



Desk Reference for Unmanned Aircraft Systems Environmental Review

Version 1 – October 2024

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Acronyms and Abbreviations

AEE	Office of Environment and Energy
AFS	Flight Standards Service
AGC	Office of Chief Counsel
AGL	Above Ground Level
APE	Area of Potential Effects
ATO	Air Traffic Organization
AUS	Unmanned Aircraft Systems Integration Office
AVS	Aviation Safety
BVLOS	Beyond Visual Line of Sight
CATEX	Categorical Exclusion
CBO	Community Based Organization
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COA	Certificate of Waiver or Authorization
dB	decibel
DNL	Day-Night Average Sound Level
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
EO	Executive Order
EPA	Environmental Protection Agency
EPS	Environmental Protection Specialist
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FRIA	FAA-Recognized Identification Area
GIS	Geographic Information System
ID	Identification
IPP	Integration Pilot Program
LAANC	Low Altitude Authorization and Notification Capability
LOB	Line of Business
NAS	National Airspace System
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
OPR	Office of Primary Responsibility
PSP	Partnership for Safety Plan
RC	Remote Controlled
RPIC	Remote Pilot in Command

Desk Reference for UAS Environmental Review

SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
UA	Unmanned Aircraft
UAS	Unmanned Aircraft Systems
U.S.	United States
USFWS	U.S. Fish and Wildlife Service
VLOS	Visual Line of Sight

1 Introduction

1.1 Overview

The Federal Aviation Administration (FAA) Reauthorization Act of 2024 requires the FAA to publish unmanned aircraft systems (UAS)-specific environmental review guidance and implementation procedures.¹ The FAA developed this desk reference per Section 909 to assist FAA practitioners and applicants in evaluating the potential environmental impacts of UAS² proposals that require FAA approval. Prior to making a decision, the FAA must conduct an environmental review that meets the requirements of the National Environmental Policy Act of 1969 (42 United States Code [U.S.C.] § 4321 *et seq.*) (NEPA), the Council on Environmental Quality (CEQ) NEPA Implementing Regulations (CEQ Regulations; 40 Code of Federal Regulations [CFR] Parts 1500 to 1508), and FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*.³ Hereafter, this desk reference will be referred to as the UAS NEPA Desk Reference.

This UAS NEPA Desk Reference is designed to complement FAA Order 1050.1F and the 1050.1 Desk Reference⁴ and should therefore be used in conjunction with both of those documents. FAA Order 1050.1F provides the FAA's NEPA-implementing policies and procedures, which must be followed when preparing a NEPA document for a UAS proposed action. When citing requirements from laws, regulations (including the CEQ Regulations), FAA Order 1050.1F, or other authorities, cite the original source authority and not the UAS NEPA Desk Reference. This Desk Reference may be cited only as a reference for the guidance it contains and may not be cited as the source of requirements under laws, regulations, Executive Orders, Department of Transportation or FAA directives, or other authorities.

Users of this UAS NEPA Desk Reference should be aware that changes to the CEQ Regulations or FAA Order 1050.1F may require changes to content in this document. The UAS NEPA Desk Reference will be updated periodically on an as-needed basis to reflect changes to regulations, special purpose laws, and any other requirements. Please consult with Aviation Safety (AVS) or the Office of Environment and Energy (AEE) regarding regulatory changes that may warrant revision.

1.2 Background

The policy of the United States (U.S.) Government is to promote the safe operation of UAS and enable the development of UAS technologies for use in agriculture, commerce, emergency

¹ See Section 909 of the FAA Reauthorization Act of 2024.

² A UAS consists of a remotely piloted aircraft and its associated elements—including the control station and associated communication links—that are required for safe and efficient operation in the NAS. The scope of this document does not include Advanced Air Mobility (AAM). AAM aircraft are often referred to as air taxis or electric vertical takeoff and landing (eVTOL) aircraft.

³ See:

https://www.faa.gov/about/office_org/headquarters_offices/apl/envIRON_policy_guidance/policy/faa_nepa_order.

⁴ Ibid.

management, human transportation, and other sectors.⁵ Since 2012, when Congress first charged the FAA with safely integrating UAS into the National Airspace System (NAS),⁶ the FAA has taken steps to develop a regulatory scheme that will enable full integration of unmanned aircraft (UA; commonly referred to as drones) in ways that are safe, scalable, economically viable, and environmentally conscious.

The FAA has engaged in a phased, incremental approach to integrating UAS into the NAS. The FAA first took steps to integrate UAS into the NAS at specific test sites and issued operational requirements for small UAS operations in the NAS. Recognizing that further integration of UAS would require private-sector cooperation and the involvement of state, local, and tribal governments in federal efforts to develop and enforce regulations on UAS operations in their jurisdictions, a Presidential Memorandum directed the FAA to establish a UAS Integration Pilot Program (IPP) in 2017.⁷ The UAS IPP had three objectives:

1. Test and evaluate various models of state, local, and tribal government involvement in the development and enforcement of federal regulations for UAS operations.
2. Encourage UAS owners and operators to develop and safely test new and innovative UAS concepts of operations.
3. Inform the development of future federal guidelines and regulatory decisions on UAS operations nationwide.

The FAA selected state, local, and tribal governments to participate in the UAS IPP through public-private partnerships.⁸ The UAS IPP demonstrated that waivers and exemptions to existing federal rules, with proper safety risk mitigations in place, were necessary in the near-term to enable operators to test new and innovative approaches to flying drones for various applications. The UAS IPP also highlighted the need for a transition away from waivers and exemptions to permanent solutions to include certifications and revised regulations to eventually normalize more complex UAS operations within a regulatory framework. Finally, the UAS IPP demonstrated a need for more efficient decision-making frameworks to integrate UAS operations into the NAS.

As a result, since October 2020, the FAA has been tackling the remaining challenges of UAS integration through a new UAS program called BEYOND.⁹ The BEYOND program challenge areas include:

1. Beyond Visual Line of Sight (BVLOS) operations that are repeatable, scalable, and economically viable with specific emphasis on infrastructure inspection, public operations, and small package delivery.
2. Leveraging industry operations to better analyze and quantify the societal and economic benefits of UAS operations.

⁵ Presidential Memorandum of October 25, 2017, “Memorandum on Unmanned Aircraft Systems Integration Pilot Program” at § 1, 82 FR 50301 (October 30, 2017).

⁶ 49 U.S.C. 44802; FAA Modernization and Reform Act of 2012, Pub. L. No. 112-95, Sec. 332. 126 Stat. 11, 73 (2012).

⁷ Presidential Memorandum of October 25, 2017, “Memorandum on Unmanned Aircraft Systems Integration Pilot Program” at § 2, 82 FR 50301 (October 30, 2017).

⁸ See: https://www.faa.gov/uas/programs_partnerships/completed/integration_pilot_program.

⁹ See: https://www.faa.gov/uas/programs_partnerships/beyond.

