

THE ECONOMIC IMPACTS OF FIRE RISK-RELATED BIOMASS REDUCTIONS ON GOVERNMENT LANDS

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Decades of fire suppression in fire-prone forested regions of the western and southern United States have created conditions favorable to catastrophic wildfires. Systematic stand density reduction through mechanical methods or a combination of mechanical methods and prescribed burning may address the fuel buildup, thereby leading to lower overall fire risk. However, the extent of risk reduction from a large-scale program of this type is not well understood, nor is how these kinds of treatments would affect wildfire damages or forest products markets. The forest product market impacts could have a significant effect on the economic feasibility, planning budgets of federal land management agencies, and on management and land use decisions of private landowners.

This presentation outlines a Joint Fire Science Program-funded study, "A national study of the economic impacts of biomass removals to mitigate wildfire damages on federal, state, and private lands." The study involves using the treatment-product and cost information provided by the Fire and Fire Surrogates study, another Joint Fire Science Program-funded research effort. This information will be combined with timber inventory information across fire prone regions of the U.S. to develop treatment supply schedules for fire prone regions. Using GIS and other modeling techniques, this approach will quantify the small region and broad region supply responses to alternative scales of fire risk-related biomass reduction programs. Concurrently, information on timber product output will be assembled to identify product demand relationships. The resulting set of supply and demand models will then be used to project the effects of various scales of a biomass removals program on prices and economic welfare. Results of the analyses will be assembled and prepared in a format that could be used by federal land managers who are considering embarking on a biomass removals programs and need to understand the economic consequences of such a program on national forest receipts and the broader local community. Policy analyses and simulations can also be used to better understand the distributional consequences of the program on producers and consumers. Combining the economic models with wildfire risk models may shed light on how such a program might affect the frequency and scales of wildfire timber salvage pulses into these markets.

The evaluation of the economic trade-offs of alternative fuel treatments to reduce wildfire damages requires accounting for the full economic effects of both the wildfire and the treatments. In the Fire and Fire Surrogates funded study, researchers proposed to analyze the costs of alternative fuel treatment methods but left open for others a further assessment of the larger economic impacts of these treatments on forest product markets. These economic impacts may affect the prices finally obtained from the treatments, especially if programs result in large changes in wood removals from forests. Financial analysis

of biomass removals should account for the effects of alternative scales of programs on the prices of biomass products removed.

Large changes in the amount of wood on local markets can affect the welfare of timber producers and consumers by shifting supply (Holmes 1991). Outward shifts in supply are generally expected to decrease prices and increase overall welfare. However, such shifts can have differential impacts on various producer and consumer groups, especially when the outward shift in supply results in a contraction in demand for alternative products.

Broadly, there are at least two possible timber market responses to a biomass removals program. These two outcomes depend on whether biomass removals substitute for regular removals from public lands or merely add to them. Both of these outcomes would also be modulated by the response of the demand sector to treatment programs. If product removals from biomass treatments substitute for regular harvests, and if the costs per unit to get the product to markets are the same, and if the mix of products going to wood product markets remains the same, then there would be no immediate market effects on producers or consumers in the short-run. Over the longer term, the effects of the programs would be limited to how treatments themselves affect growth rates, final products obtained from a different inventory structure, and wildfire salvage volumes obtained from altered wildfire risk. If biomass removals supplement regular public harvests, if the costs of their delivery are different, or if the mix of products harvested is different, then the market would respond by reallocating inputs and outputs and result in price changes and have economic distributional impacts.

The harvest (supply) decisions on federal lands where biomass treatment programs take place may not only affect the welfare of taxpayers, as public timber owners, but also the welfare of private sector producers. Timber supply in areas of significant federal timber harvests can be described as consisting of two components: private supply, which is price-responsive, and public supply, whose quantities offered are determined by factors other than timber price in the relevant range (see Adams et al. 1991). In the zones of treatments, biomass removals that supplement regular timber harvests can benefit timber consumers. If these changes are not accompanied by increases in demand, then biomass harvests may harm private timber suppliers by driving down the price of their timber and land.

The final outcome of a biomass removals program on timber markets therefore depends on the responses to the program by two sets of actors: government land managers and the timber demand sector. If government land managers decide to supplement regular harvests with biomass harvests, and if these harvests are sustained, then mills could expand their capacities in the vicinity of the treatment zones with positive effects on public welfare. Brief programs may

not stimulate such capacity changes but instead result in only small capacity utilization increases. With limited opportunities for moving logs out of the treatment zones, there may be negative timber price effects, resulting in wealth transfers between producer groups. Furthermore, biomass removals programs that result in movement of roundwood out of the region and secondary wood product production increases within and outside the region would geographically broader economic impacts.

LITERATURE CITED

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