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Written Testimony from Dr. John G. Duesler, Jr.

President of the PA Drone Association

For

**Public Hearing by the Pennsylvania Senate Transportation Committee
(Senator Wayne Langerholc, Jr., Chair) at Johnstown Airport on April 20,
2023.**

Secretary Carroll, Senator Langerholc, Committee Members, Fellow Panel Members, and our Johnstown Friends...good morning.

My name is Dr. John G. Duesler, Jr. and I am the President of the Pennsylvania Drone Association, as well as a small business owner whose drones operate during the broadcasting of the biggest events in sports.

It is my privilege and honor to represent our Pennsylvania Drone Community and Industry here today to further strengthen our relationship with PennDOT. Our partnership began a few years ago with your support of our drone survey to gain further insights into the already rising drone economy in our commonwealth and continues here today.

The joint PennDOT/PA Drone Association report recently published describes 28 different industries that right now, at this very moment, are deploying drones in their industries. Construction, media, real estate...all natural domains for drone ops. But insurance, telecommunications, agriculture, and architecture? These industries may not be the first to come to mind when we consider drone applications, yet these and dozens of other sectors in our state economy are finding drones to be a cost efficient, time-saving, and safer alternative to their long-running business operations.

While our survey was qualitative, there are some potent themes that emerged from our work and that you and your PennDOT colleagues may consider as you plan for the rising drone economy.

1. Aviation in Pennsylvania no longer exists just within the purview of airports, heliports, and airfields.
2. Drones present our commonwealth with a new and potent infrastructure that can support and be integrated in the current multi-modal transportation system.
3. Unmanned Aerial Vehicles and Unmanned Aerial Systems are no longer just a future possibility or potential technological innovation in Pennsylvania; they are operating today in a compliant and productive manner throughout our commonwealth.
4. With what is currently happening with drones throughout our commonwealth and the enormous talent pool that our PA Drone Association has encountered and now represents, we have the opportunity to help fulfill Governor Shapiro's mandate for transformation and innovation in our state to provide a bright future to our citizens.
5. Drones present, perhaps, the most tangible and potent development in generations to inject hope back into a wide swath of our citizenry.

Please allow me to briefly comment on these five points.

1. Currently there are 3552 licensed remote pilots registered in Pennsylvania. Yet, unlike other commercial pilots, these flyers are farmers, firemen, construction foremen, and operators in dozens of other industries throughout Pennsylvania. I dare to say that drones have launched an aviation craze in our commonwealth; one that may have been anticipated, yet not sufficiently accommodated for on a state level.

With a significant number of drones now being integrated into the airspace throughout the commonwealth, the PA Drone Association and the stakeholders we represent believe it is now time for PennDOT to give greater credence to aviation within your department. This may be accomplished by first strengthening the Bureau of Aviation and appointing a dedicated leader, giving her the status and jurisdiction necessary to provide leadership and guidance throughout the aviation operations in our state. Such a development will help further develop public policy to support the current (and future) state of real aviation in Pennsylvania.

2. For many of our citizens and neighbors, drones are thought of as toys your nephew received as a Christmas or birthday present. On the other hand, many also jump to the conclusion that drones are inherently used for

military purposes. While there is truth in both scenarios, the broader truth is that drones are now accessible to a wider audience than ever for both personal enhancement and professional advancement.

With thousands of drones flying in our commonwealth each week, the next incarnation of the drone economy will be to support operations across a greater distance by developing a robust infrastructure to monitor and manage drone operations. We are pleased to report that a prototype for this UTM (unmanned traffic management) system is now being considered here in Johnstown and will become a model to be deployed, not just across airfields and communities throughout the state, but nationwide as well.

This infrastructure initiative has the potential to revitalize and further link public airports throughout Pennsylvania to become, what I call, the aerial rails to trails system for transportation, delivery, and other services.