3. Focusing on community engagement efforts to collect, analyze, and address community concerns. The BEYOND program continues the partnership with eight of the UAS IPP participants.¹⁰

In addition to these programs, the FAA launched the UAS Partnership for Safety Plan (PSP) initiative in December 2016 to address and advance complex UAS operations. Complex UAS operations include activities that cannot be conducted under the Small UAS Rule (14 CFR Part 107) or as a recreational flight without additional certification or approval.¹¹ The UAS PSP program establishes a working relationship between the FAA and industry to help facilitate the integration of UAS into the NAS.¹²

Informed by these programs, the FAA is currently pursuing an “operations first” approach to regulating UAS operations by enabling the lowest risk operations first, and then providing a path to enable increasingly higher risk operations through exemptions or waivers from FAA rules. Finally, future rulemaking actions are expected to address more complex operations.

To align with this overarching strategy for UAS integration, the FAA is pursuing a strategic approach for NEPA review of proposed UAS operations that includes two parallel paths: (1) completing near-term NEPA review of requests from individual operators, while (2) examining and implementing programmatic¹³ NEPA review of multi-operator operations within the same geographic area or multiple geographic areas.¹⁴ This approach will allow the FAA to efficiently manage resources, ensure compliance with environmental review requirements, and keep pace with the industry.

1.3 FAA Roles and Responsibilities

Multiple FAA offices play a role in UAS approvals:

- The **Aviation Safety/Flight Standards Service (AVS/AFS)** is responsible for the certification, production approval, and continued airworthiness of aircraft. Within AVS, AFS is responsible for issuing certificates, exemptions, waivers, and operations specifications (OpSpecs) for UAS operations, in addition to ensuring the appropriate level of NEPA review for these various certificates, waivers, and exemptions. AFS leads the preparation of individual NEPA documents to ensure compliance and smooth integration of UAS operations into the NAS. AFS is the approving authority for the FAA’s UAS NEPA reviews.

¹⁰ Ibid.

¹¹ Examples of complex UAS operations are available here: https://www.faa.gov/uas/advanced_operations.

¹² See: www.faa.gov/uas/programs_partnerships/psp/.

¹³ A programmatic NEPA review is used to assess the environmental effects of policies, programs, plans, or groups of related activities. Agencies may use programmatic environmental documents to conduct a broad or holistic evaluation of effects or policy alternatives; evaluate widely applicable measures; or avoid duplicative analysis for individual actions by first considering relevant issues at a broad or programmatic level. 40 CFR § 1501.11.

¹⁴ The FAA has completed two programmatic NEPA reviews for UAS operations and is in the process of conducting a third programmatic NEPA review. The two completed programmatic reviews are posted on the FAA’s website: https://www.faa.gov/uas/advanced_operations/nepa_and_drones. Refer to Chapter 6 for more information on programmatic NEPA reviews.

- The **AVS/UAS Integration Office (AVS/AUS)** brings government and industry together on integration issues, provides technical assistance and program management, and functions as the FAA's lead for all things related to UAS. AUS staff support UAS operators as the primary point of contact between prospective operators and other Lines of Business (LOBs) within the FAA. AUS also supports AFS with NEPA compliance.
- The **Air Traffic Organization (ATO)** is responsible for approving changes in airspace and air traffic control procedures. For UAS actions, ATO issues Certificates of Waiver or Authorization (COA) for use of the airspace.
- The **AVS/Office of Quality, Integration, and Executive Services (AVS/AQS)** assures the adequacy of national programs, plans, policies, procedures, and priorities, which govern the integration of key safety and business processes across the AVS enterprise. AQS supports AVS Services and Offices with coordination for the design, improvement, and integration of selected business and operational processes, including compliance with NEPA and other applicable laws, regulations, and policies.

Due to the complex nature of UAS approvals, more than one FAA LOB may be responsible for the numerous approvals that enable UAS operations. For example, AFS may issue a certificate and OpSpecs to a UAS operator, and ATO may issue a COA for the same proposal. All of these approvals together are required for the UAS to operate in the NAS.

The NEPA review for a UAS proposal is completed by the Office of Primary Responsibility (OPR). The OPR is the office proposing to take an action that is subject to NEPA review (e.g., issuing a waiver, OpSpecs, or other approval). As stated above, the OPR is usually AFS.¹⁵ The OPR is responsible for completing the NEPA review process and make decisions about the proposed action after considering the potential environmental impacts of the action. The NEPA process should start as early in the application process as possible.

OPRs that encounter issues of high-priority, first impression, or novel approaches to conducting NEPA review that may set precedent for the FAA (including those related to new entrants, such as UAS) must consult with AEE and the FAA's Office of Chief Counsel, Airports and Environmental Law Division (AGC-600). AEE and AGC-600 support OPRs in various elements of the NEPA process.

- **AEE** provides policy oversight on environmental actions; assists in developing guidelines and procedures for FAA program areas; interprets policies established in FAA Order 1050.1F; provides assistance with environmental tools, such as methodologies for UAS noise analysis; and provides guidance to OPRs on NEPA compliance.
- **AGC-600** is responsible for providing legal interpretation on NEPA compliance and legal requirements. AGC-600 counsels and assists OPRs in completing the NEPA process by advising on the legal sufficiency of NEPA documents.

¹⁵ As needed, AFS Environmental Protection Specialists coordinate with the FAA Office of Quality, Integration, and Executive Services (AQS), AUS, AEE, and Office of Chief Counsel (AGC).

2 Overview of FAA Regulation of UAS

Congress has provided the FAA with exclusive authority to regulate airspace in the United States, as well as aviation safety, the efficiency of the navigable airspace, and air traffic control, among other things, through Title 49 U.S.C. Subtitle VII. Any UAS flown outdoors is subject to FAA regulation because a UAS is considered an aircraft under both 49 U.S.C. § 40102 and 14 CFR § 1.1.

The three aspects of aviation the FAA regulates for all aviation activities are the aircraft, the aviator (in the case of UAS, this is the Remote Pilot in Command [RPIC]), and the airspace. FAA operating authorities for UAS operations vary based on the type of operator (civil or public) and use of the UAS (recreational, commercial, or government/public agency).

Table 2-1 shows the UAS operating authority, as well as aircraft, pilot, and airspace requirements, for different types of UAS operations. Section 2.1 describes how different types of UAS operations are regulated.

Table 2-1. UAS Operating Authorities

	UAS Operating Authority	Aircraft Requirements	Pilot Requirements	Airspace Requirements	Types of Operation
Civil	14 CFR Part 91	§ 44807 Exemption	Part 61 airman certificate	Blanket COA or Jurisdictional COA for specific airspace	UAS may be > 55 lbs.
	14 CFR Part 91	Airworthiness Certification	Part 61 airman certificate	Standard COA for specific airspace	Research and development, crew training, market survey
	14 CFR Part 107 (Small UAS)	UAS < 55 lbs. max gross operating weight	Part 107 Remote Pilot Certificate with small UAS rating	Airspace waiver or authorization for Class B, C, D, E airspace	Visual Line of Sight, below 400 ft. (some regulations subject to waiver)
	49 U.S.C. § 44809 (Recreational)	No weight restrictions, but aircraft > 55 lbs. must be operated at fixed sites	Community-Based Organization (CBO) standards	Airspace waiver or authorization for controlled airspace	CBO safety guidelines and strictly recreational purposes
	14 CFR Part 135 (Cargo Delivery)	Type Certification ^a	Airman certificate	Blanket COA or Jurisdictional COA for specific airspace	Package delivery and AAM
	14 CFR Part 135 (Cargo Delivery)	§ 44807 Exemption	Airman certificate	Blanket COA or Jurisdictional COA for specific airspace	Package delivery and AAM
	14 CFR Part 137 (Agricultural)	§ 44807 Exemption	Airman certificate	Blanket COA or Jurisdictional COA for specific airspace	Spraying of economic poisons

	UAS Operating Authority	Aircraft Requirements	Pilot Requirements	Airspace Requirements	Types of Operation
Public	Public Aircraft Operations ^b	Self-certification by public agency	Self-certification by public agency	Blanket COA or Jurisdictional COA for specific airspace	Public Aircraft Operations, UAS Test Site operations

^a Aircraft must have an appropriate and current worthiness certificate.

