



# LAW & POLICY OF UNMANNED AERIAL SYSTEMS

## Public Engagement Project Report

May 2017

**Tina Nabatchi**, Associate Professor, Maxwell School  
of Citizenship and Public Affairs

**Keli Perrin**, Assistant Director, Institute for National Security and Counterterrorism

**Derrick Taylor**, Graduate Research Assistant, Maxwell School  
of Citizenship and Public Affairs

---

# **LAW & POLICY OF UNMANNED AERIAL SYSTEMS**

## Public Engagement Project Report

**May 2017**

---

**Tina Nabatchi**

Associate Professor, Maxwell School of Citizenship and Public Affairs

**Keli Perrin**

Assistant Director, Institute for National Security and Counterterrorism

**Derrick Taylor**

Graduate Research Assistant, Maxwell School of Citizenship and Public Affairs

**Maxwell**  
Syracuse University



**Syracuse University**  
Institute for National Security  
and Counterterrorism

## Executive Summary

On March 26, 2017, over 40 residents from the Syracuse, NY area attended a three-hour public workshop to evaluate and discuss perspectives and policy options surrounding the use of Unmanned Aerial Systems (UAS, also called drones) in the community. This deliberative public workshop shed light on how an informed public views issues relating to the use of UAS. Using data from three surveys and the flipchart notes taken during the table discussions, this report explores participants' general dispositions toward UAS, and their views on and recommendations for the use of UAS by the commercial and private sector, the government and public sector, and hobbyists. The findings for each of these areas are briefly summarized below.

### General Dispositions Toward UAS

Most participants were aware of UAS, but only a quarter owned or had considered getting a UAS prior to the workshop. After the workshop, 41% of participants said they would consider getting a UAS. In general, there was strong support for a variety of UAS applications, including search and rescue operations, homeland security missions, fighting crime, emergency and disaster response, surveying, and journalism. However, most participants were troubled by the possibility of UAS being used to monitor people, and were concerned about invasions of privacy, an inability to identify the operator of the UAS, and personal and public safety.

### Views on and Recommendations for Commercial/Private Sector Use of UAS

After the workshop, a majority of participants favored the commercial use of UAS in real estate sales, professional photography, and mapping and surveying. Fewer than half supported the use of UAS in package delivery, and less than a quarter supported the use of UAS in private detective services. More participants favored expanding the use of drones than limiting the use of drones; however, more participants were concerned about the use of drones for delivery services than were looking forward to using such services. The participants saw many benefits of UAS use in the private sector (e.g., improving safety, service delivery, environmental outcomes, economic development, innovation, and quality of life), as well as many drawbacks (e.g., the potential for abuse and misuse, negative economic and employment outcomes, and threats to privacy, the environment, and public safety). Moreover, most participants believed that law and policy makers should start working now to regulate commercial and private sector use of UAS, and recommended focusing on issues related to privacy, safety, ownership rights, the environment, and enforcement.

### Views on and Recommendations for Governmental/Public Sector Use of UAS

After the workshop, the majority of participants indicated being concerned about the government's ability to regulate UAS and ensure they are used for lawful purposes. That said, a majority of participants favored the use of UAS in several agencies, including the Environmental Protection Agency, Department of Agriculture, Department of Energy, Department of Interior, Customs and Border Patrol, and Department of Labor. The participants also favored use of UAS for a variety of specific police and law enforcement purposes, such as photo flights, drug location/interdiction, traffic patrol, and investigation/surveillance. However, they did not favor the use of UAS for monitoring public events or protests. Moreover, three-quarters of the participants were concerned about law enforcement using

UAS for surveillance, and only about half expressed confidence that local police departments and federal law enforcement agencies would use UAS appropriately. The majority were opposed to arming UAS with either non-lethal or lethal weapons. The participants were evenly split on whether to expand or limit the use of drones by the government. The participants articulated many benefits of UAS use in the public sector (e.g., environmental monitoring and preventative action, emergency response, public safety, crime control, public health management, military operations, and other governmental functions), as well as many drawbacks (e.g., the potential for misuse and abuse, threats to privacy, accountability, and civil liberties, and challenges related to discrimination, inequality and data collection and management). The overwhelming majority of participants recommended that law and policy makers start working immediately to regulate governmental and public sector use of UAS, and focus particularly on clarifying and, developing regulations based on aims, regulating data collection and access, ensuring transparency, and establishing oversight bodies.

### Views on and Recommendations for Hobbyist Use of UAS

After the workshop, a majority of participants were uncomfortable with a neighbor using a UAS in general, and even more uncomfortable with the use of UAS for specific purposes, including walking a dog and monitoring children in the backyard or in the neighborhood. The participants offered more support for using UAS for home security and picking up groceries. The responses about the amount of airspace landowners should own varied tremendously, but more participants selected '350 to 500 feet' than any other option. More participants believed that the risks of drones warranted regulations than believed that it was too early to regulate. The participants saw many benefits of hobbyist UAS use (e.g., recreation and entertainment, learning opportunities, enhanced home security and reconnaissance, and assistance with tasks), as well as several drawbacks (e.g., threats to privacy and accountability, and concerns about harassment, safety, licensing, and misuse). The participants had several questions about current regulations, but recommended several areas where law and policy makers could focus their initial efforts, including training for UAS users, enforcement, defining spaces for UAS use, and immediately prohibiting the weaponization of UAS.

## Introduction & Methodology

On March 26, 2017, over 40 residents from the Syracuse, NY area attended a three-hour public workshop to evaluate and discuss perspectives and policy options surrounding the use of Unmanned Aerial Systems (UAS, also called drones) in the community.<sup>1</sup> This opportunity was offered as part of a New York State grant awarded to Syracuse University's Institute of National Security and Counterterrorism (INSCT) to study and gauge community response to the growing use of these systems. The overall goal of the workshop was to better understand community concerns and judgments about: (1) commercial applications of UAS, (2) government applications of UAS, and (3) hobbyist applications of UAS.

To achieve these goals, the workshop was designed according to the principles of public deliberation (see sidebar). As participants entered, they were given several documents, including an agenda, a list of goals and ground rules, and a discussion guide (see Appendix). Participants were then randomly assigned to a table with 5-10 others. Graduate students from the Maxwell School of Citizenship and Public Affairs facilitated the table discussions and took notes on flipcharts.

The workshop opened with a brief presentation that offered a general overview of UAS. Participants were then guided through three sets of discussions about commercial, governmental, and hobbyist applications of UAS. Each of these segments was introduced with a brief presentation based on the discussion guide, and followed by facilitated table discussion that centered on three questions:

- (1) What are the positives of this type of UAS application? How do you feel about advocates' arguments, and is anything missing?

### What is Public Deliberation?

Public deliberation is an approach to public participation that allows people to carefully examine an issue and arrive at a well-reasoned judgement after a period of inclusive, respectful consideration of diverse points of view. More specifically, public deliberation enables a group of participants to take part in an open and accessible process of reasoned discussion during which they reflect carefully on a matter, weigh the strengths and weakness of alternative views, and aim to arrive at a decision or judgment based not only on facts and data, but also on values, emotions, and other less technical considerations. It requires that all participants have an adequate opportunity to speak, listen attentively, consider carefully the contributions of others, and treat each other with respect.

The goal of public deliberation is to elicit how people actually think and feel about an issue once they learn more about it and hear from others. This process results in opinions that are not only more informed, but also more stable and representative of how the public feels about an issue than the opinions garnered through more traditional forms of consultation such as polling. Accordingly, the results of public deliberation are particularly useful to policy and decision makers who want to understand how an informed public views an issue.

<sup>1</sup> The workshop took place from 1:00 to 4:00 pm at the Fayetteville Community Centre in the Tower Centre Mall (102 Towne Drive, Fayetteville, NY 13066). Participants were recruited through social media, listservs, and emails. The only requirement for participation was that the individual be 18 years of age or older. All participants received a \$25 gift card as a token of our appreciation. Light refreshments were also provided.

- (2) What are the negatives of this type of UAS application? How do you feel about critics' arguments, and is anything missing?
- (3) Given the conversation, should law and policy makers start working now to address issues, or is it too early? If no, why? If yes, what should they focus on first?

This report presents the results from the public workshop. Several sources of data are used, including pre- and post-surveys that captured participants' opinions and perceptions on UAS;<sup>2</sup> three interim surveys that were administered following each segment of the discussions; and flipchart notes from each table. The surveys were designed using questions that have appeared in other research on UAS.

The report proceeds through five sections. First, we examine participants' general dispositions toward UAS. Next, we review the data from the three thematic sections of the workshop: Commercial/Private Sector use of UAS, Government/Public Sector use of UAS, and Hobbyist use of UAS. For each of these sections, we first present the data from the pre- and post-surveys, followed by the data from the interim survey. We then offer brief summaries of the flip chart notes on the three discussion questions (i.e., the positives, the negatives, and recommendations to policy makers). The report concludes with a summary of the findings for each area.

---

<sup>2</sup> There were over 40 participants at the workshop; however, only 39 participants completed both the pre-and post-surveys. We present the results from these 39 surveys.

## General Dispositions Toward UAS

As part of this research project, we wanted to get a sense of where participants stood on some broad, general issues pertaining to UAS. To do so, we asked five sets of questions.

First, we asked participants on the pre-survey, “How much have you read or heard about the use of unmanned aerial systems (UAS), sometimes called drones?” Most participants in the workshop professed to having at least minimal awareness of drones. As shown in Table 1, 31 participants (80%) reported having heard or read “some” (46%) or “a great deal” (33%) about UAS, while 6 (15%) reported having heard or read “just a little,” and only 2 (5%) reported having heard or read “nothing at all.”