3. Quite frankly, all these forward-looking possibilities are currently looking back at us and saying, “We are here now!” More importantly, through a collaborative effort with state and federal authorities, drone operators and systems are working every day in a productive and compliant manner, given the high degree of regulation required for aviation in Pennsylvania.

This is a crucial element for the successful growth of the drone economy, as it demonstrates our respect for regulation, our collaborative approach to developing drone technologies, and our regional, state, and federal partners’ willingness to support the development of these new and exciting and productive aviation technologies. We have shown that we can all work together to achieve drone integration. Let us continue to strengthen those bonds.

4. Indeed, the rapid evolution of drone technologies in Pennsylvania is the ideal platform to help in fulfilling Governor Shapiro’s mandate for transformative and innovative initiatives. Quite frankly, we within the drone industry view our flyers as a platform, much like the Defense Department’s ARPANET 50 years ago, that manifested new industries, operations, and economies throughout the state, nation, and globally.

Indeed, given what we know now about drones, and how they are currently being used, it is not an overstatement to describe Unmanned Aerial Systems as the Internet of the Sky! Drones offer widespread availability; they are being adopted across almost every industry; they support a wide variety of operations; they are being networked to operate in tandem and autonomously; and they are revolutionizing our economy. Combined, the

parallels between the digital platforms we know as the internet and the aerial platforms we know as drones are undeniable.

5. And what is perhaps the most potent aspect of drones, and the drone economy is the appeal, interest, and hope these systems are offering to our neighbors and citizens. In Northeastern Pennsylvania, we are finding workers energized by the possibilities of good paying jobs where they learn how to operate this new work tool and be fulfilled to see their work product put to such productive use. In public safety teams throughout Pennsylvania, we are seeing law enforcement officials, fire fighters, and first responders clamoring to be part of newly forming drone teams that are making our communities safer. In corporations throughout our commonwealth, we are seeing a rising tide of innovative hardware and software solutions that are receiving attention throughout the globe and filling these companies with pride in their work. And here in Johnstown, we are seeing elected officials, county agencies, community leaders, and residents universally supporting the adoption of drone technologies to help their communities and provide hope for the future where uncertainty, skepticism, and tragedy is all too commonplace.

Such excitement, agreement, and unified energies are rare to find these days, but this hope in the future is precisely what we are seeing as we work to gain more widespread adoption and integration of drones into our Pennsylvania airspace.

Of course, all this begs the question...how PennDOT can help. In my written testimony, I outline several specific and necessary actions whereby PennDOT and the PA Drone Association can provide state and national leadership in the drone economy. In summary, my spoken testimony will provide three general themes that I trust you will consider.

1. Let us, PennDOT and the Pennsylvania Drone Association, continue to foster robust and meaningful communications between us that focuses on feasibility, funding, and a framework for widespread integration of unmanned systems throughout the commonwealth. Such efforts will result in measurable and demonstrable strategies to guide transportation and commerce for the citizens of our commonwealth into the future.
2. Let us develop modern and efficient funding strategies that will support the Transportation Advisory Committee's \$8.5 million aggregate budget for grants, infrastructure modernization, outreach and training, an aviation information exchange, and other non-trivial initiatives to advance aviation in Pennsylvania. This seed funding will provide not only a potent return on investment but enhance the services and operations to our citizenry.

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3. Let us together respect Pennsylvania's monumental place in the history of transportation in America but let us also remain open-minded and optimistic and inspired about the role drones are currently playing and will play in our future endeavors. We know our neighboring states, New York, Ohio, Virginia, and others are working hard on integrating drones into their economies and airspace. Pennsylvania cannot sit idly by, nor can we afford to miss this opportunity. The future is coming, and drones will be part of it.

Finally, I will leave you with this insight regarding the nature of technology and innovation.

Have you noticed that, when typing your emails now, your computer does not just correct your spelling, but is actually completing your sentences for you?

When you are changing lanes on the Pennsylvania Turnpike, does your seat vibrate now to let you know you are drifting out of your lane?