^b Government agencies (including federal, state, and tribal), law enforcement, and public safety entities can fly under Part 107 or receive a COA to function as “public aircraft operator” that can self-certify its drone pilots and drones (49 U.S.C. §40102(a) and § 40125).

Notes: COA = Certificate of Waiver or Authorization

2.1 Civil Operators

2.1.1 Recreational Operations

Recreational operations can be conducted under either of the following operating authorities: (1) 49 U.S.C. § 44809, *Exception for limited recreational operations of unmanned aircraft*,¹⁶ or (2) 14 CFR Part 107 (see the next section for more information about Part 107). According to 49 U.S.C. § 44809, a person may operate a small UA without specific certification or operating authority from the FAA if the operation adheres to *all* of the limitations included in § 44809(a).

- **Illustrative Use Case:** Typical UAS types include recreational model aircraft such as remote controlled (RC) gliders, RC scale model aircraft, and electric quadcopters. Flight profiles differ depending on the flight objective and may include hovering close to the ground to take photographs or flying along a ridge for glider slope soaring. These UAS may be used in various places, including people’s yards, at athletic fields through Community-Based Organizations (CBOs) affiliated with the Academy of Model Aeronautics, or at an FAA-Recognized Identification Area (FRIA), which is a defined geographic area where drones can be flown without remote identification (ID) equipment.¹⁷
- **Aircraft Provisions:** All UAS operated recreationally must be registered and marked in accordance with 49 U.S.C. Chapter 441.¹⁸ Additional aircraft requirements for recreational UAS differ depending on whether the aircraft is operated from a fixed flying site. Outside fixed sites, recreational UAS must weigh less than 55 pounds (lbs.) (including anything attached to the UA) and need to broadcast remote ID. Recreational UAS weighing more than 55 lbs. must be operated under FAA-approved safety guidelines of a recognized CBO and operated solely at a fixed site. Recreational UAS are not required to broadcast remote ID when operated solely in a CBO-designated area.¹⁹
- **Airspace Provisions:** The UAS must be flown within the visual line of sight (VLOS) of the person operating the aircraft or a visual observer co-located and in direct

¹⁶ See also: https://www.faa.gov/documentLibrary/media/Advisory_Circular/AC_91-57C_FAA_Revised.pdf.

¹⁷ See: https://www.faa.gov/uas/getting_started/remote_id/fria.

¹⁸ UAS weighing less than 0.55 pounds do not need to be registered and therefore do not need to comply with the Remote ID rule.

¹⁹ See: https://www.faa.gov/uas/getting_started/remote_id.

communication with the operator. In controlled airspace,²⁰ the operator may obtain prior authorization (e.g., from the FAA's Low Altitude Authorization and Notification Capability [LAANC] system) before operating and comply with all airspace restrictions and prohibitions. Recreational flyers do not need to obtain authorization prior to operating in Class G (uncontrolled airspace) below 400 feet above ground level (AGL). When flying under 49 U.S.C. § 44809, operators must comply with the rules of a CBO.

2.1.2 Commercial Operations

Commercial UAS operations can be conducted under multiple operating authorities depending on the aircraft and type of operation. As outlined in Table 2-1, these operating authorities include the following:

- 14 CFR Part 107 (Part 107)
- 14 CFR Part 91 (Part 91) / 49 U.S.C. § 44807
- 14 CFR Part 135 (Part 135)
- 14 CFR Part 137 (Part 137)

2.1.2.1 14 CFR Part 107

On June 28, 2016, the FAA published Part 107,²¹ which allowed people to begin conducting routine, civil small UAS operations.²² The Part 107 remote pilot certification and operating rules cover civil small UA (UA weighing less than 55 lbs. on takeoff, including everything that is on board or otherwise attached to the aircraft). Those rules fulfilled Congressional intent by enabling the integration of the lowest-risk small UAS operations into the NAS. They also provided for a number of operational restrictions on small UA, including operations at night²³ or over people.²⁴ The intent of these restrictions is to mitigate the potential risks to people on the ground and other users of the airspace.

In keeping with a phased approach to integrating UAS into the NAS, on January 15, 2021, the FAA published a final rule amending Part 107 to permit routine small UAS operations at night or over people under certain conditions.²⁵ In particular, the amendments allow operations over people who are not directly participating in the operation, located under a covered structure, or inside a stationary vehicle, as long as the operation meets the requirements in the amendments. The amendments also allow routine operations of small UAS at night when the RPIC completes a current initial knowledge test or recurrent training, as applicable, and when the small UAS has

²⁰ Controlled airspace is a generic term that covers the different classifications of airspace and defined dimensions within which air traffic control service is provided in accordance with the airspace classification. Controlled airspace consists of Class A, Class B, Class C, Class D, and Class E airspace.

²¹ See: <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-F/part-107>.

²² *Operation and Certification of Small Unmanned Aircraft Systems*, 81 FR 42064 (June 28, 2016).

²³ An operation at night was defined as an operation conducted between the end of evening civil twilight and the beginning of morning civil twilight, as published in the Air Almanac, converted to local time.

²⁴ An operation over people was established as one in which a small UA passes over any part of any person who is not directly participating in the operation and who is not located under a covered structure or inside a stationary vehicle.

²⁵ *Operation of Small Unmanned Aircraft Systems over People*, 86 Fed. Reg. 4314 (January 15, 2021)

anti-collision lighting visible for at least three statute miles with a flash rate sufficient to avoid a collision.

- **Illustrative Use Case:** Types of operations conducted under Part 107 include aerial photography, survey, infrastructure inspections, emergency response, research and development, and many others. Under Part 107, the RPIC, visual observer (if one is used), and the person manipulating the flight control of the UAS must be able to see the UA throughout the entire flight (i.e., VLOS operations).
- **Aircraft Provisions:** To operate under Part 107, UAS must weigh less than 55 lbs., be registered on FAADroneZone, and have appropriate markings.²⁶ UAS operating under Part 107 need to broadcast remote ID in accordance with 14 CFR Part 89.²⁷
- **Airspace Provisions:** Airspace rules for commercial operations under Part 107 are similar to those for Recreational Flyers and Hobbyists under Section 44809. The UAS must be flown within VLOS of the person operating the aircraft or a visual observer co-located and in direct communication with the operator. However, under Part 107, operators can also request waivers from the FAA for relief from some Part 107 rules, including waivers to fly at night, without a visual observer, or to fly BVLOS.²⁸ To obtain a waiver, a UAS operator submits a waiver request form on FAADroneZone. The FAA reviews applications based on an established set of criteria used to evaluate waiver applications.²⁹

2.1.2.2 14 CFR Part 91 / 49 U.S.C. 44807

As noted above, Part 107 is only applicable to UA weighing less than 55 lbs. on takeoff. To fly a UA that exceeds the maximum weight limit of Part 107 or if the UAS operation includes a non-waiverable rule, operators may apply for an exemption from certain flight rules contained in Part 91 in accordance with 14 CFR Part 11 and the Congressional authority granted in Special Authority for Certain Unmanned Systems, 49 U.S.C. § 44807. 49 U.S.C. § 44807 grants the Secretary of Transportation the authority to use a risk-based approach to determine if certain UAS may operate safely in the NAS on a case-by-case basis. This grants UAS operators safe and legal entry into the NAS, thus improving safety.