Table 1: Awareness of UAS

Question	Responses	Frequency (Percentage)
How much have you read or heard about the use of unmanned aerial systems (UAS), sometimes called drones?	A great deal	13 (33.3%)
	Some	18 (46.2%)
	Just a little	6 (15.4%)
	Nothing at all	2 (5.1%)

Second, we asked people about UAS ownership on both the pre- and post-survey. The results, displayed in Table 2, show that despite having awareness about drones, only 10 participants (about 26%) owned or considered getting a UAS prior to the workshop. Interestingly, after the workshop, this number increased by 15%. Specifically, after the workshop, 16 participants (41%) reported that they would consider getting a UAS.

Table 2: UAS Ownership

Question	Yes	No
Do you own or have you considered getting a UAS?	10 (25.6%)	29 (74.4%)
After participating in this event, will you consider getting a UAS?	16 (41%)	23 (59%)

Third, we wanted to get a general sense of how participants thought about various uses of UAS in the community. To this end, we asked participants to indicate how much they favored or opposed the use of UAS in six broad areas. The results, presented in Table 3, generally show strong support for UAS applications in a number of areas.

There was consistent, and generally unchanging support for the use of UAS in four areas:

- (1) Search and Rescue Operations, where 37 participants (95%) favored or strongly favored the use of UAS both before and after the workshop;

- (2) Homeland Security Missions, where 29 participants (74%) favored or strongly favored the use of UAS both before and after the workshop;
- (3) Fighting Crime, where 31 participants (80%) favored or strongly favored the use of UAS both before and after the workshop; and
- (4) Emergency and Disaster Response, where 38 participants (97%) favored or strongly favored the use of UAS both before and after the workshop.

Table 3: Opinions on Various Uses of UAS in the Community

		Strongly Oppose	Oppose	Favor	Strongly Favor	No Opinion
Search and Rescue Operations	Pre	0 (0.0%)	1 (2.6%)	9 (23.0%)	28 (71.8%)	1 (2.6%)
	Post	0 (0.0%)	1 (2.6%)	8 (20.5%)	29 (74.4%)	1 (2.6%)
Homeland Security Missions	Pre	2 (5.1%)	6 (15.4%)	16 (41.0%)	13 (33.3%)	2 (5.1%)
	Post	2 (5.1%)	6 (15.4%)	18 (46.2%)	11 (28.2%)	2 (5.1%)
Fighting Crime	Pre	1 (2.6%)	6 (15.4%)	20 (51.3%)	11 (28.2%)	1 (2.6%)
	Post	0 (0.0%)	7 (19.9%)	23 (59.0%)	8 (20.5%)	1 (2.6%)
Emergency and Disaster Response	Pre	0 (0.0%)	0 (0.0%)	7 (17.9%)	31 (79.5%)	1 (2.6%)
	Post	0 (0.0%)	0 (0.0%)	10 (25.6%)	28 (71.8%)	1 (2.6%)
Surveying (e.g., agricultural monitoring, land surveys, road repair)	Pre	0 (0.0%)	3 (7.7%)	15 (38.5%)	17 (43.6%)	4 (10.3%)
	Post	0 (0.0%)	0 (0.0%)	16 (41.0%)	21 (53.8%)	2 (5.1%)
Journalism (taking news pictures, breaking news video, traffic reports)	Pre	1 (2.6%)	11 (28.2%)	16 (41.0%)	8 (20.5%)	3 (7.7%)
	Post	1 (2.6%)	3 (7.7%)	19 (48.7%)	11 (28.2%)	5 (12.8%)



Similarly, before the workshop, there was strong support for the use of UAS in surveying, with 32 participants (82%) favoring or strongly favoring such applications. After the workshop, support for surveying applications grew to 36 participants (95%). Finally, while fewer than half of the participants (24, 43%) favored or strongly favored the use of UAS in journalism before the workshop, a majority of participants (30, 77%) favored or strongly favored it after the workshop.

Fourth, we wanted to get a sense of the participants' general level of concern regarding the use of UAS to monitor people's actions. Thus, we asked the following question: "Some members of Congress and the public are concerned that UAS might be used to monitor the actions of people in areas outside their homes, such as backyards and driveways, or at public gatherings such as sporting events. How concerned are you about UAS being used in this way?"

The results, shown in Table 4, suggest that this is a significant concern for the public. Specifically, prior to the workshop, 30 participants (77%) were either very concerned or somewhat concerned about this issue, while only 7 (18%) were only slightly concerned or not at all concerned. After the workshop, 33 participants (85%) reported being either very concerned or somewhat concerned about this issue, and 6 (15%) reported being only slightly concerned or not at all concerned.

Table 4: Concern about UAS being used to Monitor the Actions of People

	Very Concerned	Somewhat Concerned	Slightly Concerned	Not at all Concerned	No Opinion
Pre	15 (38.5%)	15 (38.5%)	6 (15.4%)	1 (2.6%)	1 (2.6%)
Post	17 (43.6%)	16 (41.0%)	4 (10.3%)	2 (5.1%)	0 (0.0%)

Finally, we wanted to understand people's perceptions about the need to regulate and monitor UAS in our communities. To do so, we asked participants to indicate their level of concern in five broad areas. As shown in Table 5, people's level of concern increased in four of the five areas after the workshop. Specifically, the number of people who were very concerned or somewhat concerned about regulation and monitoring increased for:

- (1) Identifying the Operator of the UAS, where it grew from 30 participants (77%) to 35 participants (90%);
- (2) Invasions of Privacy, where it grew from 31 participants (80%) to 36 participants (92%);
- (3) Personal and Public Safety, where it grew from 26 participants (67%) to 31 participants (80%); and
- (4) Expanded National Security, where it grew from 20 participants (51%) to 23 participants (59%).

Table 5: Concern about Regulating and Monitoring Various Aspects of UAS

		Very Concerned	Somewhat Concerned	Slightly Concerned	Not at all Concerned	No Opinion
Identifying the Operator of the UAS	Pre	12 (30.8%)	18 (46.2%)	4 (10.3%)	3 (7.7%)	1 (2.6%)
	Post	22 (56.4%)	13 (33.3%)	3 (7.7%)	0 (0.0%)	1 (2.6%)
Invasions of Privacy	Pre	20 (51.3%)	11 (28.2%)	4 (10.3%)	2 (5.1%)	1 (2.6%)
	Post	25 (64.1%)	11 (28.2%)	1 (2.6%)	1 (2.6%)	1 (2.6%)
Personal and Public Safety	Pre	11 (28.2%)	15 (38.5%)	7 (17.9%)	4 (10.3%)	1 (2.6%)
	Post	19 (48.7%)	12 (30.8%)	6 (15.4%)	1 (2.6%)	1 (2.6%)
Expanded National Security	Pre	7 (17.9%)	13 (33.3%)	9 (23.1%)	7 (17.9%)	2 (5.1%)
	Post	11 (28.2%)	12 (30.8%)	9 (23.1%)	5 (12.8%)	2 (5.1%)
Noise	Pre	4 (10.3%)	12 (30.8%)	7 (17.9%)	13 (33.3%)	2 (5.1%)
	Post	7 (17.9%)	5 (12.8%)	15 (38.5%)	11 (28.2%)	1 (2.6%)

Interestingly, people became less concerned about noise after the workshop. Prior to the workshop, 16 participants (41%) were very concerned or somewhat concerned about regulating and monitoring noise, whereas after the workshop, only 12 participants (31%) were very or somewhat concerned about this issue.

### Views on Commercial/Private Sector Use of UAS

Commercial or Private Sector use of UAS was the first thematic area discussed. On the pre- and post-surveys, we asked two questions to gauge participant's views about this area of UAS use.

First, we wanted to know what participants thought about Amazon's announcement that it wishes to use UAS to deliver packages. Therefore, we asked, "which of the following words do you think best describes Amazon's announcement that it wants to use UAS to deliver packages?" Table 6 provides both the frequency and percentage of responses for the pre- and post-surveys.

Both before and after the workshop, “Scary (I don’t like this!)” was the most selected response, with 12 participants (31%) selecting it on the pre-survey and 14 participants (36%) selecting it on the post-survey. Thus, it appears that deliberation made participants a bit more fearful about this commercial delivery possibility. However, deliberation also changed people’s opinions in other ways. For example, on the pre-survey, “Goofy (I’m not interested!)” was the second most selected option with 10 participants (26%), but on the post-survey, it dropped a spot with only 6 participants (15%) selecting it. Similarly, “Innovative (It’s the future!)” was in the third place position on the pre-survey, with 6 participants (15%) selecting it, but it was in second place on the post-survey with 8 participants (21%) selecting it. Finally, more people thought it was “Cool (I can’t wait!)” on the post survey (6, 15%) than on the pre-survey (4, 10%). These results suggest that deliberation had both positive (i.e., more people became enthusiastic and enticed) and negative (i.e., more people became scared and fearful) effects on participants’ perceptions about the potential use of UAS by Amazon.

Table 6: Views on Amazon’s Announcements

Response	Pre	Post
Cool (I can’t wait!)	4 (10.3%)	6 (15.4%)
Goofy (I’m not interested!)	10 (25.6%)	6 (15.4%)
Innovative (It’s the future!)	6 (15.4%)	8 (20.5%)
Impossible (It won’t happen!)	2 (5.1%)	3 (7.7%)
Scary (I don’t like this!)	12 (30.8%)	14 (35.9%)
Other <sup>3</sup>	3 (7.7%)	2 (5.1%)

Second, we asked participants to evaluate the use of UAS in a number of other more general commercial or private sector activities. Table 7 shows the responses from the pre- and post-survey to the question, “How do you feel about private companies inside the United States using UAS for the following activities?” The results clearly suggest that deliberation had a positive effect on participants’ views of UAS use in the five areas. Specifically, the number of people who favored or strongly favored the use of UAS increased for:

- (1) Delivering Packages, from 12 participants (31%) to 17 participants (44%);
- (2) Real Estate Sales, from 16 participants (41%) to 26 participants (67%);
- (3) Professional Photography, from 24 participants (62%) to 31 participants (80%);
- (4) Mapping and Surveying, from 32 participants (82%) to 36 participants (92%); and
- (5) Private Detective Services, from 5 participants (13%) to 8 participants (21%).

