NYC Emergency Management

Testimony of Henry Jackson
Deputy Commissioner of Technology and Strategic Resources
New York City Emergency Management
Before the New York City Council Committees on Public Safety and Transportation
November 23, 2015

Good morning Chair Gibson and Chair Rodriguez and members of the Committees on Public Safety and Transportation. I am Henry Jackson, Deputy Commissioner of Technology and Strategic Resources at New York City Emergency Management. I am joined here today by Timothy Herlocker, Director of the FDNY Emergency Operations Center. We are here to talk about the potential use of Unmanned Aerial Vehicles – UAVs – to enhance City agency operations.

As you know, UAVs are often referred to as 'drones' and, while this usage is widely recognized by the public, the Federal Aviation Administration (FAA) uses the terms 'Unmanned Aerial Vehicles' or 'Unmanned Aerial Systems' because the key characteristic of these types of aircraft is the ability to fly them without an on-board pilot. For the purpose of this hearing we will use the term 'UAV.'

The FAA is empowered by Congress to regulate the airspace throughout all fifty states and localities. The FAA is currently finalizing comprehensive regulations regarding the use of UAVs by private entities. We await the finalization of these rules and look forward to working with the FAA and other municipalities regarding the safe and innovative use of UAVs.

On our local front, several City agencies have started to research and discuss how the use of UAVS may improve their operations. You will hear next from the Fire Department about their explorations into using this new potential tool to gain situational awareness at serious fires (2nd Alarm or higher) Many other agencies have similar needs for situational awareness and the Fire Department's efforts will likely inform solutions at other city agencies. I will now provide a synopsis of activity from several other agencies.

NYC Emergency Management has been investigating and researching the use of UAVs for disaster response and recovery. There are generally two types of UAVs that would suit our purposes: those that are manually radio-controlled therefore allowing flexibility in determining the best views and angles of, say, a collapsed building, and those that can be programmed to follow a specific grid pattern in an automated fashion. NYCEM is particularly interested in this second type. After a large scale event, such as a coastal storm, UAVs programmed to fly over an area of damage, like the Rockaways, could be up in the air as soon as the skies clear. This can occur much earlier than fixed-wing planes of any size can typically get up in the air, the timeliness of which can be hampered by logistical concerns related to moving the proper specialized air assets into the metro area and also the need for FAA approval of specialized flight plans. UAVs could operate well before local airports are reopened and air traffic has been reinstated post-event in the metro area. These considerations and the low-flying nature of UAVs in general contribute to minimizing any potential air traffic conflicts.

FAA approval for the flight plans of the programmed drones could potentially be arranged pre-event based on hurricane evacuation zone areas. The UAVs, flying back and forth in a prescribed rectangular pattern would use aerial photography to record damage from a storm. These photographs are georeferenced and tagged to the actual location on the earth. The georeferenced photos can be correlated with all preexisting parcel data, allowing analysts to determine which properties have been damaged, along with all ancillary data about the property, including ownership, type of building, number of housing units, etc. The City already has 'before' pictures for all areas, also georeferenced and associated with lots, so a rough damage estimation can quickly be made.

This of course would only be the initial reconnaissance regarding damage assessment. Subsequently, inspectors on the ground will be able to provide more detailed assessments. But that ground level assessment cannot be started until road and streets are accessible and other safety considerations for the inspection teams are taken into account. The reconnaissance provided by the UAVs will certainly help determine the priority of areas to be visited by inspection teams. In sum, programmed drones flying in a prescribed grid pattern hold the promise of providing the earliest reliable assessments of damage that may result from catastrophic weather events.

The City's Parks Department has also spent time researching the use of UAVS for aerial tree risk assessments in line with their agency operations. The surveys would detect structural defects and health conditions in the tree canopy that are not visible from the ground. Typical trees are approximately 120 feet high, at most. Presently, monitoring and inspection is conducted by a team of climbers and pruners and an aerial lift truck. UAVs, as an added benefit, would release equipment and human capital to perform more standard operational tasks. The Parks Department is considering the use of UAVs for scientific data collection of natural resource areas such as detailed elevation information and vegetation classification, health and condition. The Parks Department has explored procurement and vendor services options and is ready to advance the use of UAVs for multiple purposes.

The New York City Department of Transportation (DOT) has been exploring the use of UAVs for use in initial cursory bridge inspections after a bridge sustains damage, real-time information on events impeding traffic in areas where traffic cameras are not readily located and aerial photography assessments of their transportation planning and management projects.

The Department of Buildings (DOB) is exploring the use of UAVs to assist DOB with façade inspections and, along with several other agencies, will receive a demonstration from a private company in the near future.

Finally, I note the NYPD does not currently own a UAV or use UAVs to accomplish its public safety mission.

To conclude, the potential use of UAVs by City agencies is still being researched. This emerging technology may present significant opportunity in reducing costs, increasing efficiencies, reducing danger or injury, and offering enhanced response capabilities during disasters and emergencies.

Thank you for the opportunity to testify today. I am happy to take your questions.

Monday, November 23, 2015
Testimony of Timothy Herlocker, Director of the FDNY Emergency Operations Center
NYC City Council Committee on Transportation Jointly with the Committee on Public Safety
Hearing on Int. No. 601-A, Int. No. 614, Res. No. 57-A, Int. No. 589-A

Good afternoon, Chair Gibson and Chair Rodriguez, and members of the Committees on Public Safety and Transportation. I am Timothy Herlocker, Director of the FDNY Emergency Operations Center. I am joined by Chief of Special Operations William Seelig, and Assistant Commissioner Laura Kavanagh. I am here to talk about the potential use of Unmanned Aerial Vehicles – UAVs – for FDNY emergency operations.

Over the past few decades, the mission of the FDNY has become more complex, attributable to the rapid new construction of buildings which have increased in size and complexity, more complex harbor operations, and the ever evolving risk landscape.

After 9/11, the FDNY realized it needed to enhance situational awareness for its incident commanders and senior executives who were making critical decisions at complex emergency operations. We followed the recommendations of a McKinsey & Company Report, prepared after 9/11, which suggested acquiring live video feeds from the NYPD and news media helicopters. Currently, when a helicopter operates at an incident, the video is shared with senior executives in the Fire Department Operations Center (FDOC), so they can see the area of impact, deploy additional resources, and monitor new developments – that can then be relayed to the incident commander on the scene. However, helicopter operations are inconsistent - they are weather dependent, their time in the air is limited, and they cannot hover directly over a fire incident. They are also costly to purchase and operate, and those owned by the news agencies have limited coverage times. For these reasons, the FDNY has continued to explore other options for gathering on-scene video.

We formed the Command Tactical Unit (CTU) in 2007 with the mission of providing live video to incident commanders and the FDOC on a 24/7 basis, in all weather conditions, and at a lower threshold of fire alarm than is utilized for helicopter coverage. Its mission is to provide a view of the sides of a building the incident commander would not otherwise see, with priority given to the rear and roof of a target building. When possible, CTU personnel get an aerial view of the incident by videoing from the roof of an adjacent building. The video CTU provides has been critical not only in large-scale emergencies, but also at structural fires. In the course of a structural fire, numerous members of the FDNY may be on the roof, as they seek to vent the building. Prior to the CTU being established, the incident commander would often be unable to see these members as they were operating. The additional viewpoints and information provided are critical to the operational capacity and safety of the incident commander and the FDNY members on scene.

However, as with helicopters, the footage gathered by CTU is inconsistent. CTU is dependent on the layout of the local area for getting relevant video. Many incidents are located in areas where there is not a taller building nearby, and not every adjacent building may be easily accessible or even safe to enter. As a result, the CTU has continued to explore technical solutions that will allow the FDNY to acquire more accurate and consistent information at the scene of fires, collapses, and other emergency responses.

The FDNY began looking at the use of small UAVs that can consistently provide aerial views of incidents, but the Federal Aviation Administration (FAA) restrictions on the use of UAVs in Class B airspace - which covers most of New York City - rendered FDNY use impractical. The FDNY has presented to the FAA a Concept of Operations (CONOPS) that would employ the use of complex tethered UAVs that could meet FDNY requirements and be safely implemented by the Department. The FAA supported the plan and has provided assistance in moving forward with it. Complex tethering, where power and data goes through the tether, is new technology with most venders still developing prototypes. The FDNY is currently in testing with a vendor that has a production platform. If we are able to move forward with this vendor, the FDNY would seek to deploy this technology 24/7 at second alarm or greater fires and other emergency incidents.

A tethered UAV is essentially a "pole camera", capable of going up and down, but without the ability for lateral movement. The UAV and its tether become the pole, elevating a camera up to 200 feet, allowing us to consistently obtain a view of the roof and rear of a fire building.

The FDNY is excited about the operational possibilities these tools can provide. We believe they will enhance safety for our members and the public, and will allow us to more effectively tackle the dangers presented at fires, collapses, and other incidents.

We look forward to taking your questions at this time.

FOR THE RECORD

TESTIMONY OF LAWRENCE A. MANDELKER on behalf of THE NEW YORK METROPOLITAN RETAIL ASSOCIATION (NYMRA) before the COMMITTEE ON TRANSPORTATION
Chair: Hon. Ydanis A. Rodriguez
Monday, November 23, 2015, 10:00 a.m.
Council Chamber
City Hall New York, NY 10007

NEW YORK CITY COUNCIL PROPOSED INTRO NO. 614

Avigation of unmanned aerial vehicles for commercial purposes and by city agencies.

Chair Rodriguez and members of the Committee: I am testifying today on behalf of the New York Metropolitan Retail Association. NYMRA is an organization of national chain retailers operating in the City of New York. Thank you for receiving my testimony.

NYMRA appreciates the efforts of the city's Committee on Transportation and its goal to identify users of Unmanned Aerial Systems (UAS) or "drones." While the NYRMA supports efforts to develop a registration process, we believe that with an initiative currently underway by the U.S. Department of Transportation (DOT) and the Federal Aviation Administration (FAA) to develop a nationwide drone registration process, Int. No. 614 would be redundant and could dissuade customers from purchasing UAS given numerous registration requirements.

On October 19, 2015, U.S. Transportation Secretary Anthony Foxx and FAA Administrator Michael Huerta announced the creation of a task force to 1) develop and recommend minimum requirements for UAS that would need to be registered; 2) develop and recommend registration processes; and 3) develop and recommend methods for proving registration and marking.

The task force, which is comprised of over twenty-five representatives from the UAS and manned aviation industries, the federal government, and other stakeholders, also includes members from:

- The Association for Unmanned Vehicle Systems International
- Academy of Model Aircraft
- Air Line Pilots Association
- American Association of Airport Executives
- Helicopter Association International
- PrecisionHawk
- AirMap/ Small UAV Coalition
- Consumer Electronics Association

The task force is scheduled to release its recommendations to the FAA on Monday, November 23, 2015; after which time the FAA will develop its rules.

Int. No. 614 seeks to amend the administrative code of the city of New York, requiring UAS registration as prescribed by the commissioner of transportation, the affixing of a department-issued identification tag, to the UAS, and outlining various penalties for violations to the rules.

The NYMRA's concern is that any effort to require UAS registration or identification requirements will have been addressed by the FAA. This could create confusion for both customers and users, as the redundancy of both efforts may dissuade UAS purchases given multiple registrations, and potential for multiple fees, are required by federal and city entities.

We recommend that the committee wait until the FAA issues its final rules based on the recommendations of the task force before addressing any UAS registration requirements.

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Port Authority Airport Operations and Plans

New York City Council Transportation Committee Testimony

November 23, 2015

Thomas L. Bosco

Director, Aviation Department

The Port Authority of New York and New Jersey

Good morning, I am Thomas L. Bosco, Director, Aviation Department, The Port Authority of New York and New Jersey. In this role, I am responsible for the operation, maintenance and development of the Port Authority's airport system, which includes John F. Kennedy International Airport, LaGuardia Airport, Newark Liberty International Airport, Stewart International Airport, and Teterboro Airport.

