



# **NORTH CAROLINA**

Department of Transportation



# UAS Regulatory Landscape

Basil Yap, UAS Program Manager

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# UAS Program Office Role



## Regulatory

Permitting commercial N.C. UAS operators



## Education

Safety, opportunity



## Research

Technology benefiting state



## Flight Services

NCDOT, other state agencies, local governments

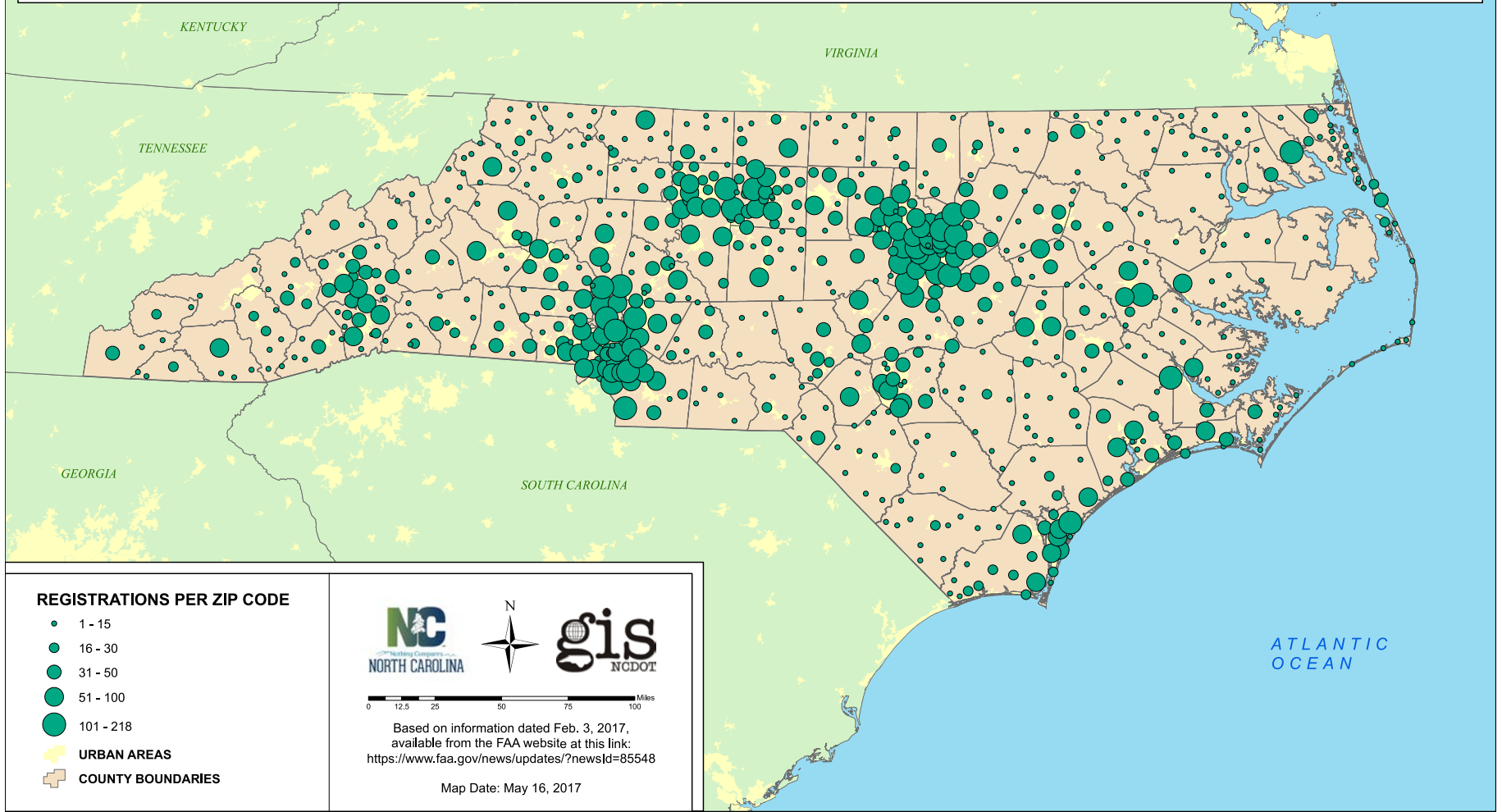


## Government Agency Integration

UAS program development and support

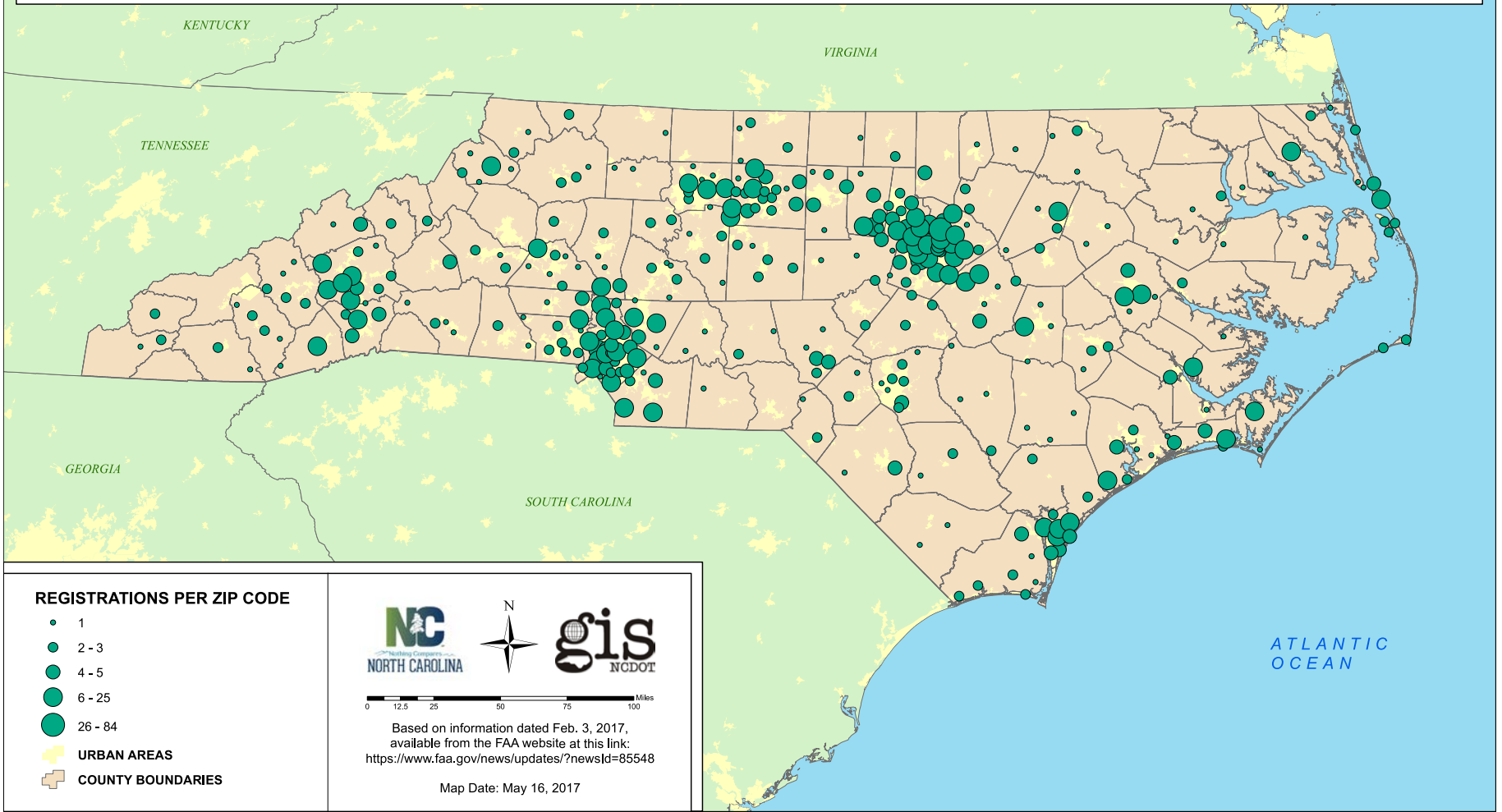