<sup>3</sup> The participants that checked ‘Other’ put “Impractical” and “Economic Opportunity”

Three additional results are particularly interesting to note. First, after the workshop, a large majority of participants supported the use of UAS in mapping and surveying (92%) and in professional photography (80%). Moreover, after the workshop, more than two-thirds of participants (67%) supported the use of UASs in real estate sales, which is also the area where support grew the most. Second, although support for the use of UAS in package delivery increased after the workshop, fewer than half (44%) of participants reported being in favor of it. This result resonates with findings reported above about participants' views on Amazon's potential use of UAS, which most people reported as being scary. Finally, while support for the use of UAS in private detective services grew after the workshop, after deliberation, most participants (74%) were still opposed or strongly opposed to such applications. This result reflects the strong concerns participants expressed about privacy (see section on Participants' General Dispositions toward UAS).

Table 7: Views on Private Companies Use of UAS for Various Activities

		Strongly Oppose	Oppose	Favor	Strongly Favor	No Opinion
Delivering Packages	Pre	6 (15.4%)	15 (38.5%)	8 (20.5%)	4 (10.3%)	6 (15.4%)
	Post	6 (15.4%)	11 (28.2%)	13 (33.3%)	4 (10.3%)	5 (12.8%)
Real Estate Sales	Pre	3 (7.7%)	13 (33.3%)	11 (28.2%)	5 (12.8%)	7 (17.9%)
	Post	3 (7.7%)	6 (15.4%)	21 (53.8%)	5 (12.8%)	4 (10.3%)
Professional Photography	Pre	2 (5.1%)	10 (25.6%)	17 (43.6%)	7 (17.9%)	3 (7.7%)
	Post	1 (2.6%)	5 (12.8%)	23 (59.0%)	8 (20.5%)	2 (5.1%)
Mapping and Surveying	Pre	1 (2.6%)	2 (5.1%)	25 (64.1%)	7 (17.9%)	4 (10.3%)
	Post	0 (0.0%)	1 (2.6%)	24 (61.5%)	12 (30.8%)	2 (5.1%)
Private Detective Services	Pre	9 (23.1%)	23 (59%)	4 (10.3%)	1 (2.6%)	2 (5.1%)
	Post	7 (17.9%)	22 (56.4%)	5 (12.8%)	3 (7.7%)	2 (5.1%)

After the deliberations on commercial/private sector use of UAS concluded, we distributed a short “interim” survey with two questions, each of which had two response options.

The first question asked: “Considering all the potential pros and cons about drones, which statement best describes your view on UAS adoption in your community? If neither statement feels right, please feel free to write your own.”

Of the participants, 19 selected, “We should greatly expand the future use of drones within the US by businesses, corporations, and other private enterprises to provide economic benefits, improve efficiencies, and increase customer benefits,” and 10 selected “We should prevent widespread use of drones within the US by limiting their use only to government approved purposes in order to protect privacy.” Moreover, 19 participants (including several that selected one of the two responses) wrote

additional comments; however, many of those comments duplicated the response options. The non-duplicative comments, included:

- There are many positive uses of UAS and expansion of use in support but there needs to be better consumer education for uses (i.e., safety courses). Concerns about individual privacy issues and tracking needs to be taken seriously.
- Use of drones can be helpful, but I am ambivalent about their widespread uses.
- We should cautiously expand the use of drones, because at this point, its growth is inevitable. I am generally more acceptant of private applications than governmental ones.
- Let's keep studying this—need a little more time until people get use to the idea.
- We should proceed forward with encouraging innovation, but also regulate issues such as: Commercial and Private surveillance in both public and private spaces (and NOT allow industry to “self-regulate”).
- Drones can and should be used for commercial purposes, but with clear regulations and transparency. People have the right to know what is in the air and for what purposes.
- Drones offer many potential benefits, but there use needs to be balanced with clear safety, privacy, and appropriate use guidelines.
- Drones should be regulated and limited (not just anyone should be able to buy and fly a drone)—should be used for emergency purposes, military surveillance but NOT bombs! Must respect privacy and homeowners—NO need in residential areas.

The second question asked: “Imagine that your municipality is considering approving a UAS delivery service from a major department store and a local grocery store. The UAS will use a GPS system to locate a customer’s house. It will either land on a landing pad or hover near the ground before lowering the package. Which statement best describes your views on a local delivery service? If neither statement feels right, please feel free to write your own.”

Of the participants, 11 selected “I support the idea and look forward to using the service,” and 26 selected, “I am more concerned about the potential problems than I am excited about deliveries.” Moreover, 16 participants (including several that selected one of the two responses) wrote additional comments; however, most of the comments duplicated the response options. The non-duplicative comments, included:

- I am more concerned about the potential problems - (Loss of jobs, pollution, etc.).
- This service would be acceptable for emergency services (medicine) but NO need for delivery of other purchases from stores.
- Oppose.

The results from the pre-, post-, and interim surveys are both buttressed and clarified by the flipchart notes taken at each table during the deliberations. The flipcharts notes, which we summarize below, suggest that participants saw several benefits of commercial applications of UAS. When asked about the positives of commercial applications for UAS and advocates’ arguments, the participants noted that the use of UAS could:

- Help with handling tasks or jobs that are dangerous or unsafe for humans.

- Improve services and their delivery in terms of reduced cost, efficiency, and speed.
- Generate environmental benefits, such as a reduced carbon footprint, the ability to monitor species and habitats, and improved environmental engineering.
- Increase economic development opportunities, for example by creating jobs and increasing incomes, leveling the playing field for small business that compete against large marketing teams, and otherwise revitalizing Central New York.
- Create innovation and technology opportunities for discovery and human invention, and for research and data collection.
- Yield quality of life improvements, for example by addressing social issues, providing access to materials in remote/rural areas, and delivering emergency or medical services.

(4)

However, as many of the survey results suggest, participants also saw drawbacks to commercial applications of UAS. When asked about the negatives of commercial applications for UAS and critics' arguments, the participants responded with a lot of uncertainty about potential unintended consequences of this technology. For example, they suggested that the use of UAS could:

- Lead to abuses of the technology, for example by allowing invasions of privacy and personal space, infringement on civil liberties, and the loss of accountability.
- Empower those who have malicious intent, since drones can be both hacked and intercepted.
- Generate negative economic consequences, for example because of rushing to market, cutting corners, or poor risk analysis.
- Harm employment, for example by spurring the loss of jobs, job dislocation, and the unequal distribution of jobs to those with technology backgrounds or training.
- Result in bad data collection and poor data storage and security.
- Create environmental harms, since mechanization may perpetuate negative extraction, and since extraction is necessary for getting the materials needed to manufacture drones.
- Harm public safety, for example, by causing property damage or individual harm due to user error or equipment failure, creating airspace hazards, using drones as weapons, and creating noise pollution.

The participants also had several thoughts for policy makers. Some participants believed that it was too early to start regulating the commercial/private sector use of UAS. These individuals asserted that government should:

- Allow the free market economy to determine the course of UAS before creating policy, and only regulate in response to common negative ramifications.
- Not create policy with a "what-if" approach or create extreme regulations or "blanket" laws.
- Encourage a broad mindset and build people's confidence and trust in the use of UAS by commercial or private entities (and work to ensure that these uses are not conflated with military use of drones).
- Rely on self-regulation and assume reliable and responsible users.

However, most participants felt that government should start regulating as soon as possible, with the goals of: (1) building a policy framework that addresses concerns now instead of waiting for

the courts to decide, (2) avoiding “blanket laws” not dampening innovation, and (3) being transparent and inclusive. They identified five broad areas where immediate regulation was needed, including:

- **Privacy**: Limit surveillance and data collection capacities; address concerns about data storage and safety; require consent before filming or collecting data.
- **Safety**: (including of drone itself, drone-to-drone/aircraft, and drone-to-people): Establish protocols for noise decibels, property easements, infrared imagining, and liability and insurance obligations; require flight training and set age limitations.
- **Ownership Rights** (to combat “anonymity in sky”): Establish protocols for UAS registration and identification; develop regulations that compel commercial entities to define their purpose/mission in using UAS.
- **Environmental**: Address the need to use environmentally-friendly materials; limit toxicity; require recycling.
- **Enforcement**: Create mechanisms (and budgets) for enforcement of regulations; establish reporting processes for citizens.

### Views on Government/Public Sector Use of UAS

The second area of discussion focused on government and public sector use of UAS. Here, we disaggregated the conversation into the use of UAS by government agencies more generally, and by law enforcement agencies more specifically.

In terms of UAS use by government agencies, we asked two questions on the pre- and post-surveys. First, we wanted to assess the participants' general level of concern about the government's ability to regulate UAS so they are used for lawful purposes. Table 8, which presents the frequency and percentage of responses on the pre- and post-surveys, shows that before the workshop, a majority of participants (27, 69%) were somewhat or very concerned. After the workshop, even more participants (32, 82%) were somewhat or very concerned.

Table 8: Concern about the Government's Ability to Regulate UAS

	Very Concerned	Somewhat Concerned	Not Very Concerned	Not At All Concerned	No Opinion
Pre	8 (20.5%)	19 (48.7%)	8 (20.5%)	3 (7.7%)	1 (2.6%)
Post	16 (41%)	16 (41%)	4 (10.3%)	1 (2.6%)	2 (5.1%)

We also wanted to know how participants felt about various government agencies using drones to carry out their regulatory functions. The results, reported in Table 9, are interesting in several respects.

