal costs and benefits / unit-scale LRMP criteria) • Public participation (25) • Statewide management goals (33-34): ○ Provide healthy and biologically diverse ecosystems ○ Maintain human-made state forest assets ○ Provide recreational opportunities for people of all ages and abilities ○ Provide economic benefits to the people of the state ■ “DEC will attempt to balance environmental protection with economic benefit” (34) (public benefits / financial return / ESVs by land type) ■ The very inclusion of this as one of five coordinate goals is important ○ Provide a legal framework for forest conservation and sustainable management of state forests ■ An effective planning framework is an output of adaptive management (rule-level) • SEQR - Generic Environmental Impact Statement.

Scope	Title / Source	Key findings / quotes
		○ “The GEIS in this plan establishes BMPs for each category of forest management actions included within” (unit-scale LRMP criteria / accountability) ○ “This plan establishes the environmental impact thresholds that would trigger future SEQR reviews of management activities requiring a more in-depth or site-specific assessment of potential environmental impacts” (reduction of uncertainty / internal costs and benefits) ○ “Certain categories of management activity may result in adverse environmental impacts; in such cases, an analysis of less damaging alternatives is presented within their respective sections” (costs and benefits of alternatives) ● Economic value of adaptive management: “adaptive management... Helps science managers maintain FLEXIBILITY in decisions, knowing that uncertainties exist and they need latitude to change direction Will improve UNDERSTANDING of ecological systems to achieve management objectives Is about taking ACTION to improve progress towards desired outcomes (U.S. Department of the Interior 2007)” (43) ● “Ecosystem management is a process that considers the total environment, including all living and non-living components. It requires skillful use of ecological, economic, social, political, and managerial and leadership principles to sustain or restore ecosystem integrity, as well as desired forest uses, products, values and services over the long term. Ecosystem management recognizes that people and their social and economic needs are an integral part of ecological systems (USBLM 1994) (43) (ESVs by management regime) ● “As the landscape changes over time, these green blocks and patches across the landscape will act as essential ecosystems supporting people, plants and animals, providing needed habitats and ecosystem services such as carbon sequestration, clean water and a sustainable supply of forest products” (46) (ESVs by land type) ● Pg 93-116 Active forest management ● Pg 127-131 Carbon sequestration ○ ‘CS’ Objectives, Actions and SEQR Analysis: outlines specific monitoring indicators and goals for carbon sequestration ○ Evidence that ESV categories beyond timber can and should be tracked (ESVs by land cover type) ● Pg 259-260 Supporting local communities ○ Provides data backing economic value of outdoor recreation, but not specific to State Forest lands

Scope	Title / Source	Key findings / quotes
		○ NY tax law “provides that all Reforestation Areas are subject to taxation for school and town purposes. Certain reforestation areas are also subject to taxation for county purposes” (260) ■ Fiscal relationship between state land management and local gov financing (revenue sources, public benefits) ● Pg 264-271 Timber (financial return on timber) ○ Timber revenue is one of multiple co-equal outputs of forest management
	Massachusetts Forest Resource Management Plans on State Lands https://www.mass.gov/guides/forest-resource-management-plans-on-state-lands	● Regulatory framework but functionally different from VT. ● Mandates planning, and procedural requirements are in codified regulations. But, the criteria that goes into each plan is up to DCR and Stewardship Council discretion ● Notable because it Stewardship Council (Gov. appointed, independent body) provides a public accountability mechanism ● Contrasts VT by only setting forth procedural requirements ● Shows what you get with procedural requirements alone ● “FRMPs are designed to guide the management of State Forests, Parks and Reservations and their associated natural resources. Under the FRMPs, forest management is conducted as part of an integrated approach to establish long-term sustainable levels for all resources and uses” ○ No mention of economic analysis, ESVs, alternatives analysis—strictly procedural ○ “Direct the management of forests that will provide key ecosystem services such as: water, habitat, recreation, wood products and carbon sequestration” (voluntary inclusion of ESVs; they may be recognized or considered at the planning level but there are no codified criteria at the rule level) ● Planning horizon: “Each plan is designed to provide a 100 year strategy that is condensed to an initial 10 year implementation schedule” (adaptive management / reduction of uncertainty) ● “Given the guidelines for management, the FRMPs predict the short and long term affects on forest structure and the expected resource outputs” ○ Again, language is close to economic analysis, but its vague enough to not imply market and nonmarket accounting, opportunity costs, ESVs, etc ● FRMP must be based on “landscape and local ecology, the ability to change and adapt to new biological and social conditions, using ecologically sound forest management practices, documentation of present conditions, predicted conditions, goals and objectives, clear implementation directives, and coordination with recreational planning” (economic analysis = discretionary)