At The Port Authority of New York and New Jersey, our core mission is to:

> Meet the critical transportation infrastructure needs of the bi-state region's people, businesses and visitors by providing the highest quality and most efficient transportation facilities and services to move people and goods within the region, provide access to the nation and the world, and promote the region's economic development.

A critical element of this transportation network is our airport system, which last year accommodated more than 117 million passengers and 2 million tons of cargo on 1.2 million flights. This activity is extremely important to the regional economy, supporting 570,000 jobs and generating nearly $80 billion in annual economic activity.

I thank Chairman Rodriguez and members of the New York City Council's Transportation Committee for the opportunity to address a serious issue confronting our airports – the burgeoning use of unmanned aerial vehicles (UAVs), commonly referred to as drones.

We fully appreciate and recognize that drones have much to offer. Their innovative use has already proven a tremendous asset serving a host of business interests. The application of this

technology is as limitless as the imagination, from enhanced product delivery to filming, surveying, military reconnaissance, law enforcement surveillance, and more.

The promise of UAV technology aside, as airport operator, our primary mission is to ensure the safety of our patrons, employees and the air traveling public. Recently, the proliferation of UAVs in the national airspace has produced numerous incidents of drones operating near airports without Federal Aviation Administration (FAA) Air Traffic Control (ATC) clearance and in dangerous proximity to aircraft. Preventive and/or countermeasures are needed to mitigate the threat.

Unfortunately, registration alone will not and cannot prevent a drone's unauthorized entry into protected airspace. We have real concerns about drone operators unfamiliar with the rules and regulations that govern our airspace and, more ominously, about those operators who could use UAVs with nefarious intent. Until government and industry can develop software or other measures to protect airspace around our airports from intrusion by drones, I believe that our facilities are vulnerable.

To counter the threat of unauthorized UAVs operating near Port Authority airports and after consulting with the Port Authority's Chief Security Officer, who oversees the Port Authority Police Department, I issued the following policy directive to our field personnel:

> In the event that a Field Supervisor (FS) observes an Unmanned Aerial Vehicle (UAV), commonly known as a "drone," operating in proximity to the airport, the FS shall maintain visual contact with the drone and immediately contact the Air Traffic Control (ATC) Tower to determine whether the UAV is operating under ATC clearance. Should the UAV have ATC clearance, no further action is necessary. If, however, the UAV is *not* under ATC control, contact the Port Authority Police immediately and continue to monitor the drone's flight path.
>
> **If, at any time, even upon first observation, the FS judges the UAV to pose an imminent threat to the safety of aircraft operations and that of the air traveling public, the FS shall take immediate action to eliminate that threat, including the discharge of an authorized firearm.** The drone may indeed constitute an imminent threat if observed operating within airspace actively in use by aircraft arrivals/departures, or on a flight path that would intersect or infringe upon such airspace, or in proximity to taxiing aircraft. In any case, the FS shall exercise professional judgment and discretion, including due consideration to the presence of personnel and equipment nearby, before taking action.

Recognizing that FS at Port Authority airports receive FAA-approved training to identify, evaluate and remove hazards to flight operations posed by wildlife, including birds, FS have been directed to treat UAVs posing an imminent threat to aircraft in a similar manner as they would large birds, taking lethal action as warranted in order to safeguard human life.

It is important to note that FAA alone controls the flow of aircraft in the national airspace and, recognizing this important role, we must rely on the federal government to do its part. Fortunately, FAA is taking steps to address the problem, having recently formed a government/industry task force to provide FAA Administrator Huerta with recommendations on regulating UAVs to help ensure safety without crippling the innovative applications of this emerging technology. What's more, the Port Authority is currently cooperating with both FAA and the FBI to establish a test system at JFK to detect, track and potentially employ countermeasures against unauthorized UAVs operating in protected airspace.

In the meantime, the Port Authority will continue to take all necessary action within our capability to protect the air traveling public from the threat posed by unauthorized drone operation.

We appreciate the Council and its Transportation Committee for bringing greater attention and focus to this issue. We share your concerns and pledge to work with you in continuing to promote aviation safety.

END.

Testimony of Jon Ollwerther
CMO of Aerobo
Before the NYC City Council
Committees on Public Safety & Transportation
Monday November 23, 2015

Chairpersons Gibson and Rodriguez, and members of the committees on Public Safety and Transportation – thank you for having me here today– it is my honor to speak here before you.

It is my hope to help inform the discussion before these committees by sharing our experience as a local company and as an early entrant to the drone industry.

My name is Jon Ollwerther, I am a New York City resident and the CMO of Aerobo; today I am speaking on behalf of our company. Aerobo is a drone services company based in the burgeoning tech hub of Industry City in Brooklyn. Our staff designs, builds, and operates drones for business clients such as movie studios, commercial producers, and TV news networks.

Aerobo is a New York City company to its very core. Company co-founders, Brian Streem and Jeff Brink graduated from NYU Tisch School of the Arts and began their careers working the film industry in New York City. We have raised capital from investors in the New York City technology, finance, and entertainment sectors. And we are staffed by New York City residents who went to New York City schools, and are making their careers and families in New York City.

Three years ago, when the word drone held little meaning for most of the American population, co-founders Streem and Brink began building their American Dream. Recent film school grads, they honed in on the opportunity and promise that unmanned aerial technology held for the filmmaking world. They saw a YouTube video of someone flying a tiny camera on a small quadcopter—surely, they thought,

if someone could fly a tiny camera on a small drone then they could fly a cinema quality camera on a drone meant for commercial applications.

The young cofounders immediately recognized that drones could enable a cinematographer to move a camera through three-dimensional space in new and beautiful ways with precise control. Furthermore, they saw that the technology would empower filmmakers to achieve their artistic vision while preserving human life. Manned aerial vehicles such as helicopters represent the leading cause of death in film and TV production.

The two budding entrepreneurs pooled their savings, formed our company and began searching for a drone to carry the large and expensive Hollywood cameras that they knew filmmakers would want to fly. Their search took them to California, Canada, Slovenia, Sweden, and more but after testing many systems, their search for a drone to carry top quality production cameras yielded scant results. Left with no off-the-shelf option and seeing a gap they could fill in the international market, Brian and Jeff did what any good entrepreneur would do; they set out to create a drone to carry large studio cameras weighing up to twenty-six pounds.

Then known by the name AeroCine (Aerial Cinema), Brian and Jeff drew from academic and aerospace circles to assemble and hire a team of engineers and they set out to create an aerial robotic system of their own. We have since renamed our company Aerobo (Aerial Robotics) to reflect our broader focus on the many sectors and verticals beyond just filmmaking that our company and our drones contribute to. Today we are proud to employ aeronautical engineers, sales professionals, and experienced drone pilots—we work all over the world, from the fifty states to Dubai, to Chernobyl, to the jungles of East Asia but we are proud to call New York City our home and our headquarters.

The Federal Aviation Administration's (FAA) efforts to integrate UAVs into the national airspace (NAS) are commendable in the face of extraordinary challenges. A notable step is the creation of the Section 333 Exemption, which is a provisional mechanism by which a company can become a certified commercial drone operator while the FAA finalizes its UAV rule. The FAA has already published a proposed rule for small drones and has already closed the comment period. The rule is now being revised by the agency.

The proposed rule is very prescriptive of the type of drones that a commercial operator can use, the manner in which they can be used, geographic areas they can be used, and even times of day that they can be used. The FAA prefers the incremental approach of crawl – walk – run and is drafting a thoughtful rule, drawing on knowledge from its own past, aviation governing bodies across the globe, and stakeholders in the international drone industry. The industry in United States has also been quick to create innovative hardware and software solutions ranging from auto-deploying parachutes to designing automated air traffic control (ATC) schemes, and options for geo-fencing. This technology exists to protect

people and property in the NAS and on the ground and as a city, we must be willing to adopt these solutions.

UAV operators in the United States are subject to myriad rules, requirements, and protocols pursuant to Federal Aviation Administration regulations. Operators are required to secure Certificates of Authorization (COAs) for all flights, file Plans of Activity (POAs) with local FAA offices and file Notices to Airmen (NOTAMs) with the FAA. Securing a COA, filing a POA and filing a NOTAM can take anywhere from hours to weeks for even the most routine flight. All commercial drones must also be approved by the FAA and registered with the FAA by the same mechanism that airplanes and helicopters receive an N number, otherwise known as a tail number.

A commercial UAV operator must also employ an FAA licensed ATP, Private Pilot or Recreational or Sport Pilot to fly their unmanned vehicles. This licensed, experienced professional must also be accompanied by Visual Observer (VO) whose primary task is to assist the pilot with situational awareness of the surrounding airspace and other potential hazards.

Per FAA regulations, standing orders for all commercial drone flights are to land immediately should the UAV perform abnormally and to yield to manned aircraft. Furthermore, the FAA has never allowed UAV operators to operate their aircraft in Class B airspace, which encompasses most of New York City. Aerobo receives regular requests from filmmakers, TV producers, and commercial agencies looking to operate drones for a project in New York City and due to FAA regulations, we simply cannot serve their request.

An important question on the minds of committee members is that of recreational drone users. Hobbyists and enthusiasts are vital to the development of jobs and technology in this industry. At Aerobo, we rely heavily on the hobbyist community, namely members of the Academy of Model Aeronautics (AMA) to source our pilot talent. The AMA has successfully governed the hobbyist community for eighty years and is an important member of the national conversation. The hobbyists of today are the problem solvers and inventors of tomorrows drone and drone safety technology. They are also the core of today's trained and practiced professional drone community. Maintaining a thriving hobbyist community in New York City is vital to the future of the industry in the city, and to New York City's future as a center of innovation and technology.

Hobbyists too will be required to register their aircraft with the FAA. The agency has collaborated with industry experts and stakeholders to develop a recreational drone registry and is set to announce the registry before the end of this year.

There are numerous magnificent ways drones can enhance the safety and efficiency in our daily lives. At the 2015 Tribeca Disruptive Innovation Awards, a French designer was honored for the drone he created that can deliver an Automatic External Defibrillator (AED) to a heart attack victim in seconds versus the minutes

that it can take for an ambulance to arrive. In September, for a CBS News story an Aerobo drone showed off the scale and progress of the Second Avenue Subway Tunnel in Manhattan on live TV. In the Carolinas, drones are being used to do biological research on whales. In California a scene for a movie that would have previously required a manned helicopter is being filmed with a drone. In Washington State, an entrepreneur and veteran of the Civil Air Patrol, Murray Craig, has created a radio signal finder that when mounted on a drone has proven its ability to locate a trapped firefighter in a high-rise.

Drones are also capable of inspecting infrastructure such as buildings and bridges both affordably and regularly. Drones can achieve this while minimizing the need for workers to dangle from bridges with ropes and harnesses or to perch precariously on the side of buildings on dangerous scaffolding.

Now three years into our company history, Aerobo's work ranges from designing custom UAVs to operating UAVs for big budget films, television shows, live programs, and special events. As Aerobo continues to grow our company and hire more employees we look toward a very bright future in New York City. We are currently diversifying beyond our roots in film and scripted TV production. We have branched into news production as well as industrial inspection. We also recently collaborated with a well-known international artist on an art installation that involved significant engineering with drones and debuted in downtown Manhattan. We have already designed several new commercial drones and are close to announcing a new micro UAV that is designed specifically for broadcast TV that has multiple layers of redundant safety systems engineered into it.

In conclusion I offer the following; all United States navigable airspace, including New York City is already subject to FAA regulations. Furthermore, most of New York City is a no fly zone for commercial operators because of FAA regulations already in place.

Aerobo stands ready to assist the Committee on Public Safety, the Committee on Transportation, and the City Council in safely integrating this exciting technology into our community. I encourage you all to visit our website, www.aerobo.com, to view some of the breathtaking video this technology has enabled us to capture and to schedule a visit to our Brooklyn office to witness the technology firsthand.

Chairpersons Gibson and Rodriguez, and members of the committee, this concludes my statement. I look forward to answering any questions from the Committees.