Table 9: Support for Use of UAS by Government Agencies for Regulatory Functions

		Strongly Oppose	Oppose	Favor	Strongly Favor	No Opinion
Environmental Protection Agency	Pre	1 (2.6%)	5 (12.8%)	17 (43.6%)	12 (30.8%)	3 (7.7%)
	Post	0 (0.0%)	3 (7.7%)	16 (41.0%)	18 (46.2%)	2 (5.1%)
Department of Labor	Pre	2 (5.1%)	12 (30.8%)	10 (25.6%)	4 (10.3%)	10 (25.6%)
	Post	0 (0.0%)	9 (23.1%)	16 (41.0%)	7 (17.9%)	7 (17.9%)
Department of the Interior	Pre	3 (7.7%)	6 (15.4%)	14 (35.9%)	7 (17.9%)	8 (20.5%)
	Post	0 (0.0%)	7 (17.9%)	14 (35.9%)	11 (28.2%)	7 (17.9%)
Customs and Border Protection	Pre	3 (7.7%)	9 (23.1%)	15 (38.5%)	10 (25.6%)	1 (2.6%)
	Post	5 (12.8%)	9 (23.1%)	13 (33.3%)	11 (28.2%)	1 (2.6%)
Department of Agriculture	Pre	1 (2.6%)	2 (5.1%)	19 (48.7%)	9 (23.1%)	7 (17.9%)
	Post	0 (0.0%)	2 (5.1%)	17 (43.6%)	16 (41.0%)	4 (10.3%)



Department of Energy	Pre	1 (2.6%)	5 (12.8%)	14 (35.9%)	10 (25.6%)	8 (20.5%)
	Post	0 (0.0%)	4 (10.3%)	18 (46.2%)	14 (35.9%)	3 (7.7%)

First, both before and after the workshop, a majority of participants supported the use of UAS in several agencies. Specifically, the number of people who favored or strongly favored the use of UAS for regulatory functions increased for the:

- (1) Environmental Protection Agency, from 29 participants (74%) to 34 participants (87%);
- (2) Department of Agriculture, from 28 participants (72%) to 33 participants (85%);
- (3) Department of Energy, from 21 participants (54%) to 35 participants (69%); and
- (4) Department of Interior, from 21 participants (54%) to 35 participants (69%).

Second, the biggest change was with the Department of Labor. Before the workshop, only about a third of the participants (14, 36%) favored or strongly favored the use of UAS, but after the workshop, 23 participants (59%) favored or strongly favored the use of UAS by this agency.

Finally, support for the use of UAS by government agencies increased for every agency except one: there was a very small drop for Customs and Border Patrol (CBP). Before the workshop, 25 participants (65%) favored or strongly favored the use of UAS by CBP, whereas after the workshop, 24 participants (61%) favored or strongly favored the use of UAS by CBP. While this change is certainly not significant, it is worth noting.

Next, we turned to the use of UAS by law enforcement agencies more generally. For this area, we asked a series of questions on the pre- and post-surveys.

First, we wanted to know how participants felt about police and law enforcement inside the United States using UAS to assist in performing several tasks. The results, shown in Table 10, are mixed.

Table 10: Support for Use of UAS in Particular Police and Law Enforcement Tasks

		Strongly Oppose	Oppose	Favor	Strongly Favor	No Opinion
Traffic Patrol	Pre	3 (7.7%)	11 (28.2%)	16 (41.0%)	5 (12.8%)	3 (7.7%)
	Post	2 (5.1%)	9 (23.1%)	20 (51.3%)	7 (17.9%)	1 (2.6%)
Investigation/ Surveillance	Pre	2 (5.1%)	10 (25.6%)	20 (51.3%)	2 (5.1%)	3 (7.7%)
	Post	2 (5.1%)	10 (25.6%)	21 (53.8%)	5 (12.8%)	1 (2.6%)
Drug Location/ Interdiction	Pre	5 (12.8%)	6 (15.4%)	16 (41.0%)	7 (17.9%)	4 (10.3%)
	Post	1 (2.6%)	7 (17.9%)	17 (43.6%)	12 (30.8%)	2 (5.1%)
Photo Flights	Pre	2 (5.1%)	6 (15.4%)	21 (53.8%)	7 (17.9%)	2 (5.1%)
	Post	1 (2.6%)	2 (5.1%)	27 (69.2%)	9 (23.1%)	0 (0.0%)

Monitoring Protests	Pre	11 (28.2%)	13 (33.3%)	8 (20.5%)	3 (7.7%)	3 (7.7%)
	Post	12 (30.8%)	12 (30.8%)	7 (17.9%)	4 (10.3%)	4 (10.3%)
Monitoring Public Events	Pre	9 (23.1%)	13 (33.3%)	10 (25.6%)	2 (5.1%)	4 (10.3%)
	Post	8 (20.5%)	12 (33.3%)	9 (23.1%)	4 (10.3%)	5 (12.8%)

Only one area - the use of photo flights for crime scene investigation or land layout prior to a raid - had support from the vast majority of participants. Before the workshop, 28 participants (72%) favored or strongly favored such uses, and after the workshop, 36 participants (92%) favored or strongly favored such uses.

In addition, about half of the participants favored or strongly favored three particular uses of UAS before the workshop, including traffic patrol (21, 54%), investigation/surveillance (22, 56%), and drug location/interdiction (23, 59%). After the workshop, support for each of these uses increased to about two-thirds to three-quarters of participants. Specifically, 27 participants (69%) favored or strongly favored the use of UAS for traffic patrol, and 26 participants (67%) and 29 participants (75%) favored or strongly favored the use of UAS for investigation/ surveillance and drug location/interdiction, respectively.

Two particular uses - monitoring protests and monitoring public events - received support from one-third or less of the participants. Specifically, before and after the workshop, only 11 participants (29%) favored or strongly favored the use of UAS for monitoring protests. Similarly, before the workshop only 12 participants (31%) favored or strongly favored the use of UAS for monitoring public events; this increased to 13 participants (33%) after the workshop.

Second, we wanted to understand how concerned participants were that the use of UAS by police departments for surveillance might cause them to lose some of their privacy. The results, presented in Table 11, echo the privacy concerns report in other sections of this report. Specifically, before the workshop, 25 participants (64%) were somewhat or very concerned that police department use of UAS for surveillance would negatively impact their privacy. After the workshop, this number increased to 29 participants (75%).

Table 11: Concerns that Police Department for Surveillance Will Impact Privacy

	Very Concerned	Somewhat Concerned	Slightly Concerned	Not At All Concerned	No Opinion
Pre	13 (33.3%)	12 (30.8%)	8 (20.5%)	5 (12.8%)	1 (2.6%)
Post	10 (25.6%)	19 (48.7%)	6 (15.4%)	3 (7.7%)	1 (20.6%)

Third, we wanted to know how confident participants were that local police departments and federal law enforcement agencies would use UAS appropriately. The results are presented in Table 12.

In terms of local police departments, the results show that there were small, but potentially meaningful changes in participants' confidence levels. Specifically, before the workshop, only 4 participants (10%) were very confident that their local police department would use UAS appropriately, whereas after the workshop, 7 participants (18%) were very confident. That said, almost half of the participants (19, 49%) reported being not confident in their local police department both before and after the workshop.

The results for federal law enforcement agencies are more consistent, though arguably worse. Specifically, both before and after the workshop, only 4 participants (10%) reported being very confident that federal law enforcement agencies would use UAS appropriately. Moreover, before the workshop, 19 participants (49%) reported being not confident, and after the workshop 20 participants (51%) reported being not confident that federal law enforcement agencies would use UAS appropriately.

Table 12: Confidence in Local Police & Federal Law Enforcement

		Not Confident	Somewhat Confident	Very Confident	No Opinion
Local Police	Pre	19 (48.7%)	13 (33.3%)	4 (10.3%)	3 (7.7%)
	Post	19 (48.7%)	12 (30.8%)	7 (17.9%)	1 (2.6%)
Federal Law Enforcement Agencies	Pre	19 (48.7%)	14 (35.9%)	4 (10.3%)	2 (5.1%)
	Post	20 (51.3%)	15 (39.0%)	4 (10.3%)	0 (0.0%)

Finally, we wanted to understand how strongly participants supported (or did not) the arming of UAS with non-lethal and lethal weapons. Thus, we asked to questions: (1) How do you feel about law enforcement using UAS armed with non-lethal weapons (i.e., beanbags) to interdict persons suspected of criminal activities? (2) How do you feel about law enforcement using UAS armed with a lethal weapon (i.e., a gun) to interdict an armed fugitive? The results are shown in Table 13.

Table 13: Views on Arming UAS with Weapons

		Strongly Oppose	Oppose	Favor	Strongly Favor	No Opinion
Non- Lethal Weapons	Pre	9 (23.1%)	17 (43.6%)	5 (12.8%)	1 (2.6%)	6 (15.4%)
	Post	12 (30.8%)	15 (35.9%)	9 (23.1%)	2 (5.1%)	2 (5.1%)
Lethal Weapons	Pre	18 (46.2%)	12 (30.8%)	4 (10.3%)	2 (5.1%)	2 (5.1%)

	Post	21 (53.8%)	11 (28.2%)	6 (15.4%)	1 (2.6%)	0 (0.0%)
--	------	---------------	---------------	--------------	----------	----------

Both before and after the workshop, just over two-thirds of the participants (26, 67%) opposed or strongly opposed the arming of UAS with non-lethal weapons. Moreover, before the workshop, only 6 participants (16%) favored or strongly favored their use, whereas after the workshop, 11 participants (28%) favored or strongly favored their use.

The results for lethal weapons are similar, but less favorable. Specifically, before the workshop, 30 participants (77%) were opposed or strongly opposed to arming UAS with lethal weapons; this opposition grew to 32 participants (82%) after the workshop. There was also a very slight growth in the number of participants that favored or strongly favored their use, from 6 (15%) before the workshop to 7 (18%) after the workshop.

After the deliberations about government/public sector use of UAS concluded, we distributed a short “interim” survey with one question that had two response options. The question asked: “Considering all the potential pros and cons about drones, which statement best describes your views on how governments should be allowed to use UAS in your community? If neither statement feels right, please feel free to write your own.”