- **Illustrative Use Case:** UAS weighing more than 55 lbs. and operating under a § 44807 exemption may be used for linear infrastructure survey (e.g., rail lines, pipelines, electrical lines), fixed site survey (e.g., energy facilities), emergency response operations, and research and development,³⁰ such as flight tests, technology evaluations, risk assessments, and data gathering and analysis. The UAS may be fixed-wing, multicopter, hybrid multicopter-fixed-wing aircraft, or unconventional designs. UAS research and

²⁶ See: <https://www.ecfr.gov/current/title-14/chapter-I/subchapter-C/part-48>.

²⁷ See: https://www.faa.gov/uas/getting_started/remote_id.

²⁸ See 14 CFR §§ 107.200 and 107.205.

²⁹ See: https://www.faa.gov/sites/faa.gov/files/uas/commercial_operators/part_107_waivers/Part-107-Waiver-Section-Specific-Evaluation-Information.pdf.

³⁰ See: https://www.faa.gov/uas/research_development.

development operations may be operated through one of the seven UAS test site programs around the country.³¹

- **Aircraft Provisions:** To operate under Part 91, UAS must have a special airworthiness certificate or a § 44807 exemption. These UAS can weigh more than 55 lbs.
- **Airspace Provisions:** When a § 44807 exemption is granted, the petitioner will be issued a Blanket COA or Jurisdictional COA for specific airspace. If the operation cannot be conducted under the provisions of the Blanket COA, the proponent must apply for a Standard COA.

2.1.2.3 14 CFR Part 135

Part 135 certification is the only path for drones to carry the property of another for compensation or hire BVLOS. Drone operators that want to conduct small package delivery must use the FAA's existing Part 135 certification process, some of which the FAA has adapted for drone operations by granting exemptions for rules that do not apply to drones. All Part 135 applicants must go through the full five phases of the certification process.³²

- **Illustrative Use Case:** UAS operations conducted under Part 135 are for the transport and delivery of goods to homes or businesses, such as food, pharmaceuticals, and a range of small products. The UAS may be a typical quadcopter weighing less than 55 lbs.; however, fixed-wing, multicopter, and hybrid multicopter-fixed-wing aircraft and UA weighing more than 55 lbs. can be approved for commercial package delivery. Packages may be held within a UA's fuselage and delivered via a parachute to the delivery location or by lowering the package vertically (e.g., via cable) and releasing. Flight paths can be pre-determined from an operation point of origin to a delivery destination or may be random based on flight software to avoid sensitive areas or other UA. These UAS are typically operated from a business (e.g., Walmart, commercial vendor) or institution (hospital, educational) and deliveries made to residential homes, business locations, or other destinations. Typically, UA are operated from existing infrastructure (e.g., parking lot) without any land disturbance.
- **Aircraft Provisions:** To operate under Part 135, aircraft, including UAS, must have a type certificate. Type certification is the approval of the design of the aircraft and all component parts (including propellers, engines, control stations, etc.). The type certificate signifies the design is in compliance with applicable FAA airworthiness, noise, fuel venting, and exhaust emissions standards. In addition, aircraft operating as civil aircraft under Part 135 must obtain either an airworthiness certificate or an exemption under 49 U.S.C. § 44807. UA operating under Part 135 can weigh more than 55 lbs. and must broadcast remote ID.
- **Airspace Provisions:** Under Part 135, operators are allowed to fly BVLOS in certain situations, by completing a five-phase certification process. Additional limitations on use

³¹ See: https://www.faa.gov/uas/programs_partnerships/test_sites/locations.

³² See: https://www.faa.gov/licenses_certificates/airline_certification/135_certification/cert_process.

of airspace under Part 135 are established through a COA and OpSpecs. An OpSpecs document defines the scope of aircraft operations that the FAA has authorized.

2.1.2.4 14 CFR Part 137

Part 137 prescribes rules governing 1) agricultural aircraft operations within the United States and 2) the issuance of commercial and private agricultural aircraft operator certificates for those operations. In order to use a UAS for agricultural aircraft operations, an applicant must first petition the FAA for an exemption and then apply for an agricultural aircraft operator certificate.³³ UA weighing less than 55 lbs. (including the weight of the substance being dispensed) are operated under Part 107. To conduct agricultural aircraft using a UA weighing less than 55 lbs., operations require an exemption from § 107.36 (carriage of hazardous material) and several Part 137 regulations. UA weighing 55 lbs. or more are operated under 14 CFR Part 91. To conduct agricultural aircraft using a UA weighing 55 lbs. or more, operations require an exemption from several 14 CFR Parts 61, 91, and 137 regulations.

- **Illustrative Use Case:** Agricultural aircraft operations means the operation of an aircraft for the purpose of 1) dispensing any economic poison, 2) dispensing any other substance intended for plant nourishment, soil treatment, propagation of plant life, or pest control, or 3) engaging in dispensing activities directly affecting agriculture, horticulture, or forest preservation, but not including the dispensing of live insects. UA used to conduct agricultural aircraft operations may be fixed-wing, multicopter, or hybrid multicopter-fixed-wing aircraft. Some UAS may carry equipment for imaging and scanning, such as cameras and Light Detection and Ranging (LiDAR) scanners, in addition to the product dispenser equipment. Flight paths for dispensing products are generally a pre-determined back and forth flight trajectory to drop the product on the area. These UAS are typically operated in rural or agricultural areas, generally away from cities and population centers.
- **Aircraft Provisions:** Operators that conduct missions involving dispensing chemicals and agricultural products must hold an Agricultural Aircraft Operator Certificate, along with § 44807 exemption or airworthiness certificate.
- **Airspace Provisions:** The airspace rules for Part 91/Part 137 operations are defined on a case-by-case bases through a Blanket COA or a Jurisdictional COA for specific airspace.

2.2 Government / Public Agency

Government agencies (including federal, state, and tribal), law enforcement, and public safety entities can operate under either Part 107 or the statutory requirements for public aircraft.³⁴

- **Illustrative Use Case:** Public agencies and tribal governments may use UAS for a wide range of operations, such as airborne monitoring and surveillance, information or intelligence gathering, data collection, land and facility surveys, transport of medical or other supplies, and public safety. The UAS may be fixed-wing, multicopter, or hybrid

³³ See: https://www.faa.gov/uas/advanced_operations/dispersing_chemicals.

