



# San Diego UAS Integration Pilot Program: Mid-Program Report

Prepared by

The City of

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The successes of this program would not be possible without the work of the SD IPP Partners that have dedicated their time and resources:



Military Advisory Council

# Unmanned Aircraft Systems Integration

## San Diego Unmanned Aircraft System Integration Pilot Program

In May 2018, The City of San Diego was selected by the U.S. Department of Transportation and the Federal Aviation Administration (FAA) as one of ten agencies in the nation to participate in the Unmanned Aircraft Systems (UAS) Integration Pilot Program (IPP). As an IPP participant, the City of San Diego will be working with several public and private sector partners to test the feasibility of advanced UAS operations, including unmanned traffic management, night operations, flight over people, and flight beyond visual line of sight.



A major component of this program is to obtain feedback from the public, the private sector, and government agencies on how UAS, commonly known as “drones,” should be integrated into our neighborhoods. The San Diego IPP directly reports the qualitative and quantitative data to the FAA, providing a unique path to give input to federal decision makers. The feedback received by the program supports the IPP primary objectives to:

- Identify ways to balance local and national interests related to drone integration;
- Improve communications with local, state, and tribal jurisdictions;
- Address security and privacy risks; and
- Accelerate the approval of operations that currently require special authorizations.

The IPP is a continuation of the City of San Diego’s long history as pioneers in the field of aviation. John J. Montgomery made the first controlled flight in Otay Mesa; Lindbergh’s Spirit of St. Louis was designed, built, and tested in San Diego. Additionally, San Diego is the birthplace of Naval Aviation. San Diego’s leadership in this program is the natural progression of airborne innovation, and the City looks forward to continuing to leverage technology to improve the quality of life for all San Diegans.

## Operations Overview

With an international airport, multiple municipal airports, U.S. Navy airspace, U.S. Marine Corps airspace, and the U.S. Coast Guard, San Diego is one of the most complex airspaces in the nation. San Diego's role as a national leader in technology, coupled with complex airspace and weather that allows for year-round testing, makes our region the ideal place for UAS testing. Program operations include:

- **International Collaboration:** San Diego will collaborate with our partners in Mexico to fly UAS across the U.S.-Mexico border. In addition to the international border, this airspace traffic is influenced by Tijuana's General Abelardo L. Rodríguez International Airport, the U.S. Naval Outlying Landing Field at Imperial Beach, Brown Field Municipal Airport, Border Field State Park, and the Tijuana River Valley Regional Park. This collaboration will be the first authorized international UAS flights in the U.S.

- **Public Safety:** UAS will be used to assist the Chula Vista Police Department by providing near-real time video feeds from the scene of an incident to a command center. The Chula Vista Police Department command center team will then be able to determine if additional resources are needed to respond. Resources that are no longer needed at the scene can be reassigned to respond to other calls, saving the public time and money.



- **Food Delivery:** Evolving, intuitive technology and the need to save time has led to an on-demand world, where customers can find what they need an order it instantly. One service industry being revolutionized by technology is food delivery. This operation will include delivering food and beverage by drone in an urban environment.
- **Medical Specimen Transport:** Teaming with UCSD Health, San Diego will be transporting specimens to a lab in order to support the healthcare provider's ability to quickly diagnose and treat patients.

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## Operations and Milestones

The focus of the first half of the program was public outreach, conducting initial operations, and preparing for more routing operations. The first official flight of the program took place in August and included the first program operation to require military authorization. There were many operational successes following the initial launch, including:

- 775 UAS flights;
- Operation of 17 unmanned aircraft vehicles;
- Flight up to 400 feet Above Ground Level;
- Operation up to 30 knots;
- Operation using three unmanned traffic management service supplier systems;
- Successful package delivery test with a mock payload;
- Successful flights within an area with military-controlled airspace;
- Successful food delivery;
- Successful beverage delivery;
- Chula Vista Police Department completed the application for and received their Certificate of Authorization to operate with a Beyond Visual Line of Sight provision
  - This is the first Beyond Visual Line of Sight provision issued to a public safety agency in the program;
- Chula Vista Police Department began responding to live 9-1-1 calls through the “Drone as a First Responder” program
  - Chula Vista Police Department launched an open data dashboard for the public to view activity and see results for themselves:  
<https://www.chulavistaca.gov/departments/police-department/programs/uas-drone-program>;
- Palomar College facilitated a National Science Foundation grant-funded “Developing A Curriculum” (DACUM) series of workshops, resulting in a national framework for a Drone Operations Technician education program.

