

“Who Will Harvest, Thin, and Restore Our Forests?”

Written Testimony on Workforce Development in the Logging Industry

Submitted to the United States Senate Committee on Energy and Natural Resources

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Chairman Manchin, Ranking Member Barrasso and members of the Committee, I appreciate the opportunity to speak to you today about workforce development in the logging industry. My name is Jim Hourdequin and I am the CEO of the Lyme Timber Company, a timberland investment management organization based in Hanover New Hampshire. We own and manage approximately 1.4 million acres of timberland in Wisconsin, Michigan, New York, Pennsylvania, West Virginia, Tennessee, Alabama, and Florida. We also co-own two sawmills and we've invested in six logging and log yard businesses.

I am going to talk about workforce development in the logging industry. According to the American Forest and Paper Association, the U.S. forest products industry employs about 950,000 people with a payroll of approximately \$50 billion annually, and is among the top 10 manufacturing sector employers in 45 states. While logging doesn't attract much attention as an essential industry, it is a critical link in the supply chain for forest products. Without a sufficient number of loggers to harvest trees and bring logs to sawmills and pulp mills, builders would not have the lumber necessary to construct the housing that's so badly needed, and the American public would not have the paper and packaging products it needs for everything from office supplies to paper tissues. Importantly, sustainably harvested solid wood products, including lumber for framing and mass timber buildings, wood flooring, and wood composite materials, have low embodied carbon emissions and can deliver climate benefits in the form of long-term carbon storage.

Loggers also play a critical role in restoring U.S. forests in need of thinning to prevent forest fires and the associated air quality and emissions impacts. This work is needed on a massive scale in the Western U.S. and will require an unprecedented level of investment in the logging supply chain.

The potential consequences of workforce shortages in the logging industry are seldom discussed but would be dire for the economy as a whole, not to mention the rural communities that rely on forestry sector jobs. While the logging industry, alongside landowners, mills, and equipment manufacturers, needs to do more to strengthen the logging workforce, I believe the federal government can play a critical role in supporting these efforts and helping to build a logging workforce for the future.

Although I did not grow up in the forest products industry, I started my career in logging 23 years ago when a logger in Lyme New Hampshire agreed to take me and a friend on as partners in his small logging business. We formed Long View Forest, Inc. and borrowed \$200,000 from the local Farm Credit to purchase a log forwarder. I started out felling trees with a chainsaw and learning the ropes of small business through trial and error. Those early experiences in logging have shaped my career as a timberland investor. Through my work at Lyme Timber, I've had the good fortune to work with logging contractors across the country and the opportunity to start several additional logging businesses to address workforce challenges and bring innovation to our timberlands.

Mechanization, Productivity, and Changes in the Logging Workforce

When I co-founded Long View Forest in 1999, we employed eight people, six of whom ran chainsaws. We produced about one million board feet of logs per year. The business now produces over 10 million board feet per year with 16 people in its logging division, a 10-fold increase in production with only a doubling of the headcount. Only one member of the logging crew operates a chainsaw on a full-time basis. The rest run forwarders or mechanical harvesters that fell trees, remove limbs, and cut the trees to merchantable lengths. Each logging employee is paired with a machine that costs between \$500,000 and \$750,000. The machines have complex hydraulic and electrical systems and we employ two full-time mechanics to keep the systems going. There are no entry level positions.

I share this experience because it is representative of the transformation that has occurred in logging over the past 20-30 years. Employment in logging has declined by 41% from 86,000 in 1990 to under 50,000 today, a rate of 2% per year over the past 30 years¹, with the largest declines in hand felling. The volume of logging output declined by only 0.3% per year over this period while the value of output increased modestly by 0.2%. Thus, increases in labor productivity almost completely offset reductions in logging employment.

Increased productivity, and the corresponding reduction in employment, has been driven by mechanization. Over the past 50 years, we have gradually shifted from tree felling with chainsaws to tree felling with mechanical harvesters. This transformation began in the US south in the 1970s and 1980s, then extended to the Northeast, Lake States, and Intermountain West in the 1990s and early 2000s, and finally to the steeper slopes of the Pacific Northwest over the past 10 years.

Mechanization, and the shift away from hand felling, has improved safety in logging, an industry that historically has had the highest fatality rates of any industrial occupation. In one study, mechanical systems were associated with one sixth as many workers' compensation claims as non-mechanical systems; and the injuries in mechanical systems tend to be much less severe.²

Logging has also become more professionalized over the past 30 years, with logger certification, training requirements, and forest certification standards. Logging contractors are responsible for protecting water quality on timber harvests and implementing state best management practices (BMP) standards. Improvements in BMP adoption have been well documented. In Georgia, for example, BMP compliance increased from 50% in the 1990's to over 90% today³.