# HOBBYIST DRONE REGISTRATIONS - NORTH CAROLINA

TOTAL REGISTRATIONS IN STATE: 18,934



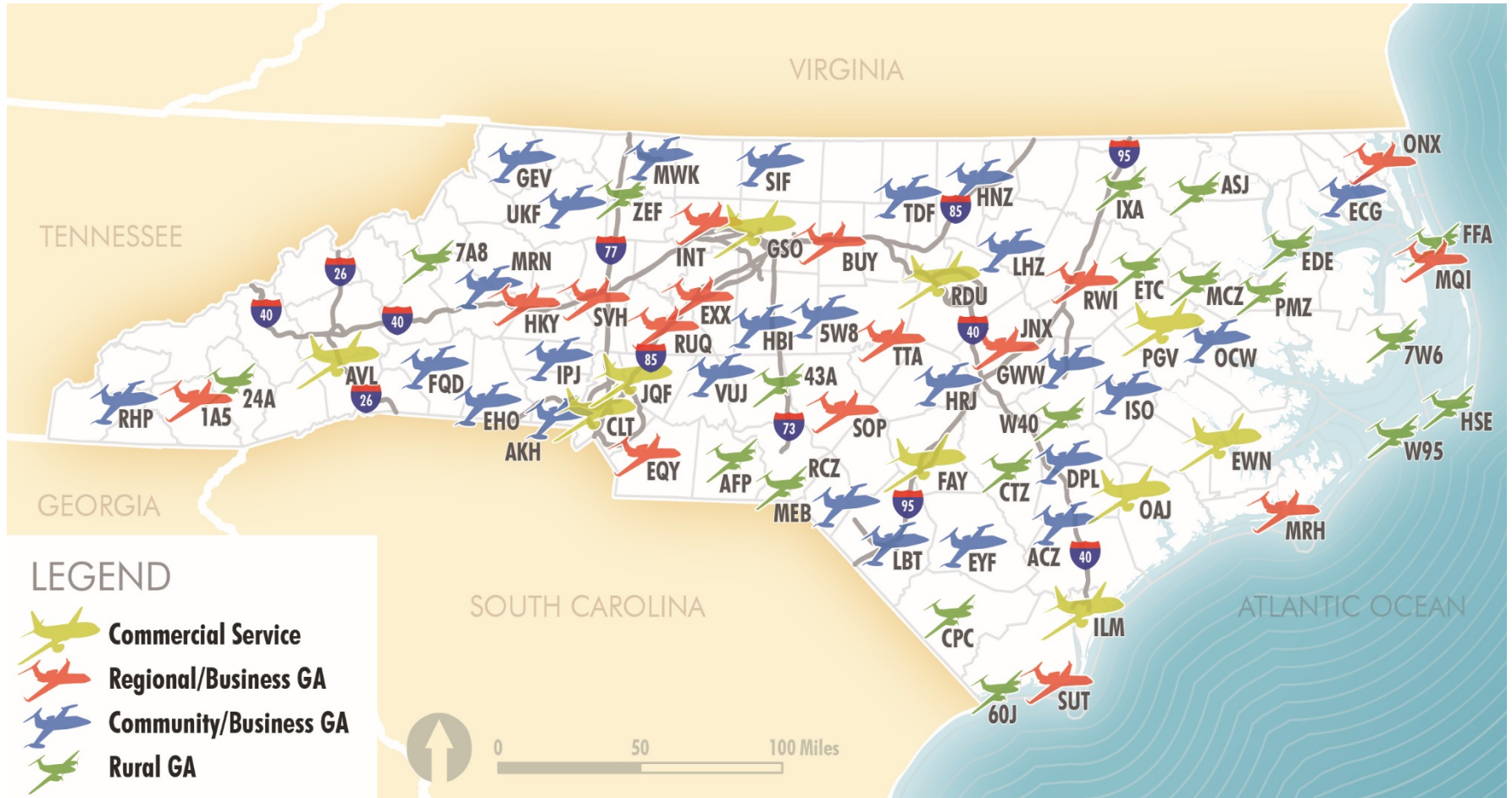
# NON-HOBBYIST DRONE REGISTRATIONS - NORTH CAROLINA

TOTAL REGISTRATIONS IN STATE: 1,319



# North Carolina's Airport System

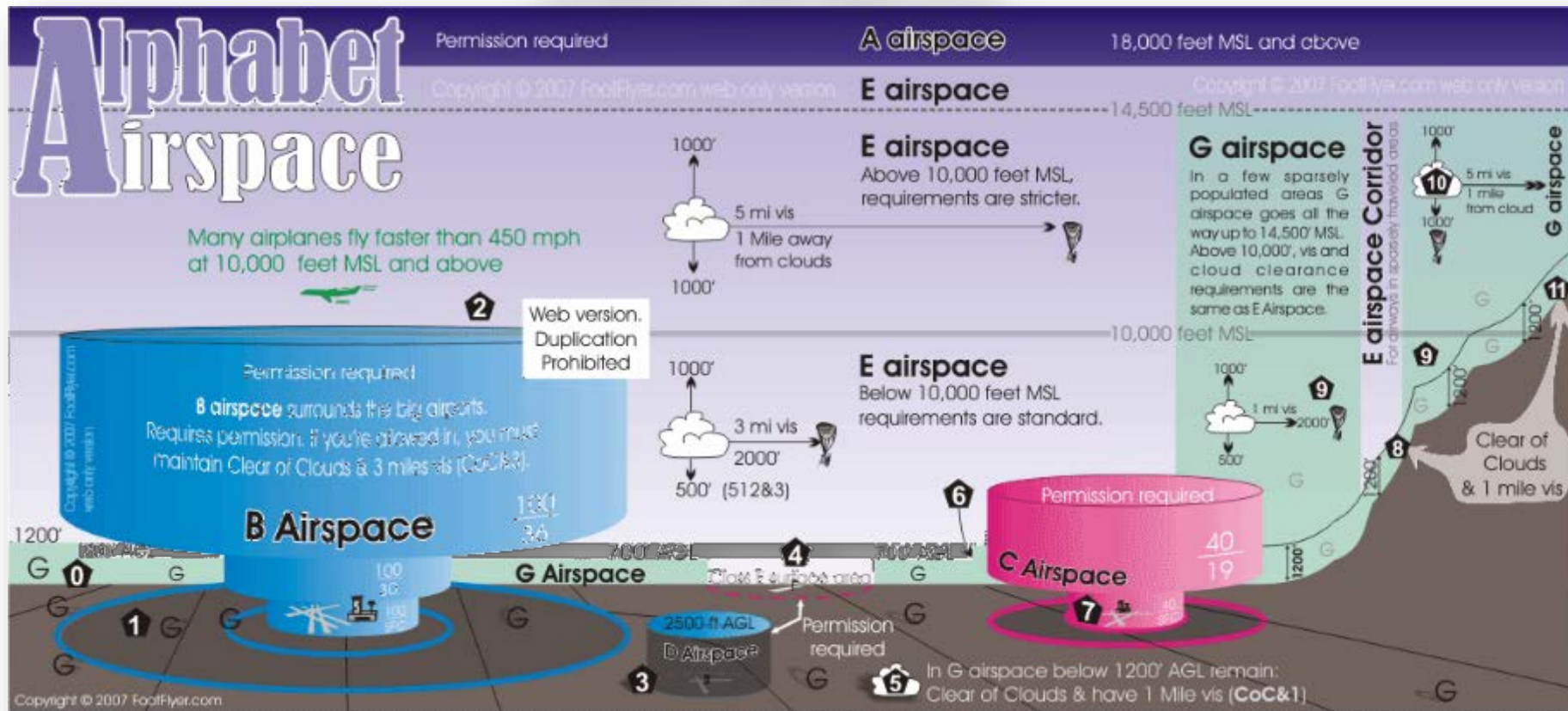
72 Publicly Owned Airports in North Carolina





