

1 COMMONWEALTH OF PENNSYLVANIA

2 PUBLIC SAFETY COMMITTEE

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4 PUBLIC SAFETY MEETING

5 * * * * *

6 BEFORE: CURTIS JONES, JR., Chair

7 Darrell Clarke, President

8 Kendra Brooks, Vice Chair

9 Anthony Phillips, Member

10 Isaiah Thomas, Member

11 Jamie Gauthier, Member

12 Quetcy M. Lozada, Member

13 HEARING: Friday, September 29, 2023

14 2:17 p.m.

15 LOCATION: 1400 JFK Boulevard

16 Philadelphia, PA 19107

17 WITNESSES: Roxana Kennedy, Miriam Fox, Abrem Ayana,

18 Dr. Justin Thomas, Kevin Bethel, Eric Rosa, Kiernan

19 Carroll, Francis Healy

20

21 Reporter: Kathleen Formichelli

22

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1 P R O C E E D I N G S

2 -----

3 CHAIR:

4 Good afternoon, everyone. Good

5 afternoon everyone. This is a public hearing of the

6 Committee on Public Safety to hear testimony on

7 resolution number 230523. And before we get started,

8 I want to recognize we have a quorum in the form of

9 Member Lozada and a special guest here President

10 Clarke, myself, Jamie Gauthier, Member Brooks, Member

11 Phillips and Member Thomas are all here today.

12 With that, Mr. Glass, would you please

13 read the title of the resolution.

14 MR. GLASS:

15 Yes, Mr. Chairman, resolution number

16 230523, authorizing the Committee on Public Safety to

17 conduct hearings regarding use of unmanned aircraft

18 systems, also known as drones, as an additional law

19 enforcement tool that would enhance public safety in

20 Philadelphia.

21 CHAIR:

22 Thank you, Mr. Glass. And before we

23 start to hear the testimony, I would like to recognize

24 President Clarke who is the author of this resolution.

25

1 PRESIDENT CLARKE:
2 Good morning. Thank you. Thank you,
3 Mr. Chair, members of the committee. I would just
4 like to thank you for allowing us to have this
5 opportunity live and in living color as it relates to
6 this particular initiative/hearing/discussion. As you
7 can recall, over the last several years, we've been
8 having a lot of discussion about ways to deal with
9 anti-violence initiatives, deal with prevention, deal
10 with ways of trying to send the numbers down. I'd
11 like to say and thank all individuals involved with
12 those anti-violence initiatives by members of our
13 community, all people that have been engaged. I'd
14 like to thank the Philadelphia police, I'd like to
15 thank all public safety officials. I'd like to thank
16 this council. We are trending down, which is a good
17 thing.
18 But at a point in time when we feel
19 comfortable with 450 homicides a year, then we've
20 already lost. So the simple reality is that during
21 that course of discussion we've had many conversations
22 about all aspects of trying to deal with violence in
23 the City of Philadelphia, be it prevention,
24 enforcement, or just simply providing resources to
25 people that ultimately with an intersection of the

1 criminal justice system if they don't get the
2 appropriate attention.
3 So today thank you for having this
4 hearing so we can talk about the use of technology,
5 something that has been discussed. The City of
6 Philadelphia, with funding from City council and
7 implementation of the administration side has put a
8 series of camera initiatives. As you recall, council
9 members, we stood in front of Bartram High and talked
10 about putting cameras around commercial corridors. We
11 stood in front of recreation centers to make sure and
12 the hope is to prevent any type of criminal activity.
13
14 Unfortunately, from time to time, such
15 as happened in your district, Councilman, in
16 Roxborough and actually happened in my district. A
17 week and a half after we put a camera at the Tenth and
18 Oxford playground, we had an unfortunate incident. So
19 this is just another phase and another potential tool
20 that can be used to help prevent crime and to assist
21 our law enforcement officers in dealing with any
22 particular incident, but I keep emphasizing the fact
23 that prevention is always our preference.
24 Had a conversation with Chief Bethel
25 earlier on, and he told me about a very exciting

1 initiative about utilizing technology and particularly
2 feel good about what he's done because it involves the
3 young people of the Philadelphia School District,
4 which I think is a key part of what we're proposing.
5 So thank you all, Mr. Chair and we'll have some good
6 conversation and, I believe a couple of presentations
7 on terms of the technology that could potentially be
8 used to help us prevent crime in the City of
9 Philadelphia.

10 CHAIR:

11 Thank you, Mr. President, for your
12 willingness to go farther than the borders of this
13 city to find resources for this city. We have
14 traveled, you have traveled more extensively than
15 most, but took us along with you to look at what other
16 cities are doing and look at best practices. So I
17 want to thank you publicly for that. Are there any
18 other members of the committee would like to make an
19 opening statement? Seeing none. Mr. Glass, who is
20 the first panel to testify?

21 MR. GLASS:

22 Mr. Chairman, our first panel is Roxanna
23 Kennedy, the Chief of Police of the Chula Vista Police
24 Department, Abrem Ayana, police lieutenant in the
25 Brookhaven Police Department and Dr. Justin Thomas,

1 director of controls of Exyn Technologies.

2 CHAIR:

3 Thank you all. Would you approach the
4 witness table? And thank you for coming to the City
5 of Philadelphia, city of brotherly love and sisterly
6 effectiveness.

7 MR. GLASS:

8 Mr. Chairman, our first witness, Roxanna
9 Kennedy, is on the screen.

10 CHAIR:

11 Oh, well, thank you for not coming.

12 MS. KENNEDY:

13 Well, thank you. Good afternoon,
14 Philadelphia. I would love to have been there, but
15 I'm back in San Diego, California. So a little bit
16 about me. My name is Roxanna Kennedy. I'm the chief
17 of police for the Chula Vista Police Department. And
18 it is truly an honor to have been invited to be a
19 speaker at the Philadelphia City Council Committee on
20 Public Safety.

21 A little bit about myself. I've been in
22 law enforcement for 31 years. I have worked myself up
23 through the ranks at Chula Vista Police Department
24 from officer to chief of police. And in December, I
25 will have served as a Chief of Police for seven years.

1 I currently serve as president of the San Diego
2 County Chief and Sheriff's Association and have for
3 the past four years. And this past March, I was
4 honored to testify in Congress on our UAS drone
5 program. And I sit on the FAA's Counter Drone
6 Committee as a co-lead of one of the working groups.
7 And I'm also very honored that this March, I will be
8 the keynote speaker at the World Police Summit in
9 Dubai, talking about the future of drones and what
10 we're doing. I'm also a Part 107 drone pilot, and I
11 am very honored also to have with me here today
12 Captain Miriam Fox. She oversees our drone program,
13 and she'll be available for questions as well.
14 So, next slide. Before I begin, I'd
15 first like to point out for the record that I do not
16 consider myself a drone or a technology expert. Yes,
17 I know much more than the average person. However,
18 what I'm here to share with you today is the value of
19 drones and why they are an invaluable asset to public
20 safety and how they're here for the good, for our
21 community.
22 In police work it's important for you to
23 understand that we don't have a crystal ball, so we
24 cannot prepare in advance for what we'll encounter. We
25 leave so much to chance in policing, and there can be

1 unpredictable consequences. For the past five years
2 Chula Vista Police Department has blazed a path that I
3 never imagined when I was appointed chief almost seven
4 years ago. You see, the story about drones for good
5 is not a technical or regulatory story. It's a story
6 about the positive impact of technology on people's
7 lives. People will only trust technology when they
8 have a voice in its use and can see the direct
9 benefits that impact their lives and communities.
10 Now, Chula Vista Police Department is a
11 world class drone program. Where is Chula Vista? As
12 you'll see on the slide, a little bit about my city.
13 We are on the other side of the United States, so it
14 does take a while to get to Philadelphia. The City of
15 Chula Vista is located in San Diego County in Southern
16 California, and we are the second largest city in our
17 county. We're 52 square miles and just 7 miles north
18 of the Mexico border. We have 289 sworn officers, a
19 total of 450 staff with civilians and volunteers. And
20 here's something interesting. We are one of the
21 lowest staffed agencies in the State of California,
22 and that's really important because it requires us to
23 be creative with how we provide public safety.
24 Staffing, as you know, is critical for all police
25 agencies right now. And I am certain Philadelphia is

1 struggling, as we all are, to recruit and retain
2 officers.

3 This is my story as a police chief and
4 why we implemented DFR at Chula Vista Police
5 Department. And you need to understand, as I'm
6 certain in Philadelphia, safety has always been a
7 priority for us in law enforcement, and especially me
8 and Chula Vista.

9 So, next slide. It started with the
10 riot. And that might sound kind of funny, but before I
11 became a chief of police in 2016, a local agency in
12 San Diego had an officer involved shooting that
13 erupted into days of protests that turned into riots.
14 And we've seen how this can happen and what it does to
15 a community. I came back to work after observing four
16 days of rioting and the challenges that this agency
17 faced and I learned a lot. And it made me consider,
18 how do we provide our officers with more information
19 as they respond to these uncertain calls? I met
20 with my watch commanders, and they proposed a pilot
21 program to use patrol officers as plain clothes
22 scouting team. These officers would focus on getting
23 to high risk calls in undercover cars and provide live
24 intelligence and tactical advice to responding
25 officers. We called them Sarah Officers and they

1 would not intervene in the call except for an
2 emergency.
3 The concept was to assess the situation
4 and provide better intelligence to responding
5 officers. The hope was that better tactics would lead
6 to better outcomes. This intelligence from a seasoned
7 officer could then be used to provide an appropriate
8 response. The Sarah Officer was a great de-escalation
9 tool, but not a sustainable model in the long term due
10 to staffing challenges. That's how we started
11 discussing what if we use drones for the same purpose
12 and really the rest is history.
13 We're going to watch two short videos
14 and remember these are from 2018 and so technology was
15 a little different in 2018, but they illustrate the
16 importance of drones and how they can benefit you in
17 your community.
18 Next slide. So this is really a
19 leadership moment in my mind. There we go. We made
20 it. Technology is always fun too, right? This was a
21 big a-ha moment for me. It was when it all started to
22 make sense to me. This was the first big success that
23 we had and it was a disturbance call where a car was
24 driving erratically, chasing a motorcycle and you'll
25 see in just one minute. Keep in mind that when you

1 watch this video there were no patrol officers
2 available. Every single unit was tied up on priority
3 calls for service. So we sent a drone and it was
4 actually my watch commander that was one of the drone
5 pilots that you'll hear in this video. And this is
6 what we saw.
7 So this driver is driving on the wrong
8 side of the road. This is right near a school, a very
9 congested area and we had no one to respond. You can
10 hear them saying, is there any unit that can break?
11 So as this continues on, you'll see that there's an
12 argument that's occurring and it was evidence that it
13 was a domestic violence type situation that was
14 occurring here. But this person was not giving up and
15 the person in the car was adamant. And as this
16 proceeds you'll see that she will take that car and
17 ram the gentleman on the motorcycle. And the whole
18 time we're trying to get officers there, but
19 everyone's on emergency calls. In all
20 cases in law enforcement you would think the person
21 would walk away so they would be safe. But
22 unfortunately this individual comes back and then it
23 continues and then she rams him again with the car.
24 So as a chief, this would be a case that we would have
25 never got to. And to me, the important thing with

1 this drone program is that the drone pilots are
2 getting information for us. This case went forward to
3 the judge. She was arrested for assault with a deadly
4 weapon and a domestic violence. And the other
5 individual on the motorcycle, this is law enforcement,
6 was a stolen motorcycle. And that's actually what she
7 was mad about. And he was arrested too. So in this
8 case, the judge indicated that the only way this case
9 would have moved forward was because of the fact that
10 we had the video footage of it. Otherwise it would
11 have been a he said/she said type situation.
12 The next video that I want to show you
13 that was really, for me, the very important case that
14 --- could you imagine a call coming out of a man with
15 a gun waving it around in front of a restaurant?
16 People are calling in to dispatch. They're
17 frightened. This is an area --- Chula Vista is 60
18 percent Hispanic in our community there. There was
19 Spanish speakers calling in. Thank goodness we have
20 dispatchers that speak Spanish as well as our drone
21 pilot. They hear a man waving a gun around.
22 Everyone's upset. People are kind of running and
23 moving around. They don't know other people are
24 walking by like it's nothing going on. We don't know
25 if he's mentally ill, if he's under the influence.

1 We're just not certain what's happening.
2 The pilot, you can play the video,
3 respond in a minute and a half. So you can imagine
4 the tactics and the concern as officers are responding
5 to a call with a man with a gun in front of a
6 restaurant. So he's just sitting there. At some
7 point, another man walks up, he's talking to him. It
8 just doesn't make complete sense to us. And we know
9 there have been national tragedies where people
10 respond to calls like this. And the importance of the
11 drone is that we're able to get more information so
12 that the officers can make better decisions.
13 A man with a gun, they would come up
14 with a strategy of how they would approach and from
15 what area. And they can see this. My officers can
16 see this on their cell phones and on their mobile data
17 computer. Before they get there, they can get the
18 picture of what's happening. You'll see, he put the
19 gun up to his mouth. At first, we didn't know what he
20 was going to do with that gun. Like, would we be
21 watching someone commit suicide in front of us? But
22 then he takes that gun and he lights a cigarette. So
23 it's not a gun, it's a lighter. And that in itself
24 changes the whole response. And when you can actually
25 see the puffs of smoke all that information is being

1 fed to my officers as they respond. And you see, they
2 respond and they're vigilant and they're careful, but
3 they're not responding, pointing their gun. They're
4 prepared. This individual was definitely under the
5 influence and had something that appeared like a gun.
6 And as I mentioned before, we've seen those national
7 tragedies where someone has mistaken a toy gun for a
8 real gun, and it ends up tragically.

9 So on this slide, I just wanted to give
10 you a picture, and I know the lieutenant who's with us
11 from Brookhaven will kind of give you the technical
12 and the tactical details of the program. I'm just
13 trying to give you an overview for you to understand.

14 We're 52 square miles. We have four different launch
15 sites that we fly from, and we're able to have
16 complete city coverage. Approximately 95 percent of
17 our city has drone as first responder coverage. These
18 drones are responding to actual calls for service, a
19 need for police assistance. And so as people say, oh,
20 well, why do you have drones only in this one area?

21 We move forward having drones have complete coverage,
22 so no one in our city feels like they're left out. We
23 want to make sure that everybody, no one feels
24 marginalized, that we have complete coverage of our
25 city.

1 Next slide. And also we provide
2 dashboards to our community so our community can go
3 online. They can see that we're very transparent of
4 how we're using our drone program. We update these
5 dashboards every 24 hours, and as of today, you'll see
6 that we are almost at 17,000 flights right now, and
7 that's over five years. And an important factor is of
8 the calls that our drone is first responders respond
9 to, 23 percent of those calls are cleared by drones
10 without the need to send a patrol officer. They
11 respond to these calls, and sometimes they determine
12 that there's really not a police need there, or that
13 the loud party or the incident has stopped and there's
14 no need for police to respond there. Twenty-three
15 (23) percent of our calls were able to clear without a
16 uniformed officer responding in a patrol car.
17 On average, our response time for our
18 drone to be first on scene is about a minute and a
19 half. And we know that on average, oftentimes it
20 takes much longer for a marked unit to get there
21 because of traffic and all the issues that we face
22 driving on the roads to get to a location. So a
23 minute and a half can provide invaluable information.
24 Next slide. When you look at our
25 response times, I know that's important to anyone.

