U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Maria Cantwell
Chair
Committee on Commerce, Science, and Transportation
United States Senate
Washington, DC 20510

Dear Chair Cantwell:

This letter is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 364 of the FAA Reauthorization Act of 2018 (Public Law 115-254).

In Section 364 of the FAA Reauthorization Act of 2018, the FAA was directed to review the process used for interagency coordination of counter-unmanned aircraft systems (C-UAS) activity. Congress directed the review to include the standards being utilized for operating a C-UAS system and similar interagency coordination processes already in use. Congress further directed the Administrator to submit a report on the Administration's activities related to C-UAS systems. The attached report responds to this request.

A similar letter has been sent to the Ranking Member of the Senate Committee on Commerce, Science, and Transportation; the Chairman and Ranking Member of the Senate Committee on Armed Services; the Chairman and Ranking Member of the House Committee on Transportation and Infrastructure; and the Chairman and Ranking Member of the House Committee on Armed Services.

Sincerely,

Billy Nolen
Acting Administrator

Enclosure

U.S. Department
of Transportation
**Federal Aviation
Administration**

Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Ted Cruz
Ranking Member
Committee on Commerce, Science, and Transportation
United States Senate
Washington, DC 20510

Dear Ranking Member Cruz:

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800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Jack Reed
Chairman
Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Chairman Reed:

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800 Independence Ave., S.W.
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March 17, 2023

The Honorable Roger Wicker
Ranking Member
Committee on Armed Services
United States Senate
Washington, DC 20510

Dear Ranking Member Wicker:

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800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Sam Graves
Chairman
Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Graves:

This letter is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 364 of the FAA Reauthorization Act of 2018 (Public Law 115-254).

In Section 364 of the FAA Reauthorization Act of 2018, the FAA was directed to review the process used for interagency coordination of counter-unmanned aircraft systems (C-UAS) activity. Congress directed the review to include the standards being utilized for operating a C-UAS system and similar interagency coordination processes already in use. Congress further directed the Administrator to submit a report on the Administration's activities related to C-UAS systems. The attached report responds to this request.

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Acting Administrator

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800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Rick Larsen
Ranking Member
Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

Dear Ranking Member Larsen:

This letter is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 364 of the FAA Reauthorization Act of 2018 (Public Law 115-254).

In Section 364 of the FAA Reauthorization Act of 2018, the FAA was directed to review the process used for interagency coordination of counter-unmanned aircraft systems (C-UAS) activity. Congress directed the review to include the standards being utilized for operating a C-UAS system and similar interagency coordination processes already in use. Congress further directed the Administrator to submit a report on the Administration's activities related to C-UAS systems. The attached report responds to this request.

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Office of the Administrator

800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Mike Rogers
Chairman
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Chairman Rogers:

This letter is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 364 of the FAA Reauthorization Act of 2018 (Public Law 115-254).

In Section 364 of the FAA Reauthorization Act of 2018, the FAA was directed to review the process used for interagency coordination of counter-unmanned aircraft systems (C-UAS) activity. Congress directed the review to include the standards being utilized for operating a C-UAS system and similar interagency coordination processes already in use. Congress further directed the Administrator to submit a report on the Administration's activities related to C-UAS systems. The attached report responds to this request.

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800 Independence Ave., S.W.
Washington, DC 20591

March 17, 2023

The Honorable Adam Smith
Ranking Member
Committee on Armed Services
U.S. House of Representatives
Washington, DC 20515

Dear Ranking Member Smith:

This letter is the Federal Aviation Administration's (FAA) report to Congress on the progress in meeting the requirements of Section 364 of the FAA Reauthorization Act of 2018 (Public Law 115-254).

In Section 364 of the FAA Reauthorization Act of 2018, the FAA was directed to review the process used for interagency coordination of counter-unmanned aircraft systems (C-UAS) activity. Congress directed the review to include the standards being utilized for operating a C-UAS system and similar interagency coordination processes already in use. Congress further directed the Administrator to submit a report on the Administration's activities related to C-UAS systems. The attached report responds to this request.

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Sincerely,

Billy Nolen
Acting Administrator

Enclosure

Federal Aviation Administration

REPORT TO CONGRESS:

Counter-Unmanned Aircraft Systems Interagency Coordination Process

FAA Reauthorization Act of 2018 (Pub. L. No. 115-254) – Section 364(b)

Executive Summary:

Section 364 of the *FAA Reauthorization Act of 2018*, Public Law No. 115-254, requires the Federal Aviation Administration (FAA) to review and report on the interagency coordination processes and standards for the authorized use of Counter-Unmanned Aircraft Systems (C-UAS) systems. The FAA submits this report in response to that requirement.

This report addresses how the FAA coordinates activities with federal agencies that are authorized to use UAS detection and mitigation technology. The report includes an assessment of the standards, efficiency, and effectiveness of the coordination process and protocols. It also outlines the challenges the FAA will face in the future as more UAS enter the National Airspace System (NAS).

Since late 2017, the FAA has collaborated with its federal partners, the Departments of Defense (DOD), Energy (DOE), Justice (DOJ), and Homeland Security (DHS), to establish a consistent and repeatable coordination process, including operational frameworks and consideration of equities. These operational frameworks include baseline roadmaps for each federal partner that informed objective standards upon which the FAA and its federal partners agreed. These objective standards, in turn, serve as checklists to ensure uniformity of the process. Together, the roadmaps and objective standards link the tasks, documents, and artifacts to the authorizing legislation ensuring that the coordination process for each C-UAS deployment is well-documented and standardized based on the legislation under which each department or agency operates.[1]

Actions and updates related to meeting the objective standards occur during regularly scheduled collaborative process meetings. Over time, the FAA and its federal partners have been able to standardize and mature this process, building off lessons learned and continual coordination, while improving efficiencies and effectiveness as they collectively gained more experience with the use of UAS detection and mitigation systems in the NAS. This standardized approach has enabled the FAA's federal partners to protect over 100 fixed facilities, all domestic naval warships, and dozens of large-scale events.

The FAA is thankful for its federal partners' close coordination, which enables the FAA to ensure that technologies or systems developed, tested, and deployed by federal departments and agencies do not adversely impact or interfere with safe airport operations, navigation, air traffic services, or the safe and efficient operation of the NAS.

[1] *See*, 10 U.S.C. § 130i, 50 U.S.C. § 2661, and 6 U.S.C. § 124n.

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I. Legislative Mandate:

Section 364 of Public Law 115-254 states:

(a) IN GENERAL. -- Not later than 60 days after that date of enactment of this Act, the Administrator, in consultation with government agencies currently authorized to operate Counter-Unmanned Aircraft System (C-UAS) systems within the United States (including the territories and possessions of the United States), shall initiate a review of the following:

(1) The process the Administration is using for interagency coordination of C-UAS activity pursuant to a relevant Federal statute authorizing such activity within the United States (including the territories and possessions of the United States).

(2) The standards the Administration is utilizing for operation of a [sic] C-UAS systems pursuant to a relevant Federal statute authorizing such activity within the United States (including the territories and possessions of the United States), including whether the following criteria are being taken into consideration in the development of the standards:

(A) Safety of the national airspace.

(B) Protecting individuals and property on the ground.

(C) Non-interference with avionics of manned aircraft, and unmanned aircraft, operating legally in the national airspace.

(D) Non-interference with air traffic control systems.

(E) Adequate coordination procedures and protocols with the Federal Aviation Administration during the operation of C-UAS systems.

(F) Adequate training for personnel operating C-UAS systems.

(G) Assessment of the efficiency and effectiveness of the coordination and review processes to ensure national airspace safety while minimizing bureaucracy.

(H) Best practices for the consistent operation of C-UAS systems to the maximum extent practicable.

(I) Current airspace authorization information shared by automated approval processes for airspace authorizations, such as the Low Altitude Authorization and Notification Capability.

(J) Such other matters the Administration considers necessary for the safe and lawful operation of C-UAS systems.

(3) Similar interagency coordination processes already used for other matters that may be used as a model for improving the interagency coordination for the usage of C-UAS systems.

(b) REPORT. -- Not later than 180 days after the date upon which the review in subsection (a) is initiated, the Administrator shall submit to the Committee on Transportation and Infrastructure of the House of Representatives, and the Committee on Armed Services of

the House of Representatives, and the Committee on Commerce, Science, and Transportation in the Senate, and the Committee on Armed Services of the Senate, a report on the Administration's activities related to C-UAS systems including –

(1) any coordination with Federal Agencies and States, subdivisions and States, political authorities of at least 2 States that operate C-UAS systems;

(2) an assessment of the standards being utilized for the operation of a [sic] counter-UAS systems within the United States (including the territories and possessions of the United States);

(3) an assessment of the efficiency and effectiveness of the interagency coordination and review processes to ensure national airspace safety while minimizing bureaucracy; and

(4) a review of any additional authorities needed by the Federal Aviation Administration to effectively oversee the management of C-UAS systems within the United States (including the territories and possessions of the United States).

II. Background:

Unmanned aircraft systems (UAS) represent the fastest growing sector in aviation today. Over the last decade, the sector has seen exponential growth in the number of UAS and operators, with approximately 861,669 registered UAS as of August 2022.[2] Every day, commercially-owned UAS contribute to the U.S. economy—and society in a myriad of ways, including inspecting infrastructure, supporting agriculture, and assisting public safety agencies.

With their low cost, high performance, wide availability, and ease of operation, UAS present low barriers to entry into the NAS. Unfortunately, coupled with user anonymity and the difficulty to see, track, and trace, UAS offer nefarious users new capabilities to exploit vulnerabilities and circumvent existing security measures.