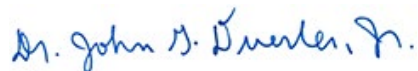
And there are dozens of other instances, subtle for sure, but profound, of daily occurrences where technologies are showing up in ways that we never asked for.

It is as if technology and innovation have a life of their own.

So, towards that end, I leave you with this--whether in transportation, telecommunications, or in any other industry in our commonwealth, technology and innovation do not show up with a parade or fireworks, it just arrives. And right now, today, drones have certainly arrived.

Let's get to work and show our citizens and nation how Pennsylvania leads.

Thank you.



20 April 2023 in Johnstown, Pennsylvania

APPENDIX A: PennDOT Action Steps to Advance Aviation in Pennsylvania

Item	Setup / License / Study Costs	Infrastructure / Integration Costs	PennDOT FTE Needs
<p>Planning and developing infrastructure needed to deploy alternative fuels such as hybrid -electric and electric -powered aircraft.</p> <p>Planning and developing the electric power capacity to construct charging facilities at airports.</p>	<p>Other states are looking at this, but they usually roll this into an overall AAM study: Utah: \$75,000 Alaska; \$100,000 Virginia: \$150,000 Ohio/NC/FLA: \$250,000+</p>	<p>This would need to be post-study. However, you could explore funding 3-5 pilot projects around PA. WRT electric, \$250,000 / airport is more than enough; WRT hydrogen YOU can't afford to build it – but you can talk to Independence Hydrogen or Plug about partnering to develop sites as local generation is the economically viable option</p>	0.5FTE
<p>Planning (Feasibility Study, CONOPS, etc) for Advanced Air Mobility and EVTOL aircraft.</p>	<p>See above – the planning and study for next gen power is part of an overall submission</p>	<p>This will likely eventually get covered through existing grant and funding mechanisms – may need to identify \$5-10MM of pilot money in a few years</p>	See above
<p>Establish or gain licensing for a UAS information and data exchange program to foster public- and private -sector collaboration on research, testing, and deployment.</p>	<p>Use a COTS solution for connectivity and syndication List (VA / CA / AK) is \$100K/year for SaaS solution</p>	<p>For automated systems / sensor integration, about \$25K per, so figure about \$100K - \$150K to fund specific demonstrations, like radar integration or Public Safety dispatch</p>	1.0 FTE to manage the program / do outreach
<p>Fund multiple permanent, full-time positions within PennDOT's Bureau of Aviation for a new Aviation Technology Division that includes a UAS/UAM/AAM manager to facilitate coordination of statewide drone/VTOL initiatives with policy, public safety, and data management, among others.</p>			<p>Recommend 1-2 FTE: 0.5 to manage intermittent projects like studies; 0.5 -1.0 to support information and data exchange and community outreach; 1 to support policy, state agency outreach and industry outreach - Examples: VA, OK, UT, WA each have 1-2 people, MA, TX, OH have 2, NC has 2</p>
<p>Continue the Pennsylvania interagency group (PennDOT, DEP, DGS,</p>	<p>Is this a permanent or ongoing activity? VA had a UAS work group</p>	N/A	See above – 0.5FTE

Item	Setup / License / Study Costs	Infrastructure / Integration Costs	PennDOT FTE Needs
PSP, PTC, PEMA) to evaluate existing agency-specific drone programs and uses.	that transitioned to the FIX User Group		
Develop a CONOPS to explore the possibility of a centralized statewide UAS program. (drone use)	This is what Charles Werner is doing in VA – 0.5 FTE		0.5 FTE
Develop a framework for the safe, efficient use of drones and other unmanned aircraft technologies in the state of Pennsylvania. (enablement)	This is focused on the Enablement activities like Cambria County – study and planning cost is \$100K - \$200K	Plan on about \$25,000 per square mile of enablement over the next year or so – so do 40 square miles for \$1MM (uses the information and data exchange described above)	0.5 FTE