Scope	Title / Source	Key findings / quotes
	Landscape Designations for DCF Parks & Forests https://www.mass.gov/doc/landscape-designations/download	- Identifies three designations (Reserves, Parklands, Woodlands) that all existing and future FRMPs must align with, which then governs what management activities are appropriate at the unit level - PDF contains selection criteria and management guidelines, works as a template for a land classification system in VT - Forest Futures Visioning Process: public engagement campaign that led to the Landscape Designations (public input)
	Central Berkshire District Forest Resource Management Plan https://www.mass.gov/doc/central-berkshire-district-forest-resource-management-plan/download	- Contains Outputs and Costs table (8) - Annual timber output broken down by treatment - Annual revenue, operating costs - Backlog road maintenance 10-year CFI inventory - Despite Massachusetts not requiring this kind of financial accounting, the FRMP plan went ahead with economic analysis. It is, evidence that such accounting is feasible. - Footnote: “the feasibility of thinning many of these acres is dependent upon economic market conditions” — acknowledgement of opportunity costs of management choices “The tension between the need to generate adequate financial returns and the principles of responsible forest operations can be reduced through efforts to market forest products for their best value” (opportunity cost) - Notably this environmental consideration was not mandated by Massachusetts regulation, but by FSC certification. - cont - This is evidence to why VT’s rule needs substantive criteria, to give managers a consistent framework that produces systemwide coherence. “The FRMP process is based on the concept of stepping down in scales: from the regional landscape to the Central Berkshire District to the individual forest and park or reservation” (sustainable scale) - Architected through practice in Mass, VT rule would codify more explicitly “The public can consider the Forest Resource Management to be a social contract and commitment on how the State Forest and Park system lands will be managed” (11) “The vegetation management within the Active Forest Resource Management Areas shall be prioritized as follows: - Meet rare species habitat and biodiversity goals

Scope	Title / Source	Key findings / quotes
		○ Reduce the risks of catastrophic disturbances such as wildfires ○ Restore and maintain native ecosystems ○ Restore and maintain forest health ○ Provide a sustainable flow of forest products and appropriate native biodiversity by balancing the age classes for each forest type” ● Useful for project-level criteria
	Pennsylvania State Forest Resource Management Plan https://www.pa.gov/agencies/dcnr/conservation/forest-s-and-tree/state-forest-management/resource-management	● “The primary instrument that DCNR’s Bureau of Forestry uses to plan, coordinate, and communicate its management of the state forest system” ○ “Instrument”--tool, not a regulatory requirement ● The plan has been revised six times over 70 years (reduction of uncertainty / adaptive management) ● “The bureau received comments from nearly 4,800 people during the four-month public comment period on the draft plan (public knowledge / best available science)” ○ Non-binding planning document still engages the public
	Pennsylvania Environmental Defense Foundation (on SFRMP) https://www.pedf.org/state-forest-resource-management-plan.html	● This source has a real-world example of reduction of litigation risk ● Mentions ○ impact of when revenue accounting is disconnected from management planning ○ Bureau of Forestry mission statement, which integrates ecosystem services ○ Also cumulative impacts of oil and gas development