Mechanization and increases in productivity, in combination with generally flat or slightly declining demand for logging services, has resulted in an aging logging workforce⁴. The percentage of logging workers 55 and older shifted from approximately 12% in 1997 to 30% in 2017. Logging business owners are older than the average business owner in the US, with over half of owners over age 55.

As aging logging business owners and workers retire over the next decade, logging businesses may close with little or no knowledge transfer to the next generation of loggers. Some studies have indicated that

¹ A Review of Changes in US Logging Businesses 1980s – Present by Joseph L. Conrad IV, W. Dale Greene, and Patrick Hiesl; Journal of Forestry; May 2018

² Injury Rate Comparisons for Nonmechanized and Mechanized Logging Operations, Washington State, 2005-2014

³ A Review of Changes in US Logging Businesses 1980s – Present by Joseph L. Conrad IV, W. Dale Greene, and Patrick Hiesl; Journal of Forestry; May 2018

⁴ Ibid.

“familial attachment” to logging may be weakening, with fewer logging business owners looking to pass businesses along to children⁵. In addition, logging systems continue to become more capital intensive and complex, requiring business acumen and the management experience necessary to price work, recruit employees, implement training programs, and make capital investments.

Emerging Logging Capacity Challenges

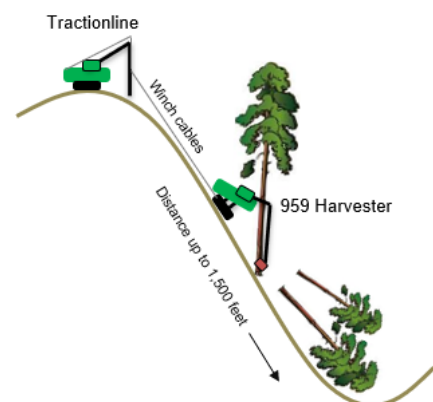
Although for the past 30 years productivity gains from mechanization have enabled the logging industry to meet the nation’s harvesting needs (despite an aging and shrinking workforce), there are now signs that logging capacity is becoming more constrained. Like many businesses in recent years, logging business owners report that finding qualified labor is one of their greatest challenges. Although mechanization can reduce the total number of jobs required in logging, the logging jobs that remain tend to require greater skill and technical expertise. Thus, the logging industry may be facing a structural labor shortage that individual firms may not be able to solve on their own.

Capacity challenges in the logging industry are highly variable from region to region. In regions with strong log markets and large private timberland ownerships – such as the U.S. South, Pacific Northwest, and Lake States – the logging industry tends to be healthier. In Michigan and Wisconsin, where we own 650,000 acres, we see contractors reinvesting in new equipment and generally operating healthy businesses, though they still struggle with the recruitment of new employees and it’s not clear who will take over these businesses when the current owners and operators retire. Similar conditions exist on the 90,000 acres we own in Florida – contractors may struggle to find help, but they are generally well capitalized and stable small businesses. In these regions, we try to be a good partner to logging contractors by providing steady, year-round work and fair logging rates. This, more than anything else, creates the stability needed for contractors to reinvest in equipment and people.

In other regions, including West Virginia and Tennessee where we own approximately 265,000 acres, workforce challenges are a bigger issue, and we have seen several logging businesses close because the owners could not recruit and retain qualified workers. Mechanization in this region is more challenging because of the steep terrain. Logging remains dependent on hand felling. Before the pandemic we had ten contractors working on our West Virginia lands; now, despite substantial increases in our logging rates, we struggle to retain just five contractors. Like many landowners in the region, we are harvesting well below biological growth because we do not have adequate logging capacity.

West Virginia Case Study

To address safety, workforce recruitment, and the need for logging innovation in West Virginia, we secured Federal New Markets Tax Credit (NMTC) financing in 2019 to assist us in bringing the first winch assist harvesting system to the Appalachian region. We started an in-house logging crew with eight employees and have spent the past three years trying to figure out how to make it work. The system, developed in New Zealand and now adopted in the Western U.S., uses a specialized base machine with winches to “tether” a machine that mechanically fells timber on steep slopes.



⁵ Ibid.

The system eliminates hand felling on steep slopes and reduces the area dedicated to mid-slope roads, thereby reducing erosion.



To date the crew has logged over 46,000 hours on steep and difficult terrain – equivalent to 23 person years of work – with no major accidents or injuries.

While we are thrilled with the safety and environmental benefits of this system, we have struggled to make it work financially. The crew needs to produce 35 truckloads of wood each week to break even and 40 truckloads per week to turn a reasonable profit. We've kept at it because we know that deploying new technologies and systems takes time and persistence, and don't see the potential to achieve our harvest goals with hand felling and traditional, ground-based logging systems.