1 Over the past five years, when you average out all the
2 calls our drones have responded to, it takes us half
3 the time to respond with a drone to priority one and
4 priority two calls for service. DFR cuts the response
5 time down for us in Chula Vista by 50 percent or less.

6 And that means that we're getting to those calls
7 quicker to help people with whatever their issue is.

8 Next slide. And this is where

9 transparency really comes into play. And I think it's
10 important and I make the recommendation to anyone to
11 have these types of dashboards so that your community,
12 when they have questions or concerns, when they see a
13 drone in the air, they think that drone is a police
14 drone. And there are many people out there flying
15 drones right now that are not related to law
16 enforcement. And so this gives them a map of where we
17 responded. So we provide for the community flight
18 maps to show the pathway of each drone flight, the
19 date, the time, the case number, the location, and the
20 reason for the call.

21 As you'll see up in the left-hand
22 corner, there is a route of a call in search of a
23 missing child. And so we think that's really
24 important for the community to know. And they can
25 also talk to any of our UAS pilots by sending us an

1 email and asking questions as well, or the phone calls
2 that come in. We make sure that we're very responsive
3 to our community because without community support,
4 this program would not work.

5 Next slide. So as you look at this and
6 what's important to your community and to your police
7 department, do you want your officers to have real
8 time information? We know the work we are doing is
9 laying the foundation for other agencies and drone
10 programs throughout the country and the world. And we
11 are doing our best to help others realize the benefits
12 of drones for good. Our program runs approximately a
13 million and a half to \$2 million and it covers one
14 drone lieutenant. We have a drone sergeant assigned.

15 We have two sworn drone as first responder officers,
16 pilots, and it's kind of technical. And we also have
17 pilots in command on our rooftop. That will change
18 down the road with technology changes and things will
19 be more automated. But right now we have 25 drone
20 operators.

21 And there's two types of drone programs.

22 There's the proactive drone program like we have with
23 DFR, and then there are tactical drones that we also
24 have that do crime mapping, accident reconstruction.
25 They can go, we call them drone in a trunk. Those

1 drones can respond to a missing child, to a car that
2 goes off the side of a cliff. So we have a very
3 robust program, but it's important for you to
4 understand that with these drones, transparency for
5 the community and making sure that your community
6 supports it. And funding doesn't always start in the
7 beginning, we started off with funding through our
8 police foundation and then we were able to showcase to
9 our city council and to our community the value of the
10 drone program. And then it ended up with us being
11 able to be funded for that. Next slide. I just
12 wanted to leave you --- I know my time is limited and
13 there's a lot to share and not enough time to go into
14 great detail. But I wanted to leave you with a couple
15 links that you could refer to for more information.
16 The first link is of my congressional testimony for
17 the FAA reauthorization where I spoke about the
18 importance of the use of drones in public safety and
19 how they benefit the American people.
20 And then the second link is to my
21 agency's website. Here you will see our DFR dashboard
22 and flight information. And our website is an
23 important, vital way that we keep our community
24 current and up to date on our drone program. So these
25 things are very important.

1 Next slide. And as I end today, what I
2 want to leave you with is the story of DFR is more
3 amazing than I could have ever imagined less than five
4 years ago. I've seen hundreds of videos where our
5 officers were able to use live streamed drone footage
6 to make life and death tactical decisions. And I
7 cannot imagine our patrol operations without drones.
8 DFR does not replace officers. It enhances the safety
9 officers of the community and of the subjects that we
10 encounter. Drones are one of the best de-escalation
11 tools that we have. It takes a lot of trial and error
12 from a technical standpoint to support a robust drone
13 program. A culture of safety, adherence to rules and
14 regulations, and attention to detail are what makes
15 safe flight possible.

16 What was a payoff for all this risk, you
17 may ask? Why would a police agency stake its
18 reputation on a pilot program? Because a reward,
19 saving lives and making our community safer is worth
20 measured risk and sacrifice. Thank you for allowing
21 us to share our story today, and I will be available
22 at the end for questions.

23 CHAIR:

24 So, first of all, thank you for your
25 insightful testimony. We usually wait until the

1 panels, but because you're distanced, we will ask
2 questions right away. And I'd like to, before I turn
3 over to Mike, ask, you mentioned tactical drones and
4 proactive drones. Briefly tell me what the difference
5 is in particular, cost and capability.

6 MS. KENNEDY:

7 So when I use the term proactive drones,
8 those are drones that are responding to actual calls
9 for service. So we don't randomly patrol. We don't
10 do what some might say is surveillance, right? We
11 respond to actual calls for service. When the
12 community calls and needs us, we will use a drone, but
13 we don't randomly patrol through our city. That's
14 just a decision we made at our department and that we
15 worked with our community because, remember, we
16 started over five years ago and drones were not
17 common. So we call it the crawl, walk, run phase, and
18 we're still at the end of the crawl phase right now.
19 So the DFR drone is a proactive drone
20 that is a larger drone that responds to calls for
21 service. Tactical drones we call reactive because
22 they're after the fact, right? Those drones are
23 sometimes officers will put them in the trunk of their
24 car, the drone officers, and they will respond to the
25 scene. After an incident has occurred, they'll pull

1 out their drone. They might need to get --- you might
2 have a subject that's just robbed a location, for
3 instance, and they believe the suspect is in the
4 general area. And so you might have that tactical
5 drone that's up searching that area. If it's an
6 alleyway or it's off the side of a cliff, and they're
7 down in a part of terrain that's hard to see, you
8 might send a tactical drone in the what I also call
9 tactical drones. Remember in Philadelphia, they might
10 not call them that.
11 I'm not certain what their terminology
12 is there, but some of the drones will do --- when you
13 have an accident scene and the traffic officers are
14 out there as quickly as possible, trying to get the
15 cars off the roadway and get traffic back moving
16 regularly, tactical drones can go in and prime map
17 that whole traffic scene and do it quickly, much
18 quicker than we could have done manually. Sometimes
19 you could have a road closed for hours upon end. These
20 drones can prime map it quickly and take aerial
21 pictures, and they can pinpoint with the actual
22 degrees of how far it is from this location. We call
23 it the POIs point of entry, point of impact. And they
24 can do that.
25 There's so many things. We have drones

1 that go inside buildings that can deliver a phone when
2 you're doing a hostage situation, and they can deliver
3 a phone and go in and have collision avoidance. It's
4 amazing, the technology. I mean, when I think back,
5 they didn't even have body one camera. We didn't have
6 computers when I started 31 years ago, it was very,
7 very different. So these drones are amazing.
8 And so understanding the difference is
9 important, because a DFR program is going to be
10 completely different than it is for a tactical
11 program. Drones can range from \$2,000 up to a couple
12 of hundred thousand dollars. The drones that we use
13 in Chula Vista for a DFR program are DJI drones. They
14 run around \$25,000 to \$30,000 apiece. And we do have
15 some other drones.
16 The best part of the drone and the most
17 important part of the drone, of course, is safety. But
18 the camera is what feeds us the information so that we
19 can make better decisions. It's up to each
20 organization to determine what the best use is. We
21 are hopeful down the road that we're going to have
22 more options. But this is new. It's still relatively
23 new technology.
24 CHAIR:
25 Are we connected? Okay.

1 MS. KENNEDY:

2 Yes, I hear you.

3 CHAIR:

4 Are there members of the committee who
5 have questions? President?

6 PRESIDENT CLARKE:

7 Thank you, Mr. Chair. And thank you for
8 joining us this afternoon on the presentation. Wanted
9 to start out by saying municipalities, states are all
10 different, As you obviously know, parts of the
11 country. City of Philadelphia, we have a significant
12 level of community participation in all aspects. We
13 have a police oversight committee. We have all types
14 of organizations where we interact with the police
15 department. The legislative body is deeply engrossed
16 in policy.

17 In your municipality as it relates to
18 the implementation of the program, first, was there a
19 policy of drone usage established within the
20 department? And not necessarily just the flyovers,
21 but the actual end portion of it as a result of
22 calling in an officer in based on what the drone saw.
23 And the second part is in terms of
24 community participation and buy in, because I noticed
25 you talked about transparency, which is obviously

1 important. Was there something established as you all
2 implemented this program to get community buy in for
3 drone uses? Because I can recall many years ago, it
4 was a significant fight here in the city council. I
5 think I might have been only member here at the time
6 when people didn't think we should use cameras
7 throughout the City of Philadelphia. So did you have
8 --- like, what's the early phases of this particular
9 program?

10 MS. KENNEDY:

11 So thank you. Yes, before we flew one
12 drone, we started back in actually 2015, having
13 community focus groups. We contact the ACLU. We
14 started just reaching out, doing a lot of reach out to
15 the community to see what the interest was in the
16 community. Because as I mentioned, it was brand new
17 technology. It was something that sounded --- you
18 know, I joke a lot and I laugh because when they
19 brought this to my attention years ago, I thought they
20 were crazy. I said, what is this George Jetson stuff?

21 You're talking about drones flying in the sky. It
22 made absolutely no sense to me. But as we started
23 talking about it and we started looking at these
24 things and I started understanding the value for our
25 officers and for our community and honestly, for the

1 subjects that we encounter, we had to start moving
2 forward and looking into this further.
3 The community was very responsive. We
4 have not had all positive community input. Some
5 people, as you mentioned, do not like anything ---
6 they think, anything that has a camera, whether or not
7 --- you know, outside there is no expectation of
8 privacy. But they were very concerned about it.
9 People would say, what are you going to do if --- one
10 of the main things was if I'm smoking marijuana in my
11 backyard and I'm like you're in California, but
12 whatever, we'll let that go, right? But we don't ---
13 we're very careful about the policy that we have in
14 terms of privacy. And so it's stipulated very clearly
15 in our policy, and we've done a lot of outreach about
16 that we are not going to use our drones to go hover in
17 someone's window. Our drones fly from 150 to 400
18 feet. They're very high in the sky, and we are very
19 careful about how we utilize them.
20 That's one of the reasons why we have
21 the flight map. That flight map shows where we went.
22 And I'll tell you another thing that came from the
23 community. And the concern was they thought, as we
24 went out with our drone that, of course, once the
25 drone takes off, the camera will key in miles down the

1 road. So the drone can get to the scene way before
2 the drone --- the drone camera gets to the scene way
3 before the drone gets there. Right? And it's feeding
4 us information as we're responding. Right?
5 But then the question was, as the drone
6 returns home, are you just willy-nilly looking around
7 in people's yards and trying to find something? Right?
8 So as a way to listen to what our community said, we
9 had it built into the system through our software
10 program that as the drone returns home, the drone does
11 a lift towards the sky. So it never is turned off,
12 but it's filming the sky as it returns back. And that
13 seemed to --- as we've done this and as we've worked
14 with the community and as we've listened to them, we
15 built more and more confidence over time because it's
16 really about --- I tell my officers, when you invest
17 in the community, they invest in you. And we're
18 seeing the results of that right now.
19 We listen to our community. And I've
20 had the ACLU, I've had the Electronic Frontier
21 Foundation I've bought in, and they just did a white
22 paper on our --- ACLU, did a white paper on our
23 department because we don't have anything to hide.
24 Come into our department and see what we're doing. We
25 want to hear feedback. If there's a better way of

1 doing something, let us know what that is, because we
2 are doing the best that we can.

3 But I'm telling you, when you engage the
4 community, you definitely will get input. But once
5 they come in and see for themselves, I think that's
6 when they really start to realize that we're actually
7 trying to do the right thing to protect them, our
8 community, and our children.

9 PRESIDENT CLARKE:

10 Thank you.

11 CHAIR:

12 Thank you, Mr. President. Chair
13 recognizes Member Gauthier.

14 MS. GAUTHIER:

15 Thank you, Mr. Chair. Thank you so
16 much, Chief, for being in this hearing and for sharing
17 your work with us. It was really interesting and
18 informative to hear about how your locality is using
19 drones and you gave a few examples of how they worked
20 really well and helped to extend your officer's
21 capacity. I was wondering if you could sort of give
22 us a list of the pros and the cons.

23 Are there examples or instances where
24 the usage of a drone didn't work as you would expect
25 or didn't help? And I just wanted to be able to sort

1 of weigh from your experience the positives and any
2 drawbacks since you've been using this system.

3 MS. KENNEDY:

4 Thank you. Yes, technology is a huge
5 benefit and also a huge challenge. And we have
6 definitely had experiences where we get the drone out
7 there and then the battery life is gone and we have to
8 return the drone right away. We've been able to get
9 waivers through the FAA where we could have more than
10 two drones at a location. So you can trade out. So
11 there's workarounds to a lot of it.

12 I mean, one of the challenges is right
13 now with the requirements, where we have a pilot that
14 is in the operations center flying, and then we have a
15 pilot on the rooftop that we're required to because of
16 the FAA requirements, it's double the cost. Okay.
17 So we started off having all sworn officers,
18 right? Because there is a need, in our opinion, and
19 everyone may have a differing opinion. The police
20 officer understands the way officers respond, and they
21 understand where to place officers, and they're kind
22 of like an incident commander from the sky as they
23 overwatch what's happening, which is very helpful.
24 The pilot in control on a rooftop, we contract out
25 with another company that is not sworn, so they take

1 control. They have to have visual awareness of the
2 sky. And so if we had an officer there, that would
3 cost too much, plus they get bored, just to tell you
4 the honest truth there.

5 So we were able to contract with the
6 company, and that's been very successful. We're
7 hopeful down the road there will be what's called
8 like, drone in a box that will be able to be stationed
9 throughout. For instance, fire departments are
10 strategically placed throughout cities, and they could
11 be stationed on rooftops of fire departments, and they
12 could deploy from there. There's so much, there's so
13 much. I would be on here for a long time telling you
14 the pros and the cons, and that's what we do, is we
15 have people come to our department.

16 It costs us a lot of money, but we think
17 it's important that we share what has worked in the
18 challenges that we've had, the mishaps that we've had,
19 the things that we could do better because we believe
20 in this so much we don't want people to start at the
21 bottom. We want them to start at the top with the
22 program.

23 MS. GAUTHIER:

24 Just a couple more questions. Has there
25 ever been an instance where the use of a drone, beyond

1 sort of battery failure, hindered, sort of your
2 response, or was not helpful? And then secondly, can
3 you give us the total cost of this program for your
4 city?

5 MS. KENNEDY:

6 Yes. And so I have Captain Fox on, and
7 she's shaking her head no, because she's the one who
8 runs the operations of the program. But I do believe
9 I'm not aware of any hindrance from a drone
10 whatsoever. In terms of cost right now, we were very
11 blessed in our community to have a tax measure that
12 went through that supports public safety, and so that
13 has helped us be able to support the program.
14 As I mentioned before, it's about a
15 million and a half to \$2 million for us to run the
16 program that we have. And we're flying seven days a
17 week, but we fly from, I believe it's like around ---
18 is it 9:00 or 10:00, Miriam?

