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Conservation and Forestry Subcommittee
Hearing on "Supporting Careers in Conservation: Workforce Training, Education, and Job Opportunities"

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Good afternoon Chair Spanberger, Ranking Member LaMalfa, and Members of the Subcommittee. My name is Shane O'Neill, and I serve as the Forest Industry Business Development Manager at the University of Maine: an R1 research university; the state's land, sea, and space grant; and a proud member of the Association of Public & Land Grant Universities (APLU), which helped invite me here.

Thank you for the opportunity to testify on workforce challenges and opportunities in the forestry and conservation sectors, an issue of great importance to our state, which is nearly 90% forested – a number relatively unchanged since European settlement. Since then, Maine's forest has provided an ever-evolving suite of products of the highest quality to the world, as has our nearly 3,500 miles of coastline. The past and future health of Maine's rural communities is highly dependent on our so-called "heritage industries": farming, fishing, and forestry. Leveraging the vast natural resources from our fields, woods, and waters to sustain these special places through these sectors relies entirely upon our ability to innovate and access to skilled human capital.

Currently, Maine's forest products industry employs more than 13,000 people across the state. But the nature of the industry, and the jobs it supports, is rapidly changing – in great part through data-driven modernization, application of AI and increasingly sophisticated technologies – and so too must our education and training practices of our future and incumbent workforce.

Three key factors have converged over the last few decades that created the urgency, and opportunity, to transition to our next phase: a sustainable forest bioeconomy. They are not unique to Maine, nor are our strategies for moving forward. First, the impacts of climate change on forest health are increasingly evident, whether it is through temperature, drought, fire, invasive pests, muddy roads from early thaws that prevent passage of logs and equipment or heavy rain events. How we manage our forest resources and extend their application will require new practices, techniques and be technology driven. Second, the transition to a digital information age has drastically reduced the demand for print and graphic paper. Mills that couldn't adapt to these changing markets closed, causing their workers – more than 7,600 over the last 20 years just in Maine – to lose their livelihoods. Third, there is a growing understanding that sustainably managed forests and their products are a pathway to reduce carbon emissions, both in sequestration in a growing forest, and storage in long life cycle forest products. Adapting the management of our forests and advanced products manufacturing has become more technically intensive with increasing processing automation, advanced material science and engineering, remote sensing, machine learning modeling, and growth forecasting using advanced artificial intelligence systems.

From these realizations and changing markets, exciting opportunities are emerging that if we strategically partner, invest, and innovate, will ultimately diversify, strengthen, and sustain the forest economy and the communities dependent upon it. Accelerating innovation in forest products and training a skilled workforce which meets the current and emerging needs of these new products and practices is key to meeting the increasing global demand for low-carbon materials, chemicals, and fuels that can come from forests

Currently, public perceptions and attitudes demonstrate a disconnect from the reality of modern forestry. Many people view forest management, harvesting, and products manufacture as ecologically detrimental, and requiring low-tech, high-exertion labor. Some of these perceptions are informed by images from long ago, where strength and brawn were the tools required to be successful, and sustainability wasn't standard practice. In reality, the engine of the modern forest economy is knowledge: utilizing technology, automation, science and engineering to increase the precision and positive impact of forest management practices and commercialize new forest-based processes and value-added products under the most sustainable and environmentally friendly means possible. For example, the University of Maine is pioneering the development and commercialization of value-added forest bioproducts manufactured from low-value forest residuals, including cellulosic nanofibrils for use in a multitude of products, biofuels such as diesel and jet fuel directly offsetting petrochemical consumption, and advanced materials including large scale 3D-printed bioproducts for use in transportation infrastructure, housing and manufacturing.

To build from our traditional assets and strengths and strategically transition our entire forest products sector through innovation and global assessment, in 2016 a unique cross-sector collaboration called Forest Opportunity Roadmap/Maine (FOR/Maine) was initiated between industry, communities, government, education, and nonprofits with support from the U.S. Economic Development Administration and our Maine Congressional Delegation.