Our single greatest challenge to date has been the recruitment of enough qualified people – skilled equipment operators and leadership - necessary to increase production and make the system work. There are no technical schools in the Appalachian region that train and certify workers to operate logging equipment and it can be difficult to recruit people from afar to rural communities.

We've faced similar logging capacity challenges in other regions where we own land. In New York, Pennsylvania, and Tennessee we have not been able to meet our annual sustainable harvest targets due to a lack of available contractor capacity. We've taken a multi-pronged approach to meet the challenges: a company logging crew in New York, a partnership with a trusted contractor in Pennsylvania, and loans to long-term contractors in Tennessee. In each case, we've done so only after concluding that logging rate increases and long-term contracts would not be sufficient to incentivize independent contractors to make the investments in people and equipment on their own.

Challenges to Workforce Recruitment in the Logging Sector

Having worked to recruit and retain logging workers at all levels, I'll share some generalized thoughts on the greatest challenges to logger recruitment. These are the barriers that industry and government efforts will need to overcome to recruit the next generation of logging workers and business owners:

1. **Low Profit Margins:** For years, people in the forest products industry have speculated about logging capacity shortages. I've quipped that there's only a capacity shortage at the price our industry has been willing to pay for logging services. Raise prices and you will increase logging capacity. Until recently, however, excess logging capacity has meant that the consumers of logging services – principally landowners and mills – have not had to increase logging rates. As a

result, many logging contractors remained in business with relatively low profit margins despite increased capital investment and rising costs. Industry-wide dislocations like the 2008-2009 recession and regional mill closures have resulted in retirements and forced less profitable logging contractors to go out of business. More recently, with strong demand for lumber and constrained logging capacity due to labor shortages, mills and landowners have begun adjusting logging rates upward to levels necessary to recruit and retain quality logging crews.

2. Uncompetitive Wages and Benefits: Studies indicate that logging wages have generally kept up with inflation, but in my experience, skilled logging wages have not kept up with wages in other skilled trades⁶. Also, while the work environment and demands of other trades may have improved over time, logging work has remained physically demanding, weather-dependent, and located in remote, rural locations. These factors may require that logging employers pay a premium for skilled positions relative to other industries. With logging rates on the rise, I believe that many logging business owners have and will continue to pay higher wages to compete with other industries.
3. Physically Demanding Work: Even though mechanization has made logging safer and less physically taxing, the work still requires agility, physical fitness, and a willingness to work in variable weather conditions, including hot and cold temperatures, rain and snow. In some regions, including the Pacific Northwest, hand felling will remain a part of the work mix and the industry will need to continue to pay premium wages to attract young, fit hand fallers.
4. Safety Challenges: Because of its continued reliance of hand felling with chainsaws, the logging industry in the U.S. continues to have one of the highest fatality rates of any occupation. The risks and danger of logging remains an impediment to recruiting new workers to the industry. While work inside an enclosed cab is many times safer than felling trees with a chainsaw, there remain inherent dangers to working in remote locations on difficult terrain. Winch assist logging (tethering) and remote-controlled grapple carriage yarding will continue to replace hand felling and other dangerous activities like choker setting, but transitioning to these systems will require major investments in equipment and training.
5. Limited Technical Training: There are few pathways for young people to get formal training or certification in the technical aspects of logging. Most logger training is on-the-job. Workers without familial connections to the industry may have limited opportunity to develop skills. Other countries, including Sweden and New Zealand, have for decades invested in technical and vocational schools to provide formal training to young people interested in logging work. In the U.S., we have developed a few of these programs, but they have funding limitations and are not widely available.
6. Weather Dependency: Logging remains one of the most weather dependent industries, with seasonal slowdowns and shutdowns during prime seasons due to weather. Climate change and increased severe weather events may have increased weather dependence over the past 30

⁶ Logging Industry in the United States: Employment and Profitability by Mightao He, Matthew Smidt, Wenying Li and Yaoqi Zhang in *Forests*, 2021, 12, 1720.

years. In the Eastern U.S., warmer and wetter winter conditions have made logging during winter months less predictable. In other parts of the country, drought and fire risk have created work limitations.

7. Long Commutes/ Rural Location: Logging often involves travel to remote work locations. It is not uncommon for logging crew members to commute 1.5 to 2.0 hours each way to a logging job. This extends time away from home and creates challenges for workers with children and spouses who also work.
8. Low Social Status: While in many rural communities, logging work is understood and respected, outside of forest-dependent communities it is often not viewed as a viable career path. I believe that higher wages and benefits, combined with greater opportunities for technical training and advancement, are the first steps towards improving the social status of logging and thereby increasing the appeal of the profession to new workers.