Testimony of the New York Civil Liberties Union

Before the New York City Council Committees on Public Safety and Transportation

Regarding Unmanned Aerial Vehicles

November 23, 2015

The New York Civil Liberties Union ("NYCLU") respectfully submits the following testimony on proposed legislation regarding Unmanned Aerial Vehicles. The NYCLU, the New York State affiliate of the American Civil Liberties Union, is a not-for-profit, nonpartisan organization with eight offices across the state and nearly 50,000 members. The NYCLU's mission is to defend and promote the principles, rights and constitutional values embodied in the Bill of Rights of the U.S. Constitution and the Constitution of New York.

Unmanned aerial vehicles ("UAVs") are a generative technology that have a broad range of applications and capabilities. UAVs are used in farming, conducting scientific research, monitoring weather patterns, protecting wildlife, filmmaking, performing search and rescue missions, monitoring traffic, investigating crime scenes, delivering consumer goods, and other uses yet to be imagined. It is beyond dispute that certain uses of UAVs may pose a significant risk to public safety, and that regulation of such surveillance technology is needed. However, UVAs also facilitate investigative and expressive activities that are protected under the federal Constitution and the Constitution of New York State. It is the position of the NYCLU therefore that any such regulation of emerging surveillance technology, such as UVAs, must balance government's interest in protecting public safety with the obligation of government to protect civil liberties.

The City Council seeks to address these competing interests through several legislative initiatives: Resolution No. 57-A, Int 614, proposed Int. 601, and proposed Int. No 589-A. We urge the Council to re-evaluate these proposals in light of our testimony, to ensure that measures to regulate UAV legislation are counterbalanced by equally strong protections of constitutional liberties.

Warrant Requirement for Government Use UAVs

Proposed Resolution No. 57-A calls upon the New York State Legislature to pass, and the Governor to sign, A.2683/S.1841. This bill would amend the criminal procedure law, requiring that government agencies secure a warrant before using a UAV to obtain information or evidence of suspected criminal activity. Similarly, Int. No 589-A, requires city agencies to establish policies intended to ensure that the use of UAVs comport with Fourth Amendment standards regarding search and seizure, and with other safeguards of constitutional rights and liberties. Further clarification is needed regarding the application of Int. No 589-A's mandate, but it appears to be consistent with the warrant requirements of A.2683/S.1841.

While UAVs are not yet routinely used by law enforcement and other government agencies, it is not merely speculative to anticipate that the unregulated use of UAVs can lead to the invasion of personal privacy. We support proposed resolution No. 57-A and Int. No 589-A because the proposed legislation seeks to protect civil rights and civil liberties while recognizing the government's interest in utilizing UVA technology to protect public safety. The proposed resolution and bill are also consistent with national legislation regarding UAVs, and with federal guidance from the Department of Justice regarding government use of UAVs.

Regulating UAV Use by Private Actors

Int 614 proposes an UAV identification tag registration process; the legislation also requires insurance for all UAVs. Providing accountability for UAV operators through some kind of registration process may make sense; however, lawmakers must ensure that this process does not violate the First Amendment rights of New York City residents. Media coverage of UAV crashes at airports, sporting events, and wildfire emergencies demonstrate that unregulated use poses a variety of public safety concerns. But this media attention fails to acknowledge the constitutionally protected uses of UAVs that benefit the public. In fact, the registration process outlined in Int. 614 would likely have a chilling effect on constitutionally protected speech. Consider that most photographs and video recordings that document acts of misconduct by government officials – from unreasonable use of force by police to malfeasance by educators to acts of corruption by politicians – are created not by the press, but rather by members of the public. Hence, this type of constitutionally protected conduct may necessitate a level of anonymity that would not be possible under the proposed regulatory scheme. In light of the breadth of this legislation, we encourage the Council to consider tailoring regulations in a manner that protects First Amendment and other constitutional rights.

Criminal Proscriptions for UAV Use

Proposed Int. 601 seeks to criminalize use of an UAV in undesignated areas of the city; use of an UAV with the intent to cause harm to person or property; and use of UAVs to which weapons are attached. Individuals who violate these provisions would be subject to a misdemeanor punishable by a fine no more that $5000 or imprisonment up to a year. While there are legitimate public safety concerns associated with these proscribed uses, we recommend against creating new criminal penalties for conduct that is subject to existing tort and criminal laws, such as harassment, stalking, assault, criminal mischief, invasion of privacy, and intentional infliction of emotional distress.

Federal Preemption of Local Legislation

The Federal Aviation Administration (FAA) has taken an incremental approach to regulating UAVs because of the novel and complex issues presented by this technology and its many applications. The NYCLU recommends that members of the City Council reconsider proposed Int. No 589-A and Int. 614 because both bills are in direct conflict with existing, and forthcoming, FAA regulations.

Proposed Int. No 589-A seeks to regulate commercial use of UAVs by creating a permit scheme that conflicts with existing FAA regulations. Currently, commercial use of UAVs are limited to operations in low-risk, controlled environments. The FAA authorizes such use of UAVs on a case-by-case basis, under Section 333 of the FAA Modernization and Reform Act of 2012. The FAA began granting exemptions under this provision in September 2014, and has since authorized the use of UAVs to more than 2,000 individuals and entities. It is likely that this regulatory scheme will preempt the City Council's proposal because the FAA has authority to regulate any aircraft, including UAVs, that operate in national airspace. Moreover, even if it were permissible for the City Council to adopt regulatory scheme governing UAVs in New York City, the obligation to comply with state and federal rules would certainly lead to confusion, not to mention administrative red tape.

Int 614 also proposes a local UAV registration process. And this proposal, too, is likely to be preempted by the FAA's regulations, once adopted, which will require registration of UAVs. Last month, the FAA announced intentions to mandate UAV registration before the end of the year. This past weekend, an FAA task force released recommendations for a national UAV registry to FAA officials. The recommendations, which will be modified by the FAA and released on December 21, will require UAV operators to register and affix a registration number to all devices weighing 250 grams and above.

I thank the members of the City Council's committees on Public Safety and Transportation for the opportunity to offer testimony today regarding the regulation of unmanned aerial vehicles. We look forward to continuing to work with the Council to ensure that comprehensive regulation of UAVs is done in a measured way that balances public safety and civil liberties.

Testimony of

Brendan Schulman

Vice President of Policy & Legal Affairs, DJI Technology, Inc.

Before the New York City Council Committee on Public Safety,
Jointly with the Committee on Transportation

Monday, November 23, 2015

Oversight of Unmanned Aerial Vehicles

THE FUTURE OF POSSIBLE

I am Brendan Schulman, Vice President of Policy & Legal Affairs at DJI, the world's leading brand of professional and recreational UAVs. Prior to taking this position in July, I spent my entire career practicing law in New York City, first at Cravath Swaine & Moore LLP, and then at Kramer Levin Naftalis & Frankel LLP, where I founded the nation's very first UAV legal practice group. I currently am serving on the FAA Registration Task Force, whose report outlining a national UAV registration system will be released this week. Questions of how to balance public safety and privacy concerns with the enormous benefits of UAVs have been the focus of my work for the past three years.

New York City is especially well-positioned to take economic advantage of UAV technology. With New York's rich history of filmmaking and photography, UAVs become tools for recording new vantage points of the world's most photogenic city. New York's density is also ideal for using UAVs for surveying, infrastructure, and building inspection. Imagine that, instead of erecting street scaffolding for months on end, a drone was used for a couple of hours to take high-resolution images in order to inspect for the many different types of wear, cracks, and corrosion, in support of the façade inspections required every five years under Local Law 11.[1] UAV technology will result in a safer, more efficient City. Though its local sales affiliates, DJI has already provided demonstrations of the technology to two of the largest New York City agencies, who were both enthusiastic about how even simple low-altitude use of this technology will speed infrastructure inspection repairs and make their work more efficient. In light of the condition of some our city's infrastructure, and limited agency budgets, this is a tool that is desperately needed.

Several companies in this industry are working to develop drone package delivery services, another application for which New York City is well suited. In the not too distant future, couriered documents and consumer products may be delivered to your building's rooftop or house's yard by battery-powered drone, saving time, reducing traffic, and providing energy savings, environmental and air quality benefits. Although that application may seem like years away, the groundwork for it is being laid now, and the cities who will benefit are those that create a reasonable and welcome environment for technological development.

UAVs can also help respond to fires and other emergencies. We have a growing list of examples where drones have been used to assist first responders, both to protect themselves and to help save the lives and property of others. Last year, a volunteer using a DJI drone helped protect fire fighters at a dangerous quarry fire in Connecticut.[2] Before sending in the

[1] For a visual glossary of dozens of façade conditions that could easily be photographed by a drone, *see* NYC Buildings DOB FAÇADE CONDITIONS, An Illustrated Glossary of Visual Symptoms at http://www.nyc.gov/html/dob/downloads/pdf/facade_condition_glossary1.pdf

[2] http://www.dji.com/showcase/16409

fire fighters it was important to see how close to the quarry's explosives shed the fire was burning. The drone did that easily. More recently, DJI drones were used to help rescue victims during flooding in Texas[3] and helped save two boys stranded in rapid waters in Maine by carrying a safety line to them, used to deliver a life vest.[4] At the scene of a brush fire in Florida last summer, it was a bystander with a drone who helped get fire crews to the right spot safely.[5] As explained by public affairs officer Brad Dykens of Seminole Fire Rescue, "it helped us make our decisions on how we want to fight the fire." In South Wales in April, a drone enthusiast helped firefighters bring a mountain grass fire under control.[6] In Illinois, firefighters used a DJI Phantom 3 to battle a house fire.[7] In Minnesota, it was a gas explosion.[8] In Georgia, a drone helped fight a peanut plant fire.[9] Advancements just around the corner such as thermal imaging sensors could assist fire fighters locate the hot spots and put out fires more quickly and safely. We are only beginning to realize the vast economic, humanitarian, and civic benefits of UAVs.

Non-commercial use of UAVs is also tremendously beneficial, especially for science education. We know from history that today's hobbyist is tomorrow's innovator and aviation pioneer. Burt Rutan, for example, started as a model aviation enthusiast and later became the founder of pioneering aerospace company Scaled Composites. New York hosted this year the first New York City Drone Film Festival, sponsored by NBC, which brought filmmakers from 19 countries here and received over 300 million media impressions placing New York City at the forefront of innovation. In September at the New York Hall of Science in Queens, DJI sponsored a Drone Zone exhibit at the World Maker Faire show that was by far the most popular of the entire event – an event that was attended by 95,000 people, including thousands of school children.[10] You should have seen how the faces of children lit up when they saw drones flying and racing each other – and how quickly they became excited about science and robotics. This technology, in the hands of hobbyists, is inspiring everything from art to STEM education and research right here in New York. New York is also the city I have been planning to make the location of DJI's East Coast headquarters – I have already toured dozens of potential Manhattan locations in so-called Silicon Alley.

We plan to invest in New York City, and we also care about the people who live and work here. I am familiar with a handful of reported incidents in New York the past few months, and we are very concerned about public safety. But it would be a tremendous loss if a few

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[3] http://www.dji.com/info/news/dji-drones-save-the-day-during-texas-flood-rescue
[4] http://insider.foxnews.com/2015/07/03/watch-drone-helps-deliver-life-jacket-boys-stranded-maine-river
[5] http://wfla.com/2015/07/13/drone-helps-firefighters-fight-pinellas-county-brush-fire/
[6] http://www.telegraph.co.uk/news/uknews/11530844/Drone-footage-helps-firefighters-tackle-blaze.html
[7] http://www.emergencymgmt.com/disaster/Drone-Battles-Blaze.html
[8] http://www.twincities.com/localnews/ci_27417719/drone-assists-at-bemidji-destroyed-house-blast-scene
[9] http://www.sharonherald.com/news/drone-helps-contain-giant-fire-at-peanut-plant/article_168e6ac0-af1d-11e4-aa62-6f60518346ab.html
[10] http://www.marketwired.com/press-release/excitement-maker-movement-builds-after-maker-faire-week-new-york-with-maker-faires-2065599.htm

uninformed or irresponsible people who have generated alarmist headlines, combined with what seems to be fundamental misunderstandings about the technology, cause all these benefits to be lost to the City.