As a founding member of FOR/Maine with extensive expertise, broad relationships, statewide reach, and research and development capacity across the forest economy and beyond (including that supported by McIntire-Stennis Cooperative Forestry through USDA National Institute of Food and Agriculture), the University of Maine is critical to this collaboration, providing knowledge-based information and innovations to deliver on FOR/Maine's strategic objectives. And, as the largest generator of graduates in the state, we can most impact the size and skill of the workforce for this sector (and most others in Maine). To facilitate partnership and progress, the university created the position of Forest Industry Business Development Manager – the job I currently hold. By serving as a focused sector advocate with subject matter expertise and access to the full span of scientists and engineers within our system, my work plays an important role in bringing diverse stakeholders together to assess industry and community needs, and collaboratively develop solutions that address needs and include all vested voices, including those historically excluded.

Not surprisingly, preparing the workforce for the future forest products economy is one of the primary goals identified by FOR/Maine, and our high-level strategies toward this include attracting young people into the industry in our oldest-in-the-nation state; ensuring that new, replacement, and incumbent workers have the skills needed for existing jobs, and preparing the workforce for emerging products and technologies in the industry. To inform how we specifically do this, I joined colleagues from UMaine's Margaret Chase Smith Policy Center and the University of Southern Maine Center for Business and Economic Research to develop the first-of-its kind forest industry workforce development strategy through analysis of current and projected workforce

and population trends, defining skill demands for current and emerging careers, and directed surveys and interviews with forest industry employers in the state.

Our research determined that by 2035, 37% of Maine's current forest economy workforce will be at or beyond retirement age, with the oldest workers currently concentrated in harvesting and logging. This translates to approximately 5,000 positions that will need to be filled in the next 15 years. As the older workforce exits, they take with them decades of learned experience that is not easily replicable, compelling companies to identify new ways to help transfer knowledge and train younger employees. Furthermore, as Maine transitions into newer emerging technologies, it is estimated that an additional 2,600 positions will be added. Many of these will be highly skilled, specialized STEM positions like photogrammetry, industrial engineers, process technicians, and programmers. However, it should be noted that in a recent UMaine study of 177 forest product firms referenced in our report noted a strong need for employee soft skills such as managing uncertainty, flexibility, adaptability, along with communication, data-based decision making and digital skills. Professional development must include both the technical and soft skills to increase employee success.

To meet this need, our report recommends the development of workforce pipelines through six strategic actions, many of which may be relevant in your own districts and states for this and other traditional industries:

1) Design, prepare, and execute a coordinated marketing and branding campaign that showcases the career opportunities in forest products in Maine, as careers in the sector are often overlooked in part because of the negative publicity in recent years due to mill closures or perceptions about the types of jobs available;

2) Foster greater education, outreach, and awareness of opportunities in the forest products sector to Maine secondary school students and advisors, leveraging the younger generation's interest in sustainability and stewardship;

3) Cultivate out-of-state workforce pipelines and integrate with statewide attraction and recruitment efforts, including from labor pools in forest product cluster regions elsewhere, Veterans looking to resettle after their service, and those who enjoy the outdoors;

4) Leverage existing workforce infrastructure to increase coordination and engagement and expand existing internship, apprenticeship, and training programs including through university research learning experiences and inclusion of justice or substance impacted individuals;

5) Community placemaking is important in workforce attraction and retention including access to affordable housing and quality health care; and

6) Maintain systems to continuously monitor and evaluate workforce conditions and requirements across the industry to be responsive in developing and adapting workforce development initiatives.

To advance these actions, and further develop and scale our FOR/Maine efforts, UMaine is currently leading our coalition in pursuing EDA Build Back Better funding to develop a Northern Forest bioeconomy cluster, and recently submitted our Phase II proposal.

Our work, and the workforce we are developing, has never been more essential to Maine and our nation's ability to sustainably manage and utilize our nation's forest resources, mitigate forest fire and invasive risks,

sequester carbon, improve clean air, water, and habitat, and protect the economic foundation and identity of many rural communities.

In closing, I would like to again thank the Committee and APLU for the opportunity to speak with you today, and for your interest and support of our nation's forests and the citizens and communities reliant on its rich resources. I look forward to answering your questions.