Since the January 2015 incident in which a UAS landed on the lawn of the White House,[3] the Department of Transportation (through the FAA), DOD, DOE, DOJ, and DHS have been actively engaged in improving the United States Government's ability to assess, respond to, and counter security threats posed by the malicious or errant use of UAS. The UAS detection and mitigation authorities that Congress enacted in 2017 for DOD and DOE, and in 2018 for DHS and DOJ were an integral part of these efforts. In 2018, the DOD, DOE, and FAA met to establish processes for review and approval, identify objective standards, and share lessons learned, among other goals. The FAA engaged in similar work with DHS and DOJ to develop substantively similar documentation after Congress enacted their authority.

The FAA strives to support its federal partners' operations and research while ensuring the safety and efficiency of the NAS. The FAA and its federal partners strive to ensure the safe and secure integration of UAS into the NAS while not interfering with legitimate and compliant UAS operations.

Coordination of UAS detection and mitigation operations is a phased process that starts with a federal partner submitting a request to the FAA. The initial request informs the FAA of the submitting partner's intent to deploy a particular system at a specific location based on a covered mission. The objective standards then require each request to contain information specific to the proposed system, such as information about radio frequency emission parameters, location specifics, airspace requirements, concepts of operations or employment, public notice, law enforcement coordination, and training. After reviewing the request and providing concurrence that risk to the NAS is suitably mitigated, the FAA stays in close contact with the requesting partner as it deploys its UAS detection and mitigation system or systems. This ongoing coordination effort ensures that the C-UAS systems are operated in a manner consistent with the request and prevents unanticipated adverse impacts on airspace access, air navigation services, avionics, and other systems essential to the safe and efficient operations in the NAS. Any changes to the performance parameters require an additional round of coordination.

[2] The FAA, *Drones by the Numbers*, https://www.faa.gov/uas/ (last visited August 9, 2022).
[3] Zeke J. Miller, *Drone That Crashed at White House was a Quadcopter*, TIMES, https://time.com/3682307/white-house-drone-crash/.

III. Report Requirements:

A. Report on the Administration's activities related to C-UAS systems, including: (1) any coordination with Federal agencies and States, subdivisions and States, political authorities of at least 2 States that operate C-UAS systems.

Response:

As described below, the FAA regularly coordinates with the four federal departments (DOE, DOJ, DOD, and DHS) that Congress expressly authorized to use UAS detection and mitigation technology. As of the time of this report, no other federal departments, agencies, or state, local, territorial or tribal entities have been granted express authority from Congress to use UAS detection and mitigation technology. Any federal department, agency or state, local, territorial, or tribal entity other than the FAA and its four federal partners may be subject to federal criminal law implicated by the use of these systems and technologies.[4] As a result, the FAA's engagement with other federal and state agencies is limited to outreach designed to educate stakeholders on the limits of detection and mitigation authorities and the negative impact unauthorized and uncoordinated use of such technology could have on the safety and efficiency of the NAS.

Federal Coordination

In coordination with its federal partners, the FAA developed standardized procedures and protocols to assist in UAS detection and mitigation system coordination and implementation. This coordination effort relies on jointly-agreed upon operational frameworks that include baseline roadmaps for each federal partner and that informed agreed upon objective standards. These objective standards, in turn, serve as checklists to ensure uniformity in established processes. The building blocks of this coordination process include a summarization of the areas in the authorizing legislation that require departments or agencies to coordinate with the FAA. The agency-specific roadmaps link these building blocks to federal partners' authorizing legislation and then identify the deliverables that the federal partner must submit to meet the objective standards. The objective standards are the tasks, documents, or artifacts each federal partner completes and submits to the FAA to satisfy the roadmap requirement. Together, the roadmaps and objective standards link the tasks, documents, and artifacts to the authorizing legislation. This ensures that the coordination process for each deployment is well-documented and standardized based on the legislation under which each federal partner operates.[5]

The FAA considered the following when developing the building blocks, roadmaps, and objective standards:

- *Safety of the NAS* - The FAA's priority in coordinating with DOD, DOE, DOJ, and DHS is maintaining the safety of the NAS. The roadmap and objective standards guide the FAA and the federal partners' analysis of the risk associated with UAS

[4] *See*, Advisory on the Application of Federal Laws to the Acquisition and Use of Technology to Detect and Mitigate Unmanned Aircraft Systems, available at https://www.faa.gov/uas/resources/C_uas/ (last visited August 9, 2022).
[5] *See*, 10 U.S.C. § 130i, 50 U.S.C. § 2661, and 6 U.S.C. § 124n.

detection and mitigation systems. Subsequently, artifacts are developed documenting that risk. The FAA reviews these documents to assess potential impacts on the NAS. If necessary, the FAA identifies additional methods for ensuring the safety of the NAS and works with its federal partners to identify mutually agreeable solutions. After concluding its review, the FAA notifies the requesting federal partner that it has concluded its review requesting either certain mitigation or additional information. If the FAA is satisfied that there are no unmitigated risks to the NAS, the FAA notifies the federal partner that the coordination process is complete. Once the requesting federal partner receives notification from the FAA that coordination is complete, the designated representative from the federal partner drafts and signs a concurrence memorandum documenting the review and any necessary mitigations and sends the memorandum to the FAA for signature. The requesting federal partner will then issue an Authorization to Operate per their departmental guidance.

- *Outreach* - Local outreach plans are an integral part of the objective standards, and as such, the FAA places a premium on these activities. It is important to inform the public of airspace and flight restrictions so that they understand where they should not operate. In addition, the objective standards include plans for outreach to local law enforcement.

- *Non-interference with Manned and Unmanned Aircraft and Air Traffic Control Systems* - A critical part of the coordination process is the FAA's analysis of a system's effect on the NAS, specifically, whether there might be spectrum interference when the detection or mitigation system is being operated. All spectrum coordination is based on the National Telecommunications and Information Administration (NTIA) Manual of Regulations and Procedures for Federal Radio Frequency Management (Redbook) and via the Special Temporary Authority (STA) process. The requesting federal partner is required to provide all system radio-frequency emission parameters to the FAA Spectrum Engineering Office. If the FAA identifies interference with other systems operating in the NAS, such as avionics systems, manned aircraft, UAS, or air traffic control systems, the FAA and federal partner work together to identify a solution that allows the federal partner to conduct its security operations without compromising the safety of the NAS. These mitigations can come in a variety of forms, including adjustments to operations, equipment, operating area, and air travel routes. When the FAA is satisfied that the system will not impact the NAS, it issues a concurrence, which is typically valid for one year. Should the requested location add any additional systems or change the operating or emission parameters of systems with active concurrence, an additional round of coordination is required.

- *Coordination Procedures and Protocols with the FAA during C-UAS Operations* - Once the FAA and federal partners complete the initial coordination phase, the UAS detection and mitigation event notification protocol requires the site, facility, or asset

to notify and report the use of UAS detection and mitigation systems. There are procedures for Air Traffic Control (ATC) notification before, during, and after a C-UAS activation event. If a site, facility, or asset identifies suspicious UAS activity that could provoke a potential or actual use of detection and mitigation systems, it must notify the FAA's Air Traffic Security Coordinator (ATSC) team in the Joint Air Traffic Operations Command (JATOC). These notification procedures are known as the WASP and HORNET protocols (need-to-know basis). Under these protocols, the site, facility, or asset notifies the ATSC team of the suspicious UAS activity and reports as close to real-time as practicable. The protocols are designed to:

- Enable ATC to increase situational awareness regarding operational impacts and prepare to resolve any safety issues;
- Enable the FAA to provide operational support to any needed security-focused response actions; and,
- Provide an immediate alert to the FAA of actions potentially adversely impacting aircraft.

Once alerted, the ATSC team contacts the ATC facilities in the potentially affected airspace to address the possible impacts. Following the use of UAS detection and mitigation systems, the site, facility, or asset presents a classified after-action report to the FAA.

- *Training for Personnel Operating C-UAS* - As part of the coordination process, the federal partner identifies who is authorized to operate the system and what training or certification process the operator must complete. The FAA does not validate this training, but is notified that the training is part of the C-UAS package.

State and Local Coordination

Public outreach, training, and education play an essential role in the FAA's coordination with state and local law enforcement. As part of this effort, the FAA created a public outreach program, including a public safety drone playbook, as an informational resource for public safety officials conducting investigations regarding UAS.[6] The playbook assists public safety officials with determining the difference between authorized and unauthorized UAS operations. In addition, to help reduce the need for mitigation or other law enforcement response, the FAA has extensive outreach and education programs that help operators and the general public understand how to operate UAS safely and in compliance with applicable laws.

Another important aspect of the FAA's outreach program is making entities seeking to use UAS detection and mitigation systems aware that certain federal laws may prohibit them from using such systems. For example, the FAA, DOJ, DHS, and Federal Communications Commission (FCC) issued a guidance document to assist non-federal public and private entities interested in

[6] The FAA, *Drone Response Playbook for Public Safety*, available at https://www.faa.gov/uas/public_safety_gov/public_safety toolkit/ (last visited March 15, 2023).

using technical tools, systems, and capabilities to detect and mitigate UAS in understanding the federal laws that prevent, limit, or penalize the sale, possession, or use of UAS detection and mitigation systems.[7]

B. Report on the Administration's activities related to C-UAS systems, including: (2) an assessment of the standards being utilized for the operation of C-UAS within the United States (including the territories and possessions of the United States).

Response:

The FAA and its federal partners established standards to ensure that the operational use of detection and mitigation systems by authorized partners would not appreciably impact the NAS. Additionally, the FAA is in the process of developing performance-based technical standards as part of the UAS Detection and Mitigation Testing Program (Section 383 described below). In the interim, the FAA engages in a rigorous analysis of the technology and operating procedures as a part of the coordination process described above. The FAA bases its current technical standards review process on the comparison of known FAA and NAS frequency requirements with the advertised operating parameters of federal partner systems to determine impacts on the NAS.