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## Public Education and Outreach

The San Diego IPP sought input from residents about drone use through presentations, a public workshop, and an online survey. The nonscientific survey was open for public response from October 10th, 2018 to December 31, 2018. Participants answered questions about their familiarity with drones, comfort with drones in their neighborhoods, and interest in emerging applications.

***“Data gathered from these pilot projects will form the basis of a new regulatory framework to safely integrate drones into our national airspace.”***

**- U.S. Secretary of Transportation Elaine L. Chao**

To promote the survey, obtain public feedback, and inform stakeholders of program activity, the San Diego IPP has been involved in briefings, public outreach events, and media interviews. In addition to individual briefings with elected officials, appointed staff, and stakeholders, San Diego IPP conducted presentations and participated at the following, among other events:

- La Jolla Town Council Drone Forum
- Barrio Logan Planning Group
- Biocom/SDSU’s “Mission: STEM Possible”
- Elementary Institute of Science’s “Girls Take Flight”
- DroneCon, presented by Palomar College (approx. 300 attendees)
- City of Poway Community Emergency Response Team (CERT) meeting
- Joint Authorities for Rulemaking on Unmanned Systems Meeting (approx. 120 attendees from 30 countries)
- U.S. Transportation Research Board meeting
- Consumer Technology Association Drone Policy Working Group
- Wall Street Journal Small Business Academy
- Commercial UAV Expo
- Mobile World Congress / International Drone Expo
- Miramar Air Show

During the course of the survey, the San Diego IPP worked to reach as many San Diegans as possible through a multi-media campaign. In the first half of the program, there were 118 news articles related to San Diego IPP activities. Some of the media organizations that covered activities include:

- CBS 8 San Diego
- KPBS San Diego
- KUSI
- La Jolla Light
- La Prensa San Diego
- NBC 7
- San Diego Business Journal
- San Diego Union Tribune
- San Diego Metro Magazine
- Times of San Diego
- Aviation Today
- Business Insider
- Commercial UAV News
- The Drive
- Nextgov
- Robotics Business Review
- Smart Cities Dive
- sUAS News
- UAV Expert News
- UAS Vision
- The Verge

## Community Outreach

The majority of survey respondents reported residency within the City of San Diego (78%). The remaining 22% reported residency in surrounding communities within the region.

Within the sample population, 81% of participants were 35 years old or older.