Of the participants, 17 selected “I support expanding the future use of drones within the U.S. by federal and state government agencies to enhance safety, prevent terrorism, and provide other public benefits,” and 17 selected, “The risks that drones pose to civil liberties are greater than the benefits of their widespread uses.” Moreover, 21 participants (including several that selected one of the two responses) wrote additional comments; however, many of the comments duplicated the response options. The non-duplicative comments, included:

- I support expanding the future of drones within the US by federal and state government agencies to enhance safety, prevent terrorism, and other public benefits. But not at the expense of privacy or private property.
- Both answers need to be considered.
- There is a huge possibility of misuse here as well. How will this be controlled?
- I support the use of drones, with specific and strong restrictions.
- I support expanding the future of drones within the US by federal and state government agencies to enhance safety, prevent terrorism, and other public benefits (with certain restrictions).
- It’s more about how data is used, rather than collected. And who has access to the data—there should be clear need for surveillance of people. Using drones to monitor agriculture, water supplies, park systems, environmental, etc. is ok.
- Needs to be case-by-case basis.
- Drones have the potential to be used in unequal, racist, classist ways, and that is concerning.

Once again, the results from the pre-, post-, and interim surveys are both buttressed and clarified by the flipchart notes taken at each table during the deliberations. The flipcharts notes, which we summarize below, suggest that participants saw several benefits of government applications of UAS. In general, the

participants were less supportive of using UAS for law enforcement functions and more supportive of using UAS for regulatory or other agency functions where they felt that UAS could help save lives, animals, and the environment. Moreover, participants noted that by removing the human element, UAS could make a lot of government work easier, faster, safer, and more cost-efficient. Specifically, the participants noted that the use of UAS could:

- Help gather data and information about natural resources.
- Enable preventative action for natural disasters and environmental hazards, for example by measuring ice flows, monitoring park/wildlife preserves, and serving as warning system for forest fires.
- Improve emergency response through aiding with evacuation, search and rescue, and delivery of medicine, among other activities.
- Enhance public safety and help control crime, for example by detecting illegal practices, aiding in criminal searches, monitoring prisoners or helping to locate them in case of escape, and helping with Amber alerts.
- Advance the implementation of government work, such as traffic control, border control, and mail services.
- Improve public health management, for example by monitoring diseases.
- Increase the safety of military operations such as bomb detection and disarming explosive devices.

However, the participants also pointed to several drawbacks of the government using UAS. They were particularly concerned about potential misuse and abuse of this technology in both law enforcement or non-law enforcement arenas. Thus, when asked about the negatives and critics' arguments, the participants noted pointed to several problems, including:

- Military misuse, for example by missing or misidentifying targets and causing the loss of innocent lives.
- Governmental misuse, resulting from employees' lack of training in using UAS.
- Governmental abuse of power, resulting in over-surveillance of the public, privacy infringements, and threats to accountability and the principle of checks and balances.
- Issues of discrimination and inequality, given that refugees and disadvantaged groups might be monitored more continuously and severely than other groups.
- Inappropriate data collection and management that negatively impacts transparency, confidentiality, and the sharing and transfer of information, and increases hacking risks.

Most participants agreed that policy makers needed to start working immediately to regulate governmental and public sector use of UAS; very few believed it was too early to take action. In general, the participants agreed that regulations should focus on ensuring that (1) governmental actors specify and use the technology according to identified purposes, and (2) the technology is not over used or exploited. Participants offered numerous suggestions for doing so, including:

- **Clarify Aims**: specify and explain the aim of using UAS, and always follow existing legal procedures and constitutional law in the process of implementation; ensure that UAS use is

necessary to meet the mission of the agency (e.g., UAS are helpful for EPA but not for Department of Education).

- **Regulate Based on Aims**: Develop specific regulations according to the type or purpose of UAS use or action; set a higher bar for using UAS in police and law enforcement actions and any other actions involving surveillance of citizens, and set a lower bar for using UAS in environmental, regulatory, and other functions.
- **Regulate Data Collection and Access**: Establish parameters for the collection of data, as well as for the duration of data retention; restrict data and information sharing; set limits on how data can be used.
- **Ensure Transparency**: Publish information about governmental applications of UAS frequently, including data about purposes; allow citizen participation.
- **Establish Oversight**: Create mechanisms to supervise how government is using UAS and develop and levy penalties for misuse and abuses

### Views on Hobbyist Use of UAS

The final area of discussion focused on the use of UAS by private citizens and hobbyists. We asked a series of three questions on the pre- and post-surveys to assess participants' views on this issue.

First, we wanted to know how participants felt about a neighbor using a UAS in their neighborhood. The results, shown in Table 14, suggest that a majority of participants dislike this idea. Specifically, before and after the workshop, 24 participants (62%) and 23 participants (59%) respectively reported being uncomfortable or very uncomfortable with this. That said, deliberation improved the comfort levels of participants, but only slightly. Specifically, before the workshop, 10 participants (26%) reported being comfortable or very comfortable with neighbors using a UAS, whereas after the workshop, 12 participants (31%) reported being comfortable or very comfortable with this.

Table 14: Comfort level with Neighbors using UAS

	Very Uncomfortable	Uncomfortable	Comfortable	Very Comfortable	No Opinion
Pre	8 (20.5%)	16 (41.0%)	6 (15.4%)	4 (10.3%)	4 (10.3%)
Post	7 (17.9%)	16 (41.0%)	10 (25.6%)	2 (5.1%)	4 (10.3%)

Second, we wanted to delve a bit deeper and explore how participants felt about their neighbor using UAS for more specific purposes. The results, which are presented in Table 15, show that with two exceptions, the majority of participants were uncomfortable with neighbors using UAS.

The only areas where participants were comfortable with their neighbors using UAS were for monitoring their homes for security purposes, and to a lesser extent, picking up groceries. In terms of home security, before the workshop, only 17 participants (44%) were comfortable or very comfortable with this UAS purpose, but after the workshop about two-thirds of the participants (26, 67%) reported being comfortable or very comfortable with this. In terms grocery pick up, before the workshop, only 13 participants (33%) were comfortable or very comfortable with this UAS purpose, but after the workshop just over half of the participants (20, 52%) reported being comfortable or very comfortable with this.

Participants were pointedly less comfortable with the other purposes. Before and after the workshop, only 7 participants (18%) and 11 participants (28%) respectively were comfortable or very comfortable with their neighbor using a UAS to walk a dog on a special leash. Participants also did not feel comfortable with the use of UAS to monitor children. Before and after the workshop, only 11 participants (28%) and 17 participants (43%) respectively were comfortable or very comfortable with their neighbor using a UAS to monitor their children in the backyard. Similarly, before and after the workshop, only 8 participants (21%) and 9 participants (23%) respectively were comfortable or very comfortable with their neighbor using a UAS to monitor their children in the neighborhood.



Table 15: Support for Use of UAS by Neighbors for Particular Purposes

		Very Uncomfortable	Uncomfortable	Comfortable	Very Comfortable	No Opinion
Picking Up Groceries	Pre	7 (17.9%)	14 (35.9%)	11 (28.2%)	2 (5.1%)	5 (12.8%)
	Post	8 (20.5%)	9 (23.1%)	19 (48.7%)	1 (2.6%)	2 (5.1%)
Walking a Dog (on a special leash)	Pre	14 (35.9%)	14 (35.9%)	6 (15.4%)	1 (2.6%)	4 (10.3%)
	Post	13 (33.3%)	13 (33.3%)	8 (20.5%)	3 (7.7%)	2 (5.1%)
Monitoring Children in the Backyard	Pre	14 (35.9%)	12 (30.8%)	11 (28.2%)	0 (0.0%)	2 (5.1%)
	Post	7 (17.9%)	13 (33.3%)	16 (41%)	1 (2.6%)	2 (5.1%)
Monitoring Children in the Neighborhood	Pre	18 (46.2%)	12 (30.8%)	8 (20.5%)	0 (0.0%)	1 (2.6%)
	Post	14 (35.9%)	15 (38.5%)	7 (17.9%)	2 (5.1%)	1 (2.6%)
Monitoring Home for Security	Pre	8 (20.5%)	11 (28.2%)	16 (41%)	1 (2.6%)	3 (7.7%)
	Post	6 (15.4%)	6 (15.4%)	23 (59.0%)	3 (7.7%)	1 (2.6%)

Finally, we asked participants, “How much of the airspace do you think is reasonable for a landowner to own above their property?” The responses, presented in Table 16, show that participants were generally generous about airspace, with the most participants answering “350 to 500 feet” both before (10, 26%) and after (13, 33%) the workshop. The second most common answer both before (10, 26%) and after (9, 23%) the workshop was “some other measurement;” however, very few participants offered an explanation of what that measurement might be.<sup>4</sup>

Finally, the third most common answer both before (7, 18%) and after (8, 21%) the workshop was “to 100 feet or so.”

Table 16: Reasonable Airspace above Property

	Pre	Post
To the highest treetop or building	1 (2.6%)	1 (2.6%)
Top of power lines, an average of 40 feet	6 (15.4%)	4 (10.3%)
To 100 feet or so	7 (17.9%)	8 (20.5%)

<sup>4</sup> Among the suggestions were: “200 feet and below”; “all airspace property”; “higher”; “TBD”; “400 feet”; “500 feet”; and “any permissible by law.”



250 feet to 350 feet	3 (7.7%)	3 (7.7%)
350 feet to 500 feet	10 (25.6%)	13 (33.3%)
Some other measurement	10 (25.6%)	9 (23.1%)

After the deliberations hobbyist use of UAS concluded, we distributed a short “interim” survey with one question that had two response options. The question asked: “Considering all the potential pros and cons about drones, which statement best describes your views on how hobbyists use UAS in your community? If neither statement feels right, please feel free to write your own.”

Of the participants, 10 selected, “I support expanding the future use of UAS by hobbyists within my community. It’s too early to regulate,” while 27 selected “The risks that drones pose to safety and privacy justify regulations to limit flight location, times, and the use of any data collected.” Moreover, 19 participants (including several that selected one of the two responses) wrote additional comments; however, many of the comments duplicated the response options. The non-duplicative comments, included:

- It is already heavily regulated.
- The regulation should be reasonable.
- The risks that drones pose to safety and privacy justify regulations to enhance public safety and awareness.
- Definite regulation monitoring. Personal space (that drones cannot enter) and limitations to height drones can fly.
- Hobbyist shouldn’t have drones, too much potential for abuse.