The FAA supports activities that pave the way for standards development. In late 2019, the FAA, DOD, DOJ, and DHS formed the UAS Technology Integrated Project Team (IPT) to work toward understanding detection and mitigation systems capabilities across the government and determining best practices for creating a unified standard. The UAS Technology IPT seeks to increase efficiency and reduce redundancy in testing efforts by coordinating or unifying testing and implementation of UAS detection and mitigation systems. Ultimately, the goal of these efforts is to improve national preparedness by driving technology development through well-defined requirements and aligning processes through interagency coordination.

Separately, Section 383 of the *FAA Reauthorization Act of 2018* includes provisions that direct the FAA to ensure technologies that detect and mitigate potential risks posed by errant or hostile UAS operations do not adversely affect or interfere with safe airport operations or the safe and efficient operation of the NAS. One statutory provision requires FAA to develop a plan for NAS-wide certification, permitting, authorizing, or allowing UAS detection and mitigation systems. The FAA is working to implement these requirements, which are expected to pave the way for further development and evaluation of standards for UAS detection and mitigation systems and technology.[8] The FAA is launching the UAS Airport Detection and Mitigation Research Program, an effort to test and evaluate technologies and systems that could detect and mitigate potential safety risks posed by unmanned aircraft at and near airports. In addition, the FAA plans to convene an aviation rulemaking committee (ARC) to inform the development of potential

[7] DOJ, FAA, FCC, and DHS, *Advisory on the Application of Federal Laws to the Acquisition and Use of Technology to Detect and Mitigate Unmanned Aircraft Systems* (Aug. 17, 2020), available at https://www.cisa.gov/publication/advisory-application-federal-laws-acquisition-and-use-technology-detect-and-mitigate (last visited August 9, 2022).

[8] The FAA, Airport Safety and Airspace Hazard Mitigation and Enforcement (Section 383), available at https://www.faa.gov/uas/critical_infrastructure/section_383 (last visited August 9, 2022).

future standards. The results from this research program will inform the ARC and the mandated plan for certifying, permitting, or authorizing UAS detection and mitigation technologies.

C. Report on the Administration's activities related to C-UAS systems, including: (3) an assessment of the efficiency and effectiveness of the interagency coordination and review processes to ensure national airspace safety while minimizing bureaucracy.

Response:

The FAA is pleased to report that both the efficiency and effectiveness of the UAS detection and mitigation system coordination process have improved significantly over the last five years. As the FAA and its federal partners gained experience with UAS detection and mitigation deployment, they collectively honed and tailored the processes and procedures and applied lessons learned to achieve the desired end-state: enabling security missions while ensuring the safety of the NAS. As agencies continue to work together, the FAA expects to refine processes further and discover additional efficiencies.

This cooperative process began soon after Congress enacted UAS detection and mitigation authorities in the National Defense Authorization Act for Fiscal Year 2017 (Pub. Law. No. 114-328). At that time, the FAA and its federal partners began to develop systems and procedures for ensuring proper coordination of UAS detection and mitigation system use. At the outset, the FAA and its federal partners met on a weekly basis to understand each other's mission sets, requirements, and organizational structure. Over time, agency representatives developed a better understanding of the other federal partners' needs and expectations and became comfortable with the processes and procedures for coordination; we developed a common understanding and established consistent requirements and templates for artifacts resulting in more efficient processes. At this time, the FAA meets with DOD, DHS, and DOJ on a bi-weekly basis to ensure efficiency and situational awareness. Through experience and repetition, the FAA and its federal partners have been able to streamline the coordination process. Specifically, through the establishment of standardized packages, spectrum review, and communication protocols, the FAA and its federal partners considerably reduced the average request processing time to less than two weeks on average.

An essential portion of the FAA's review is spectrum analysis. Initially, the FAA had to evaluate each coordination request on a case-by-case basis. This process was both time and resource-intensive. The FAA, in coordination with its federal partners, developed the Spectrum Hot Operational Readiness and Training (SHORT cut) process for C-UAS mitigation systems that emit radio frequency (RF) signals.

The SHORT cut process expedites the coordination for technologies emitting minimal-to-no RF signals that could impact the NAS. Once a C-UAS system is identified as meeting the parameters for a SHORT cut, it goes through a streamlined FAA spectrum coordination process, minimizing unnecessary analysis and administrative workload. Irrespective of the SHORT cut, federal partners continue to notify the FAA of deployments to ensure situational awareness.

To date, the coordination process has proven successful. As of August 5, 2022, the FAA and its federal partners have successfully coordinated detection and mitigation systems to protect 1 DOE, 1 DHS, and 143 DOD fixed-site facilities since the first coordination using the aforementioned process in December 2018. Additionally, the DOD and FAA have coordinated protections for all U.S. Navy-designated covered vessels, and certain U.S. Coast Guard missions, that operate in the United States and territorial waters.

D. Report on the Administration's activities related to C-UAS systems, including (4) a review of any additional authorities needed by the Federal Aviation Administration to effectively oversee the management of C-UAS systems within the United States (including the territories and possessions of the United States).

Response:

At the time of this report, the FAA has not identified additional authorities it needs related to oversight of UAS detection and mitigation systems within the United States. The FAA's existing plenary authority in Title 49 of the United States Code (49 U.S.C.) § 40103(b) and complementary authority in 49 U.S.C. § 44810(a) enable the FAA to support the congressionally-authorized use of UAS detection and mitigation systems by federal partners while ensuring that these systems do not adversely impact or interfere with safe airport operations, navigation, air traffic services, or the safe and efficient operation of the NAS.

The FAA issued Order JO 7210.3, Facility Operation and Administration, providing direction and guidance for the day-to-day operation of facilities and offices under the administrative jurisdiction of the FAA's Air Traffic Organization (ATO). This order provides direction and guidance regarding the day-to-day activities across the ATO, and includes specific sections that provide guidance on reporting suspicious UAS activities, require ATC facilities to create a checklist for reporting suspicious UAS activity, and provide guidance regarding the use of UAS detection and mitigation systems.

VI. Conclusion and Way Forward

The collaborative and cooperative partnership between the FAA, DOD, DOE, DOJ, and DHS has proven to be a success. These five agencies spent eight months developing the building blocks, roadmaps, and objective standards for the use of UAS detection and mitigation systems. During this time, they overcame several challenges, including determining the extent to which UAS detection and mitigation systems could interfere with the NAS and what processes were needed to standardize the coordination process.

The FAA coordinated with its partners to determine what information was required in order to fulfill the requirements set forth in authorizing legislation. The agencies collectively built a roadmap for each Cabinet-level department to link information requirements and the building blocks to each agency's authorizing legislation. The equities captured in the roadmaps informed specific objective standards for each department. The objective standards serve as a checklist of required information such as system parameters, airspace, training, concept of operations (CONOPS), public notice, and law enforcement outreach. The federal partners then developed guidance for their respective component agencies to use when providing information to the FAA, as well as policies for use. All spectrum coordination processes continue to follow those found in the Redbook.

Through this cooperative process, the Interagency Coordination Process resulted in the transformation of the authorizing legislation into a workable framework. The process has evolved through each successful iteration improving upon lessons learned, but its success is due to the FAA and its federal partners adhering to a set of common goals.

The FAA, DOD, DOE, DOJ, and DHS continue to look for new ways to advance the safety and security of the NAS by working together to promote the safe use of UAS detection and mitigation technology. Going forward, these agencies will build on the successful foundation referenced in this report.

Appendix 1: DOD Roadmap and Objective Standards under Pub. L. 114-328

In accordance with Title 10 U.S.C. § 130i, the FAA has been collaborating with the Department of Defense, Military Departments, and authorized Agencies to safely integrate a security-focused use of UAS detection and mitigation systems into the NAS. This ongoing joint effort has been defined through a deliberative approach. The roadmap ensures department-level understanding of equities and, the assessment of risk and identifies the legislative authority for these efforts. The roadmap informs the objective standards found on the checklist of information required for coordination.

Shared DOD-Roadmap for FAA Support of Operational C-UAS Use under 10 U.S.C. § 130i