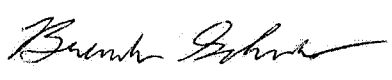
Our most popular model, and arguably the most popular consumer and commercial UAV in the world, the DJI Phantom 3, weighs less than 3 pounds, about the same as each of the hundreds of seagulls that fly around this coastal city every day. It includes dozens of safety features including automatic return to home in the event of a signal loss or low battery, a maximum altitude limitation feature, and GPS-based geofencing.[11] We announced last week an update to our geofencing system which will provide live airspace information to operators to help them make educated decisions, and which will restrict the operation of the drone near airports and in FAA flight restriction areas -- such as when there's a Yankees or Mets game or when the United Nations is in session. We already have implemented technology to address many concerns, and we are constantly innovating. Across all brands, there are millions of small UAVs that have been sold around the world over the past few years, and I have yet to hear of a single serious injury. This is safe technology that we are making even safer.

If the proposals before the Council are enacted in substantially this form, with dozens of restrictions, licenses, registration, permits, pre-flight and post-flight administrative requirements, and criminal penalties -- these proposals will say to the world that New York City is no place for UAV technology. They would negate virtually all the benefits by making it difficult, expensive, and administratively burdensome for any person, company, or city agency to operate one – for <u>any</u> purpose.

I respectfully propose the formation of a working group. I would be delighted to work with members of the council and staff on a balanced approach, and one that also accounts for the legal framework that the aviation field is preempted by the federal government. Together, we can work on making New York City not only a leader in public safety but in exciting new technologies.

In the interim, attached as Appendix B are some of our specific concerns relating to the three proposals and the one resolution currently before the City Council.

Respectfully Submitted,



Brendan Schulman
Vice President of Policy & Legal Affairs

[11] A list of DJI safety features is annexed as Appendix A.

Appendix A

Selected Safety Features Implemented in DJI Consumer Drones

- Live map showing drone location, orientation, distance, altitude
- Visual/audible low-battery warning with reserve power
- Altitude limitation (398 foot default)
- First consumer drone with geofencing – provides location-based warnings and, in some cases, restricts flight
- Automatic return-to-home in event of radio signal loss
- Automatic return-to-home in event of low battery
- Automatic user-initiated return to home in the event of any contingency
- Auto-land feature for all of the above return-to-home functions
- Talking voice feature for audible cues when pilot is looking up
- Prediction of battery power needed to return home (avoids "point of no return" problem)
- Motors do not spin until deliberate arming sequence is input by user
- Intelligent battery system with charge history and temperature monitoring
- Built-in flight simulator for practice
- GPS hold feature keeps drone in place even with pilot "hands off" or in wind
- GPS using two different systems for redundancy and reliability
- Vision positioning system for position-hold indoors or at low outdoor altitudes
- Speed limitation (Phantom/Inspire)
- Weak radio signal warning before signal loss
- Live HD view for collision hazard detection and precise positioning
- Auto-tightening or locking propellers eliminates loose ones flying off
- Propeller guards for Phantom series
- Lightweight materials and lowest-in-class drone weight to reduce risk
- Collision avoidance technology for the Matrice 100 (first "retail" drone to offer this)

Appendix B

Specific concerns and comments

Int. No. 614

In General. DJI is concerned that this proposal makes no distinction for what are essentially small battery-powered toys. An ordinance that overreaches will not be taken seriously and will result in poor compliance. One or more thresholds should be established below which none of the provisions apply. In other countries such as Canada, Australia and Mexico, a weight of 2 kilograms has been designated as a threshold for regulation, premised on a risk-based approach. Australia's CASA concluded that UAVs "with a gross weight of two kilograms and below have a very low kinetic energy, pose very little risk to aviation and have a low potential for harm to people and property on the ground and other airspace users."[12] Also, drones that are operated inside structures should be excluded.

Registration. This proposal contemplates a registration scheme that is more complex than what is required of motor vehicles. The FAA is weeks away from implementing its own national UAV registration system. The scheme proposed here, involving a two-year re-registration term and transfer of ownership records, is far more complex than necessary. We urge the City Council to defer to the federal system, which was recommended by a group of over 25 stakeholders from law enforcement, manned aviation, state and federal government agencies, who spent weeks working in earnest to arrive at a thoughtful and effective approach. DJI also believes that this is one of several aspects of Int. No. 614 that is federally preempted.

Insurance. The insurance requirement imposes a hardship upon the average consumer who may be operating a very small UAV in a private location, such as a backyard. It is not at all clear that such insurance products exist, or that insurers would be willing to add the City as an insured party, potentially making operation in the City impossible. Moreover, the lack of any reported serious injury or death worldwide attributed to multirotor drones suggests than an insurance requirement is less needed than it would be for, say, skateboards, bicycles, and baseball bats which have been around for decades and do not require insurance.

Identification tag. The identification tag proposal seems, like the registration proposal, to resemble a license plate system for cars. The complexities set out by this proposal are unneeded in light of the imminent federal system. These requirements also do not reflect the way these devices are purchased, used, resold, and traded – as consumer technology products, not as motor vehicles.

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[12] https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/newrules/ops/nprm/nprm1309os.pdf at page 8.

Seizure and Reporting. The seizure and reporting requirements resemble provisions that might be appropriate for very hazardous devices, chemicals, or weapons. We would be interested to know what other consumer technology products are subject to such provisions, which seem far more onerous than necessary.

Proposed Int. No. 589-A

In General. DJI is concerned that this proposal makes no distinction for what are essentially small battery-powered toys, or UAVs that are in a lighter-weight "micro" category. Many countries such as Mexico, Canada and Australia have taken a risk-based approach in recognizing that the lightest weight UAVs (2 kg or less) can be used safely for any purpose without a complex regulatory scheme. Australia's CASA concluded that UAVs "with a gross weight of two kilograms and below have a very low kinetic energy, pose very little risk to aviation and have a low potential for harm to people and property on the ground and other airspace users."[13] Also, drones that are operated inside structures should be excluded.

(a) Articles 1 and 3

Commercial purposes. This proposal identifies "commercial purposes," perhaps to distinguish from purely recreational purposes, but does not address science, research, education, humanitarian and volunteer purposes. It would be unfortunate if UAVs used for purposes other than making money fall into the same framework as "commercial" operations simply by failure to consider that UAVs can be used for many beneficial non-profitable purposes. For example, students at schools learning about technology, and the teachers who instruct them, should not fall subject to commercial operator rules.

Operator license. The complex set of proposed requirements for obtaining a license from the commissioner is extremely burdensome and duplicative of not just the current FAA process for approval of commercial operations, but also the future rules that will be in place next year. The requirement of "periodically" testing an applicant's knowledge is not something that is even required of motor vehicle operators or *manned* aircraft pilots.

Inspection. An annual inspection requirement is more stringent than required for motor vehicles and many different types of equipment, let alone camera equipment. Expecting an agency to examine and "approv[e] for avigation" all of the hundreds of models of UAVs would be an overwhelming task, and require the hiring of new agency employees. This is why the FAA's proposed commercial small UAV rules have no airworthiness certification requirement.

Permits. The permitting system described appears to be an additional requirement on top of the licensing system. It asks for detailed operational information in advance, the make and model of UAV, start and end times, and other information.

[13] https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/newrules/ops/nprm/nprm1309os.pdf at page 8.

Operational limitations. The 25 mile per hour limit conflicts with the FAA's commercial exemption requirements and the FAA's proposed rules to be promulgated next year, all of which preempt local laws. DJI supports a prohibition against equipping civilian drones with weapons.

Preemption. DJI believes many if not all of the provisions in these Articles concerning UAV operation are federally preempted.

(b) Article 2

Agency Use. The requirements set out in this section are extremely complicated and burdensome, and appear to preclude the use of a UAV on short notice in response to developing conditions. The Article effectively says to city agencies, including the ones who have already inquired about our products, not to even try using UAVs because it would be so complicated so as to require hiring new administrative staff. The framework set out in this Article would eliminate much, if not all, of the cost and efficiency benefits presented by UAVs.

Autonomous navigation systems. We believe the provisions relating to autonomous avigation systems might reflect a misunderstanding of the technology. Such systems can help to more precisely position UAVs adjacent to infrastructure for photography, to precisely navigate paths through the air, or help prevent collisions with objects and structures in the flight environment. Autonomous systems should be permitted so long as a human may override and resume control of the UAV during the flight operation. As the technology develops, even that type of requirement should be reconsidered.

GPS logs. The requirement of prior written authorization and five years of GPS tracking logs seems impractical, and creates data retention complexities. It is also not clear what purpose these would serve. For example, an agency that uses a UAV in place of surveying equipment to measure and map land areas of the city would presumably not retain location data of the surveying equipment it currently uses. What goal is served by retaining GPS logs of a UAV used for the exact same purpose?

Proposed Int. No. 601-A

In General. DJI is concerned that this proposal makes no distinction for what are essentially small battery-powered toys. An ordinance that overreaches will not be taken seriously and will result in poor compliance. One or more thresholds should be established below which none of the provisions apply. In other countries such as Canada, Australia and Mexico, a weight of 2 kilograms has been designated as a threshold for regulation, premised on a risk-based approach. Australia's CASA concluded that UAVs "with a gross weight of two kilograms and below have a very low kinetic energy, pose very little risk to aviation and have a low potential

for harm to people and property on the ground and other airspace users."[14] We are glad that UAVs operated inside structures are excluded.

Surveillance defined. The definition of unlawful surveillance already exists in New York State statutes (N.Y. Penal Code Article 250) and is not synonymous with "close observation." This proposal risks creating a new standard for this aerial technology that is different from manned aircraft and cameras on the ground, potentially in violation of First Amendment rights. We submit that the balance between an individual's interest in outdoor photography and acts which constitute unlawful surveillance have long ago been struck by the state legislature, and that UAVs should not be subject to a technology-specific redefinition of that conduct. Unlawful surveillance is already a crime under New York law. *See* N.Y. Penal Code Article 250 (sections 250.40-250.60). Indeed, there has already been a prosecution, resulting in a jury verdict, of a person using a drone near a medical facility under the existing New York State statute.[15] The state statute is technology-neutral, as it should be. We oppose the use of our technology for nefarious or invasive purposes, but believe existing doctrines address the very small number of people who might engage in such activities.

Locations. This proposal suggests the UAVs will only be permitted to operate in areas specifically designated by the commissioner of parks and recreation. This would seemingly preclude the use of these consumer technology devices in one's own back yard or anywhere else other than a park. While we welcome the designation of city park locations for operation of UAVs, the implicit ban in all other locations is far too restrictive.

Operational parameters. We note and appreciate that this proposal recognizes the framework in Section 336 of Public Law 112-95 for notifying the airport when operating a UAV within five miles. However, we do not believe a duplicative city law is required. Also, we note that some of the parameters in this proposal appear to mandate certain parameters that are simply FAA guidelines, such as the 400 foot altitude above ground level and the prohibition on operations at night. In appropriate circumstances, operation outside these parameters may not only be safe but preferential. (One of our colleagues at another company recently concluded that operations at night using lighting systems are actually safer than daytime because they are more visible to manned aircraft pilots. The Academy of Model Aeronautics safety code specifically contemplates the safe operation of model aircraft at night using lighting systems. All DJI consumer drones include lighting systems.)

Preemption. DJI believes many, if not all, of the provisions in this proposal concerning UAV operation are federally preempted.

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[14] https://www.casa.gov.au/sites/g/files/net351/f/_assets/main/newrules/ops/nprm/nprm1309os.pdf at page 8.
[15] "Man Accused of Using Drone to Spy on Hospital Patients Is Acquitted," *Slate*, June 23, 2015, available at http://www.slate.com/blogs/future_tense/2015/06/23/david_beesmer_accused_of_using_drone_to_spy_on_hospital_is_acquitted.html .