# Federal UAS Regulations

## Airspace Management



# Airspace Access

Government entities have 2 options for flying UAS:

- Fly under the small UAS rule – follow all rules under 14 CFR part 107, including aircraft and pilot requirements
- or**
- Obtain a blanket public Certificate of Waiver or Authorization (COA) – permits nationwide flights in Class G airspace at or below 400 feet, self-certification of the UAS pilot, and the option to obtain emergency COAs (e-COAs) under special circumstances

# Part 107

- Obtain Remote Pilot Certificate from FAA (2 years)
- 16 years or older
- Aircraft weighs less than 55 lbs.
- Fly during day and civil twilight\*
- Weather minimums including 3 mile visibility
- Max altitude of 400 ft. AGL\*
- Max speed of 100 mph
- Must fly within line of sight\*
- Cannot fly over people not involved with the operation\*
- Class G airspace\*

\*Waivers for certain small UAS operating rules



# Waivable sections of Part 107

- Operation from a moving vehicle or aircraft ( § 107.25) \*
- Daylight operation ( § 107.29)
- Visual line of sight aircraft operation ( § 107.31) \*
- Visual observer ( § 107.33)
- Operation of multiple small unmanned aircraft systems ( § 107.35)
- Yielding the right of way ( § 107.37(a))
- Operation over people ( § 107.39)
- Operation in certain airspace ( § 107.41)
- Operating limitations for small unmanned aircraft ( § 107.51)
- \* The FAA will not waive this section to allow the carriage of property of another by aircraft for compensation or hire.

# How to apply for a waiver

The screenshot shows the FAA website's navigation and content for requesting a Part 107 waiver. The top navigation bar includes the United States Department of Transportation logo, the FAA Home, Jobs, News, About FAA, A-Z Index, and a search bar. Below this is a secondary navigation bar with categories like Aircraft, Airports, Air Traffic, Data & Research, Licenses & Certificates, Regulations & Policies, and Training & Testing.

The main content area is titled "Request a Part 107 Waiver or Operation in Controlled Airspace" and includes a breadcrumb trail: FAA Home > Unmanned Aircraft Systems > Request a Part 107 Waiver or Operation in Controlled Airspace. A yellow warning box states: "The previous Part 107 waiver and authorization form has been split into two separate request forms — one for airspace waiver/authorization requests, and another for non-airspace Part 107 waiver requests. If you need both an airspace waiver/authorization and a non-airspace waiver, you will need to submit each form separately. See directions below. View instructions for extending an Airspace Authorization." Below this, a text block says: "The FAA will strive to review and issue decisions on waiver and authorization requests within 90 days. Processing times will vary based on the complexity of your request." A "Directions" section is also visible.

On the left, a sidebar lists various resources under "Unmanned Aircraft Systems", including "Getting Started", "Beyond the Basics", "Where to Fly", "Wildfires", "Frequently Asked Questions", "Programs, Partnerships and Opportunities", "Research & Development", "Resources", "Contact Us", "Report an Accident", "Request a Part 107 Waiver or Operation in Controlled Airspace" (with a right-pointing arrow), "Part 107 Waivers Granted", and "UAS Facility Maps".

On the right, a "Top Tasks" section lists: "View the 2017 Symposium Presentations", "Register your UAS", "Become a UAS pilot", "Request a Part 107 Waiver or Operation in Controlled Airspace", and "Report an Accident". Below that, a "More Information" section lists: "14 CFR Part 107" and "§ 107.205 List of Regulations Subject to Waiver".

[https://www.faa.gov/uas/request\\_waiver/](https://www.faa.gov/uas/request_waiver/)



# Which COA works for me?

- **Blanket Area Public Safety (BAPS) COA**
  - Class G, below 400 ft, restrictions based on distances from airports/helipads, 55lbs or less
  - Meets 75% of Public Agencies missions
- **Jurisdictional COA**
  - Expand operations into D, E, C and B airspace
  - Night operations
- **Special Government Interest COA**
  - In areas not covered in previous COAs
  - Temporary Flight Restrictions (TFRs)

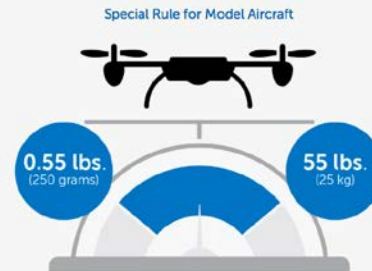
# Federal UAS Regulations



- UAS over .55 lbs. must be registered with the FAA
- <https://faadronezone.faa.gov>
- \$5 registration fee
- UAS must be labeled
- Hobbyist – One number for all aircraft
- Non-Hobbyist – Each aircraft has unique number

## Do I need to register my Unmanned Aircraft?

You need to register your aircraft if it weighs between **0.55 lbs.** (250 grams) and up to **55 lbs.** (25 kg) and you are not flying under the Special Rule for Model Aircraft.