Building Block	Explanation and Underlying Need	Metrics / Artifacts
1. Risk-Based Assessment of covered facilities and assets	§ 130i requires that Departments consult with the FAA on the designation of covered facilities and assets with respect to potentially impacted airspace.	1A. Department shares updated lists of covered facilities and assets to be protected per § 130i/§ 2661, including associated location-specific risks, if applicable. 1B. Department shares risk assessment results, updated deployment plans, and systems to be installed, including all details on individual system types. 1C. Department works with NTIA via the Interdepartment Radio Advisory Committee (IRAC) process to characterize the spectrum effects of all deployed C-UAS technology.
2. Common threat definition	§ 130i requires that Department consult with the FAA on the definition of UAS threats.	2A. The Department promulgated to component heads guidance on using force that is proportional, discriminatory of threat severity, incrementally graduated based on proximity to a covered asset, and considers the totality of circumstances. 2B. Department integrates this threat definition into Department-wide, Agency-level, and facility and/or asset specific CONOPS or concept of employment (CONEMP) and/or tactics, techniques, or procedures (TTP), as well as training and certification material.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
3. System collateral effects analysis	§ 130i requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace.	3A. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment. 3B. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyze testing results with the FAA. 3C. Department shares information on and pre-coordinates with the FAA on the introduction of new C-UAS systems, system capabilities, and/or configurations.
4. Judicious and Responsible Employment	§ 130i requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace.	4A. Department, in coordination with FAA, develops and implements Department-wide policies and procedures. 4B. Department develops and implements Agency-level and facility and/or asset-specific policies, CONOPS / CONEMP, and TTP, as well as supporting training and certification programs consistent with Department-wide policy coordinated with the FAA, and conducts further coordination with the FAA for any issuance of policy or procedure that is not-consistent with Department-wide policy. 4C. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which is applied to each individual UAS incident, including use of C-UAS systems, in the NAS.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
		4D. Department and FAA develop and implement a shared data collection and analysis process to summarize C-UAS action taken by Department covered facilities and assets. 4E. FAA, in coordination with Department, leverages pre-existing airspace mechanisms or establishes new mechanisms, as appropriate, to provide clear, advance "fair warning" to UAS operators to remain clear of certain airspace or otherwise caution against operational activities, which would likely provoke a C-UAS response. 4F. Department establishes policies and procedures to support FAA-requested site visits.
5. Active NAS impact mitigation	§ 130i requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace. This requirement contemplates active steps to operationally mitigate potential impacts on the NAS.	5A. Immediate notification of UAS incidents and C-UAS use to ATC, enabling ATC to take tactical mitigation action needed to maintain the safety of potentially affected air traffic 5B. FAA develops and implements processes and procedures to rapidly notify potentially affected ATC (including military ATC units) facilities of C-UAS usage and to facilitate ATC in taking any needed safety-driven tactical action.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
6. Effective and Efficient Interagency Process	Coordination with FAA to cooperate on informing the public and engaging Federal, State, and Local (FSL) law enforcement agencies (LEAs) on the Department use of C-UAS.	6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset-specific policies, CONOPS / CONEMP, and TTPs, as well as supports the training programs that incorporate regular outreach to the community and local law enforcement.
7. Sustaining cooperation	The successful implementation of § 130i necessitates that FAA and Department sustain a robust partnership on C-UAS implementation for the foreseeable future. In order to frame and reinforce this partnership, establish a clear model for DOE and other Departments and agencies, which may secure C-UAS authority, and ensure a seamless, consistent and defensible approach is taken to the implementation of C-UAS. The FAA believes that a Memorandum of Understanding (MOU) needs to be established forth with.	7A. FAA and Department coordinate the development and execution of a MOU.

Cabinet-level Department C-UAS Objective Standards

Roadmap Requirement	Objective Standard
1A. Department shares updated lists of covered facilities and assets to be protected per § 130i/§ 2661, including associated location-specific risks, if applicable.	D.1.1) Department provided an authoritative list of facilities and assets scheduled to receive C-UAS technology.
1A. Department shares updated lists of covered facilities and assets to be protected per § 130i/§ 2661, including associated location-specific risks, if applicable.	D.1.2) Department provided results of the risk-based assessment rooted in § 130i for each installation.
1B. Department shares risk assessment results, updated deployment plans, and systems to be installed, including all details on individual system types.	D.1.3) Department provided the deployment schedule, to include installation, testing, initial operational capability, and full mission capability for each covered location.
1B. Department shares risk assessment results, updated deployment plans, and systems to be installed, including all details on individual system types.	D.1.4) Department provided information on the specific C-UAS system(s) to be used, and the planned modes of operation for each C-UAS system for each covered location.
1C. Department and FAA work with the NTIA via the IRAC process to characterize the spectrum effects of all deployed C-UAS technology.	D.1.5) Department submits electronic attack (EA) requests for each § 130i C-UAS operating location.
2A. The Department promulgated to agency heads guidance on using force that is proportional, discriminatory of threat severity, incrementally graduated based on proximity to covered asset, and considers the totality of circumstances.	D.2.1) The Department promulgated to its agency heads guidance on using force that is proportional, discriminatory of threat severity, incrementally graduated based on proximity to covered asset, and considers the totality of circumstances.
3C. Department shares information on and pre-coordinates with the FAA the introduction of new C-UAS systems, system capabilities, and/or configurations.	D.3.1) The Department provided all changes to C-UAS configuration—to include equipment, procedures, and operational use—at covered locations, which must be coordinated with FAA prior to implementation of the change.
4A. Department, in coordination with FAA, develops and implements Department-wide policies and procedures.	D.4.1) The Department promulgated to its agency heads engagement authority consistent with Department policy.

Roadmap Requirement	Objective Standard
4B. Department develops and implements Agency-level, and facility and/or asset-specific policies, CONOPS / CONEMP, and TTPs, as well as supporting training and certification programs consistent with Department-wide policy coordinated with the FAA, and conducts further coordination with the FAA for any issuance of policy or procedure that is not consistent with Department-wide policy.	D.4.2) The Department promulgated to its agency heads operational guidance in support of C-UAS deployment.
4C. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which is applied to each individual UAS incident, including use of C-UAS systems, in the NAS.	D.4.3) The Department promulgated to its agency heads the requirement to use the post-incident / after-action reporting process.
4D. Department and FAA develop and implement a shared data collection and analysis process to summarize C-UAS action taken by Department covered facilities and assets.	D.4.4) The Department promulgated to its agency heads the requirement to collect and analyze data to summarize C-UAS action taken.
4E. FAA, in coordination with Department, leverages pre-existing airspace mechanisms or establishes new mechanisms, as appropriate, to provide clear, advance "fair warning" to UAS operators to remain clear of certain airspace or otherwise caution against operational activities, which would likely provoke a C-UAS response.	D.4.5) The installations requested and established UAS-specific airspace restrictions.
4F. Department establishes policies and procedures to support FAA-requested site visits.	D.4.6) The Department coordinated with the Agencies processes to enable FAA-requested site visits.
5A. Immediate notification of UAS incidents and C-UAS use to ATC, enabling ATC to take tactical mitigation action needed to maintain the safety of potentially affected air traffic	D.5.1) The Department promulgated to its agency heads the requirement to notify the FAA of imminent or current C-UAS technology activation (e.g., WASP protocol).
6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset-specific policies, CONOPS, and TTPs as well as supports the training programs that incorporate regular outreach to the community and local law enforcement.	D.6.1) The Department promulgated to its agency heads the requirement for regular outreach to UAS stakeholders (e.g., tenant commands) to discuss C-UAS operations.

Roadmap Requirement	Objective Standard
6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset specific policies, CONOPS, and TTPs, as well as supports the training programs that incorporate regular outreach to the community and local law enforcement.	D.6.2) The Department promulgated to its agency heads the requirement for regular outreach to Federal, State, Local, Tribal and Territorial (FSLTT) LEAs to discuss the C-UAS operations.

Appendix 2: DOE Roadmap and Objective Standards under Pub. L. 114-328

In accordance with Title 50 U.S.C. § 2661, the FAA has been collaborating with the Department of Energy and its authorized component, the National Nuclear Security Administration, to safely integrate their use of UAS detection and mitigation systems into the NAS. This ongoing joint effort has been defined through a deliberative approach. The roadmap ensures department-level understanding of equities and the assessment of risk and identifies the legislative authority for these efforts. The roadmap informs the objective standards found on the checklist of information required for coordination.

Shared DOE-Roadmap for FAA Support of Operational C-UAS Use under 50 U.S.C. § 2661

Building Block	Explanation and Underlying Need	Metrics / Artifacts
1. Risk-Based Assessment of covered facilities and assets	§ 2661 requires that Department consult with the FAA on the designation of covered facilities and assets with respect to potentially impacted airspace.	1A. Department shares updated lists of covered facilities and assets to be protected per § 130i/§ 2661, including associated location-specific risks, if applicable. 1B. Department shares risk assessment results, updated deployment plans, and systems to be installed, including all details on individual system types. 1C. Department works with NTIA via the IRAC process to characterize the spectrum effects of all deployed C-UAS technology.
2. Common threat definition	§ 2661 requires that Department consult with the FAA on the definition of UAS threats.	2A. The Department promulgated to component heads guidance on using force that is proportional, discriminatory of threat severity, incrementally graduated based on proximity to covered asset, and considers the totality of circumstances. 2B. Department integrates this threat definition into Department-wide, Agency-level, and facility and/or asset-specific CONOPS or concept of employment (CONEMP) and/or TTPs, as well as training and certification material.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
3. System collateral effects analysis	§ 2661 requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace.	3A. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment. 3B. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with the FAA. 3C. Department shares information on and pre-coordinates with the FAA the introduction of new C-UAS systems, system capabilities, and/or configurations.
4. Judicious and Responsible Employment	§ 2661 requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace.	4A. Department, in coordination with FAA, develops and implements Department-wide policies and procedures. 4B. Department develops and implements Agency-level, and facility and/or asset-specific policies, CONOPS / CONEMP, and TTPs, as well as supports the training and certification programs consistent with Department-wide policy coordinated with the FAA, and conducts further coordination with the FAA for any issuance of policy or procedure that is not consistent with Department-wide policy. 4C. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which is applied to each individual UAS incident, including use of C-UAS systems, in the NAS.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
		4D. Department and FAA develop and implement a shared data collection and analysis process to summarize C-UAS action taken by Department covered facilities and assets. 4E. FAA, in coordination with Department, leverages pre-existing airspace mechanisms or establishes new mechanisms, as appropriate, to provide clear, advance "fair warning" to UAS operators to remain clear of certain airspace or otherwise caution against operational activities, which would likely provoke a C-UAS response. 4F. Department establishes policies and procedures to support FAA-requested site visits.
5. Active NAS impact mitigation	§ 2661 requires Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such guidance or implementation might affect aviation safety or the use of airspace. This requirement contemplates active steps to operationally mitigate potential impacts on the NAS.	5A. Immediate notification of UAS incidents and C-UAS use to ATC, enabling ATC to take tactical mitigation action needed to maintain the safety of potentially affected air traffic 5B. FAA develops and implements processes and procedures to rapidly notify potentially affected ATC (including military ATC units) facilities of C-UAS usage and to facilitate ATC in taking any needed safety-driven tactical action.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
6. Effective and Efficient Interagency Process	Coordination with FAA to cooperate on informing the public and engaging Federal, State, and Local (FSL) law enforcement agencies (LEAs) on the Department use of C-UAS.	6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset specific policies, CONOPS, and TTPs, as well as supporting training programs that incorporate regular outreach to the community and local law enforcement.
7. Sustaining cooperation	The successful implementation of § 2661 necessitates that FAA and Department sustain a robust partnership on C-UAS implementation for the foreseeable future. In order to frame and reinforce this partnership, establish a clear model for DOE and other Departments and agencies, which may secure C-UAS authority, and ensure a seamless, consistent and defensible approach is taken to the implementation of C-UAS, the FAA believes that a Memorandum of Understanding (MOU) needs to be established forth with.	7A. FAA and Department coordinate the development and execution of a MOU.