As with the other topics, the results from the pre-, post-, and interim surveys are buttressed and clarified by the flipchart notes, which we summarize below. The notes suggest that participants saw benefits of people enjoying UAS for their own private, hobbyist use. When asked about the positives of hobbyist use of UAS and the advocates’ arguments, the participants noted that UAS:

- Enable people to have fun and enjoy being outside and engaging with technology, by joining community organizations and clubs surrounding UAS technology, photography (aerial photography), and sports.
- Produce learning opportunities to engage with technology and promote interest in the STEM fields.
- Have the potential to provide security to one’s household.
- Provide reconnaissance for a variety of situations, such as traffic, routes for hikers and outdoor recreationalists, and search-and-rescue for lost pets.
- Provide opportunities to aid those with disabilities to do simple tasks around their property.

But with the positives also come numerous drawbacks, a reality that is suggested by the survey results presented above. When asked about the negatives of hobbyist applications for UAS and critics’ arguments, the participants identified several concerns, such as:

- Privacy and fear of dissemination of such private information that was obtained illegally.
- Accountability and attribution: who's UAS is that, and what are the possibilities for identifying and reporting illegal actions?
- Harassment, misuse, and stalking.
- Safety: what if the battery dies and it falls out of the sky?
- Lack of licensing or certifications for hobbyists to ensure proper use.

Although most participants believed that it was time to start regulating hobbyist use of UAS, the participants also raised several questions about existing policies and about hobbyist uses of UAS in general. For example, participants asked:

- Why hasn't hobbyist use been regulated already? Is it too complex?
- How is one supposed to enforce these recommendations and regulations?
- Why is there no uniform ownership of airspace above one's property?
- If this cannot be federally regulated, can there be collaboration amongst the states to try and make laws as uniform as possible?
- Should there be restrictions to those who can be certified to use UAS? (Those who have been convicted of stalking, or those who have orders of protections against them should not be able to use UAS).
- Can one shoot down a UAS from their property? What is the liability standard?

But for all the questions that were posed, the participants also had some recommendations on where to start regulating. Specifically, the participant believed that law and policy makers should start regulating by focusing on:

- **Training**: Establish training programs and requirements for licensing/certification to operate a UAS; this will increase education on the laws and policies surrounding the UAS and will attract responsible people to the activity.
- **Enforcement**: Figure out proper enforcement mechanisms, which is key to answering several of the questions posed by participants.
- **Defining Appropriate Spaces for Use**: Mandate that hobbyists may only operate and use UAS in certain areas, at certain times of day, and for certain purposes.
- **Weaponization**: Immediately make weaponizing hobbyist UAS illegal.

## Conclusion

This deliberative public workshop shed light on how and informed public views issues relating to UAS use. Using data from the pre-, post, and interim surveys, as well as from the flipchart notes taken during the table discussions, this report has explored participants' general dispositions toward UAS, and their views on and recommendations for the use of UAS by the commercial and private sector, the government and public sector, and hobbyists. Here, we briefly summarize the findings for each of these four areas.

### General Dispositions Toward UAS

Although participants entered the workshop being fairly aware of UAS, with nearly 80% reporting having read or heard a great deal or some about them, only about 26% owned or had considered getting a UAS prior to the workshop. However, after the workshop 41% said they would consider getting a UAS. In general, there was strong support for a variety of UAS applications after the workshop, with a majority of participants favoring or strongly favoring use in search and rescue operations (95%), homeland security missions (74%), fighting crime, (80%) emergency and disaster response (97%), surveying (95%), and journalism (77%). However, despite their openness about various UAS applications, participants expressed a great deal of concern about UAS being used to monitor the actions of people. This concern grew from 77% prior to the workshop, to nearly 85% after the workshop. This concern was reflected again in the questions about regulating and monitoring UAS use, where after the workshop, participants' number one concern was invasions of privacy (92%), followed closely by identifying the operator of the UAS (90%), and personal and public safety (80%).

### Views on and Recommendations for Commercial/Private Sector Use of UAS

Deliberation changed the minds of some participants about Amazon's interest in using UAS to deliver packages, with some becoming more fearful, and others becoming more enthusiastic. In terms of more general commercial or private sector activities, after the workshop, a majority of participants reporting favoring or strongly favoring the use of UAS in real estate sales (67%), professional photography (80%), and mapping and surveying (92%). However, after the workshop, fewer than half (44%) favored or strongly the use of UAS in package delivery, and less than a quarter (21%) favored or strongly the use of UAS in private detective services.

On the interim survey, which was distributed at the conclusion of the discussions on this topic, the participants were split on their views about UAS adoption by commercial and private companies; however, more participants (19) favored expanding the use of drones than favored limiting the use of drones (10). Likewise, participants were split on their views of using drones for delivery services, with more participants (26) indicating that they were more concerned about potential problems than looking forward to using the service (16).

Finally, the notes from the discussion indicate that participants saw many benefits of UAS use in the private sector, such as improving safety, service delivery, environmental outcomes, economic development, innovation, and quality of life. However, they also saw many drawbacks including potential for abuse and misuse, negative economic and employment outcomes, and threats to privacy, the environment, and public safety. Moreover, most participants believed that law and policy makers should start working now to regulate commercial and private sector use of UAS. In particular, they

recommended that policy makers focus on issues related to privacy, safety, ownership rights, the environment, and enforcement.

### Views on and Recommendations for Governmental/Public Sector Use of UAS

After the deliberations, the majority of participants (82%) indicated being somewhat or very concerned about the government's ability to regulate UAS so they are used for lawful purposes. That said, after the deliberations, a majority of participants favored or strongly favored the use of UAS in several agencies, including the Environmental Protection Agency (87%), Department of Agriculture (85%), Department of Energy (69%), Department of Interior (69%), Customs and Border Patrol (61%) and Department of Labor (59%). The participants also favored or strongly favored use of UAS for a variety of specific police and law enforcement purposes such as photo flights (92%), drug location/interdiction (75%), traffic patrol (69%), and investigation/ surveillance (67%). However, they did not favor the use of UAS for monitoring public events (33%) or monitoring protests (29%). In part, this is likely a function of the fact that after the workshop, 75% of participants were somewhat or very concerned that the police department use of UAS for surveillance would negatively impact their privacy. Similarly, after the workshop, 49% of participants reporting being not confident in their local police department to use UAS appropriately, and 51% reported being not confident in federal law enforcement agencies. Given their general lack of confidence, it is not surprising that 67% of participants were opposed or strongly opposed to arming UAS with non-lethal weapons, and 82% were opposed or strongly opposed to arming UAS with lethal weapons.

On the interim survey, which was distributed at the conclusion of the discussion on this topic, the participants were evenly split on their views about how governments should be allowed to use UAS, with 17 indicating that they supported expanding the future use of drones, and 17 indicating that the risks posed by drones were greater than their benefits.

Finally, the notes from the discussions indicate that the participants saw many benefits of UAS use in the public sector, such as improvements in environmental monitoring, emergency response, public safety, crime control, public health management, military operations, and other governmental functions. However, they also pointed to many drawbacks, including the potential for misuse and abuse, threats to privacy, accountability, and civil liberties, and challenges related to discrimination, inequality and data collection and management. Moreover, the overwhelming majority of participants believed that law and policy makers should start working immediately to regulate governmental and public sector use of UAS. In particular, they recommended that policy makers work to clarify aims, regulate based on aims, regulate issues pertaining to data collection and access, ensure transparency, and establish oversight bodies.

### Views on and Recommendations for Hobbyist Use of UAS

After the deliberations, 59% of participants were uncomfortable or very uncomfortable with a neighbor using a UAS in their neighborhood. This discomfort is reflected in the generally low percentage of respondents who reported being comfortable or very comfortable with particular UAS uses after the workshop, including walking a dog (28%) and monitoring their children in the backyard (43%) or in the neighborhood (23%). They were more positive about using UAS for home security (67%) and picking up groceries (52%). The responses about the amount of airspace landowners should own varied tremendously, but after the workshop, more participants (33%) selected '350 to 500 feet' than any other option.

On the interim survey, which was distributed at the conclusion of the discussion on this topic, the participants were again split on their views about hobbyist use of UAS; however, more participants (27) believed that the risks of drones warranted regulations than believed that it was too early to regulate (10).

Finally, as with the other topics, the notes from the discussions suggest that participants saw many benefits of hobbyist UAS use, including recreation and entertainment, learning opportunities, enhanced home security and reconnaissance, and assistance with tasks. Likewise, they also saw several drawbacks including, threats to privacy and accountability, as well as concerns about harassment, safety, licensing, and opportunities for misuse. In terms of law and policy making, the participants raised several questions about existing regulations, the challenges of enforcement, the locus of regulatory action (e.g., at the federal or state level); and liability. However, they also recommended several areas where law and policy makers could focus their initial efforts, including training for UAS users, enforcement, defining spaces for UAS use, and immediately prohibiting the weaponization of UAS.

In sum, this public workshop shows that the public is not only interested in, but also capable of, deliberating about complex issues such as UAS. It also shows that deliberation can change the public's perceptions. In general, participants reacted more favorably to UAS uses that they felt would not affect privacy; commercial, governmental, and hobbyist applications that threatened (or potentially threatened) privacy were largely unwelcome. Moreover, the majority of participants seemed to agree that law and policy makers should start working now to regulate the use of UAS. Across all applications - commercial, governmental, and hobbyist - participants were particularly concerned about regulating UAS in terms of privacy, safety, owner rights and responsibilities, and enforcement.