Can the Market Take Care of the Problem?

Yes and no. As I discussed earlier, the market – specifically landowners and mills – are adjusting logging rates to ensure that quality loggers remain in business. This is an important first step in addressing future logging capacity. But as we have experienced in West Virginia and other parts of the country, increasing logging rates, while necessary, may not be sufficient to develop the workforce that is needed. The absence of skilled workers, a lack of affordable housing, and limited options for skills training can all be impediments to a business owner’s ability to recruit labor, even with higher wages and benefits.

In theory, the industry - logging businesses, equipment dealers, manufacturers, landowners and mills – could invest in technical training programs to develop a future logging workforce. It might also be possible for more large landowners to invest in logging equipment and logging crews as we have done. But these approaches are unlikely to occur at scale without strong incentives from government.

Ways that Government Policy Can Help

Below I have listed some ideas for how the Federal government could begin addressing the need for workforce development in the logging sector.

1. Long-term contracts on Federal lands that combine timber harvesting and stewardship work: The Forest Service currently engages with loggers in two different capacities: it sells standing timber to be harvested and sold to mills through so-called “stumpage sales,” and it contracts for the thinning and removal of smaller trees through so-called “stewardship contracts” to reduce fire risk and keep forests healthy. The Forest Service has the authority to combine stumpage sales with stewardship contracts, and this approach should be used to create greater work security for logging contractors. Importantly, such contractual arrangements are also necessary to incentivize logging contractors to invest in thinning systems that will help to restore Western U.S. forests and reduce fire risk. Job security is one of the key impediments to investing in new equipment, employee recruitment, and employee training. The Federal government can incentivize such investments by offering long-term contracts within logical work areas that align with contractor workflow on private lands.

In my discussions with Western U.S. logging contractors who have considered such contracts, I heard the following suggestions:

- Provide work for contractors during slow periods when timber harvesting opportunities are limited due to weather or other factors; and
 - Allow contractors to enter into multiple, long-term contracts within the same logical geographic area, thereby giving the contractor flexibility to optimize workflow and schedule work over a period of years.
2. Incentivizes for logging apprenticeship programs: Hiring an inexperienced worker to learn how to operate a \$500,000 to \$750,000 machine is expensive and risky. In many regions, there does not currently exist any kind of vocational training program to develop and certify operators. Thus, it falls on the contractor to recruit from within and provide on-the-job training. The training takes an experienced operator away from productive work, reduces productive time on equipment during the learning phase, and can result in excess wear-and-tear on machinery. The Federal government could create incentives – tax credits or direct reimbursements – for logging businesses that establish formal apprenticeship programs and demonstrate that they have developed skilled workers through on-the-job training.
 3. Funding support for public-private partnerships to develop and sponsor technical training for existing logging businesses: The logging industry has the greatest need for technical training related to the use, operation, and maintenance of heavy logging equipment and new logging systems, including winch-assist systems like the ones we have deployed in West Virginia and Pennsylvania. For this training to be effective, it needs to be developed through collaborations between logging contractors, equipment dealers, equipment manufacturers, and community colleges or trade associations. Equipment manufacturers appear willing to participate in and support such programs, but they are not equipped to administer the programs at the local level. The development of high-quality technical training is expensive and requires access to heavy equipment and experienced instructors, technicians, and field operators. A Federal grant program for training development that targets community colleges and/or equipment dealers might be the most effective approach to catalyzing investments in specialized training. Another option is to incentivize logging contractors to purchase (or dealers to provide) specialized training when new logging equipment is purchased and sold.
 4. Funding support for vocational and technical school training programs: If we wish to scale up workforce development to meet the challenge of thinning Western U.S. forests to reduce fire risk, we will need to make large and long-term investments in vocational and technical education. We can look to other countries, including Sweden and New Zealand, for educational models that work. We can build on programs like the Mechanized Logging Operations Program developed by the Maine Community College System. As with technical training for existing businesses, successful vocational training programs will require strong collaborations with equipment dealers and manufacturers.

Concluding Thoughts

The entire forest products supply chain in the U.S. – including landowners, sawmills, paper mills, and wood manufacturing businesses - depend on logging contractors and truckers to cut and haul timber from the woods to market. Logging contractors are also the critical link in forest restoration and will be needed at a massive scale to perform thinning treatments on Western U.S. forests to reduce fire risk and climate impacts. Although in the past productivity gains from mechanization, combined with flat or declining demand for logging services, relieved the industry of the need to invest heavily in recruitment and technical training programs, there is a growing recognition that recruitment and training will be critical to the industry in the future. Sustaining the forest products industry in the U.S., while responsibly growing, harvesting and restoring our nation’s forests, will require government and industry to collaborate in new ways to develop the logging workforce of the future.