Criminalization of operational infractions. DJI is concerned that various procedural or administrative requirements set out in this proposal have been framed as criminal violations. We urge the City Council to consider carefully which aspects of UAV operations deserve to be subject to criminal enforcement, thus taxing law enforcement agencies and the criminal justice system, and potentially imposing criminal liability upon juveniles, and which provisions are more properly the subject of civil liability standards and tort law.

Proposed Res. No. 57-A:

DJI is concerned that, in the preamble, the resolution conflates the use of attack drones by the military with the use of small UAVs for civilian purposes. The drones we manufacture are derived from model aircraft technologies, not from military equipment. Ours are already being used for cinematography, wildlife conservation, agriculture, infrastructure inspection, disaster recovery, and countless other beneficial purposes. The comparison in the resolution is analogous to citing tanks used by the military overseas as a basis for regulating the use of trucks in the United States. This comparison serves no purpose and inappropriately demonizes a new technology. It also bears noting that many of the civilian technologies we enjoy today, including the smartphones in our pockets, and the internet, are based on technologies originally developed for military applications. What matters is how technologies are used.

THE NEW YORK CITY COUNCIL
COMMITTEE ON TRANSPORTATION JOINTLY WITH COMMITTEE ON PUBLIC SAFETY
MONDAY, NOVEMBER 23, 2015
10:00 AM COUNCIL CHAMBERS-CITY HALL

Statement of Lawrence H. Brinker, Esq.
Executive Director & General Counsel
NUAIR Alliance (www.nuairalliance.org)

Chairperson Rodriguez, Chairperson Gibson, and Members of the Committees, on behalf of our over 70 public, private, and academic partners of the NUAIR Alliance, I thank you for the opportunity to be heard on this transformative technology issue.

As background, the NUAIR Alliance is a New York Not-for-Profit corporation that manages the Congressionally mandated, Federal Aviation Administration (FAA) authorized, Griffiss International Airport Unmanned Aerial Systems (UAS) Test Site. One of only 6 such Test Site locations in the nation, we provide UAS flight safety data gathered at our UAS Test Ranges in New York, Massachusetts, and Michigan to FAA and NASA. The data informs these agency's regulatory, research, and development efforts toward fully integrating civil and commercial use of UAS into the National Airspace System (NAS).

Further, the NUAIR Alliance promotes and encourages the economic development of the UAS industry sector in New York through public education of the many and varied beneficial civil and commercial uses of UAS, as well as the development of public-private partnerships to advance the civil and commercial growth of unmanned systems.

Accordingly, we respectfully request the Committees consider the following information before deciding on any of these initiatives.

(1) Operation of all aircraft in the National Airspace System is the exclusive jurisdiction of the federal government. State or local governments do not have authority to regulate the airspace or the aircraft that fly in it. UAS is an "aircraft" with its operation regulated exclusively by the Federal Aviation Administration.

(2) The UAS is only a tool. How a **person** uses that tool is already governed by all applicable federal, state, and local laws and regulations. There is no need to make a special law for UAS. Singling out UAS for disparate legal treatment makes the use of this technology more difficult for routinely using UAS for its many and varied beneficial uses. For example, if law enforcement is already required to have a warrant for a particular action, it is the proposed action by law enforcement that requires the warrant, not the "tool" the law enforcement agency is using to conduct the surveillance. Let's not make it more difficult for law enforcement or

anyone to use the UAS for all the beneficial jobs it can perform by establishing arbitrary, special rules. If a criminal uses a hammer to commit burglary, we don't ban hammers or levy special qualifications for use of a hammer. We punish the law-breaker that used the hammer in a criminal manner.

(3) *Promoting Economic Competitiveness While Safeguarding Privacy, Civil Rights, and Civil Liberties in Domestic Use of Unmanned Aircraft Systems*—On February 15th this year, President Barack Obama issued this Presidential Memorandum. He states in part "Unmanned Aircraft Systems (UAS) technology continues to improve rapidly, and increasingly UAS are able to perform a variety of missions with greater operational flexibility and at a lower cost than comparable manned aircraft. A wide spectrum of domestic users—including industry, private citizens, and Federal, State, local, tribal, and territorial governments—are using or expect to use these systems, which may play a transformative role in fields as diverse as urban infrastructure management, farming, public safety, coastal security, military training, search and rescue, and disaster response...As compared to manned aircraft, UAS may provide lower-cost operation and augment existing capabilities while reducing risk to human life. Estimates suggest the positive economic impact to U.S. industry of the integration of UAS into the NAS could be substantial and likely will grow for the foreseeable future. As UAS are integrated into the NAS, the Federal Government will take steps to ensure that the integration takes into account not only our economic competitiveness and public safety, but also the privacy, civil rights, and civil liberties concerns these systems may raise."

To further this effort, the President created the Multi-Stakeholder Process— Unmanned Systems, concerning privacy, transparency, and accountability issues. The federal agency in charge of this process is Department of Commerce, National Telecommunications and Information Administration (NTIA) (see *http://www.ntia.doc.gov/other-publication/2015/multistakeholder-process-unmanned-aircraft-systems*).

The practical reason that aviation in America (and around the world) is governed by Federal standards is simple. The freedom to fly across state and local governmental boundaries, not having to worry about complying with a patchwork of law underneath the aircraft, permits that tool (the aircraft) to be efficient, cost-effective, and safe. The Remotely Piloted Aircraft System (or RPAS as referred to in Europe) is an aircraft. It must be treated like an aircraft and simply an addition to our National Airspace System. National Airspace governance by the FAA has brought us the safest aviation system in the world. The FAA will do the same thing with the integration of UAS.

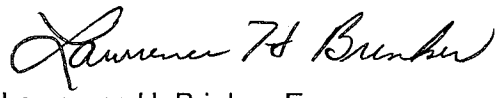
It is a myth that operation of UAS are not currently regulated. FAA regulations require all UAS to comply with all existing Federal Aviation Regulations or have a waiver or exemption to compliance with that regulation granted by FAA. Currently the FAA has 3 methods for evaluating and granting waiver requests (1) a general waiver for hobby or recreational flying of UAS, (2) a Certificate of Exemption or Waiver for public agencies, and (3) a Section 333 exemption for commercial operations. If you are not operating your UAS under one of those authorities then you are operating the UAS outside the regulations and are subject to FAA enforcement action.

In closing, we recommend the following course of action (1) do not pass local legislation that attempts to regulate UAS operations. That would only hinder the adoption of the technology for beneficial use. (2) Do enforce existing criminal law and ordinances that are violated by an individual using a drone to commit that violation (3) Establish a NYC "drone" best practices working group that include public and private stakeholders to establish recommended "best practices" for drone operation in New York City and by New York City agencies.

This approach will help safely integrate the UAS transformational technology into common use that will save lives, save money, and increase human potential.

All of us in the NUAIR Alliance are committed to the safe integration of UAS into the National Airspace System. Let us work with you to accomplish that mission.

Respectfully,



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FOR THE REC...

SMALL UAV COALITION
A Partnership for Safety & Innovation

November 19, 2015

Via email

Melissa Mark-Viverito
Maria del Carmen Arroyo
Inez Barron
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Margaret Chin
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Elizabeth Crowley
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Eric Ulrich
James Vacca
Paul Vallone
Jimmy Van Bramer
Jumaane D. Williams
Ruben Wills

Honorable Members of the City Council
New York City, NY

Re: New York City Proposed Bills to Regulate Unmanned Aerial Vehicles

Dear City Council Members:

The Small UAV Coalition[1] opposes Proposed Int. No. 601-A and Proposed Int. 0614-2015 in their current form. The former bill would essentially make certain operations of unmanned aerial vehicles (UAVs) a municipal crime. The latter bill would require UAVs to be registered with the

[1] Members of the Small UAV Coalition include 3D Robotics, AGI, AirMap, Amazon Prime Air, Botlink, DJI Innovations, Drone Deploy, Flirtey, Google [X] Project Wing, GoPro, Intel, Kespry, Parrot, PrecisionHawk, Strat-Aero, Verifly, Verizon Ventures, and ZeroTech.

City of New York and carry insurance; failing to meet these requirements could result in a civil penalty and a seizure of the UAV. Both of these bills, as currently written, are preempted by Federal law in several respects.

Proposed Int. No. 601-A – Restrictions on UAV Operations

The bill would prohibit the landing or taking off of a UAV "at any place within the limits of the city other than places of landing designated by the department of transportation or the port of New York authority." It would be a misdemeanor offense to operate a UAV in any area of the city not specifically designated by the commissioner of parks and recreation.

The bill would prohibit the operation of a UAV under the influence or "in a careless or reckless manner so as to endanger life or property of another[,]" and would make it a misdemeanor to operate an aircraft contrary to any FAA regulation.

The bill would also prohibit UAV operations (1) within 5 miles of an airport unless notice is provided to the air traffic control tower and airport operator "in accordance with" section 336 of the FAA Modernization and Reform Act of 2012, which created a special rule for model aircraft; (2) over 400 feet AGL; (3) beyond the visual line of sight; (4) in bad weather; and (5) at night. In these respects, the bill may have been drafted to follow FAA rules and/or guidance, but differs from existing and proposed FAA rules and guidance in several respects. In any event, whether or not a city ordinance faithfully adopts a Federal law, the city ordinance is preempted under Federal law where Congress has charged a Federal agency to regulate to conduct addressed by the city ordinance.

The FAA has plenary control over the navigable airspace and thus its safety regulations "occupy the field." Therefore, it does not matter that there may not be a "conflict" between Federal and local law.

In fact, this bill would significantly conflict with Federal law. The bill would make a municipal crime conduct that may be currently prohibited by the FAA but may subsequently be permitted, whether by a rule change, an exemption or waiver, or a change to the Federal Aviation Act. The FAA has proposed a set of rules governing operation of small unmanned aerial vehicles (UAVs), which is expected by June 2016. Also, the FAA has granted over 2,200 exemptions for commercial use of small UAVs under section 333 of the FAA Modernization and Reform Act of 2012 to those applicants who provide a full description of their intended operations as well as measures undertaken to ensure they are conducted safely and responsibly. Thus, what may now be prohibited or restricted may in a short time be permitted or changed. For instance, the FAA has proposed to authorize small UAV operations below 500 feet Above Ground Level (AGL); the bill would limit operations in the city to 400 feet AGL.

The bill's provision relating to operations near airports, while similar to a condition the FAA imposes in section 333 exemptions, is inconsistent with FAA proposed section 107.41 (operations in certain airspace). The bill does not define "airport," and does not address a UAV operated in the city within 5 miles of an airport outside of the city, as well as a UAV operated

outside of the city but within 5 miles of an airport in the city. These are several reasons why the issue of operations near airports is best left to the FAA.

The bill's limitation on landing areas appears to be confined to designated parks (see proposed section 18-145). This limitation may be intended to afford hobbyists and modelers park space in which to operate UAVs, but it would effectively ban UAV operations for commercial purposes. In doing so, it would flatly conflict with current FAA exemption authority and would likely conflict with the FAA's small UAS rule when it becomes final. Another part of the bill would exempt UAVs that "take off or land in a location where a UAV may be avigated legally, so long as such takeoff or landing does not pose an unreasonable risk of harm to persons or property." It is not clear whether a UAV takeoff or landing is "legal" only if it occurs in a designated park. The bill also does not define "unreasonable risk." The bill thus raises a significant concern under the Due Process Clauses of the 5th and 14th Amendments to the United States Constitution whether a person has fair notice of the law.

The FAA does not preempt State and local laws concerning the operation of aircraft under the influence of alcohol or drugs where those laws "impose sanctions for reckless conduct leading to actual loss of like, injury, or damage to property." See 14 CFR 120.205(b) (alcohol); 14 C.F.R. 120.121 (drugs). The bill is not so limited and thus is preempted to the extent it criminalizes conduct within the FAA's preemptive reach. With respect to the "careless or reckless" prohibition in the bill, this is a provision taken verbatim from 14 CFR 91.13(a). The Coalition believes the FAA has sufficient enforcement authority to take action against UAV operators who violate the Federal Aviation Regulations, including those who operate UAVs careless or recklessly. If additional authority is desired, it is up to Congress, or the FAA under its delegated authority, to act, and not up to a State or municipal government.