DOE C-UAS Objective Standards

Roadmap Requirement	Objective Standard
1C. Department and FAA work with the NTIA via the IRAC process to characterize the spectrum effects of all deployed C-UAS technology.	FS.1.1) FAA Spectrum certified that Department has supplied sufficient information to evaluate the impact to FAA controlled spectrum of each C-UAS at this installation.
1C. Department and FAA work with the NTIA via the IRAC process to characterize the spectrum effects of all deployed C-UAS technology.	FS.1.2) FAA Spectrum, working with the Department, documented and quantified the possible impact to FAA controlled or aviation related spectrum equities for each C-UAS system at this installation.
1C. Department and FAA work with the NTIA via the IRAC process to characterize the spectrum effects of all deployed C-UAS technology.	FS.1.3) FAA Spectrum, working with the Department, documented that all required spectrum coordination with NTIA has been completed to FAA's satisfaction for each C-UAS at this installation.
2B. Department integrates this threat definition into Department-wide, Agency-level, and facility and/or asset specific CONOPS or CONEMP and/or TTPs, as well as training and certification material.	A.2.1) The agency heads promulgated to department guidance on using force that is proportional, discriminatory of threat severity, incrementally graduated based on proximity to covered asset, and considers the totality of circumstances.
3A. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment.	FO.3.1) The FAA determined which entities (e.g., pilots, airports, ATC facilities) require notification of possible ongoing collateral effects produced by operation of C-UAS equipment for each C-UAS at this installation.
3B. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with the FAA.	FO.3.2) The FAA reviewed the field test methodology and installation test reports and considered the implications within notification protocols.

Roadmap Requirement	Objective Standard
3B. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with the FAA.	A.3.1) The agencies maintain and make available the C-UAS system(s) test result(s) for each field test produced at the request of the FAA, or in the course of evaluating covered C-UAS equipment for each installation.
4A. Department, in coordination with FAA, develops and implements Department-wide policies and procedure	A.4.1) The agencies promulgated to commanders engagement authority consistent with Department policy.
4B. Department develops, implements Agency-level, and facility and/or asset-specific policies, CONOPS / CONEMP, and TTPs, as well as supporting training and certification programs, consistent with Department-wide policy coordinated with the FAA, and conducts further coordination with the FAA, for any issuance of policy or procedure that is not-consistent with Department-wide policy.	A.4.2) The agencies tasked commanders to develop policies, CONOPS / CONEMP, and TTPs, as well as support training and certification programs in support of C-UAS deployment.
4C. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which is applied to each individual UAS incident, including use of C-UAS systems, in the NAS.	A.4.3) The agencies promulgated to the commanders the requirement to implement the post-incident/after-action reporting process.
4D. Department and FAA develop and implement a shared data collection and analysis process to summarize C-UAS action taken by Department covered facilities and assets.	A.4.4) The agencies promulgated to commanders the requirement to collect and share data to summarize C-UAS action taken to agency's head.
4E. FAA, in coordination with Department, leverages pre-existing airspace mechanisms, or establishes new mechanisms, as appropriate, to provide clear, advance "fair warning" to UAS operators to remain clear of certain airspace or otherwise caution against operational activities, which would likely provoke a C-UAS response.	FO.4.1) The FAA published the installation's UAS-requested airspace notification on the UAS Data Delivery System, through NOTAM and through News & Update.
4F. Department coordinates with the FAA to enable visits to C-UAS equipped and authorized facilities in order to identify areas for improved coordination as result of observed operational implementation.	FO.4.2) The FAA visited the installation, if required, to jointly confirm C-UAS program.

Roadmap Requirement	Objective Standard
5A. Immediate notification of UAS incidents and C-UAS use to ATC, enabling ATC to take tactical mitigation action needed to maintain the safety of potentially affected air traffic	A.5.1) The agencies promulgated to commanders the requirement to notify the FAA of imminent or current C-UAS technology activation (e.g., WASP protocol).
5B. FAA develops and implements processes and procedures to rapidly notify potentially affected ATC (including military ATC units) facilities of C-UAS usage and to facilitate ATC in taking any needed safety-driven tactical action.	FO.5.1) The FAA Systems Operations Security office developed and implemented the DEN notification procedures for ATC notification before, during and after a C-UAS activation event.
6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset specific policies, CONOPS, and TTPs, as well as supporting training programs that incorporate regular outreach to the community and local law enforcement.	A.6.1) The agencies promulgated to commanders the requirement for outreach to other UAS stakeholders (e.g., tenant commands) to discuss the C-UAS operations.
6A. Department develops and implements Department-wide, Agency-level, and facility and/or asset specific policies, CONOPS, and TTPs, as well as supporting training programs, that incorporate regular outreach to the community and local law enforcement.	A.6.2) The agencies promulgated to commanders the requirement for the regular outreach to FSLTT LEAs to discuss the C-UAS operations

Appendix 3: DOJ Roadmap and Department Objective Standards under Pub. L. 115-254.

In accordance with 6 U.S.C. § 124n, the FAA has been collaborating with the DOJ and its approved components to integrate its use of UAS detection and mitigation systems safely into the NAS. This ongoing joint effort has been defined through a deliberative approach. The roadmap ensures department-level understanding of equities and the assessment of risk and identifies the legislative authority for these efforts. The roadmap informs the objective standards found on the checklist of information required for coordination.

Shared DOJ-FAA Roadmap for Operational C-UAS Use under 6 U.S.C. § 124n

Building Block	Explanation and Underlying Need	Metrics / Artifacts
1. Risk-based assessment of prioritized covered facilities and assets	Subsection (k)(8) of the Act requires that the methodology of the risk-based assessment include an evaluation of the threat information specific to that covered facility or asset and an evaluation of potential impacts on the safety and efficiency of the NAS and needs of law enforcement and national security in the context of seven factors.	1A. Department coordinates with FAA on the methodology of the risk-based assessment. 1B. Department shares list of covered facilities and assets to be protected per sec. 1602, including associated location-specific risks, if applicable, and risk assessment results. 1C. Department coordinates with FAA on assessment of airspace impacts and technology selection for a given covered facility or asset. 1D. Department works with the FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with the FAA to leverage the NTIA's IRAC process for this coordination and spectrum deconfliction.
2. Common threat definition	Subsection (a) of the Act requires the Attorney General (or his delegee) to define "credible threat" in consultation with the Secretary of Transportation.	2A. Department develops threat definition in consultation with FAA. 2B. Department incorporates this threat definition into Department-wide, component-level, and facility and/or asset specific guidance as well as training and certification material. Definition to be incorporated into site/asset/mission-specific CONOPS documents.
3. NAS impact analysis and mitigation	Subsection (d)(2) of the Act requires the Attorney General to coordinate with the Secretary of Transportation and the Administrator of the FAA before issuing any guidance or otherwise	3A. Department coordinates with the FAA to assess the impact of C-UAS technology and activities on the safety and efficiency of the NAS, options to mitigate identified impacts, and potential