19 MS. FOX:

20 We fly until sunset, seven days in a
21 week, and then on the weekends until midnight.

22 MS. KENNEDY:

23 So we're not flying 24/7 at this point
24 yet. There are thermal cameras that it would benefit
25 us tremendously. I know our officers want it, but

1 from a fiscal standpoint, we're still in the position
2 right now where we're showing the value of our program
3 and it will build out as we continue.

4 MS. GAUTHIER:

5 Thank you.

6 MS. KENNEDY:

7 Thank you.

8 CHAIR:

9 Thank you, Member. Chair recognizes
10 Member Lozada and then we'll go to Member Brooks.

11 MS. LOZADA:

12 Hi, thank you for your testimony today.

13 I just have a really quick question. In your
14 testimony, you mentioned that you all formed
15 partnerships with some of the business community. And
16 I was just wondering, what does that partnership
17 entail, if you can tell us a little bit more about
18 that? And was there ever concern expressed from some
19 of these businesses along those commercial corridors
20 of retaliation since they have partnered with the
21 community or with the police department as a launch
22 site?

23 MS. KENNEDY:

24 So we fly from the police department,
25 then we fly from Bayview Hospital, which is a mental

1 facility here in our community. We fly from Sharp
2 hospital, and then we fly from the Ayres Hotel, which
3 is out in our eastern portion of our city. We pay no
4 fee to them. They've all done this because they want
5 to be a part of it and they believe in it. We are on
6 their rooftops of their buildings, and they're
7 strategically placed in areas that give us the
8 coverage that we need.

9 My recommendation, whenever you work
10 with anyone in the community, there's been no
11 retaliation, there's been no problems whatsoever that
12 I'm aware of. But if you work with them, you have to
13 be aware that you're on, for instance, their rooftop,
14 and you need to take special consideration to protect
15 their rooftop. We put down matting and special things
16 up there to make certain that we don't destroy any of
17 their area, their roof or anything like that. That
18 would be my request.

19 When you contract with other companies,
20 sometimes they don't pay as close attention to the
21 details as, for instance, myself or Captain Fox might.

22 And I would always take that in consideration. You
23 would never want to do anything that would create a
24 negative opinion of how you're running a program,
25 especially when you have the support of your

1 community.

2 MS. LOZADA:

3 Thank you.

4 MS. KENNEDY:

5 Thank you.

6 CHAIR:

7 Thank you, Member. Chair recognizes

8 Member Brooks.

9 MS. BROOKS:

10 Good afternoon. Council member Gauthier

11 asked about the cost. So for the 25 drone operators,

12 did you train them internally or did you have to do a

13 hiring process to fill those roles? And is it a

14 technical component to it that would prevent existing

15 officers to be able to patrol or operate drones?

16 MS. KENNEDY:

17 So it's a competitive process here.

18 They're all sworn --- the piloting command, the ones

19 on the rooftops are contracted, so they're not

20 officers. But all the drone operators at the PD are

21 sworn officers that go through a competitive process

22 to become a drone operator. Then they have to go

23 through the FAA part 107 certification, and it's

24 rigorous. And you have to go to a course. The course

25 is put on by some regional academies here, and we send

1 them to that. It's a one-week course. I went through
2 it myself. And they have to keep up. So every two
3 years, we have to recertify and take another test.
4 And it's pretty rigorous, I have to say.

5 MS. BROOKS:

6 So is that included in the \$1.5 to \$2
7 million cost that you mentioned?

8 MS. KENNEDY:

9 No, that would be a part of our regular
10 training budget that we have. So the cost for the
11 part 107 test, Miriam, is it like \$150 or something
12 like that?

13 MS. FOX:

14 Yes, it's not much. It's maybe \$400 for
15 the course. It's very minimal. We'll host the course
16 and invite other agencies, and they will get free
17 spots. But again, that training, the initial training
18 is only the one-time cost. And then there's the
19 monthly training that you would do eight hours a day,
20 once a month for your pilot. So it's very minimal
21 cost. The cost for the program was the salary cost of
22 staffing.

23 MS. KENNEDY:

24 So to add further, we absorb into our
25 training budget, we absorb the monthly training. We

1 absorb the cost to go to the school as a part of our
2 training budget, and we've been able to talk with our
3 city leadership and get them to increase that training
4 budget to compensate for that, but it's not
5 significant.

6 The \$1.5 million is the salary for the
7 contractors that are on our rooftops, as well as for
8 the cost of the drones and then the sergeant, the
9 lieutenant, and the two pilots that are in our
10 operations center.

11 MS. BROOKS:

12 Thank you so much.

13 CHAIR:

14 Thank you, Member. Real two quick
15 questions. One, in Philadelphia, I don't know if it's
16 true in your part of the country, we have had a
17 problem with dirt bikes, and there is a safety
18 question of whether patrol cars should actually chase
19 them, apprehend them in urban areas. Have you had an
20 occasion to follow dirt bikes or other vehicles from a
21 safe distance to be able to apprehend them?

22 MS. KENNEDY:

23 So can you hear me?

24 CHAIR:

25 No. Go ahead.

1 MS. KENNEDY:

2 Okay. It was freezing up a little bit,
3 but I think I got the gist of what you said it was
4 about dirt bikes and would it benefit to use drones.
5 And the answer is yes. We don't have that type of a
6 situation in our community, but we do have street
7 racers. And so ---.

8 CHAIR:

9 You froze. Can you hear us? Okay.

10 MS. KENNEDY:

11 Are you able to hear me? I'm sorry.

12 CHAIR:

13 You stopped at street racers?

14 MS. FOX:

15 Yes. It looks like the chief's camera
16 froze. What she was going to refer is we do have
17 street racers. We don't have ATVs or takeovers. I'm
18 from the east coast. I am aware of that, but we don't
19 have that. But we do have street racers, and the
20 drones can be assisted in providing that intelligence
21 to the officers from above.

22 Again, it's trying to figure out when
23 that occurs. Out here when we do have the street
24 racing takeovers, they do it over like WhatsApp? They
25 try not to put it on social media because they know

1 that we can monitor that stuff if it's open source.
2 So if it's available, we can provide that information
3 to the officers on ground and kind of figure out how
4 they can stop us. But we don't have it on the scale
5 that we see on the East Coast.

6 CHAIR:

7 And the final question I would have,
8 have they been used in live fire situations where they
9 were on the scene, where they might have been hit by
10 ordinance and what happens then?

11 MS. FOX:

12 So we have not got the --- and thank
13 God, we have not had that situation where there's been
14 some sort of active shooting situation where that
15 happens. All of our drones are equipped with
16 parachutes, and the parachutes can be manually
17 deployed by pressing a button or automatically
18 deployed when they decelerate. So if our drone is
19 affected by someone possibly shooting on it and the
20 drone recognizes --- the system will recognize that
21 there's a fast deceleration, the parachute will
22 deploy.

23 CHAIR:

24 Okay. Are there any other questions for
25 this panel? Member Phillips? Anyone? Seeing none,

1 thank you for your testimony, and we appreciate your
2 contribution to our deliberations about drone usage.

3 Thank you so much.

4 MS. FOX:

5 You're welcome.

6 CHAIR:

7 Mr. Glass.

8 MR. GLASS:

9 Mr. Chairman, our next witness is Abrem
10 Ayana from the Brookhaven Police Department.

11 CHAIR:

12 Are we connected?

13 MR. AYANA:

14 Yes, sir. Can you hear me?

15 CHAIR:

16 Yes, we can. Welcome. Thank you for
17 your testimony.

18 MR. AYANA:

19 Yes. Good afternoon. I am Lieutenant
20 Abrem Ayana. I am the UAS Program Manager for the
21 Brookhaven, Georgia Police Department. If you're
22 wondering where Brookhaven, Georgia is, we are a
23 suburb of the City of Atlanta, home of the 2023 NL
24 East Champion Atlanta Braves. I had to say that
25 because you all are Philadelphia Philly fans, I

1 suppose.

2 I am actually joining you all today from

3 Chief Kennedy and Captain Fox's home state of

4 California. I've had the opportunity since starting

5 this drone program back in 2020 to travel not only the

6 State of Georgia, but our nation, delivering

7 presentations on the drone program. And those travels

8 have brought me to California this week to speak to

9 the International Municipal Lawyers Association, where

10 I actually had the opportunity to meet several of your

11 deputy city solicitors from Philadelphia who attended

12 a couple of law enforcement breakout sessions that I

13 led.

14 I've also had the opportunity to deliver

15 this presentation or similar presentation to the

16 International Association of Chiefs of the Police, the

17 Israeli National Police, the German Police, and

18 several other international police organizations.

19 None of it would be possible without the partnership

20 from Chief Kennedy, Captain Fox, and the entire Chula

21 Vista Police Department team. And so I appreciate them

22 for their partnership. I tell people all the time as

23 I travel that law enforcement is only as good as the

24 partnerships and the relationships that we have. And

25 we were able to launch our drone program in a time

1 period of --- time span of about five to six months,
2 primarily because of the partnership and the advice
3 that we received from them several years ago when we
4 launched our program.

5 So to give you all a little bit of idea
6 about the origins of our drone program, we previously
7 relied exclusively on outside agencies for aerial
8 support. Our city is the city of approximately 12
9 square miles, a little bit over 65,000 residents. So
10 it's a lot of folks in a small space. We are a suburb
11 of Atlanta that is wholly encircled by 285. So when
12 you think of suburbs, I tell people I'm born and
13 raised in the City of Atlanta. You're from the
14 suburbs if you came from outside of 285, inside the
15 perimeters, we call it that's the city.

16 And so the City of Brookhaven is
17 entirely encircled by the bypass of 285 inside the
18 perimeter. And so we do deal with a lot of the same
19 crime concerns that you would see in a large city like
20 Atlanta and Philadelphia, but not the exact same ---
21 can you all hear me?

22 CHAIR:

23 Yes.

24 MR. AYANA:

25 Okay, sorry. I had some feedback. So

1 in April 2022, we began researching the use of drones
2 and public safety. We learned about the Chula Vista
3 DFR program that was a part of the integration pilot
4 partnership with the FAA. And then in October 2020,
5 our program gained the full support of our mayor and
6 council and we launched our first flight in April of
7 2021.

8 I want to talk to you all very briefly
9 about the capabilities and the limitations of drone
10 first responder. As Chief Kennedy hit on this point
11 earlier about the drones that we use, in order to make
12 DFR scalable, our agencies are relying on consumer
13 drones. Those drones range anywhere from \$6,000 to
14 \$7,000 upwards to the \$20,000 to \$30,000 when you
15 start adding on the cameras.

16 The most widely used drones in drone
17 first responder today are capable of flight times up
18 to an average of about 40 minutes, depending on the
19 distance that you fly the drone out, with average
20 speeds of 30 to 35 miles per hour. So you can imagine
21 going 30, 35 miles per hour in a straight line, not
22 having to stop at red lights. We can actually be
23 pretty efficient. And presently, agencies operating
24 drone first responder have gained FAA authorization to
25 operate aircraft up to three mile radius from their

1 launch locations.

2 Drones --- to give you a little bit of

3 technical background about drones are broken down into

4 three groups. You have your micro UAS, and that's the

5 small drones that you often see in the Hollywood

6 movies that fit in like the size of somebody's

7 fingertip. Those are the drones under .55 pounds.

8 Then you move up into the small UAS category, which is

9 what we operate in public safety. That's between .55

10 pounds up to, but not including 55 pounds. And then

11 you have your large drone category over 55 pounds.

12 And that's typically what you see the military using

13 with their Reapers and the such.

14 There are three different types of

15 drones. You have your multicopter drones. Those

16 drones require significant fuel or battery power.

17 That's why they're limited to that 30 to 40 minute

18 flight time oftentimes. All of the lift on those

19 drones come from propulsion. But those drones do

20 require only a small launch and recovery area. That's

21 why we're able to make them work on the rooftop of

22 buildings. And they also have the ability to just stay

23 and hover in one space.

24 Then you can move over into your fixed

25 wing. Those fixed wing aircraft, just like the

1 Reaper, require less battery or fuel. They have
2 longer flight times, significant lift coming from the
3 wings. They require a much larger launch and recovery
4 area. So you see a lot of those drones using
5 airfields and requiring runways, and they don't have
6 the ability to hover in one spot.
7 And then the last category, which you
8 see a lot more coming online now, are the vertical
9 takeoff and landing, the VTOL. The VTOL aircraft
10 require a small launch and recovery area. They're
11 very flexible, they have a long flight duration, a lot
12 of very capable payloads, similar to our multicopter
13 aircraft with the cameras. They have hybrid energy
14 sources, so you see a lot of battery power, but they
15 also have some that are hydrogen powered and have
16 other alternative fuel sources and they're actually
17 getting a lot more affordable. So we're starting to
18 see these drones being marketed to law enforcement and
19 public safety, and they're starting around the area of
20 about \$130,000.
21 So to give you all the background, some
22 operational considerations for our police department,
23 what I often tell people, and the most common question
24 I get is do drones reduce crime? And I'm very, very,
25 very transparent that drones for us are not a crime

1 control strategy. And Chief Kennedy gave you a very,
2 very big open window to how they use drones in Chula
3 Vista and we do it the same exact way. We don't have
4 drones up in the air patrolling our cities in hopes of
5 catching somebody in the act of doing a crime or
6 looking like they're going to do a crime. We're not
7 doing proactive policing. It is completely an
8 emergency response tool or strategy. The
9 drones are not positioned in neighborhoods or areas
10 based on crime stats. We are placing our drones
11 solely in the areas that have the highest call volume.
12 So we know that the drone is going to do work because
13 people are going to call 911 in those areas. Where
14 that strategy helps us is when a civic group or civil
15 liberties group comes and says, the Brookhaven Police
16 Department has only placed drones in areas with the
17 minority communities or low socioeconomic communities.
18 We don't have to have that conversation because we
19 placed our drones specifically in areas where people
20 call 911.
21 If they want to do the digging and they
22 want to try to make the comparison and say, oh, well,
23 it just so happens that the areas that people call 911
24 are the areas where they have the predominant minority
25 communities. That is not something that we have

1 decided based on race or any of those other
2 socioeconomic factors. It is solely dependent on
3 where people call 911 the most.
4 And this is the most important piece
5 about that, because we know that through the use of
6 these drones, by doing it that way, we're able to get
7 eyes on any type of situation occurring in those areas
8 in less than two minutes. The lowest response time
9 we've ever had for our drones for a month was 43
10 seconds in March of this year. And so I like to tell
11 my citizens, and they'll take this proposition any day
12 of the time --- any day of the week, that if you call
13 911 in the City of Brookhaven and I could tell you
14 that we will have a drone over your emergency in less
15 than 120 seconds over 95 percent of the time. And in
16 the month of March, we had it there in less than 60
17 seconds, they take that proposition 100 percent of the
18 time.
19 By taking this approach, we're able to
20 reduce unnecessary dispatches of officers to calls
21 that don't require a police response. By removing
22 these calls from patrol officers daily activity, we're
23 putting time back in their workday to patrol and
24 actively do the things that actually do reduce crime.
25 And so when you talk about, hey, have you seen a

1 reduction in crime from your drone program? The
2 reduction in crime is not because people know the
3 drones are flying. The reduction in crime is because
4 the patrol officers have time to go out and actually
5 do proactive police work and be on patrol preventing
6 crime.

