COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY

"*Head Health Challenge*: Preventing Head Trauma from Football Field to Shop Floor to Battlefield."

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Written Testimony

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Chairwoman Comstock, Ranking Member Lipinski and distinguished members of the Subcommittee, thank you for the opportunity to participate in today's discussion on the *Head Health Challenge*.

My name is Shawn Springs. I am the Chief Executive Officer of Windpact, a Northern Virginia based safety technology company I founded in 2011. Windpact is an innovative startup with a goal to become the most advanced impact protection company in the world. We leverage our patented Crash Cloud™ technology to improve impact performance in helmets and protective gear. Learning and accepting guidance from the medical community, our aim is to be the catalyst of innovation for impact protection technology so manufacturers can build better products for their customers.

Windpact partners with top equipment brands to improve products by replacing their existing padding with our Crash Cloud technology. We are working with multiple customers across sports and recreation, including football, baseball, lacrosse and hockey helmet brands, and we are currently negotiating partnerships in other sectors, including the military and automotive.

My inspiration for founding Windpact stems from my desire to make playing sports safer for the next generation of athletes. I spent over 20 years playing football, from the youth level to the professional level, playing 13 years in the National Football League (NFL). Football is a beautiful sport when played properly within the confines of the rules. Even when played correctly, there are some inherent dangers that are unavoidable. Having sustained concussions and witnessed concussions among friends and teammates, I developed a sense of urgency and obligation to work towards a solution and effect change. It is important to me to protect future players from injury and make both the game I love and other sports safer.

There has been growing negative attention directed at sports in the past few years with the elevated awareness of concussions and injury, resulting in a reduced participation in sports,

especially at the youth level. I feel strongly that this is the opposite reaction that is needed. Team sports and recreational activities are invaluable in what they provide to our communities and our children. Studies have found that participation in these activities makes us healthier, and the values of teamwork, hard work and discipline have been shown to make more productive citizens.

In 2013, the NFL, General Electric and Under Armour announced a partnership with the National Institute of Science & Technology (NIST) with the launch of the *Head Health Challenge I, II & III*. This four-year, $60 million collaboration was formed to accelerate the diagnosis and improvement of treatment of traumatic brain injury. The *Head Health Challenge* (HHC) was followed by additional programs supported by the NFL's Play Smart, Play Safe initiative. The annual *1st and Future Startup Competition* held at the Super Bowl, which last year, teamed the NFL with Texas Medical Center and the *HeadHealthTECH (HHTC)* group of challenges, launched over the last 12 months, which teamed the NFL and Football Research, Inc. (FRI) with Duke University's Clinical and Translational Science Institute.

Windpact has participated in a few of the *Head Health Challenge* competitions, resulting in a first-place victory in the *1st and Future Competition*, as well as an award under the *HeadHealthTECH II Challenge*.

As a startup company, gaining access to, and trust from, larger brands can be a challenge. As a recipient of multiple awards, we have found that the formal acknowledgement and support of our technology by an institution like the NIST or Duke University's Clinical and Translational Science Institute, through the *HeadHealthTECH* program, provides welcome validation and legitimacy to our own findings. This has opened doors with funding partners as well as commercial opportunities, which are so critical to gaining traction as an emerging company.

Through our applications to *HHC* and *HHTC* programs, we learned the importance of understanding the specific underlying mission behind each of the programs. For instance, the first *Head Health Challenge* was focused on improving the diagnosis and treatment of patients with traumatic brain injury. Windpact initially applied to the *Head Health Challenge II*, but the program mission didn't perfectly match our business model and technology, and our application was turned down. The *HeadHealthTECH* challenge is specifically aimed at commercializing and deploying technologies that show promise in improving the health of professional football players. The *HeadHealthTECH* challenge has a mission in alignment with Windpact's current state of development, ultimately resulting in their decision to award our company funding.

Additionally, we learned the importance of tailoring an application to fit those program goals. In one instance, Windpact's grant application requested funds that would enable us to achieve significant gains on several development fronts, including physical prototyping of helmets, as well as initial brain modeling and virtual model simulation. Ultimately, our application was too ambitious for the program and Windpact was not selected as a recipient of that grant. We drew on our experience and our subsequent successful application contained a significantly pared back set of objectives and smaller funding request.

Based on our experience with these competitions, I strongly believe that public-private science prize competitions are invaluable to the advancement of player safety. The NFL has done a good

job the past few years partnering with corporations and research facilities to encourage the improvement of technology to protect its players. And while football has received the bulk of the attention for injuries to its athletes, they are now also receiving compliments for the work they are doing to spur on innovators, entrepreneurs and manufacturers to build the next generation of protective gear.

Other industries can follow suit by creating their own initiatives to improve safety. Protecting our loved ones with better equipment is Windpact's stated mission, but it is also a common goal for parents, players, coaches, emergency responders, military personnel, and others. Our experience has been that the public-private science prize is an excellent way to spur innovation and speed much needed improvements to market. With the right partners supporting the funding, a program like the *Head Health Challenge* provides opportunities to young companies beyond what would otherwise be accessible to them. We would recommend continued exploration and investment in these types of competitions across sports and beyond.

As it applies to head health among athletes, studies have highlighted the dangers of concussion in a wide variety of sports, including football, hockey, lacrosse, wrestling, rugby, and girls' soccer. Due to recent studies, women's lacrosse, for example, is facing new standards for protective headgear. The state of Florida is the first to mandate that all girls playing high school lacrosse wear headgear, and it is widely expected that other states will follow suit. Windpact's technology is in the first girls' lacrosse headgear to pass the stringent ASTM standards.

Head protection in the cycling industry offers another significant opportunity for new standards and innovation driven by public-private funding support. Today, most cycling helmets continue to rely on dated rigid foam technology to address an outdated Consumer Product Safety Commission certification standard. Anecdotally, we know that concussions and other mild traumatic brain injuries can occur at impact speeds far below those measured by the certification standard.

Another consideration for leveraging prize money to spur innovation is evaluating the size of the grants. Using *HeadHealthTECH* as an example, from a significant pool of funds ($60 million), the program appears to be on track to award many very modest sized grants, from $20,000 to $190,000. This is helpful to spread funding to multiple recipients, but also limits the gains any one recipient can make with prize funding. I would recommend more flexibility in award size to encourage bolder and more ambitious ideas, as well as those that demonstrate incremental improvements.

Thank you for the opportunity to offer my testimony and I look forward to answering any questions.