Building Block	Explanation and Underlying Need	Metrics / Artifacts
	implementing its C-UAS authority, if such guidance or implementation might affect aviation safety, civilian aviation and aerospace operations, aircraft worthiness, or the use of airspace.	consequences of such impacts for each initial covered facility or asset designation. 3B. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment, with the FAA for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters. 3C. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyze testing results with FAA. 3D. Department shares information on and pre-coordinates with the FAA on the introduction of new C-UAS systems, system capabilities, and/or configurations for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters. 3E. Department coordinates with FAA on implementation of notification process of UAS incidents and immediate notification of C-UAS use to ATC using the DOD/DOE/FAA coordinated WASP protocol allowing for the action needed to maintain the safety of potentially affected air traffic. 3F. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which applies to each individual UAS incident, including use of C-UAS systems, in the NAS.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
4. Judicious and responsible employment	Subsections (b)(4) and (d) of the Act require the Attorney General to coordinate with the FAA Administrator before issuing any guidance authorizing C-UAS actions that might affect aviation safety, civilian aviation and aerospace operations, aircraft airworthiness, or the use of airspace. Subsection (b)(2) of the Act requires the Attorney General to develop the actions authorized to be taken under the Act with the Secretary of Transportation. Subsection (e)(1) of the Act mandates that an interception or acquisition of, access to, maintenance or use of, or communications to or from a UAS shall be consistent with the First and Fourth Amendments to the U.S. Constitution. Subsection (b)(1)(D) and (E) of the Act empower DOJ to seize or confiscate UAS, while subsection (c) subjects seized drones for forfeiture to the United States. Subsection (b)(1)(B) of the Act allows the DOJ to warn UAS operators, including by electromagnetic means. Subsection (k)(8)(D) of the Act requires the risk-based assessment to evaluate the ability to provide reasonable advance notice to aircraft operators,	4A. Department coordinates with FAA on the development and implementation of Department-wide policies and procedures for taking C-UAS actions, as well as DHS component and site-specific objective standards. 4B. Department, in coordination with DOJ, implements guidance regarding: (1) the applicable warrant requirements (or warrant exceptions) necessary to conduct C-UAS operations, (2) compliance with Civil Rights and Civil Liberties (CRCL) and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions. 4C. Ensure property seizures and forfeiture standards comply with current law. 4D. Department develops procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements. 4E. Department coordinates with FAA to develop a standard process and procedure to warn UAS operators of potential C-UAS action and provide advance notice to aircraft operators. 4F. Department creates, as required, standards, guidelines, and training for “use of force” for departmental law enforcement operators related to C-UAS operations and engagements. Standards to be reflected in site/asset/mission-specific CONOPS.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
	consistent with the safety of the NAS and needs of national security and law enforcement. Subsection (b)(1)(F) authorizes the use of "reasonable force," if necessary, to disable, damage, or destroy a UAS or UA.	4G. Department directs/oversees development of CONOPS by location/asset/mission incorporating items such as rules for the Use of Force, C-UAS use notification/reporting process, etc. 4H. Department and FAA develop and implement process to share and analyze Department C-UAS actions. 4I. Department and FAA will certify that the elements of the roadmap have been completed for each covered asset or facility with a co-signed concurrence memo.
5. Effective and efficient research, development, testing, and training	Subsection (b)(3) of the Act requires that prior to the use of any C-UAS technology, the Department shall conduct research, testing, training on, and evaluation of that C-UAS technology.	5A. Department develops C-UAS requirements that inform material and non-material needs across the DHS enterprise and shares requirements with FAA. 5B. Department develops and implements policies and CONOPS for research, development, testing, and training on the use of C-UAS technology to accommodate anticipated component needs in coordination with FAA.
6. Designation of authorized personnel	Subsection (a) of the Act allows the Attorney General to authorize personnel with assigned duties that include the security or protection of people, facilities, or assets to take certain actions to mitigate a credible threat to protect certain facilities and assets. Subsection (k)(6) defines personnel as officers and employees of DOJ with those duties.	6A. Department identifies relevant component personnel for Secretary authorization. 6B. Department establishes baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
7. Sustaining cooperation with state and local law enforcement partners	Subsection (e)(4) permits the Department to disclose intercepted communications under specific circumstances, while (e)(5) allows the Department to share threat information, not including intercepted communications, with SLTT law enforcement in the course of a security or protection operation.	7A. Department examines existing information sharing tools to determine the extent to which these tools can be leveraged to share UAS related threat information. 7B. Develop definition of mass gathering in coordination with DOJ and SLTT partners. 7C. Department coordinates with DOJ on development of guidance and procedures for implementing SLTT law enforcement into relevant C-UAS operations, including mass gathering and Special Events Assessment Rating (SEAR) event operations.
8. Congressional Reports and Notifications	Subsection (g)(5) of the Act requires Congressional notification within 30 days of deployments of new technology and must include description of options considered to mitigate impacts to the NAS. Subsection (g)(1) requires a semiannual briefing to Congress and includes several requirements. Subsection (f) requires the Department to submit a consolidated funding display that identifies funding source for C-UAS actions beginning in FY20. Subsection (l)(1) requires the Secretary of Homeland Security, in coordination with the Attorney General, to provide an assessment to appropriate Congressional committees that includes a threat assessment focusing on critical infrastructure and domestic large hub airports, among other requirements.	8A. Department identifies process for congressional notification of technology deployments and coordination process with FAA. 8B. Department develops timeframes for briefing inputs from stakeholders. 8C. Department develops guidance to track associated C-UAS related costs. 8D. Department identifies components/offices to lead assessment and timeframes to meet statutory deadline, which is one year from date of enactment, and consults with FAA on threat assessment.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
9. Rulemaking	Subsection (d) of the Act authorizes DHS, DOJ, and DOT to issue regulations as necessary and requires guidance to implement the Act (including effects on aviation security).	9A. Department identifies components responsible for the coordination, deconfliction, and publication of appropriate rules, notices, regulations, and guidance in the Federal Register.

DOJ Departmental C-UAS Objective Standards

Roadmap Requirement	Objective Standard
1C. Department coordinates with FAA on the assessment of airspace impacts and technology selection for a given covered facility or asset. **1D. Department works with FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with FAA to leverage the IRAC process for this coordination and spectrum deconfliction.**	D.1.1) Department provided a standard operating procedure/policy for delivering information on the specific C-UAS system(s) to be used to the FAA and the planned modes of operation for each C-UAS system for each covered location.
1A. Department coordinates with DOT (FAA) on the methodology of the risk-based assessment. **1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.**	D.1.2) Department provided a standard operating procedure/policy for delivering results of the risk-based assessment rooted in 6 U.S.C. § 124n for each installation.
1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.	D.1.3) Department provided an authoritative list of facilities and assets scheduled to receive C-UAS technology, with the understanding that some facilities, such as an National Special Security Events (NSSE) or Unites States Secret Service (USSS) protective operations pursuant to sections 3056(a) and 3056A(a) of Title 18, United States Code, and the Presidential Protection Assistance Act of 1976, are presumed to be facilities or assets that are assessed to be high risk, and a potential target for unlawful unmanned aircraft activity, such that identifying specific threats are not necessary.

Roadmap Requirement	Objective Standard
1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.	D.1.4) Department provides standard operating procedures/policy for the deployment schedule, to include installation, testing, initial operational capability, and full mission capability for each covered location.
1C. Department coordinates with FAA on assessment of airspace impacts and technology selection for a given covered facility or asset. **1D. Department works with the FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with the FAA to leverage the NTIA's IRAC process for this coordination and spectrum deconfliction.**	D.1.5) Department provided standard operating procedure/policy for delivering EA requests for each 6 U.S.C. § 124n C-UAS operating location developed with the FAA.
2A. Department develops threat definition in consultation with FAA. **2B. Department incorporates this threat definition into Department-wide, component-level, and facility and/or asset specific guidance as well as training and certification material. Definition to be incorporated into site/asset/mission-specific CONOPS documents.**	D.2.1) The Department provided to components the threat definition developed in consultation with the FAA.
3A. Department coordinates with the FAA to assess the impact of C-UAS technology and activities on the safety and efficiency of the NAS, options to mitigate identified impacts, and potential consequences of such impacts for each initial covered facility or asset designation. **3B. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment, with the FAA for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters.**	D.3.1) The Department provided a standard operating procedure/policy to ensure all changes to C-UAS configuration—to include equipment, procedures, and operational use—at covered locations must be coordinated with FAA prior to implementation of the change.

Roadmap Requirement	Objective Standard
3C. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with FAA. **3D. Department shares information on and pre-coordinates with the FAA the introduction of new C-UAS systems, system capabilities, and/or configurations for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters.**	
3E. Department coordinates with FAA on implementation of notification process of UAS incidents and immediate notification of C-UAS use to Air Traffic Control using the DOD/DOE/FAA coordinated WASP protocol allowing for the action needed to maintain the safety of potentially affected air traffic.	D.3.2) The Department provided to components the requirement to notify the FAA of imminent or current C-UAS technology activation (e.g., WASP protocol).
3F. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which applies to each individual UAS incident, including use of C-UAS systems, in the NAS.	D.3.3) The Department provided to components the requirement to use the post-incident/after-action reporting process.
4A. Department coordinates with FAA on the development and implementation of Department-wide policies and procedures for taking C-UAS actions, as well as, DHS component and site-specific objective standards.	D.4.1) The Department provided guidance to components on C-UAS actions.
4B. Department, in coordination with DOJ, implements guidance regarding: (1) the applicable warrant requirements (or warrant exceptions) necessary to conduct C-UAS operations, (2) compliance with CRCL and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions. **4C. Ensure property seizures and forfeiture standards comply with current law.**	D.4.2) The Department provided to components operating procedures/policy(s) for situations when C-UAS operations implicate (1) warrant requirements, (2) compliance with CRCL and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions.

Roadmap Requirement	Objective Standard
4D. Department develops procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements.	D.4.3) The Department provided to components the procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements.
4E. Department coordinates with FAA to develop a standard process and procedure to warn UAS operators of potential C-UAS action and provide advance notice to aircraft operators.	D.4.4) The Department provided to components the procedures for location requested and established UAS-specific airspace restrictions.
4F. Department creates, as required, standards, guidelines and training for "use of force" for departmental law enforcement operators related to C-UAS operations and engagements. Standards to be reflected in site/asset/mission-specific CONOPS.	D.4.5) The Department provided components guidance on using force which is consistent with law and Department policies and procedures.
4G. Department directs/oversees development of CONOPS by location/asset/mission incorporating items such as rules for the Use of Force, C-UAS use notification/reporting process, etc.	D.4.6) The Department provided components guidance for C-UAS CONOPS development to include rules for use of force and the notification/reporting processes.
4H. Department and FAA develop and implement process to share and analyze Department C-UAS actions.	D.4.7) The Department provided to components guidance on procedures to collect and analyze data to summarize C-UAS action taken.
4I. Department and FAA will certify that the elements of the Roadmap have been completed for each covered asset or facility with a co-signed concurrence memo.	D.4.8) The Department provided to components standard operating procedures/policy for obtaining certification from the Department and FAA that elements of the Roadmap have been completed and for obtaining a co-signed concurrence memo.
5A. Department develops department C-UAS requirements that inform material and non-material needs across the DHS enterprise and shares requirements with FAA.	D 5.1) The Department has developed a list of Departmental C-UAS requirements that inform material and non-material

Roadmap Requirement	Objective Standard
	needs across DHS and has shared that list of requirements with FAA.
5B. Department develops and implements policies and CONOPS for research, development, testing and training on the use of C-UAS technology to accommodate anticipated component needs in coordination with FAA.	D 5.2) The Department provided to components the policies and CONOPS for research, development, testing, and training on the use of C-UAS technology to accommodate anticipated component needs that were developed in coordination with the FAA.
6A. Department identifies relevant component personnel for Secretary authorization.	D 6.1) The Department has identified and provided to components relevant component personnel for Secretary authorization.
6B. Department establishes baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.	D 6.2) The Department provided to components the policy(s) establishing baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.
7B. Develop definition of mass gathering in coordination with DOJ and SLTT partners.	D 7.1) The Department has developed and provided to components a definition of mass gatherings in coordination with DOJ and SLTT partners.