7 And so my city, we have over 150 license
8 plate readers that we have access to track stolen
9 vehicles and warned felons who come into our city. So
10 there's the whole wraparound of technology that allow
11 us to be successful in combating crime. But the true
12 reality is, if we don't have patrol officers on the
13 ground who are able to respond when that stolen
14 vehicle hits an LPR, or that wanted felon hits an LPR,
15 then they get away 100 percent of the time. And so by
16 having these drones readily able to respond and clear
17 those costs of service that don't require police
18 response, it allows us to have those patrol officers
19 available.

20 I've got displayed a graphic that shows
21 exactly how we made the determination where to place
22 our drones. The image to the left, the graphic to the
23 left, is a heat map of our citizen initiated calls for
24 service. This is where the citizens in the City of
25 Brookhaven called the police the most. And those two

1 red stars signify my two launch locations in the City
2 of Brookhaven.
3 With those two locations, I can cover
4 about 65 percent to 70 percent of the city. What you
5 don't see is to the northeast of that map is an
6 airport, Peachtree-Dekalb Airport, which is the
7 busiest general aviation airport in the southeastern
8 United States. So all of Atlanta's private jet
9 traffic for all of the Fortune 500 companies, the
10 tourist flights, the Medevac helicopters fly, and the
11 local media fly out of that airport. So it's constant
12 aircraft moving through our city's airspace.
13 And so there are some areas that we're restricted
14 from flying that if we needed to fly a drone, we would
15 have to pick up the phone and call DC to get
16 permission. The northern area of the city where you
17 don't see a lot of heat or a lot of cost of service,
18 we don't place drones there. And it's as simple as,
19 because we don't have a lot of cost of service,
20 there's not a lot of crime that occurs there. Those
21 are areas that we don't have a large demand for police
22 service. And so for us, it doesn't make business
23 sense for us to put a third launch location there.
24 The map to the left is where our field
25 officers are actually initiating their patrol

1 activity. So where they're doing a lot of their
2 proactive policing. And those areas you see that
3 those two maps, while they are different, they're
4 eerily similar. And those launch locations
5 strategically placed based on those costs of service,
6 allow us to respond in support officers on the ground
7 who are doing proactive police work and need
8 assistance in addition to citizens who call 911.
9 So I've got a couple of use case videos
10 I want to show you all to give you all a little idea
11 of how this works. This first video is a run of the
12 mill call that a police officer will respond to.
13 Someone calls and says, hey, there's a gentleman who's
14 drunk and indecent at the Waffle House. The drone
15 responds, gets on that scene in about 40 seconds, and
16 identifies the individual that they called 911 on.
17 He's no longer at the Waffle House. He's actually
18 across the street at the Dunkin' Donuts.
19 Our response time in Brookhaven to
20 emergencies is less than four and a half minutes, an
21 overwhelming amount of the time. Without lights and
22 sirens, we do have a lot of traffic. It would take a
23 patrol officer, on average 10 to 14 minutes
24 potentially, to respond to this low acuity call. The
25 drone is there, is able to direct the officer directly

1 to where this individual is, is able to observe if any
2 altercation takes place, or if there's any need to
3 increase the urgency of this call. You see he
4 stumbles into a car. At any moment some physical
5 confrontation could have ensued, but it didn't. And
6 as a result, the officer was able to go directly to
7 where this individual was without driving around in
8 search of them.

9 And so you say this is a fairly routine
10 call. This is what officers do every day. But the
11 flip side of this and you may experience this in your
12 city is a lot of times when officers finally get to
13 the location where the call came from or where the
14 incident occurred, the problem is no longer there. It
15 has relocated. And what happens oftentimes the
16 citizens grow the opinion that the police never
17 responded because I never saw them, and this
18 individual is now at the Dunkin' Donuts, creating a
19 disturbance. The Brookhaven Police Department is
20 ineffective in their duties, and the reality is, we're
21 not ineffective. We just went to the place you told
22 us he was, and we didn't find him. And that
23 contributes to a negative perception of police that
24 we're not out actually serving communities. And
25 that's where you get folks saying, I called 911 and

1 the police never showed up. Through the use of the
2 drone, we able to exactly pinpoint where that
3 individual was.

4 This next video, and individual goes
5 into a local Publix and shoplifts. And I'll let you
6 listen and watch this video.

7 ---

8 (WHEREUPON, VIDEO IS PLAYED.)

9 ---

10 MR. AYANA:

11 And so what I often tell people when I
12 show that video is the 911 caller provided us one
13 description of this individual. once he departed a
14 location, you saw he changed clothes. The drone, by
15 being able to respond in such a quick fashion, was
16 able to locate him in a neighborhood that was down the
17 street and a little bit off the beaten path where he
18 was changing clothes. He had already removed the
19 items from the Publix shopping cart, and when the
20 officer responded, the officer didn't have to
21 question, hey, am I pulling out with the right
22 individual? The officer was informed because we had
23 real live situational awareness of what was occurring
24 before the officer ever responded.
25 And then the last video I'll show you

1 all occurred in May of last year, a vehicle that was
2 used in an armed robbery. The victim was shot
3 multiple times in Charlotte Mecklenburg, North
4 Carolina, came to the City of Brookhaven. The
5 individual you see running fled out the back of the
6 store while the patrol officer who located the vehicle
7 in the parking lot was apprehending a second
8 individual in the parking lot. The drone was able to
9 track through a community, was able to coordinate a
10 perimeter around where this individual was, and he was
11 taken into custody peacefully with minimal intrusion
12 upon the community. And we didn't have to stop
13 anybody in the neighborhood because they fit the
14 description.

15 As a result of this case and this
16 apprehension, we were able to recover the firearm that
17 was used in the shooting in Charlotte, as well as the
18 \$10,000 cash that was taken in the armed robbery.
19 Some of the keys to success for our program, and
20 you'll see it right here on the screen, is our
21 community. Just like Chief Kennedy told you all when
22 they launched their program, before they ever
23 purchased the drone, they got buy in from the
24 community. The community support is so important when
25 you're launching a program like this.

1 The picture that you see is of our
2 Hispanic or Spanish speaking police academy. So every
3 year, we host Citizens Police Academy in English and
4 Spanish. And that's important because the community
5 groups and the interest groups that are going to say
6 that we're targeting persons of color, it's important
7 that we go to those communities and show them very,
8 very transparently what it is that we're doing, that
9 this is not surveillance, that this is not targeted
10 policing, and we're not targeting certain communities.

11

12 And so, with the assistance of our city
13 attorney, before we ever bought a drone, we engaged
14 our local district attorney to make sure the district
15 attorney was on board with the program. There's no
16 good to get drone footage of anything if the district
17 attorney believes that that drone footage is a
18 violation of someone's constitutional right to
19 privacy.

20 We also engaged the ACLU of Georgia. The
21 ACLU of Georgia, when we engaged them, we gave them
22 our policy. And from our policy, we engaged in a
23 conversation and they gave us a lot of good feedback
24 that was actually incorporated in our policy. And
25 from there, we've taken that policy and we've actually

1 posted it on a forward-facing website, just like Chula
2 Vista has done. And we also publish every drone
3 flight. We attend every community event in every
4 neighborhood meeting we're invited to, and we don't
5 hide from anyone. This is nothing secret when it
6 comes to our drone program.

7 And as I wrap up some of the policy
8 highlights for our drone as we deal with the privacy
9 issue, when we launched our program, we said, if the
10 video is not of a criminal --- with criminal evidence,
11 we're discarding the footage after 30 days. The public
12 records law in Georgia has recently changed, and we've
13 moved that to 180 days. But it's put into a cloud
14 based server, and at 180 days, if it's not considered
15 evidence in a case, it automatically goes away.

16 We also restrict the use of vision
17 enhancement in those cameras to areas where there's no
18 privacy interest, unless there's a warrant or exigent
19 circumstance. And we require all of our pilots to
20 have a pilot's license. Our policy also says we're
21 not using our drones to conduct random surveillance to
22 target people based on individual characteristics like
23 race, gender, sexual orientation. We're not using
24 drones to harass or target any other group, and we're
25 not using them to conduct personal business of any

1 type.

2 At a time when police staffing is an
3 issue nationally, it's important that public safety
4 agencies and governing bodies like yourselves focus on
5 leveraging technology to close the gap. By
6 dispatching the drone as the first responder, our
7 police department can remotely assess the scene and
8 determine what type of police response is necessary.
9 This approach avoids unnecessary confrontations and
10 allows pilots to cancel ground units when no evidence
11 of a crime is found. And with that, I will open it up
12 for questions.

13 CHAIR:

14 Thank you so very much for your
15 testimony. One brief question. When you mentioned
16 license plate readers, have you used that drone to -
17 -- I understand there's a problem with ghost cars,
18 just like with ghost guns, that they remove all
19 identity off of the car. And when you run into a
20 plate like that, does that give you probable cause to
21 stop that car? And I got my own expert here on
22 driving equity, but I want to hear how your
23 municipality treats that.

24 MR. AYANA:

25 In the State of Georgia, all vehicles

1 are required to display valid registration, whether
2 that be a state issue license plate or a temporary
3 registration. It is also illegal in the State of
4 Georgia to conceal a license plate through, like, a
5 tenant tag cover or any type of tag frame. And so, in
6 the State of Georgia, if someone does any of the
7 things that I've just described, that would be against
8 the law, and that would give us probable cause to stop
9 them.

10 CHAIR:

11 Thank you. Any questions? Member
12 Gauthier.

13 MS. GAUTHIER:

14 So, thank you so much, Lieutenant, for
15 your presentation and for sharing your work with us. I
16 have a question for you and the same question for the
17 chief from Chula Vista if she's still on. Do you
18 think that the expanded capacity that you gained from
19 the use of drones has resulted in increased arrest,
20 maybe for things that you wouldn't prioritize
21 normally? I was particularly struck by the gentleman
22 that was arrested for being intoxicated in public. Is
23 that something that your department would have
24 prioritized if you did not have this program? And
25 then I would pose the same question to Chula Vista if

1 they're still on.

2 MR. AYANA:

3 So thank you for that question, ma'am.

4 So the gentleman that was in the video that was drunk,
5 he was not arrested for public intoxication. He was
6 actually arrested because he had an outstanding
7 warrant. And so, no, the drone ---.

8 MS. GAUTHIER:

9 Okay, I'm sorry, I wasn't clear.

10 MR. AYANA:

11 That's on me, I didn't explain it.

12 MS. GAUTHIER:

13 Okay.

14 MR. AYANA:

15 Yeah, I did not explain it, and that's a
16 great question. And so what I will say is the drone
17 does not change any tactic or any decision to arrest.
18 It just provides additional evidence where evidence
19 may be needed.

20 MS. GAUTHIER:

21 Thank you for clearing that up. That
22 was frightening to me. So thank you.

23 CHAIR:

24 Are there any other questions from
25 members of this committee for this witness?

1 MS. GAUTHIER:

2 I don't know if Chula Vista wanted to
3 answer the same question.

4 CHAIR:

5 Oh, the previous ---.

6 MS. KENNEDY:

7 Can you hear me?

8 CHAIR:

9 Yeah, we hear you. Thank you for
10 staying with us.

11 MS. KENNEDY:

12 Okay, thank you. Not a problem. I
13 think that Lieutenant Anaya answered that perfectly. I
14 mean, the drones aren't out there to make arrests. The
15 drones are out there to provide information to the
16 officers that are there. And commonly, there are many
17 quality of life issues that don't require arrests.
18 Sometimes it's just getting the resources for the
19 individual that's out there. But the drone just
20 provides those officers with that real time
21 information and more information to make better
22 decisions.

23 MS. GAUTHIER:

24 Thank you.

25 CHAIR:

1 Thank you so much for your testimony.

2 Seeing no other questions, if you'd like to stay on
3 and hear from other experts, please feel free to do
4 so. And with that, Mr. Glass, who's our next witness
5 to testify?

6 MR. GLASS:

7 Mr. Chairman, our next witness is Dr.
8 Justin Thomas, director of Controls of Exyn
9 Technologies.

10 CHAIR:

11 Thank you. Welcome. Thank you for your
12 patience. Please come up to the witness table, state
13 your name for the record, and begin your testimony.

14 MR. THOMAS:

15 My name is Justin Thomas. All right,
16 good afternoon. I'm the Director of Autonomy and
17 Mapping at Exyn Technologies. Exyn is a Philadelphia
18 based spinout of the University of Pennsylvania, and
19 we develop artificial intelligence for robots that can
20 collect data autonomously in any environment, and
21 particularly those that are hazardous to humans.

22 My background is focused on small
23 unmanned aerial systems, and I completed a master's of
24 engineering in robotics, as well as a PhD in
25 Mechanical Engineering at the University of

1 Pennsylvania. My research concentrated on developing
2 autonomy for unmanned aerial systems. At Exyn I
3 continue that effort, and I am primarily responsible
4 for ensuring that our robots operate autonomously and
5 safely, and can do so to navigate complex 3D
6 environments.

7 My goal today is to provide a brief
8 overview of unmanned aerial systems, highlight some of
9 the capabilities, point out some considerations, and
10 answer any technical questions you may have about the
11 technology.

12 Unmanned aerial systems, which are often
13 called drones, are flying robots that do not have a
14 human pilot on board. Instead, they are typically
15 controlled by a remote operator or a pilot. As a
16 result, they can be significantly lighter, smaller,
17 quieter, cheaper than conventional aircraft. We can
18 think of them as similar to a helicopter. They can
19 take off and land vertically, or they can hover at a
20 specified location for upwards of 30 minutes.

21 Drones can also move quickly. Within a
22 minute, it is possible to have a system take off and
23 start to travel across the city faster than a car. And
24 since they are airborne, they are not restricted to
25 the street grid, traffic lights, or traffic jams.

1 Therefore, drones can likely reach a location of
2 interest faster than a human can.
3 The most basic drones require a reliable
4 GPS signal and are unable to detect their
5 surroundings. They may rely on a remote pilot or
6 operator to specify a collision free flight path or to
7 manually navigate the vehicle around obstacles.
8 Depending upon the desired operating altitude and the
9 environment complexity, this can be challenging.
10 More advanced commercial systems, like
11 the ones Exyn develops, have built in obstacle
12 avoidance and detection, and that enables these robots
13 to autonomously navigate around buildings, cranes,
14 trees, power lines, and even at night. This newer
15 technology can increase safety and reliability. It can
16 also reduce the cognitive burden and the training
17 required to operate such systems. In addition, drones
18 like these can function without GPS, creating
19 opportunities to operate at lower altitudes in urban
20 environments, it could be among buildings instead of
21 above them, and even indoors or underground.
22 Presently, drones are most commonly used
23 for situational awareness. Off the shelf robots can
24 be equipped with sensors such as high resolution
25 cameras, night vision, thermal cameras, microphones,

1 and laser scanners. Camera type sensors can be
2 controlled independently of the aircraft to provide
3 real time video streams of a specified location or to
4 visually track a moving target. They may also be used
5 to capture high resolution images or to record videos
6 that can be accessed later.