You will be subject to civil and criminal penalties if you meet the criteria to register an unmanned aircraft and do not register.

REGISTER

# Military Airspace



- National Security UAS Flight Restrictions
- FAA and DoD have restricted UAS operations over 132 military facilities.
- The restrictions are up to 400' AGL, 24 hours a day, 7 days a week.
- Facilities can be found here: <http://uas-faa.opendata.arcgis.com/>
- Other FAA restricted areas for civil operations apply to UAS operators



County	Base	FAA ID
Onslow	Marine Corps Air Station New River	20170410-DOD-New River-MCAS New River 2
Carteret	MCALF Bogue, Marine Corps Air Station Cherry Point	20161222-DOD-MCALF Bogue-Auxiliary Landing Field (ALF) Bogue CDSA by NOTAM during scheduled operations only.
Jones	MCOLF Oak Grove, Marine Corps Air Station Cherry Point	20161222-DOD-Oak Grove-Outlying Landing Field (OLF) Oak Grove CDSA by NOTAM. Heavy use as an uncontrolled airport.
Richmond	Fort Bragg, NC	20161222-DOD-Fort Bragg-Mackall AAF
Cumberland	Fort Bragg, NC	20161222-DOD-Fort Bragg-Simmons AAF
Stanly	Stanly County, NC	20161222-DOD-Stanly County-Stanly County
Onslow	MCB Camp Lejeune	20170508-DOD-MCB Camp Lejeune

# State UAS Regulations



- North Carolina General Assembly passed UAS bills into law in 2013, 2014, 2015, 2016, 2017
- Chapter 14 – Criminal Law
  - § 14-7.45 Crimes committed by use of UAS
  - § 14.280.3 Interference with manned aircraft by UAS
  - § 14.401.24 Unlawful possession and use of UAS (Weapon attached)
  - § 14.401.25 Unlawful distribution of images
- Chapter 15A – Criminal Procedure
  - § 15A-300.1 Restrictions on use of UAS
  - § 15A-300.2 Regulation of launch and recovery sites
  - " § 15A-300.3. Use of an unmanned aircraft system near a confinement or correctional facility prohibited.
- Chapter 63 – Aeronautics
  - § 63-95 Training required for operations of UAS (Knowledge Testing)
  - § 63-96 Permit required for commercial operation of UAS
- Chapter 113 – Conservation and Development
  - § 113-295 Unlawful harassment of persons taking wildlife resources

# State UAS Regulations



- § 63-95 Training required for operations of UAS (Knowledge Testing)
  - The Division of Aviation will develop and administer a UAS Knowledge Test
  - Applicable to both government and commercial operators who operate in North Carolina
  - The test can be completed online and is the first part of the permitting process
- § 63-96 Permit required for commercial operation of UAS
  - Must be 16 years of age
  - Must provide a drivers license number
  - Must meet the federal requirements for access to the airspace (Remote pilot certificate)
  - Applies to commercial operators only
  - Application for permit is completed online



# NCDOT Aviation UAS Website – One Stop

**NCDOT** NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
Connecting people, products, and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina.

Home | About | eNewsletter | Careers | Contact | Searching for... | Go | NCDOT Mobile

Business | DMV | Newsroom | Programs | Projects | Travel & Maps

Home » Division of Aviation » Operating Unmanned Aircraft Systems (UAS) in North Carolina

## Operating Unmanned Aircraft Systems (UAS) in North Carolina

**Do you know the requirements to fly a drone in North Carolina?**

Flying safely is the responsibility of every UAS operator. Download the Study Guide and learn all the rules & regulations in North Carolina.

[Download Study Guide](#)

[Start Knowledge Test](#)

### UAS Operator Permits

A permit is required for [commercial](#) & [government](#) drone operations in North Carolina. Passing the [UAS Knowledge Test](#) is a requirement for obtaining a permit.

[Start Permitting Process](#)

### About UAS Program

The Division of Aviation's main goal is to ensure that drones flying within North Carolina are flown safely and responsibly. [Read more...](#)

## Types of UAS Operation

Detailed information, guidelines and restrictions for drone pilots.