Appendix 4: DHS Building Blocks and Objective standards for Operational C-UAS use under Pub. L. 115-254

In accordance with Pub. L. 115-254, the FAA has been collaborating with the DHS and its authorized components to safely integrate its use of UAS detection and mitigation systems into the NAS. This ongoing joint effort has been defined through a deliberative approach. The roadmap ensures department-level understanding of equities and the assessment of risk and identifies the legislative authority or these efforts. The roadmap informs the objective standards found on the checklist of information required for coordination.

Shared DHS Roadmap for Operational C-UAS Use under Pub. L. 115-254

Building Block	Explanation and Underlying Need	Metrics / Artifacts
1. Risk-based assessment of prioritized covered facilities and assets	Sec. 1602(k)(8) requires that the methodology of the risk-based assessment to identify covered facilities and assets account for a number of missions and factors and be coordinated with DOT on the impact to the NAS.	1A. Department coordinates with DOT (FAA) on the methodology of the risk-based assessment. 1B. Department shares list of covered facilities and assets to be protected per sec. 1602, including associated location-specific risks, if applicable, and risk assessment results. 1C. Department coordinates with FAA on assessment of airspace impacts and technology selection for a given covered facility or asset. 1D. Department works with the FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with the FAA to leverage the NTIA's IRAC process for this coordination and spectrum deconfliction.
2. Common threat definition	Sec. 1602(a) requires "credible threat" be defined in consultation with the Secretary of Transportation.	2A. Department develops threat definition in consultation with FAA. 2B. Department incorporates this threat definition into Department-wide, component-level, and facility and/or asset specific guidance as well as training and certification material. Definition to be incorporated into site/asset/mission-specific CONOPS documents.
3. National Airspace System impact analysis and mitigation	Sec. 1602(d)(2) requires the Department to coordinate with FAA before issuing any guidance or otherwise implementing its C-UAS authority if such	3A. Department coordinates with the FAA to assess the impact of C-UAS technology and activities on the safety and efficiency of the NAS, options to mitigate identified impacts, and potential

Building Block	Explanation and Underlying Need	Metrics / Artifacts
	guidance or implementation might affect aviation safety or the use of airspace.	consequences of such impacts for each initial covered facility or asset designation. 3B. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment, with the FAA for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters. 3C. Department cooperates with the FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with FAA. 3D. Department shares information on and pre-coordinates with the FAA the introduction of new C-UAS systems, system capabilities, and/or configurations for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters. 3E. Department coordinates with FAA on implementation of notification process of UAS incidents and immediate notification of C-UAS use to Air Traffic Control using the DOD/DOE/FAA coordinated WASP protocol allowing for the action needed to maintain the safety of potentially affected air traffic. 3F. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which applies to each individual UAS incident, including use of C-UAS systems, in the NAS.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
4. Judicious and responsible employment	Sec. 1602(b)(4) requires DHS coordinate with DOT and FAA before issuing any guidance that might affect aviation safety, civilian aviation and aerospace operations, aircraft airworthiness, or the use of airspace. Sec. 1602(b)(2) requires DHS, DOJ, and DOT to develop operational coordination and guidance for all C-UAS "actions" authorized under the Act Sec. 1602(e)(1) mandates t any interception or acquisition of, access to, maintenance or use of, UAS related communications shall be consistent with the Act and with protections afforded under the Constitution as well as federal laws related to privacy and CRCL. Sec. 1602(b)(1)(D) & (c) empowers DHS and DOJ to seize or confiscate UAS assets, which may be forfeited to the USG, as part of their authorized c-UAS actions. Seizure and forfeiture actions must comply with prevailing federal law and court precedent. Sec.1602(b)(1)(B) allows DHS to maintain the ability to warn UAS operators Sec. 1602(k)(8)(D) requires that the risk-based assessment includes the ability to provide reasonable advance notice to aircraft operators	4A. Department coordinates with FAA on the development and implementation of Department-wide policies and procedures for taking C-UAS actions, as well as, DHS component and site-specific objective standards. 4B. Department, in coordination with DOJ, implements guidance regarding: (1) the applicable warrant requirements (or warrant exceptions) necessary to conduct C-UAS operations, (2) compliance with CRCL and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions. 4C. Ensure property seizures and forfeiture standards comply with current law. 4D. Department develops procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements. 4E. Department coordinates with FAA to develop a standard process and procedure to warn UAS operators of potential C-UAS action and provide advance notice to aircraft operators. 4F. Department creates, as required, standards, guidelines and training for "use of force" for departmental law enforcement operators related to C-UAS operations and engagements. Standards to be reflected in site/asset/mission-specific CONOPS. 4G. Department directs/oversees development of CONOPS by location/asset/mission incorporating items such as rules for the Use of Force, C-UAS use notification/reporting process, etc.

Building Block	Explanation and Underlying Need	Metrics / Artifacts
	consistent with safety, NAS, national security, and law enforcement standards. Sec. 1602(b)(1)(F) authorizes the use of "reasonable force" if necessary, to disable, damage, or destroy a UAS or UA.	4H. Department and FAA develop and implement process to share and analyze Department C-UAS actions. 4I. Department and FAA will certify that the elements of the roadmap have been completed for each covered asset or facility with a co-signed concurrence memo.
6. Effective and efficient research, development, testing, and training	Sec. 1602(b)(3) requires that prior to the use of any such technology that DHS research, test, train on the use of, and evaluate any C-UAS technology.	5A. Department develops department C-UAS requirements that inform material and non-material needs across the DHS enterprise and shares requirements with FAA. 5B. Department develops and implements policies and CONOPS for research, development, testing and training on the use of C-UAS technology to accommodate anticipated component needs in coordination with FAA.
7. Designation of authorized personnel	Sec. 1602(a) allows the Secretary to authorize personnel with assigned duties that include the security or protection of people, facilities, or assets to take certain actions to mitigate a credible threat to protect certain facilities and assets.	6A. Department identifies relevant component personnel for Secretary authorization. 6B. Department establishes baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.
8. Sustaining cooperation with state and local law enforcement partners	Sec. 1602(e)(5) allows DHS to share threat information with SLTT law enforcement as part of a security or protection operation but excludes acquired/intercepted communications.	7A. Department examines existing information sharing tools to determine the extent to which these tools can be leveraged to share UAS related threat information.7B. Develop definition of mass gathering in coordination with DOJ and SLTT partners. 7C. Department coordinates with DOJ on development of guidance and procedures for implementing SLTT law enforcement

Building Block	Explanation and Underlying Need	Metrics / Artifacts
		into relevant C-UAS operations, including mass gathering and SEAR event operations.
9. Congressional Reports and Notifications	Sec. 1602(g)(5) requires congressional notification within 30 days of deployments of new technology and must include description of options considered to mitigate impacts to the NAS. Sec. 1602(g) also requires a semiannual briefing to Congress and includes several requirements. Sec. 1602(f) requires funding transparency for C-UAS actions beginning in FY20. Sec. 1602(l)(1)(A) requires a threat assessment to focus on critical infrastructure and domestic large hub airports and includes multiple requirements.	8A. Department identifies process for Congressional notification of technology deployments and coordination process with FAA. 8B. Department develops timeframes for briefing inputs from stakeholders. 8C. Department develops guidance to track associated C-UAS related costs. 8D. Department identifies components/offices to lead assessment and timeframes to meet statutory deadline, which is one year from date of enactment, and consults with FAA on threat assessment.
10. Rulemaking	Sec. 1602(d) authorizes DHS, DOJ, and DOT to issue regulations as necessary and requires guidance to implement the authorities vested in the Act (including effects on aviation security).	9A. The Department identifies components responsible for the coordination, deconfliction, and publication of appropriate rules, notices, regulations, and guidance in the Federal Register.

DHS C-UAS Objective Standards

Roadmap Requirement	Objective Standard
1C. Department coordinates with FAA on assessment of airspace impacts and technology selection for a given covered facility or asset. **1D. Department works with the FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with the FAA to leverage the NTIA's IRAC process for this coordination and spectrum deconfliction.**	D.1.1) The Department provided a standard operating procedure/policy for delivering information on the specific C-UAS system(s) to be used to FAA, and the planned modes of operation for each C-UAS system for each covered location.
1A. Department coordinates with DOT (FAA) on the methodology of the risk-based assessment. **1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.**	D.1.2) The Department provided a standard operating procedure/policy for delivering results of the risk-based assessment rooted in 6 U.S.C. § 124n for each installation.
1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.	D.1.3) The Department provided an authoritative list of facilities and assets scheduled to receive C-UAS technology, with the understanding that some facilities, such as NSSE or USSS protective operations pursuant to sections 3056(a) and 3056A(a) of Title 18, United States Code, and the Presidential Protection Assistance Act of 1976, are presumed to be facilities or assets that are assessed to be high risk and a potential target for unlawful UA activity, such that identifying specific threats are not necessary.
1B. Department shares list of covered facilities and assets to be protected per 6 U.S.C. § 124(n) including associated location-specific risks, if applicable, and risk assessment results.	D.1.4) The Department provides standard operating procedures/policy for the deployment schedule, to include installation, testing, initial operational capability, and full mission capability, for each covered location.