7 These systems also have the ability to
8 do more than simply collect photos and videos. They
9 may be equipped with spotlights or speakers to make
10 their presence known, illuminate an area, or to
11 communicate with persons nearby. More advanced
12 systems can further process the data captured to
13 generate 3D models, for example, of a crime scene or a
14 car accident.

15 I see two key considerations regarding
16 the adoption of this technology for law enforcement.
17 First, these systems could provide video surveillance
18 from vantage points not previously possible, which may
19 prompt public concerns about privacy. Infrared
20 cameras cannot see through windows; however, regular
21 cameras and night vision technology can.

22 Secondly, the FAA regulates the airspace
23 above our city. Therefore, it is necessary to adhere
24 to the appropriate regulations which dictate when and
25 where the drones can fly, as well as how to operate

1 them safely.

2 In conclusion, drones have the ability
3 to get eyes on the scene before law enforcement. They
4 can provide an unparalleled level of situational
5 awareness with low requirements for training and
6 specialized skillsets. Their capabilities extend
7 beyond aerial observation, and then they can be used
8 for communication deterrence or to construct 3D models
9 of a scene of interest. Finally, I would like to thank
10 you for your attention and remind you that I'm
11 available to answer any further questions about the
12 technology or its capabilities.

13 CHAIR:

14 How long have you been doing this?

15 MR. THOMAS:

16 2011, I started in grad school, focusing
17 my research on drone and the autonomous technology to
18 enable them.

19 CHAIR:

20 And what is the range of type of
21 equipment, from low end to high end, that you've dealt
22 with and for what reasons?

23 MR. THOMAS:

24 Sure, I've worked with systems on the
25 hobby side as cheap as a couple hundred dollars and

1 maybe 250 grams to systems that cost upwards of six
2 figures.

3 CHAIR:

4 Questions?

5 PRESIDENT CLARKE:

6 Just one.

7 CHAIR:

8 President Clarke?

9 PRESIDENT CLARKE:

10 Thank you, Mr. Chair. Yeah. Good
11 afternoon. Thank you for being here. I just had one
12 question. Earlier this year, there was a lot of
13 discussions about drones, and it was connected to
14 political campaigns. You know how we do, right? But
15 one of the presentations that I saw, the person that
16 was flying a drone was saying you had to have line of
17 sight in order to operate the drone.

18 Is that accurate? Do you have to have a
19 direct ---?

20 MR. THOMAS:

21 In general, yes. This is a regulation
22 that's established by the FAA. From a technological
23 standpoint, that's not necessary. So it is more of a
24 regulatory restriction that would have to be adhered
25 to. And there are potentially opportunities to

1 collaborate with the FAA on figuring out ways to get
2 past that in the future.

3 PRESIDENT CLARKE:

4 Okay. So it's not about you being able
5 to see the drone in order to have a direct feed, but
6 it's the regulatory aspect of the FAA. They want you
7 to be able to see the drone because of a concern about
8 it going to places maybe it shouldn't be going or
9 whatever.

10 MR. THOMAS:

11 That is exactly correct. It's also a
12 matter of making sure that there are no collisions
13 with other aircraft that are operating in the area, as
14 well as making sure that the operator can know what
15 the vehicle is doing at all times.

16 PRESIDENT CLARKE:

17 Okay, all right, I'm glad you told me
18 that because I was wondering, when they told me that,
19 how the people in Nevada can fly a drone over
20 Afghanistan and say, well, that's clearly not line of
21 sight.

22 MR. THOMAS:

23 Correct.

24 PRESIDENT CLARKE:

25 Okay. All right, thank you.

1 CHAIR:

2 Thank you, Mr. President. Quick
3 question. Natural disasters, train wrecks, hazardous
4 spills, have you had occasion to utilize this
5 technology in cases like that?

6 MR. THOMAS:

7 I personally have not, though my company
8 has been involved in some responses. We have a lot of
9 systems that operate in underground mines, and there
10 was a mine that collapsed a couple of years ago and we
11 were able to send our robot in autonomously to build a
12 three dimensional map of the area of the mine that was
13 collapsed. And that really helped in the recovery
14 efforts of the miners that were in that mine.

15 CHAIR:

16 What other type of data can drones send
17 back to be analyzed?

18 MR. THOMAS:

19 Really, it's anything that you might
20 want, any kind of sensor. We specialize in Lidar, and
21 what that is is that is a technology that allows the
22 robot to measure distances to any obstacle around it.
23 And from that we can build really accurate 3D maps.
24 So you could envision a complete replica, a digital
25 replica of any environment that you would like, but

1 it's not limited to that. It could be anything such
2 as cameras or gas sensors to measure any kind of gas
3 levels in an area and the opportunities are endless.

4 CHAIR:

5 Member Lozada?

6 MS. LOZADA:

7 With so much development that is
8 happening in the city, is the drone capable of kind of
9 navigating around certain obstacles that maybe were
10 not originally there with the GPS that it has
11 installed in it?

12 MR. THOMAS:

13 That's an excellent question. It
14 ultimately comes down to the technology that is
15 implemented on a specific drone. Some drones are
16 capable of that and some drones are not. And what
17 we're seeing more recently is these vehicles are able
18 to start to detect things in the environment,
19 something as thin as a power line, for example, and is
20 able to navigate around that and avoid a collision.

21 MS. LOZADA:

22 Thank you. The two police departments
23 that we've heard from so far have been using drones, I
24 think, only in response to service calls as a means of
25 quickening their response times and freeing up some of

1 their officer capacity. Is that how every locality is
2 using them, as sort of first response, or are there
3 other localities that are using them more broadly than
4 that? And are there different considerations if you
5 use them more broadly than as a first response?

6 MR. THOMAS:

7 I cannot answer that question from a
8 general standpoint, but as far as the technology
9 itself is concerned, there would be a need for more
10 infrastructure if you wanted continuous operation. So
11 you would need more charging pads, for example, or
12 more locations to swap batteries in order to enable
13 continuous operation.

14 CHAIR:

15 Thank you so very much.

16 MR. THOMAS:

17 Thank you very much.

18 CHAIR:

19 Insightful. Mr. Glass, can we bring the
20 next two up together I would imagine?

21 MR. GLASS:

22 Yes, Mr. Chairman. Our next witness is
23 Kevin Bethel, the chief of school safety for the
24 Philadelphia School District. And just so everyone is
25 aware, right after Chief Bethel is done speaking, we

1 will have a live drone demonstration. So we're asking
2 all witnesses to leave the floor, and then we'll have
3 the members step back as well, once we're done with
4 testimony.

5 CHAIR:

6 Welcome back.

7 MR. BETHEL:

8 Yeah. I appreciate being here. And I
9 first want to thank the body for having us in this
10 conversation and your leadership and willing to have
11 these tough conversations around technology that
12 oftentimes gets people unnerved. And specifically
13 want to thank you, President Clarke, for your support
14 in kind of bringing this forward.

15 I know you've heard the conversation
16 from the police chiefs, and it was ironic. There was
17 only some maybe four years ago when I was looking into
18 what the work that the Vista Police Department was
19 doing. It's my first time to actually see it in live
20 action. And I'm amazed at what they've been able to
21 do with this technology and move that forward.

22 When I sit here and listen to the why -

23 -- so when you look about that technology, we're far
24 from being there. As a school district, that is not
25 our goal. And so they're at a high level. What I

1 present to you today is a school district that is
2 challenged with some significant issues. So my why
3 for thinking about and using the drone technology as
4 you all know, how many times the times I've responded
5 to my schools to address the violence outside of our
6 schools. I never thought I would be sitting here
7 having a conversation around my homicide out of
8 Roxborough High School, Lincoln High School, Bartram
9 High School, Duckrey High School, and the list goes
10 on.

11 And so part of my charge as the chief of
12 school safety in the School District of Philadelphia,
13 and my charge from Dr. Watlington is do everything
14 possible to keep my children safe. I'm going to
15 repeat that, my children safe. That's how we view it.

16 That's how my team view it. And that is our work
17 that we're doing. And so part of that is really
18 looking at where does the technology take us to enable
19 us to enhance the work we're doing.

20 We've been very appreciative of the
21 support from the council as it relates to the cameras
22 around our corridors. And we've also embarked as part
23 of our Philly accelerate and the strategy out of the
24 school district and fully supported by Dr. Watlington,
25 to change out 150 of our schools that have analog

1 cameras, some dating back 30 years.
2 Increasing and adding a video management system
3 that will align us with the genetic system that the
4 school district --- the city has, which I know,
5 President Clarke, as you're about to leave this place,
6 was a vision of yours when I was on the police
7 department. How do we integrate these cameras across
8 the entire city so we have a true blueprint of the
9 work we're doing.

10 And so part of our work and my charge
11 as Officer of School Safety is look for that
12 futuristic technology. Listen today is not as
13 futuristic as it appears to be and how could we
14 integrate that technology into the work we're doing.
15 And so part of that was looking at drone technology.
16 At this point, I'm spending, as you
17 know, through the support of the school district and
18 the work of --- and some state grants to put safe
19 corridors around our schools where we pay individuals
20 to be on our corridors. But that costs millions of
21 dollars to do that in the work that we're doing. We
22 clearly know the cost of what it means to put cameras
23 around our schools and the sheer dollar. So just from
24 a dollar and cents perspective, the ability to buy
25 this equipment, to be able to put around our schools,

1 to protect my children.

2 So our goal is not to be in the

3 neighborhoods trying to feather out whether there's

4 some activity. What we see, the plan to be able to

5 use this technology to get around our schools, to make

6 sure that our kids are moving through the corridors

7 safely. And that is our sole focus.

8 Looking at our supersites, as you many know, you

9 have supersites in your communities where it's very

10 difficult to do a full perimeter of those supersites

11 and see if someone's doing anything that could cause

12 some negative activity with our children. And so being

13 able to use that in that area, we see as a significant

14 advantage.

15 There may be some other capacities to

16 use that, but we are very, very --- I want to level

17 set here. We're not about to put on that kind of show

18 to show you the capacity. We're very early in the

19 development of our policy, very early in to see how

20 this technology and the collaborations and the

21 community collaborations are necessary.

22 Some of the things that the chief

23 indicated about transparency lit up on me. And I

24 wrote about two pages of notes when I was listening to

25 her. And so I'll stop there because I want to now

1 start to move into what the real work is. I do want
2 to introduce Eric Rosa. He's an assistant director.
3 He is an FAA pilot, so he understands his space,
4 learning it more each and every day. But he is
5 leading this work, doing a phenomenal job as I've
6 given him --- passed the charge on to him to bring
7 this forward.
8 So he is going to do a live
9 demonstration. Just going to do a very short up in
10 the air flight to show you some of the just the basic
11 capacities. But these are our devices. They can't
12 run into a wall. We have all the protections because
13 we want to make sure we had kids using this equipment,
14 young students. So we want to make sure we had
15 equipment that this thing, you got to fight with it to
16 make this thing crash.
17 Right? And so we wanted to make sure we
18 had a very early on and good investment in this work.
19 So I'll stop there. I'll pass it over to my colleague
20 here and we'll get the second part of our presentation
21 started. Thank you for the opportunity to speak.

22 CHAIR:

23 Thank you. We have any questions?

24 PRESIDENT CLARKE:

25 Yeah, just have one quick statement.

1 Chief, first of all, thank you. And thank you for
2 your years of service, both at the Philadelphia Police
3 Department, now the school district. And I like the
4 way you emphasize protecting your children, our
5 children, they're all of our children. And anything
6 that we can do to make sure that we have safe
7 corridors and not have children afraid to go to school
8 for fear of getting shot. And we've witnessed way too
9 much of that over the last several years. So thank
10 you for being forward thinking. Thank you for being
11 able to take on, to some degree, somewhat of a
12 controversial strategy. But we really appreciate what
13 you've done and what you're proposing to do. And
14 again, I really like the fact that you're involving
15 young people in the technology and the whole process
16 that takes it to another level. So I really
17 appreciate you.

18 MR. BETHEL:

19 Yeah, thank you, sir. And Eric did a
20 very good job. He did an excellent job of working
21 with our curriculum team to build this into a
22 curriculum. So our young people who are supporting in
23 this work not only get our class instruction, but
24 they're also going to be hired as some of our powers.
25 We're going to be bringing them on as interns to

1 support us in this work because we think it's some
2 great opportunities for them in their future as this
3 technology continues to grow. Are you ready?

4 CHAIR:

5 Okay. Begin to --- oh, remember Lozada.

6 MS. LOZADA:

7 I'm sorry. I'm excited to hear that
8 young people are engaged and they're interested in
9 something like this. And I'm also surprised, right,
10 because this is the age where they don't want you
11 watching what they're doing, where they feel like you
12 are overstepping and you're invading their privacy.
13 And so have you guys had conversation with that? How
14 receptive have they been? Is this just a small group
15 of students that you all are working with, exposing
16 them to this technology and the possibilities of using
17 it in their school day or throughout the school day in
18 multiple school buildings? Or have you all kind of
19 engaged an entire school that has kind of bought into
20 the idea?

21 MR. BETHEL:

22 Yeah, we haven't engaged the entire
23 school. And I know Eric, in his testimony, can really
24 highlight his activity, but I think anytime you bring
25 our children into a place, I mean, we pay for someone

1 to come into this space to train them. Two of our
2 young people have gotten their license, and I can
3 probably show --- we would be correct in sharing that
4 they are absolutely ecstatic to be able to have the
5 opportunity. They're doing missions with an aircraft
6 that costs \$18,000. Right? And part of that, what
7 you teach them is all of the elements of learning,
8 right? They get math, they get science, they get all
9 of that, but they also get trust. Right? That we
10 trust them in this space to be a part of something
11 that we're doing. And I think that goes a long way in
12 building trust across the entire process. And some of
13 our kids, unfortunately, were not able to pass, but
14 Eric and his team are staying with them.
15 What are the extra things we have to
16 give them to be able to get over the hump, to be able
17 to pass that FAA test to do that? We're still early
18 in the process as it relates to the entire community.
19 But I will say this to you that our kids, in their
20 surveys across the district, each and every time they
21 do the survey, say, as you indicated, President
22 Clarke, the corridors going to and from school has
23 been one of the greatest challenges for them. And so
24 oftentimes when you talk to them, they want to be safe
25 in this environment.

1 I've shared this before to this body and
2 to others. When I went to high school was the safest
3 place for me to be. Many of you, the two gentlemen in
4 front of me, knew we grew up in a time when gang war
5 and all the gangs were in place. But where I can go
6 for refuge and safety was my high school, John Bartram
7 High School, proud to say that. And so if we can't, as
8 adults in this space, do everything possible to make
9 these places safe again for our kids, it's a shame
10 that we have to go down this path, though, right? So
11 we have to name that. But at the same token, we can't
12 sit on the sidelines and let our children be fearful
13 of being in a school setting and not take action.
14 And so I refuse to sit here and say,
15 hey, woe is me that we can't do these things. So I'm
16 going to do everything possible from people on the
17 ground, training my people to be effective, working
18 with the police department, anybody wants to do to
19 make sure that our children, when they come into our
20 space, feel safe. And that's the goal. And I'm
21 hoping as we present it in a positive and effective
22 way, we're able to garner the same respect and get
23 that back in tenfold.
24 CHAIR:
25 Thank you. Thank you for your service.

