

Testimony in support of Engrossed House Bill 1379

Andrew P. Armacost, President, University of North Dakota

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Chairman Bekkedahl and Members of the Senate Appropriations Committee,

For the record my name is Andy Armacost, and I am the President of the University of North Dakota. I am here today to speak in favor of House Bill 1379 and, in particular, the establishment of the Economic Diversification Research Fund.

Such a fund gives universities an advantage in creating new knowledge and new technologies. The fund will help elevate North Dakota's research capability, better preparing us to compete on a national stage. The funding can support laboratory technologies, competitive student stipends, seed funding for research innovation, and a bridge to push the application of lab ideas into the commercial world. At UND, this includes opportunities in medicine, the biosciences, engineering, national security, cyber security, autonomy, materials, and more.

With this funding, we can recruit and retain top-quality faculty and students, enhance academic programs to train a high-tech workforce, and become stronger partners with industry and with other universities. We will compete for and secure -- often in partnership with industry -- federal funding in strategic areas. University research can help diversify the economy of North Dakota. Strong college and university research activity is critical in every high-tech area of economic development -- especially at the leading edge of technology. Investing in and strengthening North Dakota's university research, as part of a strategy to diversify and grow the state's economy, will ensure that North Dakota plays a role in technology development and acquires a strong capability to train the workforce of the future.

Let me share with you several examples of how UND has applied research to dramatically impact the state. You are likely familiar with the Northern Plains UAS Test Site and the Vantis system. But did you know the origin for both was research at the University of North Dakota? Radar research at UND reaching back nearly two decades created the building blocks for the nation's first beyond visual line of sight system, which enabled UAS testing and operations across the state. Making this leap required years of research on how to build the system, again, spearheaded by researchers at UND. The result of building this capability has yielded one of the nation's most advanced ecosystems for UAS, comprising North Dakota colleges and universities, NPUASTS, GFAFB, Grand Sky, and dozens of private firms in the UAS world. It started with and continues through research at UND.

Here's another example. Two UND professors, Travis Desell and Jim Higgins, developed novel AI algorithms useful in airport planning. In 2016, along with two other UND teammates -- Josh Riedy as CEO and Brett VanHuizen as general counsel -- they created a firm called HubEdge, which commercialized the research into a product now central to FedEx's airport operations. This team then combined their entrepreneurial spirit with UND's research in uncrewed aircraft. The firm they founded, Airtonomy, now known as Thread, which recently earned \$15 million in venture funding from the North Dakota Growth Fund. This is a great story of how university research, combined with the entrepreneurial spirit, can have a direct impact on the economic vibrancy of our state.

Numerous other examples exist for how research connected to solving problems can build industry opportunities. For instance, Professor Kouhyar Tavakolian and his colleagues in our biomedical engineering program have a series of research projects geared toward commercial application. One of his research partnerships is with a firm called SafetySpect, proudly headquartered at the UND Center for Innovation. Together they are developing commercial and military applications for a hand-held technology platform that detects and analyzes specific pathogens in real-time. This startup firm is having extraordinary success, and is following a trajectory with many unfolding opportunities, like Thread. National venture capital firms are eyeing SafetySpect for investment, and we are eager to see where the collaboration goes. Again, the impact of university research is clear from this example.

Finally, I'll reference my experience as a researcher and entrepreneur. As a 30-year-old PhD student, I, along with my advisor, created a new class of models and algorithms that enabled us to solve huge logistics problems. Working with the UPS air group, we implemented these algorithms for the company in 2000. They have been in place since, helping this Fortune 50 company make strategic decisions about their flight routes and their fleet of hundreds of aircraft, saving billions of dollars. Later, in my life as a professor, I was involved directly in the research and development of assistive technologies for children with disabilities and the commercialization of those technologies.

My point: I have been part of making this model work: taking ideas from research to commercialization. I commit to putting my full effort as a member of this new fund's advisory committee to put the state's money to great use. I can't think of two better presidents to make an impact on this board: NDSU's Dave Cook, with his exceptional background in economic development, and me, as a technologist who has put research into commercial play.

We have seen the capacity of UND, NDSU, and our other colleges and universities to do this. We have proven this can work. This bill provides funding that is central to making this happen in North Dakota on a grander scale.

Thank you and let me now turn it over to President Steve Shirley from Minot State University.