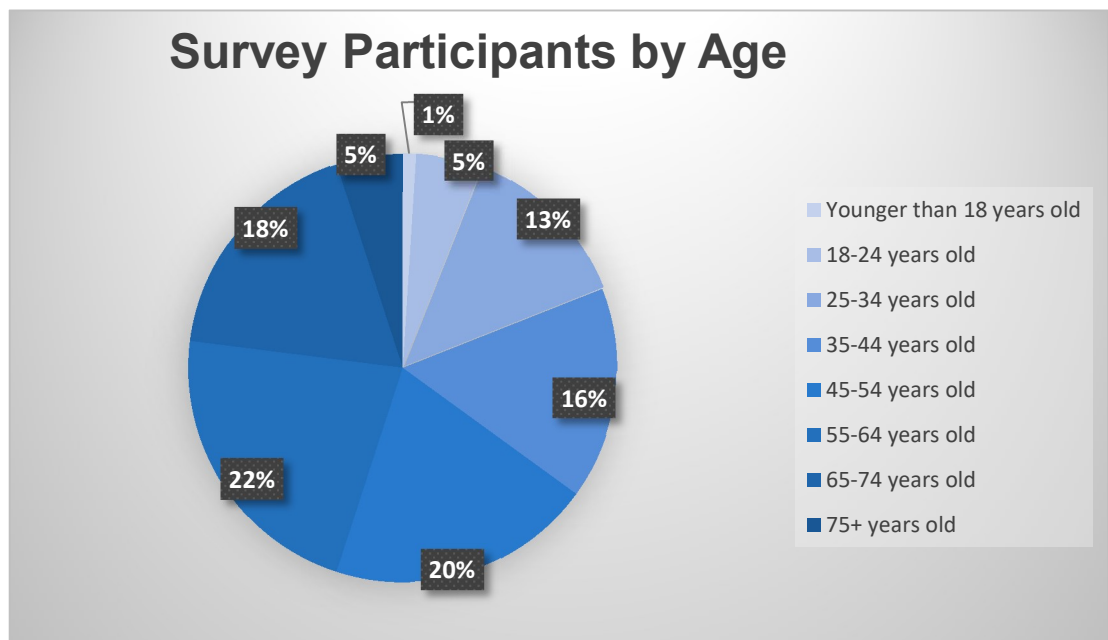


Figure 1

## General Sentiment

Survey results showed respondents from a variety of demographics and experience with drones. An overwhelming majority of respondents did not own a drone at the time of the survey, with 59% never intending to own a drone and 17% wanting to own a drone. Without providing any specific scenario or use case, survey respondents were asked to select a word that best describes their feelings toward drone usage. The majority of respondents chose words with positive connotations.

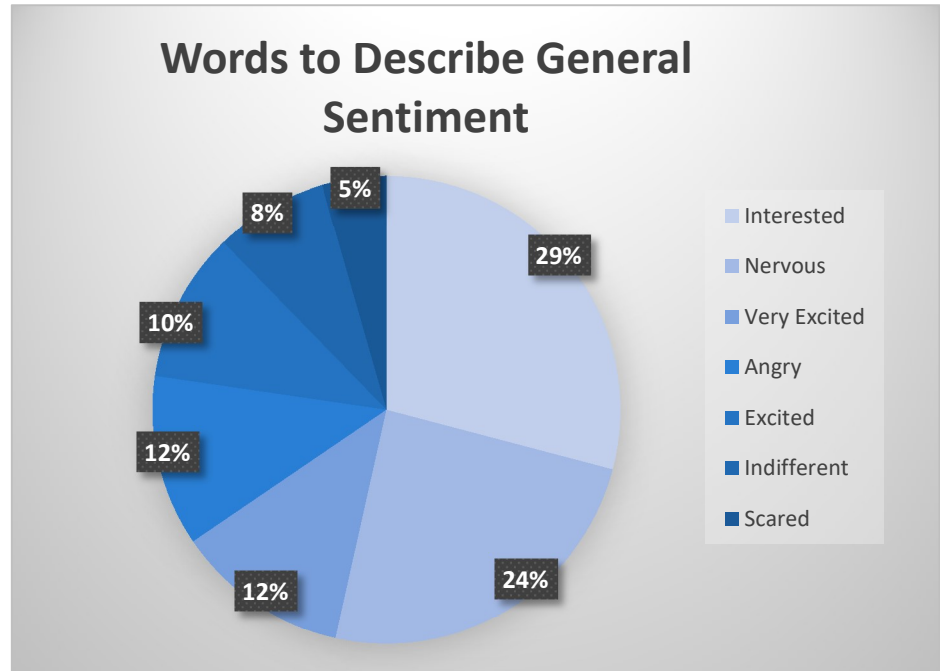


Figure 2

### Residents reported being most excited to see UAS used for:

- Fire/Police applications;
- Infrastructure inspections;
- Construction inspections;
- Medical supply delivery; and
- Package delivery

### Residents reported the top concerns about drones as:

- Privacy;
- Safety of people/objects on the ground;
- Safety of other manned aircraft;
- Terrorism; and
- Noise disturbances

***“Fields that could see immediate opportunities from the program include commerce, photography, emergency management, agriculture support and infrastructure inspections.”***

- Federal Aviation Administration



## Familiarity with Drone Technology

The survey results revealed a significant correlation between familiarity with drone technology and general acceptance of drone use in the community. 39% of all participants reported having Moderate Familiarity (3 out of 5) with drone technology, and 41% reported High Familiarity ( $\geq 4$ ) with drone technology.