1 Thank you for protecting our children.

2 MR. BETHEL:

3 Yes sir.

4 CHAIR:

5 Demonstration. Take cover.

6 MR. ROSA:

7 Good afternoon, Council President and
8 esteemed members of Council. As it was said my name
9 is Eric Rosa, I'm the assistant director of school
10 safety with the school district of Philadelphia. And
11 I was asked to come here today to give testimony about
12 our drone program. But first, Council President asked
13 that I give a little live demonstration with one of
14 our fleet to show you essentially what our operators
15 see when they operate the drone. For obvious safety
16 reasons, I'm not going to fly around the building but
17 I'll use the camera and move it around a little bit
18 and kind of show you what it can do before I sit down
19 and give my testimony. So I'll set up now what is our
20 --- this is our Matrice 30T. It's made by DJI and ---
21 . So once this links to the remote
22 you'll be able to see what our operators see on the
23 screen. Essentially this is a unit that is operated by
24 our students. So once the controller links to the TV,
25 you'll be able to see, it'll mirror the screen of the

1 remote control. So you'll be able to see what the
2 student operators see when they're operating the drone
3 on a mission in their school.
4 And I also have a video that I'll show
5 during my testimony to show what an actual after
6 school dismissal mission looks like outside of John
7 Bartram High School. So we'll just wait for it to
8 link up and here we are and we'll go ahead and get
9 started.
10 So as you can see, it reminds the
11 children to do a --- or the operators, I'm sorry, to
12 do a pre-flight check, tells them what their battery
13 levels are. It makes sure that all of the sensing
14 signals, the obstacle avoidance systems are on. So
15 right now it's set to brake when it senses obstacles.
16 This is what was mentioned earlier. Like Chief said,
17 you've really got to try hard to crash this thing into
18 a building or a tree. It has sensors and cameras all
19 around it to detect obstacles. So one of our assets
20 is not going to be destroyed very easily. Once
21 the operator completes the pre-flight check, they're
22 into the main screen and this is what they see when
23 they get ready to launch. As you can see, it's
24 mirroring what's on the remote. So you see the
25 cameras have zoom capabilities right from the remote

1 control. They can move the cameras around, pan, tilt,
2 and zoom. And these also have thermal cameras built
3 into them so they can put it in IR mode. And it
4 senses heat, the heat signatures that come off of an
5 individual. So if you have someone who's hiding in a
6 tree or something of that nature, this has the
7 technology to do that. Not that's necessarily what we
8 use it for, but the technology is built into it.

9 CHAIR:

10 Well, that's a first for this chamber.

11 MR. BETHEL:

12 It is absolutely a first.

13 CHAIR:

14 Well, it sure did provide air
15 conditioning for the chambers as well.

16 MR. BETHEL:

17 Normally, that thing would be way up, so
18 you're getting a little bit of that activity.

19 CHAIR:

20 It doesn't sneak up on anybody either.
21 You can hear its presence.

22 MR. BETHEL:

23 No, but he's got it in his chambers.

24 Once that's up in flight, unless he brought it down to
25 that level, you wouldn't even know it's up there. And

1 as he shared, Eric, when you come know, this thing
2 will be, as you heard the chief said, you can be a
3 good distance away video and seeing what's going on
4 before the drone is actually on top of location.

5 CHAIR:

6 And what was the flight time capability
7 of that?

8 MR. ROSA:

9 That machine has the capability to fly
10 approximately 45 minutes on one battery charge. It
11 has two batteries on it that are what's called hot
12 swappable. So you can bring it down and take one
13 battery out, put a fresh one in without having to shut
14 it down. So the time to get it down and put it back
15 up is minimal.

16 CHAIR:

17 Questions? President Clarke?

18 PRESIDENT CLARKE:

19 Thank you. Thank you, Mr. Chair. And
20 an awesome presentation. Thank you so much. The
21 young people, Chief, when they're in the classroom and
22 they're in the position to do that, is it conceivable
23 that they will be on the path, or they can actually
24 leave high school with a pilot's license? Or is there
25 an age limit in terms of threshold where they can

1 actually get a pilot's license?

2 MR. BETHEL:

3 So the FAA has an age requirement that
4 you be at least 16 years old to receive your Part 107
5 certification.

6 PRESIDENT CLARKE:

7 Okay.

8 MR. BETHEL:

9 So when I work with the administration
10 of the school, we look at children who are 15, about
11 to turn 16 and up so that we can have them go through
12 the course, have them be certified when they're of
13 age, and then we can use them for the missions to
14 serve the school and to serve the school community.
15 As well as, as the chief pointed out earlier, we
16 intend on hiring them as interns to have them come out
17 and support the safety and security of our supersites
18 as well.

19 PRESIDENT CLARKE:

20 So the relationships are important with
21 private sector entities like I know Dr. Watlington
22 supported Ryan Bohr and others. We have individuals
23 coming out of the Strawberry Mansion High School that
24 are prepared to go into their apprenticeship program
25 directly. So they're basically taking a pre

1 apprenticeship program while they're in school. Are
2 we looking at a similar approach as it relates to
3 opportunities once they graduate with the private
4 sector company? So we can just move those children
5 right into a path of ---.

6 MR. BETHEL:

7 We actually are. We've partnered with a
8 consortium who is the group that is leading the
9 teaching of the students in the Part 107 preparation
10 course. That consortium has relationships with
11 several construction companies, with Google, with
12 Amazon, and they've had prior young men and women
13 who've gone through their program have been hired by
14 these companies either as per diem workers or they
15 have one sort of their crown jewel. Young man was
16 hired by Google and he now makes a salary of over
17 \$100,000 a year flying drones for Google down in
18 Dallas, Texas.

19 PRESIDENT CLARKE:

20 Awesome.

21 MR. BETHEL:

22 But I think your vision is the absolute
23 right space of blame. I remember having a
24 conversation with Eric. I said we could loan our
25 drones out on the weekends and have them doing, you

1 see, real estate. Now they're doing aerial overshots,
2 I mean, construction, as they indicated, even
3 internally for an organization, as indicated. We're
4 really early in the process. But I think you're
5 definitely a place that we can see the future of this
6 equipment, particularly as we interlace our young
7 people.

8 Now, I'll be very honest, in some cases
9 we won't be able to do that because just a safety
10 issue. We also have to be careful that we don't put
11 kids into harm's way to say, hey, you're going to be
12 part of this safety initiative and you're flying,
13 right? And you're the one flying the mission. So we
14 also want to be very guarded as we bring our young
15 people into this space that we don't put them in a
16 difficult position. But we will have our staff will
17 be the ones who are doing looking at the video. Our
18 staff will be the ones who are pushing out the
19 information. And so we will continue to look through
20 to make sure we have those safeguards in place.

21 PRESIDENT CLARKE:

22 Awesome.

23 MR. ROSA:

24 We took sort of a three-step approach to
25 this program. Step one is obviously supporting the

1 safety of the school with the dismissal support from
2 the students. But we also see it as a unique
3 opportunity for our staff and for the Philadelphia
4 Police Department to mentor these youth. They're
5 going through this course with them every day. You're
6 sitting in the classroom with them, you're flying the
7 missions with them, and you begin to build these very
8 impactful relationships. So we made it very clear
9 when we spoke to the administrators of the building
10 that we weren't looking for your valedictorians
11 necessarily. We wanted those students who could have
12 gone either way. They're right there. They're getting
13 the good grades. They're smart kids, but they're
14 easily influenced and they could sway either way.
15 And we're using this as an opportunity
16 to pull them to the right side and to mentor them and
17 to show them that there are ways that you can come and
18 make real money using technology that to them is fun.
19 And it's almost like a video game.
20 And aside from that, we have them
21 looking at their future, and we have them looking at
22 ways that they could be gainfully employed. Once
23 these students receive this certification, they are
24 immediately employable. I mean, this is a
25 certification that can let them go out and freelance

1 for real estate companies, they can freelance for
2 construction companies. They were hired by the
3 consortium that taught them over the summer, they were
4 making \$35 an hour as camp counselors under drone
5 cadets, teaching young people to have fun with drones
6 and how to build and how to work with drones.
7 So they've already benefited from receiving this
8 certification. And I think once our goal and our hope
9 is once they go back to school and say, hey, I made
10 some real money this summer doing this, and it was fun
11 and it was cool, it's really going to spike interest
12 in this program.

13 PRESIDENT CLARKE:

14 Awesome. Awesome. I know the City of
15 Philadelphia we use drones currently one for --- I
16 don't know, Mr. Healy, wants to talk about it. But
17 it's not just about public safety. I guess to some
18 degree it is. I know, like license inspection, my
19 understanding is that we actually use drones to look
20 at the top of buildings to determine whether or not
21 it's a dangerous condition. You can't see a collapse
22 from down on the ground level, so this is great.

23 MR. ROSA:

24 Conversely to on the opposite side of
25 the chief, who was speaking earlier, they use theirs

1 as sort of first responders in critical incidents. We
2 tend to use ours a little more proactively. And I can
3 show you a video that I have in this PowerPoint that
4 shows you how we use it during the dismissal missions.

5 And it's really, as the chief said, it's another set
6 of eyes out there looking up and down the corridors,
7 just making sure everything looks okay. If they see
8 anything that looks out of the ordinary, anything that
9 looks unusual, any unusual activity, they're told to
10 flag one of the adults down. We come over, we take a
11 look at the remote, and then we decide if we need to
12 send assets over there or if it's a response needed
13 from Philadelphia Police Department.

14 So we tend to use it a little more
15 proactively rather than reactively by just keeping an
16 eye on the streets and making sure that everything
17 looks okay for the students to safely go home.

18 MR. BETHEL:

19 I know we have about eight slides. I
20 didn't know if you wanted to continue forward for the
21 purpose of time or just jump over to the slide where
22 he showed --- I'll be guided by you.

23 CHAIR:

24 So I just want to make sure Member
25 Lozada gets a question in.

1 MS. LOZADA:
2 No very quickly. I mean, I'm really
3 happy to hear that these students are learning an
4 alternative option. Right? I've said many times that
5 I mentored some students before coming here, and many
6 of them were interested in college, but all of them
7 would find this very interesting. You mentioned some
8 of the employers that you guys have partnerships with,
9 and I was afraid that you didn't mention the
10 Philadelphia Police Department. Right? And I'm sure
11 that we'll hear later on, if not, I'll ask the
12 question, but do children have to be police officers
13 to be able to get into a division like this, to be
14 able to do something that they've been certified
15 through the school district? Right? Are we creating
16 an immediate pipeline to connecting them to the police
17 department? Maybe Parks and Recreation could use a
18 division like this to keep our park safe.
19 \$35 is a lot of money for some students,
20 right? Some of their parents don't even make \$15, \$12
21 an hour. Right? And so \$35 is a lot of money. An
22 hour is a lot of money for a student to make. And so
23 if we can create a pipeline of employees to all of the
24 departments in the City of Philadelphia; License and
25 Inspection, Parks and Recreation, Philadelphia PD,

1 Sheriff's office, all of those things are things that
2 are really beneficial to young people who either don't
3 think they are ready to go to college, don't want to
4 go to college or this is just super interesting to
5 them and want to look at a career in drones.

6 MR. ROSA:

7 So speaking of college, interesting that
8 you brought that up. One of our partnerships that we
9 formed was with Warren County Community College, and
10 they've agreed to give every student who passes
11 through this program and receives their certification
12 three course credits towards some of their UAS
13 courses, their undergrad degrees at Warren County
14 Community College, for a very small fee, that Chief
15 Bethel has agreed that we would pick up. I think it's
16 like, \$120 to have these credits transferred over to
17 them. So it kind of gives them a jump start if they
18 chose to continue their education towards a degree in
19 this field.

20 And additionally, the 12th District has
21 been a great partner with us through this process. The
22 captain and the lieutenant there. The officers are
23 very eager. And one of the officers who went through
24 the program and actually received his certification,
25 Officer Montague, the relationship that he's built

1 with these students, I think, has really shown them
2 another side of policing. They think Officer Montague
3 is so cool. He comes up in his car, and hey, what's
4 up, guys? And the way he meets them, the way he
5 interacts with them, he went from being and he was an
6 officer who was already there every day at dismissal
7 in uniform. And to see him in this other light and to
8 have him helping them with this, and I have some
9 pictures of him helping the kids here as well. He's
10 really grown a really cool bond that you see with the
11 kids that I think really just puts police in a
12 different light for them.

13 And I think many of them, let's be
14 honest, when we first brought this up and when we
15 first talked to the kids, the first thing that they
16 said was, I'm not an Op, I'm not a fed. That's the
17 first thing they said. Much to your point, they
18 didn't want to be a part of it. But once they kind
19 of, whoa, I get to fly that, I get to play with that,
20 I get to do this. All right, I'll try it. And they
21 kind of put their toe in and then they got in a little
22 further and now they're all in and they're very aware
23 of the mission of what it is that they are doing at
24 dismissal.

25 And they do it now with pride. And they

1 know that they're supporting the safety of their
2 peers. Because most of these children, they want to
3 be safe. They want to come to school and do what it
4 is that they're supposed to do and they don't want to
5 have to worry about getting jumped or being assaulted
6 or being victimized on the way to and from school. So
7 they take a great sense of pride in knowing that
8 they're contributing to not only themselves, but to
9 their peers safety after school.

10 So it has really grown on them and we're
11 using that. We're telling them, tell your friends, a
12 lot of your friends who are kind of iffy, tell them
13 what you experience, that's the most powerful
14 testimony is the testimony of your peers.

15 MS. LOZADA:

16 Yeah, I can appreciate that, especially
17 at a time like now where we're experiencing some
18 tension between the police department and the
19 community, especially young people. And so finding
20 opportunities where we can find common ground, where
21 there are things that kind of bring them together and
22 see each other in a different light is extremely
23 important.

24 MR. BETHEL:

25 I think that's why --- and I know we're

1 going to switch over. These conversations are so
2 important because folks can for their first time hear
3 a totally different conversation around what drones
4 actually are. They hear it, but they don't really get
5 to see what's happening on the ground. And now you
6 hear a whole conversation, a whole narrative about how
7 it's impacting young people and how it's doing these
8 other things. And so I appreciate the body really
9 bringing this to the forefront because I think it
10 gives a more well-rounded overview of what's going on.

11 CHAIR:

12 So we're going to skip those slides.

13 MR. BETHEL:

14 That's fine.

15 CHAIR:

16 But I want to put on the record that our
17 president went from cameras to drones to acoustical
18 recognition. He just went all George --- I mean,
19 Jetsons on us. And so we appreciate that. But I want
20 to say to you, this program within the school district
21 checks a lot of boxes, community policing, career from
22 school to paycheck pipelines, public safety corridors,
23 it is a practical win/win situation and we are
24 thankful that you are visionary enough to do that.