## Appendix: Participant Documents

### Public Meeting Goals & Ground Rules

#### GOALS

- To gauge community response to the growing use of Unmanned Aerial Systems (UAS)
- To explore how UAS are being used in commercial, governmental, and recreational settings
- To explore the policy and legal issues surrounding the use of UAS in these settings
- To get feedback and recommendations from participants on UAS issues

#### GROUND RULES

- Speak openly and honestly
- Listen carefully and respectfully to each person
- Keep comments brief and stay focused on the task
- Explore differences (without the need to come to agreement)
- Turn cell phones to vibrate or off



## Law & Policy of Unmanned Aircraft Systems Public Engagement Workshop

March 26, 2017 | 1 p.m. to 4 p.m.  
Fayetteville Community Centre | Fayetteville, NY.

1:00-1:15 p.m.	Welcome; Introductions; Informed Consent; Pre-Survey; Overview of Event
1:15-2:00 p.m.	Commercial UAS Considerations
2:00-2:45 p.m.	Government UAS Considerations
2:45-3:00 p.m.	Break
3:00-3:45 p.m.	Hobbyist UAS Considerations
3:45-4:00 p.m.	Closing & Thank You



### INTRODUCTION

As a result of rapid innovation, unmanned aircraft systems (UAS), or drones, are now commercially available on a large scale, and being used increasingly by governments, businesses, and hobbyists. New York State is particularly interested in supporting the development and adoption of the technology.

In fact, the state is investing \$500 million in the Central New York Rising plan to develop the industry, as part of the Upstate Revitalization Initiative. Educational institutions, such as Syracuse University and Mohawk Valley Community College, are aligning their teaching and research to meet the growing needs of the UAS sector. New York State has also launched the largest business accelerator program in the country, called GENIUS NY, with awards of up to \$1 million for UAS startup companies.

Policymakers at the federal, state, and local levels are working to balance the potential advantages and disadvantages of drone use in national and community airspace. Advocates predict that UAS will enable high-impact research, create new jobs and industries, save lives, and provide scientific, economic, and social benefits that public and private entities are only beginning to explore. Critics worry about the societal implications of cheaper, easier-to-use, aerial surveillance tools in the hands of so many more people.

The purpose of this workshop is to gauge community response to the growing use of these systems. The participant recommendations and data from the surveys will be compiled and analyzed, and will form the basis of a report that is given to policy makers and industry leaders.

In this workshop, we will explore the use of UAS by three different groups: commercial entities, government agencies, and hobbyists. After a brief description of drone applications by these groups and the policy and legal issues surrounding their use, you will be asked to discuss the issues, offer your ideas, and develop recommendations.





## DEFINITIONS

An **Unmanned Aircraft System (UAS)**—also called an “unmanned aerial system,” “unmanned aerial vehicle,” or “drone”—is an aircraft without a human pilot onboard.

Typically, the word “system” refers to the fact that unmanned aircraft today operate with additional technologies, such as computers, cameras, and sensors.

A UAS is usually controlled by an operator from the ground. They are grouped often both by size and by use ...

Micro UAS weigh less than 0.55 lbs



Small UAS weigh less than 55 lbs



Large UAS weigh more than 55 lbs



### COMMERCIAL USE OF UAS

According to some industry estimates, UAS technologies could generate more than \$82 billion for the U.S. economy and create more than 100,000 new jobs over the next 10 years. Part of the excitement around the technology is the belief that it will spur great innovation and new applications. A current list of applications is included below.



- ✓ Package Delivery: consumer goods & food
- ✓ Real Estate/Property Photography
- ✓ Cinematography, documentaries
- ✓ Journalism
- ✓ Advertising
- ✓ Agricultural Activities
  - ✓ Crop Management
  - ✓ Livestock Management / Herding
  - ✓ Pest Control
  - ✓ Plant Count
  - ✓ Soil type and moisture
  - ✓ Growth stage and plant health
  - ✓ Yield monitoring
- ✓ Communications
- ✓ Mapping and surveying: Trees, land cover, biomass, forest health, hazards, disaster sites, archeological sites
- ✓ Mineral exploration
- ✓ Geophysical surveys
- ✓ Inspection services: Construction sites, radio towers, wind turbines, solar panels, industrial roof inspections (heat and leaks)
- ✓ Photography: Weddings, sporting events, concerts, scenic views
- ✓ Oil and Gas Exploration and Production
- ✓ Building Security Services: Homes, schools, critical infrastructure
- ✓ Utility line monitoring
- ✓ Education and research
- ✓ Insurance and claims adjustment
- ✓ Business inventory and asset management
- ✓ Remote location tourism
- ✓ Civil Engineering Design Mapping
- ✓ Maintenance Surveys: Access areas that are not normally reachable.

Compared to manned aircraft, drones are often preferred for missions too "dull, dirty or dangerous" for humans.

### Current Rules for Flying Commercial UAS

#### *Small UAS*

Last summer, the Federal Aviation Administration (FAA) enacted rules for flying Small UAS (<55 lbs.). The rule, referred to as Part 107, includes pilot requirements, aircraft requirements, and operating rules.

#### **Pilot Requirements:**

- ✓ Must be at least 16 years old
- ✓ Must pass an initial aeronautical knowledge test at an FAA-approved knowledge testing center
- ✓ Must be vetted by the Transportation Safety Administration (TSA)

#### **Aircraft Requirements:**

- ✓ Vehicles must weigh less than 55 lbs.
- ✓ Vehicles must be registered with the FAA if they weigh more than .55 lbs. Vehicles must be affixed with their FAA registration number.

#### **Operating Rules**

- ✓ Must remain in Class G airspace
- ✓ Must keep the aircraft in sight (visual line-of-sight)
- ✓ Must fly under 400 feet
- ✓ Must fly during the day
- ✓ Must fly at or below 100 mph
- ✓ Must yield right of way to manned aircraft
- ✓ Must NOT fly over people
- ✓ Must NOT fly from a moving vehicle



Operators may apply for certificates of waiver from the rules if the FAA finds that the proposed operation can be performed safely.

#### *Large UAS*

Commercial entities that wish to fly UAS that weigh more than 55 lbs must seek permission through a special exemption process.

Operating rules and aircraft requirements will be the same or similar to operators flying under the small UAS rule. Pilot requirements will be evaluated on a case-by-case basis.

#### *Micro UAS*

The FAA is in the process of promulgating rules related to Micro UAS (<0.55 lbs)

### Law and Policy Issues

Some opposition to UAS technology stems from its military roots and use in foreign conflicts, but other specific concerns have developed around the commercial use of drones. Opponents are concerned that the widespread use of drones will invade our privacy and infringe on other civil liberties. They argue that because drones will be cheaper to develop and buy, and because they can be much smaller and quieter than manned aircraft, miniaturized sensor technologies on drones will make surveillance more affordable and invasive. They also fear that drones can be designed to have long flight endurance, and be used for continuous surveillance.

Others are most concerned about safety, as there have been a few drone crashes due to misuse or malfunction resulting in personal injury. Some opponents express particular concern about flights over their property. The industry is just developing, but at this time, it is not possible for citizens to identify the operators, know what sensors are carried on the device, or know the purpose of the flight.

Drone supporters think that there are too many beneficial uses of drones to limit their application at this early stage. They note that a multi-billion-dollar American industry can be built to develop and support widespread applications of drones not only in the U.S., but also that can be sold around the world. Supporters see drones as just another emerging technology that was first used in the military, but when adapted for peaceful purposes can improve American lives, provide jobs, and enhance public safety. They think the uses of drones within the U.S. can be regulated to protect privacy and other civil liberties without severely limiting drone applications. Supporters argue that the benefits of drone technologies are greater than the risks of their widespread uses.



### GOVERNMENT USE OF UAS

Many government agencies have embraced UAS as a way to carry out their missions more effectively. These agencies include the US Forest Service, the Environmental Protection Agency, National Oceanic and Atmospheric Administration, the National Park Service, and the Department of Agriculture.

#### Government Agency (Non-Law Enforcement) Uses of UAS

- ✓ Protection, surveillance of sensitive environmental sites
- ✓ Harbor and coastal patrol
- ✓ Disaster Response and Assessment
- ✓ Fire Investigations & Assessments
- ✓ Conservation Enforcement
- ✓ Critical Infrastructure monitoring and Inspection
- ✓ Flood assessments
- ✓ Delivery of equipment, food, medicine
- ✓ Fire detection
- ✓ Ice flow monitoring
- ✓ Wildlife counts
- ✓ Hunting/Anti-Hunting
- ✓ Marine Life monitoring
- ✓ Oil Spill tracking



UAS are also in use as law enforcement tools to support kidnapping investigations, search and rescue operations, drug interdictions, and fugitive investigations. While they are, in many ways, similar to the manned aircraft that have been in use for many years, they have the potential to provide law enforcement with additional flexibility and yield life-saving benefits. UAS also have the potential to be cost-effective in a time of shrinking government resources. For these reasons, UAS are likely to come into greater use.

#### Law Enforcement Uses of UAS

- ✓ Search & Rescue Operations
- ✓ Criminal Intelligence
- ✓ Surveillance Missions
- ✓ Crowd Control
- ✓ Emergency Response
- ✓ Traffic Management and Investigations
- ✓ Border Patrol
- ✓ Accident Investigations
- ✓ Traffic SWAT
- ✓ Explosive Disposal Unit
- ✓ Hazardous Material Operations
- ✓ Crime Scene Investigation

- ✓ Gathering Evidence
- ✓ VIP Protection
- ✓ Disaster Response
- ✓ Narcotics Investigations
- ✓ Chemical Biological Agent Detection
- ✓ Suspect and Vehicle Tracking
- ✓ Stand-off Situations
- ✓ Criminal Pursuit



### Summary Legal Landscape for Government Use

#### *FAA Rules*

Federal, state, and local agencies may either operate under the Part 107 rule described above, or they may apply for a Certificate of Waiver or Authorization (COA) for certain operations beyond the scope of that rule.

Common applications for COAs include law enforcement, firefighting, border patrol, disaster relief, search and rescue, military training, and other government operational missions.