³⁴ See: https://www.faa.gov/uas/public_safety_gov/drone_program.

multicopter-fixed-wing aircraft and may weigh over 55 lbs. Some UAS may carry equipment for imaging, scanning, and data collection, such as cameras and LiDAR scanners, depending on the mission objective. Flight profiles also vary depending on the operation. These UAS may operate on federal land, private property, or other government jurisdiction, over open ocean, deserts, coastal areas, or mountainous regions.

- **Aircraft Provisions:** Government agencies can self-certify UAS with a COA. The FAA conducts a comprehensive operational and technical review of the application and, if necessary, provisions or limitations may be imposed as part of the approval to ensure the UAS can operate safely with other airspace users. Weight and other restrictions on the UAS are applied on a case-by-case basis. The aircraft and operations vary by use case and location. First responders and other organizations responding to natural disasters or emergency situations may be eligible for expedited approval through the Special Governmental Interest process.³⁵ Operations may include firefighting, search and rescue, law enforcement, utility or other critical infrastructure restoration, damage assessments as part of disaster recovery related insurance claims, or media coverage providing crucial information to the public.
- **Airspace Provisions:** Public aircraft operations are defined on a case-by-case basis through a Blanket COA or a Jurisdictional COA for specific airspace.

³⁵ Ibid.

3 Planning for UAS NEPA Reviews

NEPA applies to *major federal actions*,³⁶ which are essentially any activity or decision subject to federal control and responsibility. A proposal for UAS operations may require multiple authorizations or approvals to enable UAS operations in the airspace (see Section 2.1). UAS-related proposed actions subject to NEPA review include, but are not limited to, the following:

- granting exemptions;
- issuing certifications, waivers, OpSpecs, or permits;
- promulgating rules/regulations; and
- establishing a FRIA.

For example, in the case of a Part 135 package delivery proposal, major FAA actions include issuing an exemption, operator certificate, OpSpecs, and a COA.

A NEPA review is required when a proposed action would enable a UAS to operate (or change the way in which the UAS operates) in the airspace. Additionally, under NEPA, federal agencies are required to consider reasonable alternatives to the proposed action, and a no action alternative (assessing the potential environmental effects of not implementing the proposed action). The FAA has established a process to ensure compliance with the provisions of NEPA through FAA Order 1050.1F, Environmental Impacts: Policies and Procedures.

Although emergency actions are subject to NEPA review, special procedures may apply. UAS may be needed for emergency actions (e.g., restoring power and other safety uses after natural disasters, delivery of medical supplies during a pandemic, etc.). If a public agency wants to respond to an emergency using a UAS, the FAA action may be limited to issuing a COA for the UAS to operate in the airspace near the emergency situation (see Table 2-1). FAA Order 1050.1F, Paragraph 8-7 provides information for practitioners in these circumstances. Emergency circumstances may require immediate action that precludes following standard NEPA processes. Alternative arrangements for NEPA compliance are permitted. Such alternative arrangements are limited to those actions that are necessary to control the immediate impacts of the emergency.

3.1 Levels of NEPA Review

One of the first steps in the NEPA process is to determine the level of NEPA review. The EPS in the FAA OPR is accountable and responsible for determining the appropriate level of NEPA review. The OPR will be either AVS³⁷ or ATO. AVS is responsible if the action is related to

³⁶ *Major federal action* or *action* means an action that the agency carrying out such action determines is subject to substantial federal control and responsibility. 40 CFR 1508.1(w).

³⁷ Flight Standards typically acts as the OPR. The manager of AFS-750, General Aviation and Commercial Branch, is typically the responsible FAA official for NEPA associated with UAS projects. AUS may provide technical assistance to AFS during the NEPA process.

aircraft certification, production approval, and continued airworthiness of aircraft. ATO is responsible for approving changes in airspace and air traffic control procedures. The OPR may coordinate with AEE (AEE-400) and AGC (AGC-600) in determining the level of NEPA review for complex and novel applications. There are three levels of NEPA review:

1. Categorical Exclusion (CATEX)

CATEX means a category of actions that an agency has determined normally does not have a significant effect on the human environment. The FAA's list of CATEXs is contained in FAA Order 1050.1F. If a proposed action falls within the scope of a CATEX and there are no extraordinary circumstances, an environmental assessment (EA) or environmental impact statement (EIS) is not required.

Extraordinary circumstances are factors or circumstances that indicate a normally categorically excluded action may have a significant effect. Examples of extraordinary circumstances include potential substantial effects on sensitive environmental resources; potential substantial disproportionate and adverse effects on communities with environmental justice concerns; potential substantial effects associated with climate change; and potential substantial effects on historic properties or cultural resources.

2. Environmental Assessment (EA)

An EA is a concise public document, for which a federal agency is responsible, for an action that is not likely to have a significant effect or for which the significance of the effects is unknown. It is used to support an agency's determination of whether to prepare an EIS or a finding of no significant impact (FONSI). Complex drone proposals (e.g., package delivery using a drone) normally require preparation of an EA.

3. Environmental Impact Statement (EIS)

An EIS is a detailed written statement that is required by section 102(2)(C) of NEPA. EISs are prepared for proposed actions that are likely to result in significant environmental impacts.

3.2 Completed NEPA Reviews and Decisions for UAS Actions

3.2.1 14 CFR Part 107

The FAA applied a CATEX to the original Part 107 rule (2016),³⁸ as well as its revisions and amendments in 2021. After completing a statewide EA in 2023 for the action of issuing a Part 107 Certificate of Waiver (waiver) according to 14 CFR §§ 107.200 and 107.205 to a UAS operator to conduct infrastructure inspections, the FAA re-evaluated applying a CATEX to satisfy the FAA's NEPA compliance responsibilities for issuing waivers according to §§ 107.200 and 107.205. The FAA determined that the CATEX listed in FAA Order 1050.1F, Paragraph 5-6.6.f continues to apply to Part 107 waivers. Therefore, barring any extraordinary circumstances, the issuance of a Part 107 waiver is categorically excluded from further NEPA review.

³⁸ See 81 FR 42063.

3.2.2 14 CFR Part 135

The FAA does not currently have a CATEX identified in FAA Order 1050.1 that applies to Part 135 UAS package delivery operations. The FAA has conducted several EAs for Part 135 UAS small package delivery operations, including a programmatic EA for package delivery operations. Each of these EAs resulted in a FONSI. Refer to the FAA's website for a copy of the previously completed EAs for UAS small package delivery.³⁹ See Chapter 6 for more information regarding programmatic reviews.

3.2.3 14 CFR Part 89 / FRIAs

The FAA published the Remote Identification of Unmanned Aircraft final rule on January 15, 2021 (86 FR 4390) in accordance with the FAA Reauthorization Act of 2018. The rule added a new part (Part 89) to title 14 of the CFR, establishing requirements for the remote ID of UA operating in the NAS. Remote ID is the capability of a UA in flight to provide certain identification, location, and performance information that people on the ground and other airspace users can receive.

There are three ways to comply with the operational requirements for remote ID. The first way to comply is to operate a standard remote ID UA that broadcasts identification, location, and performance information of the UA and control station. The second way to comply is by operating a UA with a remote ID broadcast module. The third way to comply allows for the operation of UA without any remote ID equipment, where the UAS is operated at a specific FRIA. A FRIA is a defined geographic area where drones can be flown without remote ID equipment.