[Commercial](#) | [Government Operations](#) | [Recreational](#)

Take the Test

Get Permit

Learn

*Different types of UAS operations*

Help

*Access FAQs, Fact Sheets, NC Statues*

# State UAS Regulations



## HB337

- Clarifies model aircraft applicability
- Remove restrictions around special imaging
- Adds emergency management exception
- Brings the NC UAS Permit in line with Federal requirements (age and Identification)
- Signed into law July 21, 2017
- Effective December 1, 2017

## HB128

- Establishes § 15A-300.3. Use of an unmanned aircraft system near a confinement or correctional facility prohibited.
- Exceptions for commercial operators
- Signed into law July 25, 2017
- Effective December 1, 2017



# UAS Prison Signs



## New signs prohibiting drone usage



Juvenile Facilities  
SKU: [20-9723-61](#)



For Prisons  
SKU: [20-9722-61](#)



For All Other  
Correctional Facilities  
SKU: [20-9721-61](#)

A new General Statute went into effect December 1, 2017 prohibiting Drones around all Correctional Facilities including Jails and Federal Facilities. The statute also requires that signage be posted every 100 yards around the perimeter of each facility.

\$14.80 each

[ORDER NOW](#)

# UAS Operator Permits

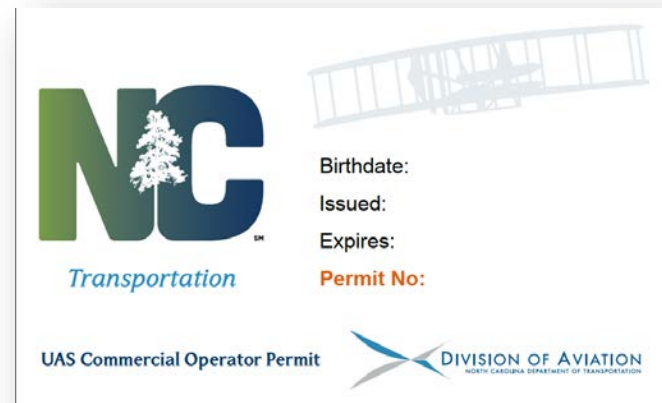
## Federal

- Pass a UAS knowledge test at FAA testing center and TSA background check
- Apply for Remote Pilot Certificate



## North Carolina

- Pass NC UAS Knowledge test online
- Apply for commercial or government NC Operator Permit online
- [www.ncdot.gov/aviation/uas](http://www.ncdot.gov/aviation/uas)



# NC UAS Operator Checklist

- ✓ FAA Authorization – Must obtain:
  - Remote Pilot Certificate (under Part 107)
  - Or Certificate of Authorization/Waiver (COA)
- ✓ FAA UAS Registration
  - All UAS/Drones above .55lbs
- ✓ NC Knowledge Test
  - Take and pass the test on the NCDOT Division of Aviation website
- ✓ NC Government Operator Permit
  - Once you have passed your NC UAS Knowledge Test, you may obtain a permit
  - Need to have an airman certificate to complete the process
  - No fee charged at this time
- ✓ Insurance (best practice)

# NCDOT UAS Resource Page

Publicly available online:

- List of NC General Statutes
- Best Practices
- UAS Research Reports
- UAS Related Links
- FAA Resources
- Law Enforcement Resources
- Emergency Management Resources
- Airport Operator Resources
- <https://connect.ncdot.gov/resources/Pages/Aviation-Division-Resources.aspx>

**Connect NCDOT**  
BUSINESS PARTNER RESOURCES

Home Help Team Sites Site Map

Doing Business Bidding & Letting Projects **Resources** Local Governments

Asset Management Environmental Geotechnical GIS Hydraulics Materials & Tests Photogrammetry Specifications Structures Traffic Safety

**Aviation Division Resources Site**  
Resources for Unmanned Aircraft Systems.

Connect NCDOT Resources Aviation Division Resources Site

**Summary & Contact Info**

The Division of Aviation's goal is to ensure that drones flying within North Carolina are flown safely and responsibly. The purpose of this resource page is to provide state and local governments the appropriate tools to create and manage UAS programs to support their specific operational needs.

The Division of Aviation encourages individuals and organizations to take time to make sure they understand and comply with all UAS/drone regulations. If you have any further questions please contact us.

Email: [UAS@ncdot.gov](mailto:UAS@ncdot.gov)

Phone: (919) 814-0550

**Documents**

**AIRPORTS**

- [Airport Operator Guidelines for Drones near Airports](#)
- [UAS Airport Notification Form](#)
- [FAA Letter to Airports on UAS Detection Testing](#)

**EMERGENCY MANAGEMENT**

- [NCDOT UAS Airspace Integration Exercise - Final Report](#)
- [NCDOT UAS Airspace Integration Exercise - Executive Summary](#)
- [NCDOT UAS Airspace Integration Exercise - Reference Information](#)
- [NCDOT UAS Airspace Integration Exercise - Best Practices](#)
- [NCDOT UAS Airspace Integration Exercise - Pocket Guide Template](#)
- [UAS Search and Rescue Manual - Addendum - July 2016](#)
- [White Paper - Using Unmanned Aerial Systems During a Natural Disaster in Texas](#)
- [Special Governmental Interest \(SGI\) Addendum - \(Emergency COAs\)](#)

**FAA RESOURCES**

- [Safety Guidelines for Model Aircraft \(UAS\)](#)

**Helpful Links**

- [NCDOT Division of Aviation UAS Website](#)
- [Federal Aviation Administrations UAS Website](#)
- [Federal Aviation Administration UAS Registration](#)