25 MR. BETHEL:

1 We appreciate it. And if I could take 1
2 minute, I do want to say thank you. I know President
3 Clarke, you'll be leaving the body soon. I don't
4 think I'll be able to come up in this session before
5 then. But I just want to tell you how I've
6 appreciated all of the work and my time in the
7 Philadelphia Police Department and then even carrying
8 over to the school district was never a time that you
9 didn't pick up the phone and say, Kev, what do you
10 need? And it was at a time I couldn't call you. And
11 I just want to publicly say thank you for your years
12 of service and all the work you've done to help the
13 community, the City of Philadelphia, and particularly
14 on a personal note, thank you for all the support
15 you've given me.

16 PRESIDENT CLARKE:

17 Thank you. Thank you so much. Somebody
18 told me that they're going to create a voluntary
19 alumni division of public servants. I got something
20 in the mail.

21 MR. ROSA:

22 I think I might see you doing one of
23 these drone things pretty soon. But we'll see how it
24 goes.

25 MR. BETHEL:

1 Thank you. Thank you.

2 PRESIDENT CLARKE:

3 Thank you so much.

4 CHAIR:

5 Thank you for your testimony, guys.

6 MR. ROSA:

7 Thank you all. Appreciate it.

8 CHAIR:

9 And you, I remember when you came, you
10 had no technological skills at that time. You were in
11 your --- but that wasn't in your job description. You
12 added that. All right. Mr. Glass.

13 MR. GLASS:

14 Mr. Chairman, our final witnesses for
15 this panel are Nick Franzosa, vice president of
16 Strategy, and Kieran Carroll, Chief of Strategy at
17 Zero Eyes.

18 CHAIR:

19 Welcome. Thank you for your patience. I
20 thought we were doing him.

21 MR. CARROLL:

22 Good afternoon, everyone.

23 CHAIR:

24 Please state your name for the record
25 and begin your testimony.

1 MR. CARROLL:

2 Yes, sir. It's Kieran Carroll. I'm the
3 Chief Strategy Officer at ZeroEyes. My associate over
4 here is Nick Franzosa. He's going to be working the
5 PowerPoint here. First of all, I just want to say to
6 the committee, thank you for your leadership. After
7 sitting here for the last hour or so, it's extremely
8 heartening to see the direction the city wants to go.

9

10 I will say that I am not going to be
11 flying a drone for this presentation. It's a little
12 bit hard to follow something like that. That was
13 incredible. Really great to see that.

14 Just want to familiarize everyone a
15 little bit about ZeroEyes and Nick's pulling up a
16 slide here, but I'll kind of talk through it. ZeroEyes
17 is a software manufacturer based right outside the
18 City in Conshohocken. We started the company in 2018.

19 The entire core team is former military. Most of us
20 came out of the special operations community, and we
21 started the company right after the Parkland shooting
22 happened.

23 This presentation is going to offer a
24 little bit different of a perspective on ways to
25 leverage effective drone as a first responder using

1 the city's existing cameras. We've heard testimony
2 today that the city is federated on the Genetec
3 system. That means there are thousands of cameras
4 that are able to be viewed and monitored. ZeroEyes
5 software is currently deployed across the city into
6 certain organizations. I'll touch on that here in a
7 second.

8 But to give everyone just an idea, after
9 the Parkland shooting in 2018 happened, the core
10 ZeroEyes team came together. We quit our existing
11 jobs, and what we decided to do is we decided to build
12 a software that could integrate to existing security
13 cameras that were already in place, and our software
14 would detect a visible firearm. As it turns out, the
15 vast majority of gun violence in a municipal setting,
16 as well as active shooters, start under a field of
17 view of an existing security camera, and the
18 perpetrator has a visible firearm.

19 Unfortunately, just in the last year
20 alone, we've seen this multiple times. We saw this in
21 Uvalde, we saw this in Nashville, we saw this in
22 Michigan State recently. This is very, very common
23 gun violence psychology. And as it turns out, there's
24 almost 100 million existing commercial security
25 cameras in the United States today. So that's not

1 counting your residential cameras like Ring or Nest.
2 That is strictly commercial cameras. Here
3 in the City of Philadelphia, our estimate is that we
4 are probably somewhere in the nature of 150,000 to
5 200,000 existing commercial security cameras. We have
6 the ability to turn those cameras into a massive force
7 multiplier that is going to detect a visible firearm
8 and then send a series of alerts to people that need
9 to know. So from an objective standpoint ---
10 actually, Nick, just back up one slide. Thanks.
11 We have an opportunity here to leverage
12 drone response automatically based on a firearm
13 detection. So the use case that we're specifically
14 interested in is the one that is predominantly vexing
15 to most of us, and that is kids and other people
16 running around the city with visible firearms. We see
17 it in the news, unfortunately, almost every single
18 day. The geography challenges from a first response
19 that Philadelphia police have are immense. This is a
20 huge city. We lack resourcing and officers, but the
21 ability for a drone to go and get overhead within 30
22 seconds to 120 seconds is incredible.
23 We've heard really good testimony from
24 folks that are doing this currently, today. The
25 ZeroEyes solution right now is live on Air Force

1 bases. That's where we started with the Department of
2 Defense. We have multiple partners to include Exyn in
3 the room today with us. We're going to sort of walk
4 through sort of the concept of what that's going to
5 look like.

6 Nick, next slide. I'm going to talk for
7 a second about the ZeroEyes commercial technology. So
8 I mentioned our software is built and integrates into
9 existing security cameras. We are camera agnostic.
10 We're video management system agnostic. We prefer to
11 work with digital IP cameras. So it's great news
12 hearing that the Philly schools are moving off analog
13 cameras into digital cameras. We're very
14 familiar with the Genetec system. Our software is
15 designed to detect visible firearms within
16 milliseconds. And then on top of that, we have a
17 24/7/365 operations center right outside the City in
18 Conshohocken. Our operations center is staffed by
19 analysts who are predominantly former military
20 veterans and former law enforcement veterans. And
21 within a few seconds, they are able to verify if
22 something looks like it's an actual threat, i.e. if
23 someone actually has a visible gun or not. And then
24 through pre-programmed software channels, they're able
25 to dispatch that out and that alert is able to get

1 sent to basically any first responder or any endpoint.
2 And typically that response is going to
3 look very similar to what you see there. It's going
4 to be a keyframe image detection with a timestamp and
5 a geolocation. End users will receive the image of
6 what that person looks like and the gun that they're
7 carrying, as well as a geolocation. So latitude and
8 longitude position that's correlated down to the
9 camera.
10 So that's what happens on the ZeroEyes
11 side. And if you add the drone response in, this is
12 currently what we're doing for the Air Force. That
13 verified ZeroEyes alarm will pop up in a drone
14 operations center and will autonomously spin up a
15 drone to go respond. This sounds complex, but
16 realistically, this is relatively straightforward
17 technology. We're able to do this through a series of
18 API endpoints.
19 Here in Philadelphia a good example
20 might be there's someone with a weapons detection
21 coming out of maybe a transit point or outside of a
22 school. That drone could be up in overhead, like I've
23 mentioned before, within 30 to 120 seconds. Whereas
24 your average police response might be something in the
25 nature of four to five minutes, if we're that lucky.

1 On top of that, we have the capability
2 to actually inference from the drone, so the drone
3 could also detect a visible firearm. It's going to
4 depend on what kind of drone we're using. We strive
5 to be drone agnostic, so depending on the camera and
6 the payload of the drone, but certainly some of your
7 bigger drones are easily able to inference from the
8 drone.

9 Nick, do you want to move on? I'm going
10 to show you just a quick image. I usually show
11 videos, but for the sake of time, we're just going to
12 go through an image. This is the ZeroEyes software
13 that's operating on drones. This is with a company
14 called Asylon Robotics. Asylon is a Norristown,
15 Pennsylvania based company. I believe they actually
16 started here in Philadelphia similar to what we did.
17 Asylon builds a drone in a box so the drone can
18 autonomously take off and land. It can do a battery
19 swap. The uptime is basically, I think, 56 minutes
20 out of every hour that drone can be up. Of course, in
21 this case, it would be responding to a critical
22 incident. In this case, it's going to be someone with
23 a firearm. This technology has been proven out for
24 the Department of Defense.
25 Nick, next slide please. I'm going to

1 talk through, I think, what an interesting use case
2 could potentially be. This is Michigan State. So if
3 everyone remembers, a few months back there was an
4 active shooter event at Michigan State University.
5 Unfortunately, four students were killed. ZeroEyes
6 does a ton of work within Michigan K through twelve
7 and higher ed. The police scanner is open to the
8 public. So about 111 minutes after the first shots
9 fired call went out, I hopped on the police scanner
10 and I listened over the next three hours before the
11 event got resolved.

12 There on the left, that Google Earth
13 image you see there. These are the shots fired 911
14 phone calls that happened in the first 30 minutes.
15 Those blue pin drops that you see, those are places
16 where I geolocated the call coming from. They're not
17 every 911 phone call. They got over 3,000 911 phone
18 calls in the space of about three hours. That red
19 circle, that is the two buildings that the shooter was
20 between. He was only ever on campus for a total of
21 about 11 minutes. And then that top right image right
22 there, that's what Michigan State University police
23 released on Twitter about two hours into the event.
24 This is the image of the gunman who is
25 staging, again, very typical active shooter behavior.

1 He's staging in a stairwell. He's pulling a pistol
2 out of his pocket, he's loading a magazine. There's a
3 camera that was on active recording the entire time.
4 Then there at the bottom right, that's the ZeroEyes
5 software. We have access to the original video file.
6 We detect the gun as it comes out of his pocket. And
7 this is the image that could have been broadcast out
8 in three to five seconds across multiple agencies to
9 include an effective drone response if they had a
10 capability to do that. That probably could have
11 detected this guy as he left the building. It took
12 Michigan State University police and the rest of the
13 interstate agency over three hours to find him.
14 Eventually, that image at the top right
15 there, that's what got this guy caught. Someone saw
16 him walking down the street. At this point he was
17 several miles north of campus. Someone called it in.
18 Police went to confront him and he ended up taking his
19 own life.
20 So this is the ability that we have with
21 a firearm detection to get it out across the agency as
22 quickly as possible and also for an effective drone
23 response. I'm going to show you an image. This is
24 from Philly. I mentioned we're deployed into several
25 organizations here in the city to include SEPTA.

1 Realistically, we see folks with guns all the time in
2 the City of Philadelphia. This is a good example. We
3 got this detection, we verified it in a couple
4 seconds. This got relayed back to SEPTA's operations
5 center. The problem is they didn't have an officer
6 close enough to respond. So by the time officer went
7 to go find this individual, who was clearly
8 brandishing a firearm, that individual was gone.
9 I think what we're proposing, and we
10 have the technological ability to do it now, is, and I
11 heard this earlier in the testimony if we
12 strategically stage drones around the city, a drone
13 could be up overhead and have this individual within
14 line of sight, custody of the drone until an officer
15 is able to go apprehend or at least intervene and see
16 what's going on.
17 And then the last set of recommendations
18 that we have and happy to sort of talk through this,
19 we see Philadelphia as a great example to engage
20 stakeholders on this. There are currently not very
21 many cities actively using their existing security
22 cameras to do this type of detection and enable a
23 drone response. We believe that a pilot project could
24 and should be launched using a few hundred cameras
25 across the city to prove out the concept. We are

1 agnostic to drones at ZeroEyes, but we do a lot of
2 work in the space with Asylon Robotics, who, like I
3 mentioned before, they're up in Norristown. And then
4 we'd be very happy to partner with the city to run
5 drill scenarios to make sure everyone's very
6 comfortable in doing it. And then a few final
7 thoughts. There's probably a pretty good chance that
8 most folks in the room never heard of ZeroEyes, but I
9 like to think of us --- we are a true Philly success
10 story. We started this company in Philadelphia back
11 in 2018. There were seven of us as cofounders or early
12 hires that quit our jobs and went all in on this idea
13 that the ability to detect visible firearms from
14 existing security cameras is a massive force
15 multiplier for law enforcement and first responders.
16 In the ensuing years, even throughout COVID, we've
17 grown the company substantially. Right now, we're
18 about 170 employees. About 80 percent of the company
19 is a military veteran. I mentioned that we started in
20 Philadelphia. We were actually over at Pennovation.
21 That's where we sort of incubated the idea for a
22 while.
23 We're currently in Conshohocken, as you
24 can imagine. We had to move out of the city
25 eventually because flying drones and robotics and

1 walking around with firearms can present certain
2 problems here in Philadelphia. And Conshohocken just
3 has the space, quite frankly, that we need.
4 But that being said, we've given jobs to
5 hundreds of people in this area that are military
6 veterans and law enforcement veterans. They see this
7 as the next mission and a valuable mission to support.

8 On top of that, we've raised over \$50 million of
9 institutional capital to keep the business going and
10 build. A lot of that is from local investors as well.

11 So I do see this as a success story here in Philly.
12 The other thing that I'm going to add to
13 is that it takes an ecosystem to get this done. Philly
14 has an incredible, innovative ecosystem. And more and
15 more in particular on the engineering side when it
16 comes to drones and robotics, the Exyn folks presented
17 earlier, they're right downtown. Asylon's up in
18 Norristown. Ghost Robotics is downtown. We have an
19 incredibly good ecosystem of autonomy and drone
20 companies that are coming out of the University of
21 Pennsylvania system. And then you layer on computer
22 vision and artificial intelligence companies on top of
23 that. I don't think that we have to look that far
24 around the country for solutions. I think there's
25 some stuff right here in our own backyard. ZeroEyes

1 would be happy to assist with that.
2 The last thing I'll leave you with is
3 that over the last year or so, we've implemented, I
4 think, a really effective government affair strategy
5 here in Pennsylvania, as well as some other states
6 around the country. And then federally, we have
7 hosted --- Nick, I mean, I've lost count of the number
8 of Pennsylvania legislature members that have shown up
9 to the office. We've also hosted multiple
10 congressional parties. We are very happy to show
11 folks how we build the software, develop the software,
12 happy to get hands on with the drones and the robot
13 dogs that we have, show everyone what we're working
14 on. So this is an open invitation to the members of
15 the committee. Please do come visit. We are happy to
16 host you and show you what we're up to. And with that
17 concludes the presentation. Happy to take questions.

18 CHAIR:

19 Wow. I'm going to start with that
20 description. I'm going to ask you, how do you, in
21 this technology, I know drones and the cameras. Does
22 that include acoustical equipment?

23 MR. CARROLL:

24 Yeah. So ZeroEyes itself, we just build
25 the fire detection and verification software and

1 platform. But that being said, we integrate to
2 numerous other layers of the ecosystem of which the
3 acoustic stuff is very important. So I'm sure people
4 here have heard of ShotSpotter or they've just
5 rebranded a sound thinking.

6 But I look at us as basically two sides
7 of the same coin. I think the fire protection piece
8 visually from cameras is a little bit more proactive.
9 Obviously, with the acoustic piece, the gun has to be
10 fired. But at the end of the day, if you're able to
11 afford it and have a good strategy around it, putting
12 both of those capabilities in layers makes a ton of
13 sense to us. And then throwing a drone on top of
14 that, I think, is sort of the Holy Grail.

15 CHAIR:

16 So my other question would be, as we
17 deal with legal protests that sometimes change to
18 something else or events that, we have the parkway
19 filled with folk, to what degree can you distinguish
20 within a large crowd a threat?