In June 2023, the FAA issued a final programmatic EA and FONSI for the approval of FRIAs under Part 89, Subpart C. The FAA determined the establishment of FRIAs would not result in significant environmental impacts, especially at locations where UA are currently operated and the establishment of a FRIA would not result in any change in the environmental baseline. Through the FAA DroneZone intake process,⁴⁰ the FAA reviews FRIA applications to confirm that those established in a new operating location will not introduce significant noise or visual effects.

3.3 NEPA Review Timelines

Per NEPA, the FAA must complete EAs not later than the date that is 1 year after the sooner of, and EISs not later than the date that is 2 years after the sooner of, as applicable:

1. the date on which the FAA determines that section 106(b)(2) of NEPA requires the preparation of an EA or EIS with respect to such action;
2. the date on which the FAA notifies the applicant that the application to establish a right-of-way for such action is complete; and

³⁹ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones

⁴⁰ AFS-752 and AFS-830 are the OPRs for this effort.

3. the date on which the FAA issues a notice of intent to prepare an EA or EIS for such action.⁴¹

Deadlines may be adjusted, in consultation with an applicant, but only for as much time is needed to complete the NEPA document.⁴² Given these timing constraints, it is important the applicant and FAA engage early in the applicant's planning process to ensure the FAA has all of the information needed to conduct the NEPA review, and the applicant's overall program schedule is maintained as best as possible.

3.4 Early Planning

Planning activities that are essential to determining the appropriate type of environmental review must be completed, where applicable, prior to the FAA decision that an EA will be prepared. These activities include the following:

1. Confirming the scope of the proposed action;
2. Identifying any connected actions;
3. Identifying any lead, cooperating, and participating agencies;
4. Developing and coordinating a schedule, including milestones for all environmental reviews and authorizations required for implementation of the action, in consultation with cooperating/participating agencies, as applicable, to ensure agreement with proposed milestone dates and proposed actions;
5. Developing a preliminary purpose and need for the project as well as preliminary alternatives screening criteria and coordinating with any cooperating or participating agencies on these items;
6. Developing a preliminary project description and range of alternatives and coordinating the description with any cooperating or participating agencies;
7. Identifying potentially significant environmental issues;
8. Conducting screening activities, such as desktop and field assessment(s), to identify potentially impacted environmental resources; and
9. Identifying potential mitigation strategies for any potentially significant effects.

Other activities that are not necessary to determine the appropriate type of environmental review or the appropriate time for EA preparation to begin, but should be completed prior to deciding to prepare an EA, include, but are not limited to:

1. Identifying project points of contact;

⁴¹ 42 U.S.C. § 4336a(g).

⁴² Ibid.

2. Determining the type and extent of public involvement;
3. Identifying affected community members and stakeholders; and
4. Determining the extent of additional technical analysis needed.

For applications to the FAA requiring an EA, the FAA must commence the EA as soon as practicable after receiving the application. (Refer to 40 CFR §1501.5(d)). Commencing the EA is not practicable until the criteria described above to determine the EA start date have been met. If an applicant is preparing the EA, the FAA will direct them to commence the EA once the FAA has made the decision to prepare an EA using the criteria described above.

Per Section 909 of the FAA Reauthorization Act, in evaluating applications involving UAS, the FAA will prioritize applications and activities that (1) offset or limit the impacts of non-zero emission activities; (2) offset or limit the release of environmental pollutants to soil or water; or (3) demonstrate other factors that benefit human safety or the environment, as determined by the FAA. The FAA is already doing this by applying CATEXs, as applicable (see Chapter 4), and prioritizing the NEPA review of UAS proposals that do not qualify for a CATEX.

3.4.1 Purpose and Need

As noted above, one of the early planning activities that must be done prior to determining the level of NEPA review is developing a preliminary purpose and need for the project. The purpose and need statement in a NEPA document explains to the reader why an action is necessary and serves as the basis for identifying the reasonable alternatives that meet the purpose and need. It must be clearly explained and stated in terms that are understandable to individuals who are not familiar with UAS aviation activities. To provide context while keeping this section of the NEPA document brief, the FAA may identify the applicant's goals or objectives for the proposed action, incorporate by reference the FAA's statutory mission as it relates to the proposed action, and present any supporting data, inventories, assessments, analyses, or studies.⁴³

The FAA's role for UAS-related proposed actions relates to the agency's statutory and regulatory obligations for air safety and the issuance of operating certificates. The FAA's role is directly related to the approvals associated with the UAS operator's proposal/proposed action. The purpose and need statement for UAS-related proposed actions most often refers to the applicant's goals, including the applicant's purpose of and need for its project. Refer to recent NEPA documents posted on the FAA's "National Environmental Policy Act (NEPA) and Drones" website for example purpose and need statements.⁴⁴

3.4.2 Scope of the Proposed Action

In addition to identifying a preliminary purpose and need for the project, another early planning activity is to confirm the scope of the applicant's proposed action. A challenge the FAA encounters while conducting an environmental review of a UAS proposal such as commercial package delivery is avoiding the appearance of segmentation, given the speed at which the UAS package

⁴³ FAA Order 1050.1F, Paragraph 6-2.1.c.

⁴⁴ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

delivery industry is advancing. A proposed action cannot be segmented by breaking it down into small component parts to attempt to reduce impacts and avoid a higher level of NEPA review.

In NEPA reviews for UAS package delivery, the FAA and the applicant must balance the applicant's long-term aspirations or market growth in a proposed operating area with what is reasonably foreseeable⁴⁵ and thus ripe for environmental review. To address this, the FAA typically requests operators provide an operational forecast for the next 2–3 years when describing the proposed action.

Another important consideration when scoping a NEPA review is the concept of independent utility. Independent utility means a project must be able to satisfy its purpose and need without other projects being built or operated. For example, if a UAS small package delivery operator wants to add six “hubs” (takeoff and landing areas) in a specific geographic area every six months and those planned hubs do not have independent utility (e.g., performing unique functions separate from the others), all planned hubs must be included in the same NEPA review. However, if the operator wants to add six hubs and these additional hubs are independent on the success of the original six hubs, then the original hubs could be analyzed in a standalone review without including the additional future (unknown) projects. The success of each action or operation does not depend on previous operations; therefore, individual NEPA reviews should be generated and evaluated. This example illustrates the importance of obtaining an operator's reasonably foreseeable planned operations for the next 2–3 years.

3.5 Data Needs

Data collection should start early in the NEPA review process. This environmental-related information should cover the details of the UAS operator's proposed project and the baseline conditions of the study area. Project specifics are necessary to draft the alternatives considered in the NEPA review, to prepare the affected environment section describing the baseline conditions, and to analyze the potential impacts of the alternatives. See Appendix A for an example list of data needs for a Part 135 small package delivery project.