# FAA Public Safety Webinars



The FAA will be Hosting webinars on the third Wednesday of every month to discuss topics of interest for public safety agencies. This will be a very Basic Agenda:

- Hot Topics
- Operational considerations (COAs, best practices, etc.)
- Enforcement considerations (case studies and legal issues)
- FAQs or Q&A

To register for the webinar please click on this link to register for the webinar: <https://attendee.gotowebinar.com/rt/3721034706553766401>

4-1-1 for 9-1-1: Drone Information for Public Safety Personnel

# Questions

[www.ncdot.gov/aviation/uas](http://www.ncdot.gov/aviation/uas)

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# NORTH CAROLINA

Department of Transportation



# UAS for Law Enforcement

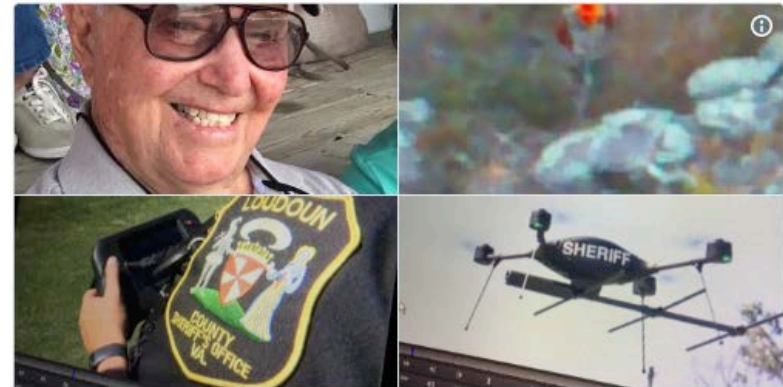
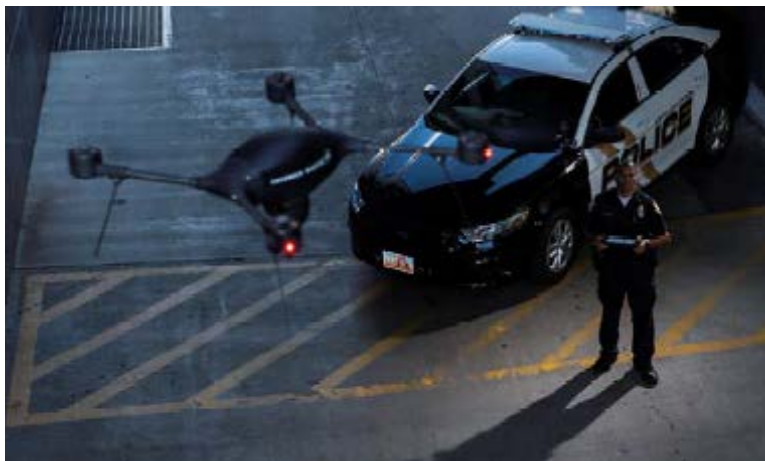
Chris Gibson

January 24, 2018

# Applications

There are tons of opportunities for using UAS to support Law Enforcement ...

- Search & Rescue
- Public Events Security
- Fugitive Apprehension
- SWAT/Tactical Team Support
- Crime Scene Documentation
- Emergency Response



Jay Korff ✓  
@ABC7Jay



92yo veteran Bill McDonnell lost track of time during solo hunting trip & slept outside o/night, no sleeping bag, in rugged terrain. @LoudounSheriff's new drone found him uninjured the next day only 20 mins after launch. Image below shows drone spotting McDonnell's hat. @ABC7News

9:10 PM - Dec 18, 2017

1 19 39

<http://wjla.com/news/local/92-year-old-wwii-veteran-caught-in-thickets-found-by-search-and-rescue-drone>

# The Mission

Why do you have/are you developing a UAS program?

What is your **PRIMARY** mission?

- Your **PRIMARY** mission should drive your equipment selection(s), personnel assignments, procedures, etc.
- Think of the main mission you want to accomplish with this tool -
  - Is it Search and Rescue, Support of Tactical Teams, Public Events Security, Crime Scene Investigations?
  - Think about how you “sell” this need to your governing political authority and to the public.

**Complimentary missions**

- *After* your **PRIMARY** mission, what are the **TOP 2 or 3 complimentary** missions you need to support with this tool?
  - Crime Scene or Traffic Accident documentation/investigation support, Fugitive recovery, others

**AVOID MISSION CREEP**

# Mission Requirements

*Now that you've defined what you need to do, time to determine what you need to do it ...*

## To accomplish your Primary and Top 2 or 3 Complimentary Missions

- Do you need to operate at night?
- Do you need to operate in bad weather, cold weather?
- Do you have significant airspace considerations?
- Do you need aerial mapping capability? If so, for what end purpose and how accurate does it need to be?
- Do you plan to collect evidentiary data with the system?
- What are the key characteristics of your most probable operating environments?
  - Urban/Suburban, Wooded Areas, Wide Open Spaces, Large areas at a time?
- In addition to operating the UAS, what other key skills are needed by the officers executing the mission?
- Concept of Operations – do you need to be able to share data in real time or near real time with others (Command, support personnel, volunteers)?