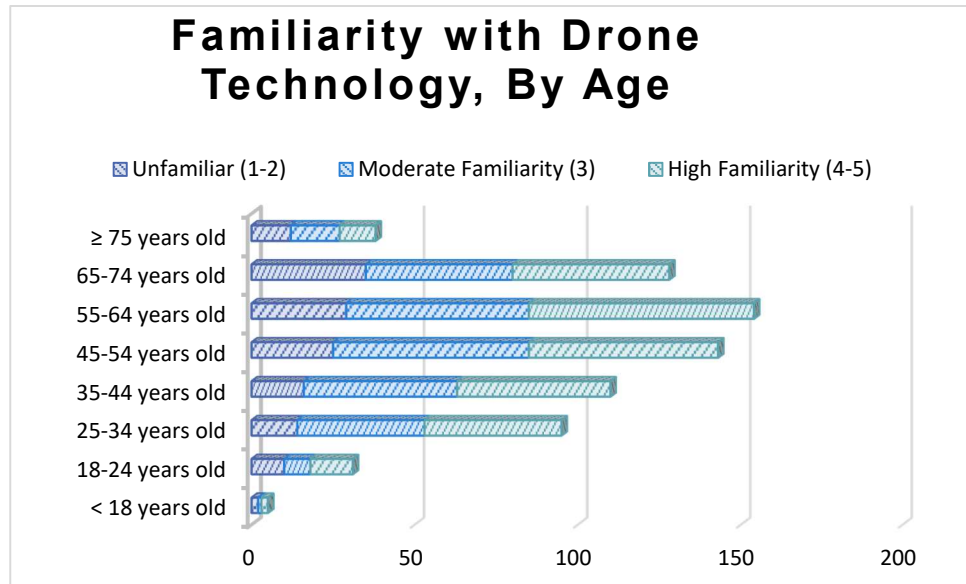


Figure 3

## Belief that Drones Will Have a Net-Positive Impact on Life

Participants were asked, "Do you think drones will have a net-positive impact on your life?" Excluding participants who did not answer this question, 59% indicated they believe drones will have a net-positive impact on their lives.

50% of participants who reported Low Familiarity with drone technology indicated that they believe drones will have a net-positive impact on their life. 70% of those who had high familiarity with drones indicated that they believe drones will have a net-positive impact on their lives:

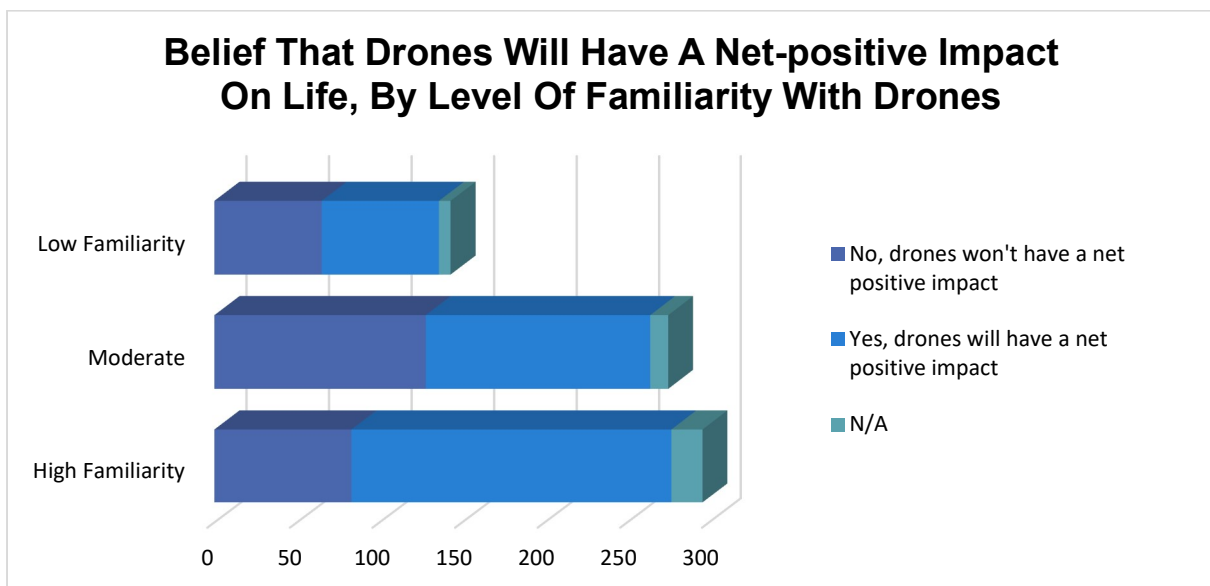


Figure 4

Overall, most age groups believe drones will have a net-positive impact on their lives. However, the majority of respondents from two age groups (people  $\geq 75$  years old and people  $\leq 18$  years old) believe drones will not have a net-positive impact on their lives.