Proposed Int. 0614-2015 – Registration and Insurance

With respect to the bill that would require registration of UAVs, the registration of aircraft is governed by the Federal Aviation Act and FAA rules. Commercial operators are now required to register UAVs with the existing FAA Aircraft Registry. The FAA recently created a task force to develop recommendations for an electronic registration system for both commercial and recreational UAVs. The task force will submit recommendations to the FAA Administrator by November 20 and FAA reportedly intends to promulgate an interim final rule before the end of 2015. We submit that, at a minimum, it is premature for the City to institute a registration system when a Federal registration system is expected to established in the near term. And once the FAA establishes an electronic registration system, any State or municipal registration system is likely to be preempted under the Supremacy Clause of the United States Constitution.

The bill would exempt "toy aircraft;" however, the bill does not define this term. Proposed Int. No. 601-A defines toy aircraft very narrowly; it is not coterminous with the concept of a "model aircraft" under Federal law.

The bill would also exempt "UAVs that are air carriers." Aircraft are not air carriers. Aircraft operators are air carriers, and so we believe the intent of this exemption is to carve out UAVs operated by DOT-certificated air carriers as defined in 49 U.S.C. 40102(a)(2).

This exemption appears to recognize Federal preemption under both the Federal Aviation Act and the Airline Deregulation Act. But neither the FAA nor the Department of Transportation has yet to determine whether to subject commercial operators of small UAVs to the economic or safety certification process. The FAA has proposed in its small UAS Notice of Proposed Rulemaking to prohibit air carrier operations, but has sought public comment on this issue. That rulemaking remains pending.

Even if the bill were revised to exempt UAVs operated by air carriers and for recreational purposes, the registration system would still conflict with the FAA's soon to be established electronic registration system. The Coalition believes the current and forthcoming Federal regulatory framework is and will be sufficient to address the concerns underlying these bills. An additional, as well as varying, layer of rules, no matter how well-intentioned, will serve only as a deterrent to an industry that has enormous potential to generate local revenues, create jobs, drive innovation, and reduce the risk of accidents as well as local transportation's carbon footprint.

For these reasons, we urge you not to adopt either bill.

Thank you for your consideration.

Sincerely,

Michael Drobac
Executive Director

Gregory S. Walden
Aviation Counsel

Consumer
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Association

FOR THE RECORD

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November 20, 2015

The Honorable Paul Vallone
Councilmember
New York City Council
250 Broadway, Suite 1841
New York, NY 10007

The Honorable Daniel R. Garodnick
Councilmember
New York City Council
250 Broadway, Suite 1762
New York, NY 10007

The Honorable Leticia James
Public Advocate for the City of New York
1 Centre Street, Suite 1500
New York, NY 10007

Re: **Unmanned Aircraft Operations – Proposed Int. Nos. 601-A, 589-A, and 614**

Dear Councilmembers Vallone and Garodnick and Public Advocate James:

We are writing today in strong opposition to enactment of the New York City Council's Proposed Int. No. 601-A, which would criminalize the operation of small unmanned aircraft systems ("UAS") in many instances: Proposed Int. 589-A, which would establish a licensing requirement for commercial UAS operations; and Int. No. 614, which would require the registration and insurance of all UAS. While well-intended, the proposals should be rejected. The former would criminalize harmless UAS operations by New York City residents engaged in innocent recreational activity, as well as legally sanctioned commercial activity. All would thwart a growing and innovative industry and are preempted by Federal Law.

The Consumer Technology Association (CTA, formerly the Consumer Electronics Association) represents more than 2,000 companies, 80 percent of which are small businesses and startups. As a champion of innovation, CTA has been a long-time advocate of clear rules authorizing UAS in a safe manner within the national airspace. CTA is involved in the FAA's current rulemaking on the operation and certification of small UAS. We also are a partner with several other organizations and the FAA in the *Know Before You Fly* campaign which is educating prospective drone users about the safe and responsible operation of UAS.

Proposed Int. No. 601-A Would Criminalize Harmless and Legally Sanctioned UAS Operations

Proposed Int. No. 601-A would subject New York City residents to incarceration and/or fines up to $1,000 for innocent, harmless UAS operations. UAS are expected to be one of the most popular gifts this holiday season, but the proposed local law would prohibit their operation in most of New York City by limiting operations to particular areas designated by the commissioner of parks and recreation. The proposal even would prohibit UAS operations that occur entirely over private property.

Potential criminal liability for UAS operations provides a strong disincentive to the UAS industry regarding future developmental and educational activities in the New York area. For example, the Second Annual New York City Drone Film Festival will be held in March 2016.[1] Yet, the proposed Int. No. 601-A threatens to prevent any shot-in-New-York films from appearing in the festival. In particular, by restricting operating areas so completely, the proposal severely limits any authorized commercial UAS use.

In addition to the operating area restrictions, the proposed Int. No. 601-A is modeled after certain general FAA limitations on UAS operations (*e.g.*, operations limited to daylight hours, UAS operations must be below 400 feet, etc.) and would criminalize operations that exceed those limitations. The proposal, however, does not account for specific UAS operations that may be authorized by the FAA subject to conditions different from those generally applicable to the industry as well as forthcoming FAA regulations that may differ from the current regime. Thus, a party may operate a UAS consistent with its FAA authorization, but face criminal sanctions due to the proposed code modifications.

The proposal also should be rejected pursuant to the vagueness doctrine.[2] A criminal statute that is too vague for the average citizen to understand is "void for vagueness" and unenforceable. In New York, legislative language "must convey[] sufficiently definite warning as to the proscribed conduct when measured by common understanding and practices."[3] Here, the proposal would impose criminal liability for operations in "weather conditions that would impair the operator's ability to [avigate] safely." However, an untrained third party would not be able to consistently and fairly discern what particular "weather conditions" would "impair" an operator's *ability* to avigate safety. The proposal would impermissibly invite "arbitrary and discriminatory prosecutions."[4] In short, the proposed local law simply is too vague to trigger criminal liability.

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[1] *See* http://www.nycdronefilmfestival.com

[2] *People v. Marquan M.*, 19 N.E.3d 480, 486 (N.Y. 2014) ("a statute is seen by the courts as vague if it fails to give a citizen adequate notice of the nature of proscribed conduct, and permits arbitrary and discriminatory enforcement") (internal quotation omitted); *Skilling v. US*, 561 U.S. 358, 364 (2010) ("To satisfy due process, a penal statute must define the criminal offense [1] with sufficient definiteness that ordinary people can understand what conduct is prohibited and [2] in a manner that does not encourage arbitrary and discriminatory enforcement.") (internal quotation omitted).

[3] *People v. Shack*, 658 N.E.2d 706, 712 (N.Y. 1995).

[4] *Id.* at 412.

Moreover, the proposal would criminalize the use of numerous toys in New York City. Although the proposal attempts to carve out "toy aircraft," the proposed exemption is too narrow because it is limited to non-motorized or tethered devices. Many UAS do not meet these requirements but are intended as toys. For example, the proposal would ban children from using UAS that are small like "Hot Wheels" toy cars and have a very limited operating range.[5] Other toy UAS are larger and are marketed as toys, but also would not fit the toy aircraft definition. For example, a UAS weighing less than two pounds, designed to look like a Star Wars "X-Wing" fighter, and marketed to 10-15 year olds would not be considered a toy.

Proposed Int. No. 601-A also is legally defective because it is preempted by Federal law. The Supremacy Clause of the U.S. Constitution states that "the Constitution and the laws of the United States which shall be made in pursuance thereof . . . shall be the supreme law of the land."[6] As noted by the Supreme Court, this gives Congress the power to preempt state law.[7] There are three types of preemption: express preemption when Congress specifically preempts a state law;[8] field preemption when a federal framework of regulation is "'so pervasive . . . that Congress left no room for the States to supplement it' or where a 'federal interest is so dominant that the federal system will be assumed to preclude enforcement of state laws on the same subject;'"[9] and conflict preemption when state laws "conflict with federal law, including when they stand 'as an obstacle to the accomplishment and execution of the full purposes and objectives of Congress.'"[10] Congress has occupied the field with regard to air navigation. As the Supreme Court has observed:

> Federal control is intensive and exclusive. Planes do not wander about in the sky like vagrant clouds. They move only by federal permission, subject to federal inspection, in the hands of federally certified personnel and under an intricate system of federal commands. The moment a ship taxis onto a runway it is caught up in an elaborate and detailed system of controls.[11]

The proposed ordinance regulates the operation of aircraft in the national airspace – in fact it criminalizes certain UAS operations. It therefore is preempted. Even if preemption was not justified by the FAA occupying the field, it would be justified on a conflict basis.

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[5] *See* http://www.amazon.com/Silverlit-Toys-84665-Nano-Falcon/dp/B00G6LUFSY/ref=sr_1_4?ie=UTF8&qid=1447778378&sr=8-4&keywords=micro+helicopter&pebp=1447778501040&perid=0TAGJ7DFAGADSPG3180W.
[6] U.S. Const., Art. VI, Cl 2.
[7] *See, e.g., Arizona v. United States,* 132 S. Ct. 2492 (2012).
[8] *Id.*
[9] *Id.* (quoting *Rice v. Santa Fe Elevator Corp.*, 331 U.S. 218, 230 (1947)).
[10] *Id.* (quoting *Hines v. Davidowitz*, 312 U.S. 52, 67 (1941)).
[11] *Burbank v. Lockheed Air Terminal*, 411 U.S. 624, 633-34 (1973)(quoting *Northwest Airlines, Inc. v. Minnesota*, 322 U.S. 292, 303 (Jackson, concurring)).

Proposed Int. 589-A Is Preempted

Proposed Int. 589-A would establish a licensing requirement for commercial UAS operations in New York City. Under this proposal, an entity licensed by the FAA to conduct commercial operations would be prohibited from operating in New York City unless a city-specific license is obtained.[12] The proposal also limits UAS operations to 25 miles per hour or less and prohibits the operation of an unmanned aerial vehicle ("UAV") unless it passes an annual inspection by a city official.[13] These provisions violate the Supremacy Clause and are preempted by federal law. As noted above, Congress has occupied the field with regard to air navigation and "Federal control is *intensive and exclusive.*"[14]

The FAA has issued thousands of Section 333 exemptions authorizing commercial operations. These exemptions are granted based on "the size, weight, speed, and limited operating areas" associated with the UAV identified in the exemption request. The proposed ordinance effectively would require the City to re-evaluate exemption requests previously granted by the FAA. In fact, many of these FAA exemptions authorize operations up to 100 miles per hour,[15] but the City's ordinance would modify – impermissibly – this federal authorization by limiting operations to no more than 25 miles per hour.

Proposed Int. 614 Is Duplicative, Burdensome, and Will Thwart Economic Investment

Proposed Int. 614 would require registration in a New York City-specific database. Such a requirement is unnecessary and burdensome, especially if other cities adopted similar registration requirements. The FAA recently announced the formation of a task force to recommend a registration system for UAS[16] which would facilitate enforcement without the need for local regulations such as Int. No. 614. Rather than create a potentially duplicative and wasteful system, the City Council should work with the FAA and industry to ensure accountability.

The Proposed Local Laws Are Premature and Could Thwart a Growing Industry

The UAS industry is expected to approach $105 million in revenue and New York City could be a major part of this growth.[17] To ensure a continued role for New York City in the UAS market, overbroad criminal and needless registration statutes should not be enacted. Rather than adopt the proposed regulations, New York

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[12] Proposed §§ 19-9202, 19-9203, 19-9232.
[13] Proposed §§ 19-9234, 19-9205.
[14] *Burbank*, 411 U.S. at 633-34.
[15] *See, e.g.*, FAA Exemption No. 12901 (Sept. 17, 2015).
[16] *See* U.S. Transportation Secretary Anthony Foxx Announces Unmanned Aircraft Registration Requirement, https://www.transportation.gov/briefing-room/us-transportation-secretary-anthony-foxx-announces-unmanned-aircraft-registration.
[17] *See* New Tech to Drive CE Industry Growth in 2015, Projects CEA's Midyear Sales and Forecasts Report, https://www.ce.org/News/News-Releases/Press-Releases/2015-Press-Releases/New-Tech-to-Drive-CE-Industry-Growth-in-2015,-Proj.aspx.