Data collection begins when an operator submits its Concept of Operations (ConOps) to the FAA during early coordination. The FAA Environmental Protection Specialist (EPS) should request from the operator any information necessary for the NEPA review that is missing from the ConOps. The items below are examples of data typically needed for a NEPA review:

- Planned area(s) of operation—geographic location of the proposed operating area. Typically, this is provided as a table with geocoordinates and either a ESRI Geographic Information System (GIS) shape file (.shp) or Google Earth file (KMZ).
- Frequency of operations—number of UAS flights proposed to occur daily and the number of days of operation per week or year. For package delivery, preference is to have expected daily deliveries per site or location of operation.

⁴⁵ *Reasonably foreseeable* means sufficiently likely to occur such that a person of ordinary prudence would take it into account in reaching a decision. 40 CFR § 1508.1(ii).

- Operating altitude—in feet AGL. Include information such as if the altitude will remain consistent or vary depending on weather, time of year, or flight paths. For package delivery, altitudes for each flight phase.
- Type and physical characteristics of the UAS—rotary, fixed-wing, or hybrid, and characteristics such as weight (including with and without payload), dimensions, and payload capacity (if applicable). Also, a graphic of the UA that will be operated from the location.
- Sound levels—anticipated sound levels representing actual flight profiles of the aircraft for all flight phases. This requires close coordination with AEE-100, Noise Division.
- Description of flight plan—takeoff and landing requirements, flight pattern(s) (e.g., linear, grid), location, length of flights, and specific flight paths. For package delivery, duration of each flight phase.
- Timing of flights—date(s) and time(s) of flight(s), especially if the project is only for a specific period of time. This also includes specifying if flights will occur during the day, night, dawn, or dusk. For instance, operations from 7:00 a.m. to 10:00 p.m., 7 days a week, etc.
- Aircraft performance characteristics—such as operational mode, mode changes, and speed.
- Mitigation measures—actions taken by the operator to avoid or minimize potential environmental impacts. These measures are sometimes developed in coordination with the FAA during the NEPA review. Additional mitigation measures may be identified during interagency consultation(s).

3.6 Internal and External Coordination

3.6.1 Internal Coordination

Internal coordination may involve the OPR (e.g., AFS) coordinating with other LOBs and/or Staff Offices that need to be involved with the NEPA review (e.g., AUS, AGC, AEE, and Office of Communications).

3.6.2 External Coordination

Early coordination with appropriate federal, state, and local agencies, and tribal governments (and the public if public scoping is conducted) can assist the FAA in identifying important environmental issues requiring study and to deemphasize unimportant issues, narrowing the scope of the environmental review.⁴⁶ By engaging in early coordination, one can reduce (or eliminate) schedule delays, avoid duplicative processes, and prevent conflicts from arising by incorporating planning and document reviews in project development.

⁴⁶ 40 CFR § 1500.4(f).

Coordination with other agencies or tribes should occur early in the planning process, particularly for resources that may be impacted by the project. For most UAS projects, the AFS Operations Manager is the responsible FAA official for consultations and the lead on those consultations; however, an FAA EPS and/or the applicant (or applicant's contractor) may draft consultation letters. The final letters must be reviewed by the AFS Operations Manager and sent by FAA staff on FAA letterhead. Consultations required by special purpose laws (e.g., Section 7 of the Endangered Species Act [ESA] or Section 106 of the National Historic Preservation Act [NHPA]) have their own timeframes, which need to be considered in the NEPA review schedule. These consultations must be completed prior to making a CATEX determination, signing a FONSI, or issuing a Record of Decision (ROD).

If publishing a draft NEPA document for public review and comment, these consultations should be completed before publishing the document. However, the project schedule may necessitate publishing the draft NEPA document before completing consultations. In such cases, the FAA should reach a point in the consultation that enables the FAA to support its significance determination in the draft NEPA document, considering the significance thresholds and factors to consider in Exhibit 4-1 of FAA Order 1050.1F. For example, prior to publishing a draft NEPA document for public review:

- when conducting ESA Section 7 consultation, the FAA should submit its effects determination(s) to the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS)
- when conducting NHPA Section 106 consultation, the FAA should submit its finding of effect to the State Historic Preservation Officer (SHPO)

If a draft NEPA document is published for public review and comment before making progress on an interagency consultation, the FAA may have to re-issue a draft NEPA document after making progress or completing an interagency consultation.

Agencies and/or stakeholders that the FAA may be required to consult include, but are not limited to, the following:

- USFWS and/or NMFS (ESA Section 7)
- Advisory Council on Historic Preservation (NHPA Section 106)
- SHPO and any additional consulting parties (NHPA Section 106)
- Officials having jurisdiction over properties protected by Section 4(f) of the Department of Transportation Act
- American Indian, Native Hawaiian, and Alaska Native Tribes
- Communities with environmental justice (EJ) considerations.

3.6.2.1 Government-to-Government Consultation

The FAA is required to conduct government-to-government consultation with Federally Recognized Tribes to ensure Tribes are given the opportunity to provide meaningful and timely input regarding proposed actions that uniquely or significantly affect the Tribes. This policy is provided in Federal Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*; Presidential Memorandum, *Uniform Standards for Tribal Consultation*; DOT Order 5301.1A, *Department of Transportation Tribal Consultation Policy and Procedures*; and FAA Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*. Refer to Section 7.5 below for more information on Tribal consultation.

3.6.2.2 Interagency Consultations

The most common interagency consultations for UAS actions include those required by the ESA and NHPA (refer to the 1050.1 Desk Reference, Chapter 2 for ESA and Chapter 8 for NHPA).

- Information on performing a consultation under ESA Section 7 is provided in the USFWS' *Consultation Handbook Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act*,⁴⁷ as well as Chapter 2 of the 1050.1 Desk Reference.
- Instructions for carrying out the NHPA Section 106 process are provided in the FAA's *Section 106 Handbook: How to Assess the Effects of FAA Actions on Historic Properties under Section 106 of the National Historic Preservation Act*,⁴⁸ as well as Chapter 8 of the 1050.1 Desk Reference.

Also, previous environmental documents completed for UAS actions⁴⁹ contain examples of consultation documentation.

In addition to ESA and NHPA consultation requirements, the FAA may also need to consult with officials having jurisdiction over properties or resources protected by Section 4(f) the Department of Transportation Act. Refer to Chapter 5 of the 1050.1 Desk Reference, as well as Section 7.3 below, for more information on Section 4(f).

3.6.2.3 Environmental Justice Communities

As described below in Section 7.4, the FAA may need to engage with EJ communities if the proposed action may affect an EJ population. Executive Order (EO) 12898, *Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*⁵⁰ and EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*,⁵¹ as well as

⁴⁷ USFWS and NMFS, 1998. *Consultation Handbook Procedures for Conducting Consultation and Conference Activities under Section 7 of the Endangered Species Act*.

⁴⁸ FAA, 2015. *Section 106 Handbook: How to Assess the Effects of FAA Actions on Historic Properties under Section 106 of the National Historic Preservation Act*.

⁴⁹ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

⁵⁰ Available: <https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf>.

⁵¹ Available: <https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all>.

DOT Order 5610.2(a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*,⁵² provide direction on how to consider and address effects to EJ communities.⁵³ FAA Order 1050.1F, Paragraph 2-5.2(b) describes requirements for public involvement on EJ.