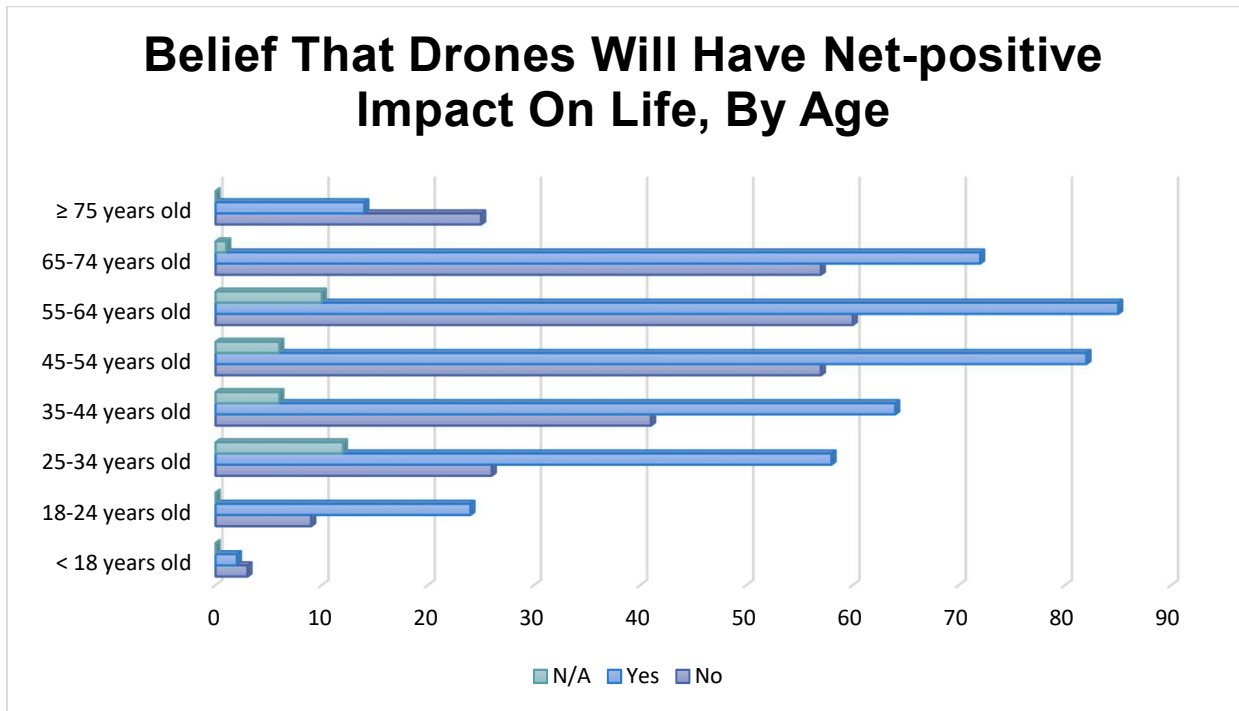


Figure 5

### Level of Comfort with Drones

Survey participants expressed their level of comfort with drones operating in various locations. Only 13% of respondents reported not being comfortable seeing drones operating in any location. Among the locations people reported being most comfortable with seeing drones, the top responses included: Near crime scenes or traffic accidents, at events (concerts & sporting events), in public parks, and on beaches. When asked specifically about drones in transit to a destination flying over or near their homes, responses were mixed:

#### Comfort with Drones Flying Near or Over Your Home:

0 = Not Comfortable At All  
5 = Extremely Comfortable

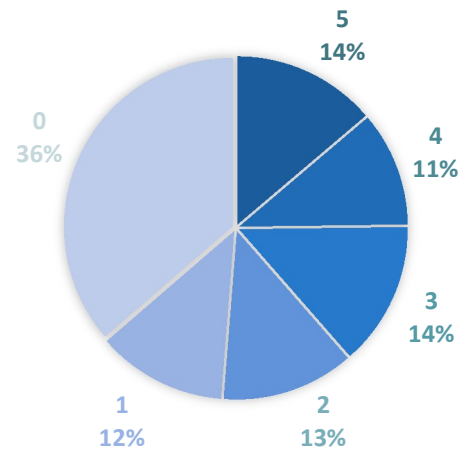
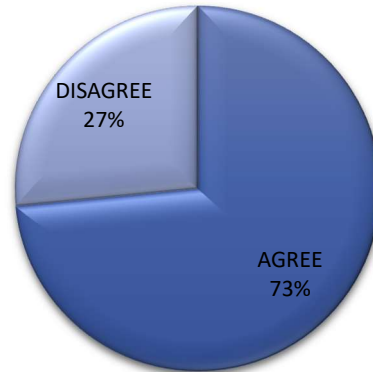


Figure 6

To gauge whether or not public education would have an impact on overall respondents' comfort level with drone integration, the public was asked if they believed that "better education on how drones can improve the safety of my city would make me more comfortable with the use of drones by law enforcement or first responders (Police, Fire, EMTs)."