#### *Constitutional Protection from Police Conducting Aerial Surveillance*

The Supreme Court has not heard a case involving a UAS, but it has heard cases involving manned aircraft. In those cases, the Court held that the Fourth Amendment does not require police to get a search warrant to view private property from above. The airspace above property is a public vantage point much the same way as a public street. Police do not need permission to use methods of observation available to the public.

#### *State Legislation*

More than 30 states have enacted legislation addressing UAS issues, and an additional five states have adopted resolutions. Some state laws and legislative action may be “technology-neutral,” meaning that, although they do not specifically mention UAS operation, existing laws, such as those related to hunting or privacy, may still apply to certain UAS operations. These bills and resolutions address a wide range of issues, from privacy and criminal penalties for misuse to commercial and governmental uses.

To date, 18 states have passed laws requiring law enforcement agencies to obtain a search warrant to use UAS for surveillance or to conduct a search. Several bills have been introduced in New York to require law enforcement warrants, but none have passed.

### Law and Policy Issues

The controversial issues around law enforcement use of UAS involve search warrants, as well as general monitoring of communities to prevent and control crime.

UAS proponents argue that the technology can make law enforcement more effective. Drones can be used to monitor high-crime areas and be equipped with high-resolution video cameras

that can identify and track specific vehicles and can identify individuals using facial recognition software. The drones also might also carry infrared cameras for use at night, and a radar that can “see” inside certain kinds of buildings or structures to determine if they are inhabited.

All of the imagery may be fed in real-time to a central monitoring facility on the ground. Some drones can stay airborne for 24 hours, and by rotating additional drones, continuous surveillance can be maintained around-the-clock.

Opponents argue persistent monitoring is a violation of their privacy and will have a harmful effect on communities. They are afraid that their lawful personal behaviors and activities will be monitored by authorities, and that they will have no control over how that information might be used. Some are concerned that particular communities will be surveilled more than others. Opponents also worry that policymakers will eventually permit the arming of drones.

As a result, opponents argue that drones should be prohibited from mass surveillance or spying within the U.S. Opponents think drone usage should be limited only to: (a) court-authorized law enforcement activities; (b) assistance with emergency situations such as disaster control and search and rescue; or (c) use by non-law enforcement agencies where privacy will not be compromised and the surveillance will not be used for law enforcement purposes.

### HOBBYIST USES OF UAS

Hobbyists are those who operate UAS for recreational purposes, rather than for commercial or governmental purposes. Hobbyist uses range from use in emergency situations, like dropping off EpiPen® to someone suffering an allergic reaction, to pure whimsy.

- ✓ Photography
- ✓ The joy of flying
- ✓ Air racing, air shows
- ✓ Dog walking
- ✓ Track you while you jog/exercise/hike, provide security
- ✓ Spy on your daughter's date
- ✓ Drop a load of confetti
- ✓ Fetch a beverage from the house to the garden



#### *Model Aircraft Association*

Thousands of people are just discovering UAS technology, but the Model Aircraft Association (MAA) has been supporting model aviation in the United States since 1936.

The AMA is a non-profit organization dedicated to the promotion of model aviation as a recognized sport as well as a recreational activity. It is the largest organization of its kind with a current membership of approximately 195,000 members. They sanction more than one thousand model competitions, and an increasing number of non-competitive fly-in events for member aeromodelers throughout the country each year. They also charter more than 2500 model airplane clubs. All AMA-chartered clubs require their flying members to purchase AMA memberships for said liability insurance.

#### *Current Rules for Hobbyists*

Very few regulations are in place regarding operation of UAS by hobbyists.

You don't need permission from the FAA to fly a UAS for fun or recreation.

Before you fly outside you must:

- ✓ Register your UAS if it weighs more than 0.55 pounds and less than 55 pounds (registration costs \$5 and is valid for 3 years).
- ✓ Label your UAS with your registration number
- ✓ Read and understand all safety guidelines

You must be:

- ✓ 13 years of age or older (if the owner is less than 13 years of age, a person 13 years of age or older must register the small unmanned aircraft)
- ✓ A U.S. citizen or legal permanent resident\*



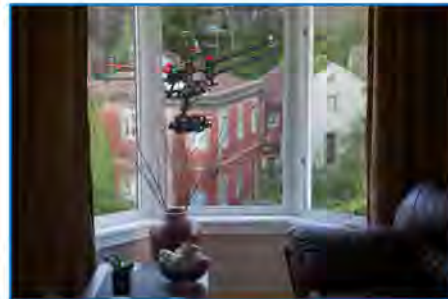
*\*Visiting foreign nationals must register their UAS upon arrival in the United States (online registration serves as a certificate of ownership).*

### Safety Guidelines

- ✓ Fly at or below 400 feet
- ✓ Keep your UAS within sight
- ✓ Never fly near other aircraft, especially near airports
- ✓ Never fly over groups of people
- ✓ Never fly over stadiums or sports events
- ✓ Never fly near emergency response efforts such as fires
- ✓ Never fly under the influence
- ✓ Be aware of airspace requirements

### Law and Policy Issues

Congress forbid the FAA from regulating hobbyists, and for the most part, states have not enacted legislation to specifically regulate them. Proponents argue that it isn't necessary. The MAA members have been flying for years without problems. Moreover, it's too early to measure the potential harms that might require regulation. The economic, recreational, security, and educational benefits justify waiting to regulate.



Opponents argue that hobbyist use raises many of the same concerns that were discussed with commercial drones: safety, surveillance, notice, and trespass. Some argue that the risks are greater here because operators are less regulated and don't have a business interest to keep them in check.

Aerial trespass is of particular concern, for both commercial and hobbyist use, and the law is not clear.

The federal government has exclusive federal sovereign authority over navigable airspace with the exclusive authority to regulate all aspects of manned aviation, with some exceptions related to take-off and landing. Generally, for manned aircraft, the National Air Space begins at 500 feet above most areas and 1,000 feet above congested areas.

Reading the relevant federal statutes and Supreme Court cases together, it is clear that property rights in airspace above land do not extend above approximately 500 feet or possibly 1000 feet in congested places.

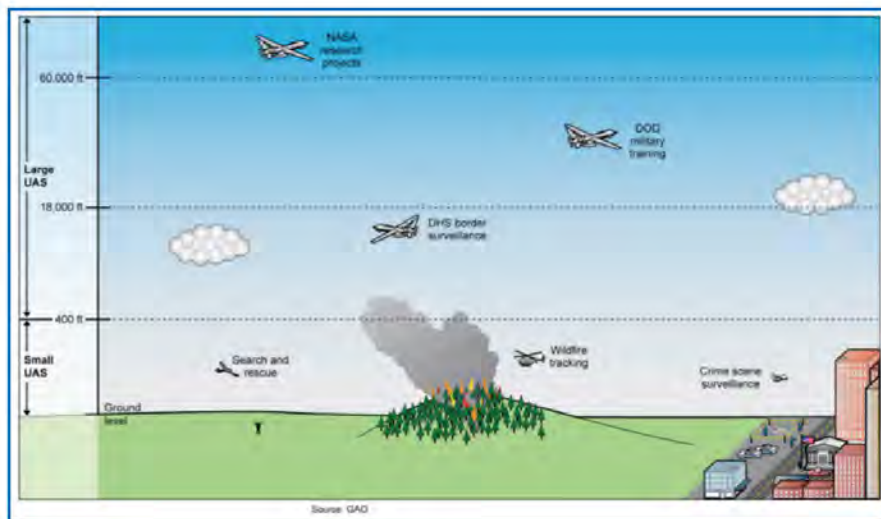
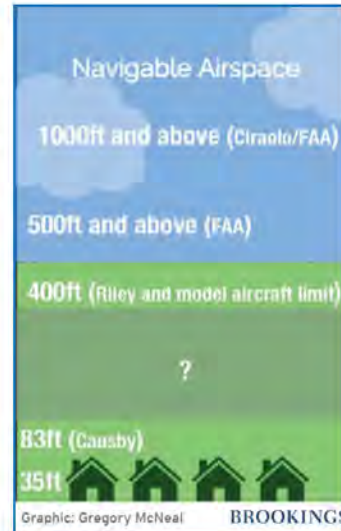
In fact, the FAA rules keep UAS flight below 400 feet without special permission, suggesting a buffer zone below the National Air Space between the 400 and 500 feet marks. This 400-500 feet

height seems the maximum possible upper height at which property rights might exist. However, property rights may very well end below that altitude.

Other caselaw suggests that flight activity above private property that interferes with actual use and enjoyment of the land is illegal. While state law provides protection against trespass, existing law does not provide for clearly defined airspace rights. With more low altitude vehicles in the airspace, policymakers are pressed to consider aerial trespass. What seems an appropriate height?

How much of the airspace do you think is reasonable for a landowner to own above their property?

- ✓ To the highest tree top or building
- ✓ Top of power lines, an average of 40 feet
- ✓ To 100 feet or so
- ✓ 250 to 350 feet
- ✓ 350 to 500 feet
- ✓ Some other measurement?



For more information, contact ...

Project Leaders

**Tina Nabatchi**, Maxwell School of Citizenship and Public Affairs  
tnabatch@maxwell.syr.edu  
315.443.8994

**Keli Perrin**, INSCT  
kaperrin@law.syr.edu  
315.443.2284

Institute for National Security and Counterterrorism  
300 Dineen Hall  
950 Irving Avenue  
Syracuse, NY 13244  
P: 315.443.2284  
E: [insct@syr.edu](mailto:insct@syr.edu)  
T: @INSCT  
W: [insct.syr.edu](http://insct.syr.edu)

About INSCT

The Institute for National Security and Counterterrorism (INSCT) is a multidisciplinary, university-based center for the study of national security, international security, and counterterrorism, offering law and graduate certificates of advanced study and conducting incisive research and timely policy analysis. Part of Syracuse University's College of Law and Maxwell School of Citizenship and Public Affairs, INSCT's collaborative projects have shaped law and policy dialogues for more than 10 years. [insct.syr.edu](http://insct.syr.edu)

**Syracuse University**

Syracuse University