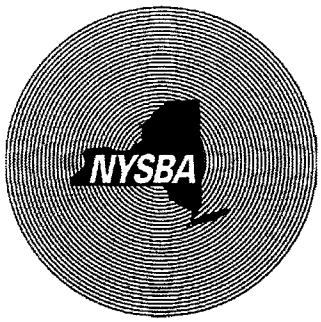
City should partner with the FAA, which regularly stresses the importance of local law officials in enforcement activities.[18]

For the above reasons, CTA urges you not to enact the proposed regulations. CTA stands ready to work with the New York City Council on potential steps that can be taken to address their concerns without raising the aforementioned legal issues.

Sincerely,

Douglas K. Johnson
Vice President, Technology Policy
djohnson@ce.org

[18] *See* FAA, Law Enforcement Guidance for Suspected Unauthorized UAS Operations at 5, https://fortress.wa.gov/cjtc/www/images/FAA%20LE%20Guidance%20for%20UAS_Jan15.pdf (Law Enforcement Guidance).



Statement of
David L. Donovan
President and Executive Director
New York State Broadcasters Association, Inc.
before the
Committee on Public Safety
Committee on Transportation
of the
New York City Council
Use of Unmanned Aerial Vehicles
November 23, 2015

The New York State Broadcasters Association, Inc., (NYSBA) welcomes the opportunity to testify about the issues surrounding the use of Unmanned Aerial Vehicles (UAVs) in New York City. The NYSBA is the leading advocate for the broadcast industry in New York City and across the state, representing more than 400 radio and television stations.

New York City's broadcasters have a long and distinguished history of providing critical news and information to the residents of the City, the nation and around the world. For example, during Superstorm Sandy, when all other forms of public communications failed, New York City's radio and television stations remained on the air broadcasting life-saving information. We understand the importance of ensuring the safety the City's residents and respecting their legitimate expectations of privacy. NYSBA understand the Council's concerns. Nonetheless, we also ask that you examine this issue from an additional perspective, one deeply rooted in First Amendment principles as well as the ability to provide important, life-saving information to the public.

UAVs are becoming an increasingly important tool for newsgathering. Today, most UAVs are used for newsgathering and video production outside the jurisdictional limits of the City. There is no question that the benefits of UAVs would be of great values to journalists working in New York City. UAVs provide a unique perspective on New York City. An aerial view can provide a different and community-wide perspective for each of the five boroughs and the communities that make up the City. These images simply cannot be obtained from "street level" reporting. The ability to broadcast aerial images is vitally important during emergencies, providing a better perspective on the potential dangers that may be faced by our citizens. When

used properly, and consistent with FAA safety regulations, UAVs provide licensed broadcast stations with an important tool to help them serve the citizens of New York City.

As explained herein, NYSBA generally supports the goals of the City's proposed Int. 589(A), 601(A) and 614, as they relate to the need to ensure public safety. UAV operators must exercise responsibility and caution when flying. The irresponsible use of drones over New Yok City has a direct impact on the safety of news helicopters that are used by broadcast stations. In this respect NYSBA notes that the Federal Aviation Administration (FAA) is in the process of developing final rules for UAV operation.

While we recognize the complexity in crafting new regulations, we urge caution in adopting regulations that extend beyond those that will ultimately be enacted by the FAA. To develop this approach we will first explain the significant public interest benefits associated with broadcast journalists employing UAVs as a tool to inform the public. We shall then propose some approaches to accommodate the First Amendment objectives in newsgathering and achieve the City Council's intended purpose of enhancing safety.

I. UAVs Provide Significant Public Interest Benefits When Properly Used by Broadcast Journalists

A. Unmanned Aircraft Can Help Revolutionize Newsgathering Enhancing the Public's Access to Life-saving Information

Broadcast journalists and newsgatherers serve as the eyes and ears of the public, transporting viewers to locations that are ordinary, exotic and everything in between. New Yorkers depend on journalists and video programmers to use the power of the picture to bring them the excitement of the Macy's Day parade or the New York marathon. They rely on local news outlets to provide detailed video information about natural disasters such as Superstorm Sandy or man-made tragedies such as 9/11. New Yorkers rely on news gathers to inform them about important news events in the city including weather emergencies, demonstrations, and daily traffic jams. UAVs will help facilitate a better understanding of these events and provide life-saving information. Viewers will be able to obtain a perspective that cannot be obtained from "on-the-street" reports.

Incorporating UAVs among their newsgathering tools will enable broadcasters to provide the public with imagery and insight that extend well beyond current capabilities. The possibilities for domestic use of UAV-collected imagery are significant. UAVs also can take journalists and the public to otherwise inaccessible places, such as remote areas that are difficult or impossible to reach by land or places that cannot safely be reached by other means. UAVs will serve as an extraordinary tool for journalists to provide information and imagery to the public that is otherwise unavailable given existing barriers and obstructions, such as hazardous material spills, fires, or flooded areas. Ultimately, permitting journalistic use of UAVs will result in better news coverage. The capabilities of UAVs will improve the accuracy and depth of information to the public during times of emergency or other breaking news situations. Permitting journalistic use

of UAV will facilitate the fundamental role of journalists as surrogates of the public and respect the First Amendment protections attendant to gathering and disseminating news.

B. Using UAVs for News Coverage will Enhance Public Safety During Emergencies

During emergencies radio and television stations act as "first informers" connecting public safety officials with the public. Lifesaving information is conveyed on a real time bases from public safety officials broadcasting messages on radio and TV stations. Lives are saved as the public learns about the extent of the danger and in extreme cases, learns the safest evacuation routes. UAVs will greatly assist broadcasters in this all important role. New York City, New York State and the federal public safety officials often rely on local broadcasters to be their eyes and ears during emergencies. Reporters on the street expand the ability of first responders and public safety officials to see and accurately assess rapidly changing events. Broadcasters using UAVs during emergencies will significantly enhance the ability of public safety officials to see what is happening throughout the City. UAVs have the potential to assist New York public safety authorities, who might not have immediate access to the same type of imagery in much the same way that manned aircraft and other forms of newsgathering assist public safety and local authorities today.

C. UAVs Allow Newsgatherers to Create High-Quality Content More Safely than Today's Aerial Operations Permit.

Broadcast journalists in New York City and across the state have many decades of experience using helicopters and fixed wing aircraft to obtain aerial videography in a responsible manner that balances the public interest in disseminating information and compelling video imagery with reasonable concerns about public safety. Electronic journalists currently employ experienced pilots to fly helicopters over the public to report on breaking news, traffic, and other important stories. News organizations already are familiar with and follow current national airspace rules and regulations.

When using manned aircraft, mostly helicopters, journalists regularly coordinate with FAA, law enforcement/first responders, and manned aircraft during emergency or other breaking news situations. Nonetheless, even FAA-approved helicopters are not risk-free. The safety benefits alone provide a compelling case for using UAVs by newsgatherers. Indeed, camera-equipped helicopters are large and powered by flammable fuel. They also are limited in their ability to fly in certain areas because of the need for a pilot. In contrast, UAVs with their light weight, agility, and slower speed, not to mention the absence of persons onboard, reduce the risk to both people and property. UAVs are typically powered by lithium batteries, further reducing the risk to bystanders in the unlikely event of a ground collision. In many cases, remote UAVs can fly where a pilot cannot, such as over a chemical spill, explosion, or other natural hazard. UAVs are easier to maneuver than large helicopters, making their operation near buildings, highway overpasses and other natural and artificial obstacles far less risky. With the ability to utilize UAVs, journalists will improve public safety while, at the same time, expand the newsgathering and production benefits of aerial videography.

D. Allowing Responsible Use of UAVs will Enhance New York City's Video Production Industry

UAVs will also be an important tool for expanded video production. For years New York City has been proactive in attracting video production. The use of UAVs helps make video production safer and more cost-effective. As noted below, it may obviate the need to use fixed wing aircraft or helicopters over the City. The result will be improved and expanded viewing options with a significant reduction in the level of risk inherent in today's aerial coverage options. As the Council knows, New York City competes with other urban areas for film production. Rules which impair the ability to use UAVs may have the unintended consequence of driving production to other cities.

E. Addressing Privacy Concerns

A UAV is a platform for a camera; it presents privacy concerns that are similar to those presented by other platforms, including helicopters, satellites as well as individuals on ladders with telephoto lenses. It is important to remember, however, that professional broadcast journalists abide by a long list of privacy protocols and rules already in place. Indeed, professional newsgatherers have a long history of working cooperatively with lawmakers and regulators to appropriately balance the legitimate privacy concerns raised by new technologies with the benefits of new technology for important newsgathering activities. In fact, broadcast journalists have developed voluntary privacy guidelines to address, for example, the use of helicopters, telephoto lenses and other new technologies. Moreover, current laws related to privacy, stalking, nuisance, and trespass already create protections for individuals that may cover UAV privacy concerns. While recognizing the interests in privacy, we respectfully request that the Council also weigh the equally important First Amendment consideration of the public's right to receive important and at times live-saving information.

F. Proposed New York City Regulations Should Be Consistent with Final Rules Adopted by the Federal Aviation Administration

As the council is aware the FAA, which has primary regulatory jurisdiction over aviation and this nation's airspaces, has a pending proceeding that is intended to develop final rules for UAV operations. Indeed, the FAA's UAV Registration Task Force has completed its final day of meetings. The group focused on reaching a consensus on a recommended process for registration. The discussions included how an operator might prove a UAS is registered, how the aircraft would be marked, and how to use the registration process to encourage or require UAS operators to become educated on basic safety rules. The group is gathering data on which types of UAVs would need to be registered and which would not. The Task Force's recommendations were scheduled to be released on November 20th. Through Section 333 waivers, the FAA currently has specific guidelines in place to help govern this nascent industry while its rulemaking is pending.

In order to avoid confusion and potential conflicts between federal, state and local law, it may be advisable for the City Council and New York State to wait until there is a final decision by the FAA. Such forbearance may help avoid potential conflicts with yet to be adopted federal

regulations. Indeed it has been reported that the FAA was planning to release its Task Force recommendations for registering UAVs at any time. In order to avoid potential federal preemption issues, the FAA rules should serve as a template for New York City and New York State. All activities allowed under the FAA's rules should be allowed in New York and New York City.

II. The Proposed Suggestions to Proposed Regulations

As noted above we agree with the Council's overarching concern that UAVs must be not be operated in such a way as to place the public's safety at risk. Nonetheless there are some provisions in the proposals that may have the unintended consequence of preventing the legal gathering of news, thereby raising First Amendment concerns. The following suggestions are offered as the beginning of an important dialogue to help mitigate these concerns and achieve a delicate balance between safety, privacy and the public's ability to access important information.

A. Prohibitions on "Surveillance" are Overly Broad and May Chill Legitimate Newsgathering Operations

Two of the proposals, Intro 589-A and 601-A prohibit avigation for the purposes of surveillance. For example, §19-9101 of the proposed Int. 589(A) and proposed Int.601-A §10-126(a) define surveillance:

> "The term "surveillance" means the monitoring or close observation of an individual, a group of individuals or real property without the knowledge and consent of such individual or group of individuals or the owner of such real property that is the subject of such monitoring or observation."

This definition appears to make it illegal to use a UAV for legitimate newsgathering activities. Assume, for example, that there has been and accident, natural disaster or even terrorist activity in the City, and UAVs were used to report the activity. It could be argued that these activities amounted to "monitoring" or "close observation of and individual or group of individuals." In these situations UAV operators could only operate where the individuals being monitored have knowledge of the activity and have given their consent. Such a requirement is completely unrealistic. It could effectively prohibit the use of UAV operations, even in cases where individuals are conducting activities in a public park or on a public street.