*The answers to these questions will help determine the key requirements for your equipment, software, personnel and procedures*

***“Professional” is a marketing term – look at the specs***

# Governance, Policies & Procedures

*More than just the equipment...*

## Governance

- Understand the Federal and State Regulations – what you can and can't do
- Who needs to sign off on use of the equipment?

## Policies & Procedures

- Borrow and adapt policies and procedures
  - Remember, for the most part the UAS is a tool to support things you already do. You likely have policies and procedures that can be adapted for missions where UAS are used.
  - Where needed, try to Borrow from other departments for UAS specific procedures
- Data Security – where does your data go and who has access to it
  - This is a huge one. Many of the Chinese and Eastern European made drones send data automatically and without notifying you back to their company servers – even if you don't "record" video. It's buried right there in their End User Agreements.
  - Think hard about whether this is an issue for your organization or not.
  - How does that square with your IT policies, your evidence procedures, your requirements to safeguard public and private information?
- Insurance – Self Insured? Additional policy for equipment and/or liability?

## Personnel

*It's about the mission, and the people ...*

### Personnel

- How many trained operators do you need to make sure you have people on duty/on call at all times? Is that necessary for your mission(s)?
- Training requirements – FAA & State permitting, initial & Currency training
- Are you going to put together a special team for UAS or place UAS responsibility with an already established team?
- Other key skills are needed by the officers executing the missions
  - If your PRIMARY mission is Search and Rescue for example, do you want to focus your UAS team on personnel that already have training in Search and Rescue?

**In the end, the mission is the objective, the UAS is a tool.**

**The most successful UAS programs are using teams made up of personnel that are experienced in the primary mission and then are cross trained in the use of the UAS to support that mission.**

# Questions

[www.ncdot.gov/aviation/uas](http://www.ncdot.gov/aviation/uas)

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NC DEPARTMENT OF  
**INSURANCE**  
OFFICE OF STATE FIRE MARSHAL



**DIVISION OF AVIATION**  
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION



# Small Unmanned Aircraft Systems (sUAS) Awareness Course:

- Joint venture from NCDOT & NC OSFM
- Purpose is to educate NC emergency responder staff in the safe and legal use of Small Unmanned Aircraft Systems (sUAS) or drones within the state.
- Focuses on the regulated fundamentals to operate a sUAS in the airspace above our state.
- This course will serve as a starting point for any agency in developing a sUAS program and implementing this technology.
- NC OSFM has co-developed a sUAS Policy Manual template that can be adapted to provide guidelines and structure in the formation of a drone program.

# sUAS Course Specifics:

- Initial Course ( Part 1 of 2) to provide the sUAS requirements for FAA & NCDOT licensure in a structured presentation.
- NCDOT Knowledge Test Course presentation
- NCDOT Knowledge Test preparation
- Review FAA & NCDOT Regulations
- Review of FAA & NCDOT types of Operator Permits
- Review of Recreational Operator requirements
- Review of Commercial Operator requirements
- Review of Government Operator requirements
- Template for a sUAS Policy Manual

# NC OSFM sUAS Support:

- OSFM website being modified for sUAS section
- Insurance provided for both the Operator and Equipment in the performance of a sUAS mission operating as a State Agency.( Risk Management \_ Signup Required)
- Informational resource providing links to other State Agencies for specific sUAS topics.
- Contact information where sUAS classes are being given at local Community Colleges.
- Schedule for OSFM sUAS Awareness classes.
- Contact information of Fire & Rescue departments with sUAS programs in use.
- Contact information of Fire & Rescue departments with sUAS programs in the development phase.
- Template for developing a sUAS Policy Manual.
- Templates for sUAS program componentry lists.

# NFPA 2400:

## Standards for Small Unmanned Aircraft Systems (sUAS) Used for Public Safety Operations

NFPA 2400



### Organization Deployment and Considerations for sUAS

- program criteria
- operational needs assessment
- purchase specification

### Professional Qualifications for sUAS Public Safety Personnel

- JPRs for remote pilot in command (RPIC) and for visual observer
- sUAS quarterly operations

### Maintenance of sUAS

- routine service
- elements of a maintenance program
- authorized personnel



# More Resources on sUAS:

- <https://www.nfpa.org/News-and-Research/Publications/NFPA-Journal/2017/July-August-2017/Features/Drones>
- [https://www.nfpa.org/assets/files/AboutTheCodes/2400/NFPA\\_2400\\_sUAS\\_Fact\\_Sheet\\_2017.pdf](https://www.nfpa.org/assets/files/AboutTheCodes/2400/NFPA_2400_sUAS_Fact_Sheet_2017.pdf)
- <https://www.iafc.org/topics-and-tools/communications-technology/uas-toolkit/uas-resource/uas-policy>
- <https://www.iafc.org/on-scene/on-scene-article/unmanned-aerial-systems-potential-meets-reality>
- <https://www.ncdot.gov/aviation/uas/>
- [http://www.ncdoi.com/OSFM/Fire\\_Rescue\\_Training/](http://www.ncdoi.com/OSFM/Fire_Rescue_Training/)
- <https://faadronezone.faa.gov/#/>