21 MR. CARROLL:

22 Yeah. So I think that the best way to
23 describe performance, which I think is basically what
24 you're asking, I think, right? I like to say that if
25 you're a human and you're sitting behind an active

1 camera feed and you can tell that something is a gun,
2 our software should also perform to the same way.
3 There's obviously a ton of variability when it comes
4 to cameras, right? There's different manufacturers,
5 different resolutions, heights, angles, lighting,
6 background condition, people in frame, movement in
7 frame. But I think what I just said about if a human
8 can tell something's a gun, that's a pretty fair
9 blanket performance statement. That being said, we
10 are deployed into environments right now that have
11 tens of thousands of people throughout the hallways or
12 in and out of the building throughout the day. I will
13 tell you one thing about human nature that I've
14 noticed. If someone has a gun displayed in a crowd,
15 people tend to make as much room as possible between
16 themselves and that person, which should give us
17 opportunities to identify the gun.

18 CHAIR:

19 Members, questions? You were very
20 precise, and I would be interested to find out from
21 Deputy Commissioner Healy how much municipal envy we
22 should have and how we are developing this technology
23 here in Philly. So thank you for your testimony.

24 MR. CARROLL:

25 Yes, sir, I appreciate that. And please

1 feel free to reach out to us if there's any further
2 questions. Thanks.

3 CHAIR:

4 Okay. Mr. Glass.

5 MR. GLASS:

6 Mr. Chairman, our final witness today is
7 Deputy Commissioner Fran Healy from the Philadelphia
8 Police Department.

9 CHAIR:

10 Welcome back.

11 MR. HEALY:

12 Thank you, sir.

13 CHAIR:

14 You know the drill. State your name and
15 begin your testimony.

16 MR. HEALY:

17 One second, sir. Good afternoon,
18 everyone. My name is Fran Healy. I got to get used
19 to saying this, but Deputy Commissioner of the Offices
20 of Professional Responsibility and Legal Affairs. So
21 it's under the umbrella of the legal affairs that I'm
22 here, as I've always been in the past.

23 To summarize, I provided the written
24 statements, but being late in the day, I'll try to
25 summarize. We in the police department, obviously,

1 following Kevin Bethel is never good. Okay. But it
2 is what it is. But we implemented a program back in
3 2018. We drafted a very strict policy for the privacy
4 issues in Philadelphia with the civil rights
5 attorneys. We've worked with them in the past, so we
6 wanted to make sure we had a very restrictive policy.
7 But we honestly have nothing like what you've seen
8 here today.

9 As the captain --- or as the chief from
10 California mentioned, she uses them for tactical
11 purposes and other purposes. Our purposes here in
12 Philadelphia are primarily tactical. We have four
13 tactical drones. As now, they're in the SWAT unit.
14 They use them for SWAT, for barricades and that type
15 of information. We also have a new one coming in for
16 the Marine unit to do searches, larger water searches
17 using the drone for those purposes. They've been used
18 primarily for the barricaded situations, but also
19 large crowds, large events on the parkway for the
20 observation from the aerial view, for tactical
21 advantages.

22 That being said, I can't help, but I'm
23 kind of jealous, quite frankly, of what I saw. And
24 I'm very interested in seeing how we can in
25 Philadelphia develop something. I'm looking forward

1 to either developing some type of a working group and
2 actually gathering more information to see what we can
3 do with this technology. I know what we're doing is
4 rather restricted, but looking at what we've seen, I
5 see that the potential and the possibilities are
6 endless. So we're looking forward to looking into
7 those opportunities.

8 But I'm happy to answer your questions.

9 Like I said, I wanted to be very short and sweet. I
10 know it's late in the day. I'm happy to say we have,
11 like I said, the number of units that we have. We
12 have one nighttime unit. The cost for these are
13 approximately --- they're old or they're older. Based
14 on this technology, most on average were about \$2,000,
15 \$2,500. The night viewing one was about \$6,000. I'm
16 not sure what the cost of the new one coming in then
17 that would be assigned to the Marine unit, but all
18 these units are under the special operations, which
19 are our tactical units.

20 CHAIR:

21 So if I could how many trained members
22 of the force know how to use this technology at
23 present?

24 MR. HEALY:

25 A handful, based on the federal FAA

1 regulations at the certified pilots under Regulation
2 107. I believe there's two or three at best, because
3 they're only limited in use by the SWAT unit, quite
4 frankly.

5 CHAIR:

6 And if you had your druthers and a big
7 pocketbook check to go to, how would you design a
8 system for Philadelphia?

9 MR. HEALY:

10 That's a very good question, and I
11 wouldn't be fair if I told you I knew the answer. I
12 need to get the subject matter experts in the room and
13 figure out how to do this. Best practices is
14 something relatively new. So I would reach out
15 honestly to the major city police chiefs and the IACP
16 to see what they have policy wise, but also from the
17 jurisdictions that already have them in play. What I
18 was most focused on was how they overcame the hurdles,
19 the issues with the community. The cameras, when we
20 implemented cameras in Philadelphia were a huge
21 problem. I remember this started with Commissioner
22 Timoney, quite frankly, when we wanted to put cameras
23 in Rittenhouse Park, and everybody kind of got very
24 upset understanding that there is no expectation of
25 privacy in the public. But nonetheless, people have

1 this expectation that people, they're not going to be
2 spied upon. That has since waned with all the new
3 cameras. We have people now they're kind of dismayed
4 when we don't have cameras in a certain area. So the
5 whole public sentiment has changed.
6 When we first started our drone problem,
7 our program, that was kind of the mindset that were up
8 against in 2018. Like these are going to be used by
9 the police in a surveillance, kind of like, are they
10 going to look at my windows? And I heard that a
11 couple of times, and so we were very restrictive on
12 that. So if we're going to use them, and if we're
13 ever going to use them in a search capacity, it would
14 have to be based on a warrant, just like any other
15 search would be done.
16 But seeing how they're being used here,
17 it's much more than a tactical operation. This is
18 actually intervening and helping to actually alleviate
19 the number of police officers actually responding and
20 are able to respond to a job, on found a job, quite
21 frankly, is important because that leaves that officer
22 available to respond to other jobs. So I see the
23 utility of this and I'm kind of excited to actually
24 look at to see how we can look at this in a bigger
25 way.

1 Money is a big issue, obviously, but
2 looking at how we can offset what we spend on the
3 opportunity costs but what we don't have to spend in
4 other avenues also has to be considered in any type of
5 assessment. But how I would come up with this
6 program, quite frankly, I honestly don't know. I
7 mean, if I said I did, I'd kind of be lying to you.
8 But I would get the subject matter
9 experts in the room to see how they're deployed, where
10 they're deployed from and see what resources we have
11 that actually can comport with that, to see how we can
12 actually create a synergy between what we already have
13 and how they're deploying them in the street
14 themselves. That's one thing I would want to know.
15 CHAIR:
16 Members of the committee, questions?
17 PRESIDENT CLARKE:
18 Thank you, Mr. Chairman. And thank you,
19 Deputy. I appreciate you having had a long, long ---
20 MR. HEALY:
21 No, actually ---.
22 PRESIDENT CLARKE:
23 --- opportunity to interact with ---.
24 MR. HEALY:
25 I will say I enjoyed it because it was

1 very informative. I mean, it's nice to know I knew of
2 different things, but seeing it in firsthand, it was
3 very impressive. I can't say anything but.

4 PRESIDENT CLARKE:

5 Yeah. No, I appreciate you, had the
6 ability to interact with you over many years usually
7 here in your role as the legal part of the response to
8 City Council and some of its more aggressive
9 approaches to trying to do you all's job.
10 Unfortunately, we are in our lane most of the time.
11 But I just want to say that at the end of the day,
12 it's about policy. And policy is usually driven by
13 the non-uniform members of government at the top
14 level, which is why we non-uniform members of council
15 have always come up with all kinds of ideas, sometimes
16 didn't make a whole lot of sense. It weren't really
17 reality based. But it just grows out of the
18 frustration of seeing some of the things that we've
19 seen. I know that you all in a uniform portion of
20 government have a better understanding of the reality
21 base.

22 But I can recall, as I said, I've been
23 here for a long time and I can recall when I first got
24 elected as a council person and then Mayor Street, we
25 actually had a police commissioner was just before

1 that, Mr. Timoney. He was widely thought of quite
2 highly as one of the better police commissioners that
3 we were able to hire at the time. And he had a very
4 aggressive pushback on us deploying cameras in the
5 City of Philadelphia. Not even the live --- because
6 the dibbit wasn't even created yet. Not even a real
7 time camera. Just simple cameras. And, I mean, it was
8 like I couldn't quite understand why he was pushing
9 back so hard.

10 And he actually gave an explanation here
11 in his chambers and talked about Rittenhouse Square
12 and how somebody was sitting in Rittenhouse Square
13 Park with somebody other than their wife that would be
14 problematic, that a camera would pick them up on their
15 feed. And I'm like, are you kidding me? Right? But
16 that's the kind of pushback we got over the years.

17 But thank God, as time grew on and
18 technology advanced, people said, look, we got to stop
19 playing. We need to utilize other aspects of it. And
20 I get it. Drone usage is something that a lot of
21 people are using, but it's still, to some degree, the
22 jury is out. But it's an effective tool from our
23 perspective. Again, we are the non-uniform members of
24 government. But at the end of the day, as Chief
25 Bethel said, anything that you have to use to protect

1 our children. And I'll go a little further our
2 children, our brother, our sister, our grandmother.
3 Right? Because people are at risk across the City of
4 Philadelphia.
5 And I'm not suggesting that you're not
6 supportive of what we're talking about today, but it's
7 just that if there is an opportunity, and I don't care
8 how much it costs, I mean, \$18,000 for that very
9 impressive drone, but when you talk about saving a
10 life, there's no dollar figure that can be attached to
11 that. Or more importantly, we're talking about
12 preventing a crime. I don't want to get into what has
13 happened over the last 48 hours, but the bottom line
14 is we need to look at this. I'm glad that the
15 officers from California acknowledged that you needed
16 to have community buy in, and they indicated that they
17 had a lot of community meetings. But at some
18 point, I think we really need to move forward. I
19 mean, there'll be a new administration coming in. We
20 need to think about utilizing every level of
21 technology within reason, because I'm not necessarily
22 there on some of the infrared and seeing people
23 through a building and all that. I'm not there.
24 Right? This is not the military. But I think this is
25 clearly something that needs to have some significant

1 levels of conversation, because we have to do some
2 things differently as it relates to our ability to
3 keep our people safe.

4 MR. HEALY:

5 I wholeheartedly agree. If there is
6 ways that we can do our job better, more efficient,
7 more effective, and actually without negatively
8 impacting the community while doing so. I mean,
9 policing is sometimes --- nobody likes to be stopped
10 by the police. Being able to use this technology to
11 have less contact that we don't need to have would be
12 phenomenal.

13 So what I say here is the commissioner
14 sent me over here, and he's very open and receptive to
15 new ideas and new concepts and new ways of doing
16 things. So what I can say leaving here is that I will
17 definitely convene a working group of sorts and try to
18 see how we're going to interact with other cities to
19 see how they're doing and bring back some best
20 practices. Because even if we can't do it at the
21 scale that's being done, we should be transitioning
22 towards using it in a much more effective manner than
23 we already do.

24 And in different types of drones. The
25 tactical is a win, but there's so much more now that's

1 evolved since just 2018. So, yeah, I'm 100 percent on
2 board. We'll look into, see what we can do, and I'm
3 happy to report back. We'll see if we find anything.

4 PRESIDENT CLARKE:

5 Thank you. Thank you, Deputy.

6 CHAIR:

7 Member Lozada?

8 MS. LOZADA:

9 Over the course of the last few weeks,
10 we've heard about adding tools to a toolbox, right?
11 And you have folks who are pro and in opposition of
12 some of these tools. But I think that tools like this
13 that would better improve public safety, better
14 improve quality of life while still protecting
15 people's constitutional rights is extremely important
16 to get behind. And I think it's a conversation that
17 we should not only be having here in this legislative
18 chamber or you all in the Broad Street building,
19 right, or in the school district. I think it's a
20 conversation that we really should start having at the
21 community level and start gaining buy in, start
22 hearing about how they feel.

23 When we first started to talk about
24 installing cameras along commercial corridors, around
25 playgrounds, around senior centers, folks got a little

1 alarmed. They got a little concerned, cameras on
2 SEPTA buses. There was a lot of uneasiness around
3 cameras. I think that as we start talking about
4 considering drones and identifying how we pay for
5 something like this, that to me, I think would benefit
6 us. Right. It would be a positive tool in that
7 toolbox.

8 Let us not forget to start talking and
9 bringing the people in now as we work towards getting
10 to what we're looking to achieve in the future.

11 MR. HEALY:

12 Thank you. I agree. And also, I think
13 it's important, the technology may not --- the laws we
14 have here may be restrictive laws in every
15 jurisdiction is slightly different. But as we develop
16 out a policy or protocol building in making sure, like
17 you just mentioned, thermal, that's a search under
18 U.S. Supreme Court case law. So making sure that we -
19 -- even though the technology is there, how do we
20 direct it in the right way so it's not misused. And
21 so exactly to your point, constitutional rights and
22 privacy rights of individuals is the highest concern,
23 but we also can balance that with the ability to see
24 how we can maximize our effectiveness by using the
25 technology. I agree.

1 So I will definitely put something
2 together internally, and if possible, can I have a
3 copy of everything here today so I can share it with
4 my people? Because like I said, I don't have to dig
5 it up. It's good stuff.

6 CHAIR:

7 You're done? All I want to say is, I
8 remember the first grant that President Clarke got
9 this city to do cameras in the Fourth District and how
10 hesitant people were. And I get it. I read George
11 Orwell's 1984. I get the privacy issue. But what
12 sold me on this technology was there was an abduction
13 of a young lady. And the dibbit was able to identify
14 this guy who got her out of Germantown out of a train
15 station on a block up there. Because he had a
16 distinctive limp, they were able to identify him with
17 another camera, find a person and find the young lady
18 alive. I'm sold.

19 Protecting and serving and preserving
20 life is the priority. And as we evolve as a city, as
21 Member Lozada talked about, we need to use every tool
22 on the tool belt being constitutionally aware. But
23 public safety has to be one of our priorities. So
24 thank you for your testimony. Thank you for your
25 service. Congratulations on your promotion.

1 MR. HEALY:

2 Thank you, sir, I appreciate it. Thank
3 you.

4 CHAIR:

5 If there are no other members to testify
6 --- people to testify, this concludes the business of
7 the committee public hearing on public safety dealing
8 with resolution number --- what was the resolution
9 number? Oh, I got it, 230523. Thank you all for your
10 testimony.

11 * * * * *

12 MEETING CONCLUDED AT 4:40 P.M.

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CERTIFICATE

3

4 I hereby certify, as the stenographic reporter,
5 that the foregoing proceedings were taken
6 stenographically by me, and thereafter reduced to
7 typewriting by me or under my direction; and that this
8 transcript is a true and accurate record to the best
9 of my ability.

10 Dated the 17 day of October, 2023

11

12

A handwritten signature in dark ink, appearing to read "Kathleen Formichelli", is written over a horizontal line.

13

14 Kathleen Formichelli,
15 Court Reporter

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