**Better education on how drones can improve the safety of my city would make me more comfortable with the use of drones by law enforcement or first responders (Police, Fire, EMTs).**



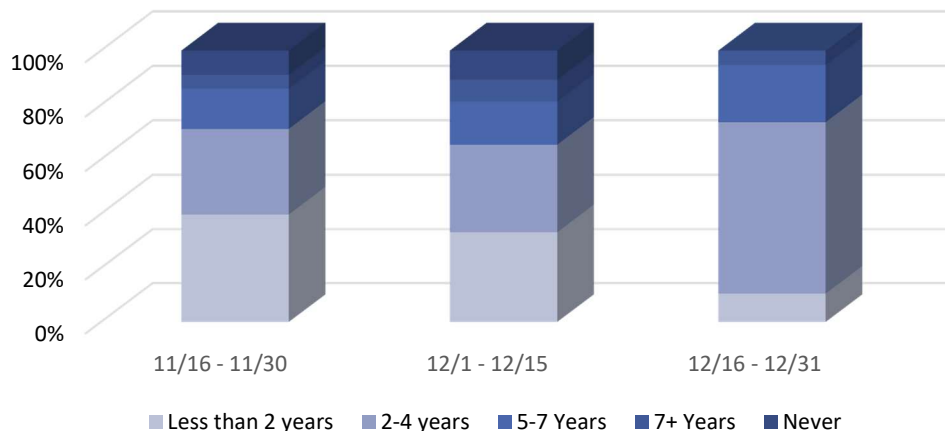
**Figure 7**

Of the participants who reported a low level of comfort with drones overall, 56% indicated that drone education would increase their comfort levels with drones used for a public purpose.

### The Future of Drones

As the program progressed, the community's perception of how soon drones would be integrated into society shifted. During the final two weeks of the survey's administration, a larger percentage of participants anticipated regular governmental and commercial use of drones within the next 2-4 years, compared to earlier responses.

**"How long do you think it will take for drone technology to be utilized regularly," by Time Period**



**Figure 8**

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## Public Comments

The San Diego IPP received comments on the survey form and via email. Comments included:

- “Although we are living in a digital area, privacy is still a fundamental right that we are fiercely committed to protecting.” (Regional organization)
- “Cost of maintaining such innovations are as yet unknown, and of course will impact usage.” (San Diego resident, 92104)
- “I’m most excited about drones being used to transport people in the long run.” (San Diego resident, 92128)
- “As a member of the LGBTQ community in Hillcrest, I would be interested in knowing more about how we can ensure these devices are not weaponized at events such as Pride while still ensuring they are available for public use.” (San Diego resident, 92103)
- “I fully support exploring drones and novel use of them.” (San Diego resident, 92115)
- “As long as drones can be identified, externally or electronically, the downsides can be diminished by working with the operators on best practices.” (San Diego resident, 92131)
- “Thank you for informing us!” (San Diego resident, 92106)
- “Please authorize the use of drones for delivery and other uses in our San Diego community.” (San Diego resident, 92127)
- “Anyone or any organization using a drone should be registered and held accountable for any use of the drone that endangers structures, transportation, and/or individual privacy within their homes. (San Diego resident, 92116)
- “They would be particularly useful in fire-fighting” (San Diego resident, 92115)
- “Privacy and safety should be top priorities.” (San Diego resident, 92110)

***“The program has created a meaningful dialogue on the balance between local and national interests related to drone integration.”***

- Federal Aviation Administration

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## **Drone User Guide**

The San Diego IPP received many questions from residents about what to do in various drone scenarios. In response, the City has released a user-friendly drone operator guide that can be found at [sandiego.gov/uas](http://sandiego.gov/uas).

## **Next Steps**

The San Diego IPP continues to seek feedback from the public, private sector, and government agencies throughout the duration of the program through public workshops, presentations, and a follow-up survey. The City's participation in the FAA UAS Integration Pilot Program gives residents the opportunity to influence how and when drones are integrated into the community. To submit comments or sign up to receive program updates, please visit [www.sandiego.gov/uas](http://www.sandiego.gov/uas).