Testimony of

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Good morning. My name is Jahmy Hindman, senior vice president and chief technology officer for John Deere. On behalf of Deere's 80,000 employees worldwide, I want to thank the Committee for the opportunity to address you here today.

John Deere is dedicated to assisting customers in meeting the increasing global demand for food, fuel, shelter, and clothing. We tackle challenges like limited land, water, and rural labor by leveraging technology, including artificial intelligence, to empower growers to achieve higher productivity with fewer resources. This approach allows farmers to accomplish more with less while improving their economic and environmental sustainability.

Deere currently connects over 650,000 machines around the world using terrestrial cellular networks. This allows data generated during farming tasks like planting and harvesting to be sent to the cloud for analysis. The insights gained from this analysis help optimize a farmer's current tasks, such as improving logistics, and contribute to enhancing future farming seasons. A common concern regarding farmers' data is ownership, and we are unequivocal on this matter: John Deere customers retain control over their data, including how it is collected, stored, processed, and shared. That said, we also believe that the valuable insights that can be derived from this information will play a crucial role in meeting our industry's collective objective of sustaining a growing global population.

Farmers use these same connections to deliver data-driven instructions back to their machines, such as prescriptions for applying different rates of fertilizer to different parts of a field, navigation information used to auto-steer machines, and input specifications like seed and fertilizer. These network services are offered to farmers through partnerships with third-party companies, allowing farmers to have greater flexibility in choosing the services based on their own preferences and needs. However, it's vitally important to address connectivity challenges in rural areas, including in-field connectivity, to fully unlock the benefits of technology for farmers.

In addition to connecting our products, we have significantly increased the computing capability embedded within our products. This allows for more advanced control and enables a unique "plant-level management" capability, where each plant can be

nurtured to achieve its optimal potential. Our self-propelled sprayers, for example, feature 9 graphical processing units and 36 cameras. These cameras can scan a distance of 120 feet at a speed of 12 miles per hour. Through artificial intelligence, they analyze images to identify weed pixels, allowing precise herbicide application only where necessary. This See & Spray™ technology is not some futuristic vision, it is already in the field: in 2023, U.S. farmers achieved an impressive 61% reduction in contact herbicide usage across 275,000 acres of corn, soy, and cotton in 2023, saving approximately 2 million gallons of herbicide.

But reducing herbicide use is just the start of AI's potential in agriculture. For instance, we have integrated the same graphical processing units with stereo cameras in our autonomous tillage solution. This application of artificial intelligence allows us to identify obstacles in the fields, prompting the fully autonomous tractor and tillage tool to pause and await further instructions from the farmer, who may be engaged in other, higher-value tasks. This solution directly addresses labor scarcity, especially during critical agricultural periods such as harvest and planting. In the past two growing seasons, this AI technology facilitated autonomous operations on approximately 45,000 acres of corn and soy in North America. As rural-urban migration continues, AI-powered solutions like this one become even more essential to U.S. farm productivity.

Additionally, we leverage the power of AI to train models using our technical assistance data. This enables us to promptly address customer or dealer machine issues, ensuring swift problem resolution. AI allows us to efficiently identify similar issues across a machine population and expedite solutions for affected customers. As a result, the impact duration during crucial agronomic timing windows is significantly reduced.

The future of U.S. agriculture is being built today with tools that enable data-driven decision-making by farmers. Artificial intelligence plays a crucial role in unlocking the value of that data and turning it into actionable insights in the field. But we need your help.

U.S. Farmers would benefit greatly from incentives to help them acquire the precision technology needed to do their jobs more effectively and sustainably. As you deliberate the upcoming Farm bill, I urge you to consider such proposals as the PRECISE Act, and

the Precision Ag Loan Act, that would expand eligibility for USDA conservation and loan programs to include the adoption of precision technologies. Further, bills like the Last Acre Act are essential for farmers to fully leverage the benefits of AI and precision technologies.

Putting these technologies in the hands of America's farmers not only improves productivity and profitability for growers, but also enables them to produce enough food, fuel, shelter, and clothing to sustain the growing world population. And that benefits us all.

Thank you.