Such a result is not in the public interest. By way of illustration, during the Boston marathon bombing, the culprit fled and ultimately hid on private property in a boat. News helicopters were able to report on this activity. Under proposed Int. 589-A and proposed Int. 601-A, using a UAV to report on the individual whereabouts may be considered to be "surveillance," and proscribed by law unless at station obtained consent of the individual or property owner. Another example is the recent case of laser pointers being aimed at pilots. A broadcast news helicopter helped identify the culprits. Indeed, broadcast stations worked closely with the police departments providing footage of the event. Yet under the language of the proposed regulations, such activity may be considered "surveillance." The same would be true for the coverage of

natural disasters and civil disturbances in public places. It is unclear whether, for example, the filming of people at a rally, riot or terrorist attack would violate the regulations.

As discussed below there should be an exemption for UAVs used by broadcasters licensed by the Federal Communications Commission. At the very least, further clarification is needed to determine whether the "consent" exception must be expressly provided or if it can be implied by the circumstances, e.g. walking in a public street. We suggest including a definition for "consent" in the definitions section that allows for both implied and express consent.

B. Future Operational Rules and Permit Requirements Should Not Undermine the First Amendment Interests in Newsgathering

As with most new regulations, Int. 589-A and Int. 601-A authorize various City departments to create new rules that will govern avigation. For example, Subchapter 2, Article 1, §19-9204 of Int. 589-A states that; "The commissioner shall promulgate rules regarding the suspension and revocation of UAV operator licenses." Moreover as part of the permitting process under § 19-9233 (9) the commissioner is authorized to obtain "any other information that the commissioner may require." Moreover under 19-9236 the commissioner has continuing authority to amend these rules. The proposed Int. 601-A contains provisions delegating authority over UAV flight areas to the commissioner of parks and recreation and the police commissioner.

While we recognize that rules governing permits, fly-zones, landing and other administrative activities are routinely delegated to the respective agencies, care must be given not to use the process in such a way as to prevent an UAV's from being used for an otherwise lawful activity. Accordingly, with the exception of no-fly zones adopted by the FAA, UAVs used by broadcast journalists should not be limited to specific geographic locations within the City. Limitations on the areas in which UAVs may operate, lengthy permit processes, unnecessarily restrictive landing and takeoff regulations may significant inhibit broadcast journalists from using UAVs in legitimate newsgathering and video production activities.

C. Adopting Coordination Procedures to Facilitate Coverage of Breaking News Events

As noted previously, UAVs are extremely important in the coverage of important breaking news events. During emergencies it is extremely important to provide timely and accurate accounts of rapidly changing events. Under current procedures, it is difficult to use UAVs to cover unplanned, live news events. The regulatory approval process envisioned by the proposed regulations may also prevent UAVs from being deployed during these events. NYSBA recognizes that safe avigation necessarily involves planning and coordination to make sure UAVs do not crash into each other. Moreover, it is often difficult to coordinate on the scene during breaking news events or emergencies.

NYSBA believes broadcasters' experience in covering live news events may be helpful in this regard. During emergencies, each radio and television station covering the event uses

equipment that transmits audio and video images back to the station. In order to avoid interference among the technologies, station engineers coordinate the frequencies that will be used in advance. For planned events, such as the Pope's arrival in New York, stations and networks coordinate these frequencies months in advance. With respect to breaking news, stations pre-coordinate the frequencies that they will be use, so they will not have to work out the details during an emergency. Thus, when stations arrive at a breaking news event, the frequencies have already been pre-assigned to stations that will be transmitting from different locations across the City.

It would appear that this coordination model could apply to the use of UAVs. In fact, because UAVs use wireless frequencies to steer the vehicle and send back video images to the ground, coordination would seem to be necessary to avoid interference in areas where multiple UAVs may be used. In this regard, operators could also pre-coordinate the flight paths of their UAVs in advance. For example, if there is breaking news in lower Manhattan, the UAV operators would know when and where they can operate their UAVs. Such coordination would be extremely important in cases where NYPD is using UAVs. Some form of pre-coordination among public safety officials and local news outlets will help provide more information to the public at large during breaking news events.

D. Compliance with new FAA Rules

As noted above the FAA is in the process of enacting rules governing the use of UAV's. Current regulations make it unlawful to navigate an aircraft within the city limits in a manner prohibited by the FAA. We agree with this approach and would extend the concept to UAVs. The FAA is primarily responsible for the control and use of navigable airspace within the United States. The use of UAVs is already quite limited in the City due to the proximity of several airports. This authority includes prescription of air traffic regulations on the flight of aircraft, including UAVs. We suggest that any proposal adopted by the Council include a specific provision that *all activity* allowed by the FAA should be allowed in New York City.

III. Creating an Exemption for UAV's Operated by Entities Licensed by the Federal Communications Commission

We understand the Council's concerns about the unregulated use of drones throughout the five boroughs. It has been estimated that more than 700,000 new unmanned aircraft will be sold across the country over the holidays. FAA administrator Michael Hureta stated recently that "Operators with little or no aviation experience will be at the controls of many of these aircraft, and many of these new aviators might not even be aware that their activities could be dangerous to other aircraft." As noted previously, broadcasters have a strong interest in ensuring the safety of their news helicopters. Moreover, we understand the City's concerns over privacy.

New York's broadcast stations and their network counterparts have a long history of using newsgathering technologies in a responsible manner. Indeed, we are licensed by the FCC to serve the public interest. In this respect we are different from other UAV users. We have both a legal and professional responsibility to serve the community. Moreover our responsibility

to provide news and information to the public facilitates First Amendment values. During emergencies like Superstorm Sandy, this information saves lives.

We recognize the importance of UAV rules to ensure safety. NYSBA respectfully suggests the creation of a general exemption from non-safety related rules for UAVs used by broadcast stations that are licensed by the Federal Communications Commission as wells as their network counterparts. Such an exemption would allow stations to use UAV technology in the same way they currently use news helicopters or satellite imagery. This exemption is especially important as it relates to the proposed and prohibitions definitions of "surveillance." Moreover, we would suggest that the permit process be streamlined for broadcast related-UAVs so as to allow stations to use this new technology for live-on the spot coverage of emergencies and new events. In this regard, the use of UAVs for newsgathering operations should not be limited to geographic limits such as pubic parks. So long as we comply with FAA safety regulations, UAVs operated by or on behalf of broadcast stations or networks should be able to use this important tool to enhance the news experience of New Yorkers.

NYSBA appreciates the opportunity to share our concerns with the Council. We understand these are complex issues and that this is the beginning of an important dialogue. We look forward to working with the Council as this process moves forward.

Respectfully submitted:

David L. Donovan
President
New York State Broadcasters Association, Inc.
1805 Western Avenue
Albany NY, 12203
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Testimony of Ben Esner
Director, Center for K-12 STEM Education, NYU Tandon School of Engineering
before
New York City Council Committees on Public Safety & Transportation

November 23, 2015

Good afternoon Chairwoman Gibson, Chairman Rodriguez and fellow Council Members. I am Ben Esner, the Director of the Center for K-12 STEM Education at the NYU Tandon School of Engineering. I appreciate the opportunity to testify before you today as you consider legislation that would regulate or ban the use of Unmanned Aerial Vehicles.

At NYU Tandon School of Engineering, students, faculty and researchers use UAVs for a number of research and educational purposes, and importantly we also incorporate this technology in our extensive K-12 STEM learning programs for middle and high school teachers and students. Over more than a decade of this work, our school has trained hundreds of teachers in engineering, computer science and research methods, and worked directly with thousands of NYC public school students in an array of programs supported by the National Science Foundation, philanthropic foundations and corporations.

Our engineering students and researchers often experiment with UAVs in innovative and exciting ways, enhancing their educational experiences, developing future technology and furthering scientific inquiry. The hands-on training students receive from fabricating, assembling and programming UAV's, including the research that can be conducted when flying one, is invaluable to their understanding of a constantly evolving engineering field.

This technology sits, along with other interactive devices, at a fascinating intersection of disciplines that encompass mechanical engineering, electrical engineering and computer science. The applications of these technologies, from 'smart cities' ideas for controlling traffic and inspecting civil infrastructure, to monitoring and testing for pollutants and contaminants, need to be explored and developed by responsible researchers and students.

In our K-12 education programs, it is precisely this intersection of disciplines and these kinds of applications that most deeply engage young people and their teachers in STEM learning. The ability to design, build, program, *test and iterate* is at the core of activity based teaching and learning, and at the core of engineering research. We urge you to consider these factors as they pertain to the pending legislation, and the implications and possible unintended consequences for education and research projects that incorporate UAV technology.

Some interesting ways in which our students are using UAV and similar technology for education and research include the area of environmental monitoring. In another of our Mechanical Engineering labs, faculty and graduate students are at work on a high school

UAV curriculum, leveraging students' innate interest in and engagement with these devices. It teaches across STEM disciplines, using the real tools of engineers and scientists like microcontrollers, motors, actuators and sensors while illuminating and applying fundamental concepts in physics, aerodynamics and wireless communication. This curriculum, too, delves deeply into computer and computational science, from the programming required to control an UAV to the programming required for sensor-based data acquisition and analysis, to—who knows?—maybe some students taking on the significant challenge of programming for autonomous flight.

In another example, one of our most accomplished engineering graduate students was working in a public high school in Brooklyn. To teach about data collection and research methods, he used an UAV as an experimental instrument, relying on the exciting nature of UAV technology to hook these students and draw them in to conducting what was in truth a pretty standard exercise in measuring and calculating speed. Needless to say, for the young people in his class, there was nothing "standard" about that lesson.

Specifically regarding the legislation that has been introduced: the definition of an UAV can often be very broad and we would ask the Council, as they are considering relevant regulations, to balance public safety interests along with educational interests. Here are a few examples of ways that regulations my impact our students and researchers who take advantage of UAV technology:

> Students in our K-12 STEM programs may build UAVs in the classroom, testing the device in a nearby parking lot or open space surrounding schools. Restricting the ability to fly UAV's around schools or requiring permission before doing so would hamper these hands-on educational programs. Further, UAV's built in classrooms would not have make, model and serial numbers that can be registered to an individual user. In the case of research, even if the UAVs were commercially purchased, registration and liability insurance requirements would add time and cost before being able to use a UAV for research purposes.
>
> Restricting height of flight and the time of day UAV's can fly will impact research efforts that take advantage of this technology. While generally UAV's used for educational purposes may not fly very high, sometimes specific research questions would need to be explored at heights greater than 400 feet above ground, such as measuring certain environmental conditions or testing specific sensor-based applications. UAV's testing night vision technology or other technologies not reliant on the visible light spectrum would need to be flown at night and restrictions on time of day for UAV flights would hinder research efforts.

We hope that any regulations put forth take into consideration the unique challenges that educational and research institutions, and programs such as those offered by NYU's Center for K-12 STEM Education, would face in allowing students and researchers to take advantage of this technology.

Thank you again for the opportunity to testify.

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I represent: NYS BROADCASTERS ASSOCIATION

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I represent: FDNY

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I represent: Acorn

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I represent: NYCLU

Address: 125 Broad St.

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Name: Jaami T. Ali

Address: 158-15 65th Avenue, Queens, NY

I represent: Targeted Individual Awareness Campaign (self)

Address: 158-15 65th Avenue, Queens, NY 11365

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Address: 165 Cadman Plaza East

I represent: NYC Department of Mgmt

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Name: ANTHONY PANSINI

Address: 119 HUNTER AVE, SI NY 10306

I represent: AMA + STATEN ISLAND RADIO CONTROL MODELERS

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I represent: MOTION PICTURE ASSOC. OF AMERICA

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Name: Benjamin Esner

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I represent: NYU Tandon School of Engineering

Address: 6 Metrotech Center, Brooklyn, NY

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I represent: N.Y.P.A.

Address: PO Box 383 Village, NY NY 10014

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Name: Richard Hanson

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I represent: Academy of Model Aeronautics

Address: Muncie, IN

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