Roadmap Requirement	Objective Standard
1C. Department coordinates with FAA on the assessment of airspace impacts and technology selection for a given covered facility or asset. **1D. Department works with FAA to characterize the spectrum effects of all deployed C-UAS technology on the NAS. Department cooperates with the FAA to leverage the IRAC process for this coordination and spectrum deconfliction.**	D.1.5) The Department provided standard operating procedure/policy for delivering EA requests for each 6 U.S.C. § 124n C-UAS operating location developed with the FAA.
2A. Department develops threat definition in consultation with FAA. **2B. Department incorporates this threat definition into Department-wide, component-level, and facility and/or asset-specific guidance as well as training and certification material. Definition to be incorporated into site/asset/mission-specific CONOPS documents.**	D.2.1) The Department provided to components the threat definition developed in consultation with the FAA.
3A. Department coordinates with FAA to assess the impact of C-UAS technology and activities on the safety and efficiency of the NAS, options to mitigate identified impacts, and potential consequences of such impacts for each initial covered facility or asset designation. **3B. Department shares technical specifications for each C-UAS system, specifically including spectrum information for RF-based equipment, with the FAA for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters.** **3C. Department cooperates with FAA to carry out field tests to improve understanding of real-world effects of RF-based C-UAS systems. Department shares and collaboratively analyzes testing results with the FAA.** **3D. Department shares information on and pre-coordinates with the FAA the introduction of new C-UAS systems, system capabilities, and/or configurations**	D.3.1) The Department provided a standard operating procedure/policy to ensure all changes to C-UAS configuration—to include equipment, procedures, and operational use—at covered locations must be coordinated with FAA prior to implementation of the change.

Roadmap Requirement	Objective Standard
for each initial covered facility or asset designation or when there is a change to the C-UAS operating parameters.	
3E. Department coordinates with FAA on implementation of notification process of UAS incidents and immediate notification of C-UAS use to ATC using the DOD/DOE/FAA coordinated WASP protocol allowing for the action needed to maintain the safety of potentially affected air traffic.	D.3.2) The Department provided to components the requirement to notify the FAA of imminent or current C-UAS technology activation (e.g., WASP protocol).
3F. Department and FAA develop and implement a post-incident / after-action reporting process, including facility and/or asset specific procedures, which applies to each individual UAS incident, including use of C-UAS systems, in the NAS.	D.3.3) The Department provided to components the requirement to use the post-incident/after-action reporting process.
4A. Department coordinates with FAA on the development and implementation of Department-wide policies and procedures for taking C-UAS actions, as well as, DHS component and site-specific objective standards.	D.4.1) The Department provided guidance to components on C-UAS actions.
4B. Department, in coordination with DOJ, implements guidance regarding: (1) the applicable warrant requirements (or warrant exceptions) necessary to conduct C-UAS operations, (2) compliance with CRCL and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions. **4C. Ensure property seizure and forfeiture standards comply with current law.**	D.4.2) The Department provided to components operating procedures/policy(s) for situations when C-UAS operations implicate (1) warrant requirements, (2) compliance with CRCL and privacy protections, (3) information handling procedures to ensure proper collection, sharing, and retention of information collected through lawful C-UAS actions.
4D. Department develops procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements.	D.4.3) The Department provided to components the procedures for collecting, retaining, and sharing of information consistent with constitutional, civil rights, civil liberties, privacy, and statutory requirements.

Roadmap Requirement	Objective Standard
4E. Department coordinates with FAA to develop a standard process and procedure to warn UAS operators of potential C-UAS action and provide advance notice to aircraft operators.	D.4.4) The Department provided to components the procedures for location requested and established UAS-specific airspace restrictions.
4F. Department creates, as required, standards, guidelines and training for "use of force" for departmental law enforcement operators related to C-UAS operations and engagements. Standards to be reflected in site/asset/mission-specific CONOPS.	D.4.5) The Department provided components guidance on using force, which is consistent with law and Department policies and procedures.
4G. Department directs/oversees development of CONOPS by location/asset/mission incorporating items such as rules for the Use of Force, C-UAS use notification/reporting process, etc.	D.4.6) The Department provided components guidance for C-UAS CONOPS development to include rules for use of force and the notification/reporting processes.
4H. Department and FAA develop and implement process to share and analyze Department C-UAS actions.	D.4.7) The Department provided components guidance on procedures to collect and analyze data to summarize C-UAS action taken.
4I. Department and FAA will certify that the elements of the roadmap have been completed for each covered asset or facility with a co-signed concurrence memo.	D.4.8) The Department provided components standard operating procedures/policy for obtaining certification from the Department and FAA that elements of the roadmap have been completed and for obtaining a co-signed concurrence memo.
5A. Department develops C-UAS requirements that inform material and non-material needs across the DHS enterprise and shares requirements with FAA.	D.5.1) The Department developed a list of Departmental C-UAS requirements that inform material and non-material needs across DHS and has shared that list of requirements with FAA.

Roadmap Requirement	Objective Standard
5B. Department develops and implements policies and CONOPS for research, development, testing and training on the use of C-UAS technology to accommodate anticipated component needs in coordination with FAA.	D.5.2) The Department provided to components the policies and CONOPS for research, development, testing, and training on the use of C-UAS technology to accommodate anticipated component needs that were developed in coordination with the FAA.
6A. Department identifies relevant component personnel for Secretary authorization.	D.6.1) The Department identified and provided to components relevant component personnel for Secretary authorization.
6B. Department establishes baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.	D.6.2) The Department provided to components the policy(s) establishing baseline training and qualification standards for personnel authorized to engage in C-UAS operations, including component specific requirements.
7B. Develop definition of mass gathering in coordination with DOJ and SLTT partners.	D.7.1) The Department developed and provided to components a definition of mass gatherings in coordination with DOJ and SLTT partners.

Appendix 5: DHS Template for Covered Facility or Asset Designation

In accordance with Pub. L. 115-254, the template below identifies DHS's Authorization to Conduct C-UAS Activities for a covered facility or asset. This memorandum authorizes designated officers and employees of the Agency or Component to take the actions necessary to mitigate a credible threat posed by UAS. This memorandum is issued following the internal coordination process between the FAA, Department, Agency, and component. This process is mirrored by other authorized federal agencies, which differ slightly based on the authorizing legislation and agency policy.

Secretary
U.S. Department of Homeland Security
Washington, DC 20528

MEMORANDUM FOR THE AGENCY OR COMPONENT HEAD

FROM: DHS Secretary

SUBJECT: Authorization to Conduct Counter-Unmanned Aircraft System Activities FOR REQUESTED ACTIVITY

Pursuant to the authority granted under section 1602 of the Federal Aviation Administration Authorization Act of 2018, Pub. L. No. 115-254, 132 Stat. 3186, 3552-29 (2018) (codified at 6 U.S.C. § 124n) (the "Act"), I hereby authorize officers and employees of the **AGENCY OR COMPONENT** with assigned duties that include the security and protection of people, facilities, or assets, to take the actions, authorized by the Act, that are necessary to mitigate a credible threat that an unmanned aircraft or unmanned aircraft system (collectively "UAS") poses to the safety or security of the **EVENT NAME in EVENT LOCATION on DATE**. The specific actions that I am authorizing are described in the **AGENCY OR COMPONENT** policies, concept of operations (CONOPS), and the **AGENCY OR COMPONENT LOCATION/EVENT SPECIFIC** Operations Plan (OPLAN), and are in accordance with the Act, DHS Guidance dated September 10, 2019, and other controlling legal authority and guidance.

Designation of the EVENT NAME as a Covered Facility or Asset

I hereby designate the **EVENT NAME,** a level XXX Special Event Assessment Rating event, as a "covered facility or asset," under 6 U.S.C. § 124n(k)(3). **This event in EVENT LOCATION** is in the United States, and directly relates to the missions authorized to be performed by the Department pertaining to protection operations pursuant to **US CODE REFERENCES**, which is identified by the Act as high-risk and a potential target for unlawful UAS activity. After completing a risk-based assessment in coordination with the Secretary of Transportation as reflected in the attached coordination letter, I have designated **EVENT NAME,** as a covered facility or asset and authorize C-UAS operations at this event.

Appendix 6: Acronym List

ARC	Aviation Rulemaking Committee
ATC	Air Traffic Control
ATSC	Air Traffic Security Coordinator
C-UAS	Counter-Unmanned Aircraft System(s)
CONOPS	Concept of Operations
CONEMP	Concept of Employment
CRCL	Civil Rights and Civil Liberties
DOD	Department of Defense
DOE	Department of Energy
DOJ	Department of Justice
DHS	Department of Homeland Security
EA	Electronic Attack
FAA	Federal Aviation Administration
IRAC	Interdepartment Radio Advisory Committee
LEA	Law Enforcement Agencies
IPT	Integrated Project Team
NAS	National Airspace System
NTIA	National Telecommunications and Information Administration
RF	Radio Frequency
SHORT	Spectrum Hot Operational Readiness and Training process
STA	Special Temporary Authorization
SLTT	State, Local, Tribal, and Territorial
TTP	Tactics, Techniques, or Procedures
UA	Unmanned Aircraft
UAS	Unmanned Aircraft System(s)
U.S.C.	United States Code