3.6.2.4 Public Involvement and Community Engagement

3.6.2.4.1 Public Involvement

Public involvement pertains to including the public in the FAA's environmental review process. FAA Order 1050.1F, Paragraphs 6-2.2 and 7-1.2 address the NEPA process for EAs and EISs, respectively, including public involvement. Regarding EAs, the FAA (or applicant) must involve the public, to the extent practicable. The appropriate level of public involvement for an EA is determined on a case-by-case basis and will vary based on the proposed action and potential environmental impacts. Beyond the required notice of availability, examples of some optional public involvement methods for EAs that should be considered in appropriate circumstances include 1) scoping, 2) circulation of a draft EA for public comment, and 3) public meetings, workshops, and hearings.

When an action involves resources protected by special purpose laws and requirements, the NEPA document should be coordinated, as appropriate, with agencies outside the FAA. Agencies with special expertise may also be consulted. Special purpose laws and requirements may require opportunities for public involvement. The responsible official should consider coordinating these requirements with the NEPA process so that public and agency review periods for these special purpose laws and requirements may run concurrently with any review period provided for the NEPA document.

3.6.2.4.2 Community Engagement

In addition to the FAA involving the public as part of the NEPA process, it is important for UAS operators and local governments to engage the local community and inform the community about the proposed UAS operations. It is important to note that operations in public places (e.g., commercial small package delivery in suburban areas using a drone) require local approvals in addition to the FAA's airspace authorization. The siting of drone "hubs" (takeoff and landing areas) and infrastructure for drone package delivery operations must comply with applicable state and local land use and zoning requirements. The FAA does not select the locations for commercial drone operators to conduct operations. Those locations are selected by the operators. Land use and zoning are typically governed by state and local laws. Operators are responsible for complying with any such applicable laws relevant to establishing their operations. Operators are expected to site their distribution hubs in accordance with all local land use ordinances and zoning requirements. Thus, in addition to coordinating with the FAA, drone operators may have to work with local government to obtain approvals. An applicant's community engagement is a parallel

⁵² Available: <https://www.transportation.gov/transportation-policy/environmental-justice/departments-transportation-order-56102a>.

⁵³ Engagement with communities could be required, either prior to or during the NEPA process. See: <https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all>.

process to the FAA's public involvement as part of the NEPA review. The community outreach messaging should be aligned and consistent with the description of the proposed action analyzed in the NEPA document.

The FAA's Community Involvement Manual⁵⁴ reaffirms the FAA's commitment, established in the FAA's Community Involvement Policy, to give the public an opportunity to be informed, become involved, and have their interests and views considered as the FAA evaluates proposals that might affect them. Community involvement does not guarantee outcomes that satisfy everyone. However, decisions that take community input into consideration are more likely to reflect the collective public interest, receive broader community acceptance, and experience fewer implementation and post-implementation problems.

The FAA Reauthorization Act of 2024 requires the FAA to establish a Community Collaboration Program that harmonizes the policies and procedures carried out by various offices of the FAA pertaining to community engagement relating to, among others, the integration of new and emerging entrants.⁵⁵ Therefore, the FAA's community engagement process may evolve as the FAA establishes the Community Collaboration Program.

⁵⁴ Available: https://www.faa.gov/sites/faa.gov/files/air_traffic/community_engagement/FAA_CIM.pdf.

⁵⁵ See Section 793 of the FAA Reauthorization Act of 2024.

4 Application of FAA Categorical Exclusions

FAA Order 1050.1F, Paragraph 5-6 contains the FAA’s list of CATEXs, which are actions that normally do not have a significant effect on the human environment. Barring any extraordinary circumstances,⁵⁶ these actions do not require an EA or EIS. Refer to FAA Order 1050.1F, Paragraph 5-3 regarding documentation when applying a CATEX for a proposed action.

4.1 FAA Categorical Exclusions Applicable to UAS-Related FAA Actions

Where appropriate, the use of a CATEX may expedite the NEPA process, reduce paperwork, and allow the agency or applicant to conduct routine or emergency actions in a timely manner. Chapter 5 of FAA Order 1050.1F details how and when to use a CATEX for proposed actions. FAA CATEXs that may be applicable to a UAS project include, but may not be limited to, those shown in Table 4-1.

Table 4-1. FAA Categorical Exclusions that May Apply to UAS-Related FAA Actions

CATEX	UAS-Related Action
Paragraph 5-6.2.c	UAS agricultural aircraft operations
Paragraph 5-6.5.o	UAS test operations at a UAS test site
Paragraph 5-6.6.b	Infrequent UAS operations or operations that replace existing manned aircraft operations (e.g., infrastructure inspection, aerial survey, or demonstration)
Paragraph 5-6.6.f	UAS-related regulations

For example, the CATEX for agricultural aircraft operations under Paragraph 5-6.2c may be appropriate to apply to an FAA action authorizing the use of UAS to conduct the same agricultural aircraft operations that have been conducted by traditional piloted aircraft. Similarly, the CATEX for exemptions under Paragraph 5-6.6.f and/or the CATEX for infrequency or one-time actions under Paragraph 5-6.6.b may be appropriate to apply to an FAA action authorizing the use of UAS to conduct the same infrastructure inspections (e.g., powerlines, pipelines, energy facilities) that have been conducted by traditional piloted aircraft. Documentation describing how using a UAS would differ from traditional aircraft (e.g., no pilot onboard, noise levels, flight altitude, and turn radius) should be detailed and include how the operation would mirror a traditional piloted activity under the CATEX. When a CATEX is used for a UAS-related action, the supporting documentation should demonstrate the agency has conducted due diligence for the use of the CATEX, and no extraordinary circumstances exist.⁵⁷ See Appendix B for an example CATEX documentation checklist.

⁵⁶ See FAA Order 10501.F, Paragraph 5-2.

⁵⁷ In addition to making the CATEX determination, which satisfies the requirements of NEPA, the responsible FAA official must document compliance with any other applicable requirements, such as consultations, findings, or determinations under special purpose laws.



Practice Tip—Some questions to ask regarding how a UAS operation and aircraft differ from piloted aircraft operation include the following:

- What is the nominal flight altitude?
- What is the nominal flight speed?
- What are the measured noise levels of aircraft operations?
- What is the duration of operation?
- What time of year and day will the operation occur?

As noted above, most of the EAs prepared to date have been for Part 135 UAS package delivery because the FAA does not have a CATEX that applies to this type of activity. The FAA may pursue establishing new UAS-specific CATEXs following CEQ's guidance for establishing new CATEXs.⁵⁸

4.2 Other Agencies' Categorical Exclusions

Under 40 CFR § 1501.4(e), the FAA may adopt and apply a CATEX listed in another agency's NEPA procedures to a proposed action or a category of proposed actions. The FAA must:

1. Identify the CATEX listed in another agency's NEPA procedures that covers its proposed action or a category of proposed actions;
2. Consult with the agency that established the CATEX to ensure that the proposed action or category of proposed actions to which the FAA intends to apply the CATEX is appropriate;
3. Provide public notification of the CATEX that the FAA is adopting, including a brief description of the proposed action or category of proposed actions to which the FAA intends to apply the adopted CATEX, the process the FAA will use to evaluate for extraordinary circumstances, and a brief description of the FAA's consultation;
4. In applying the adopted CATEX to a proposed action, evaluate the proposed action for extraordinary circumstances; and
5. Publish the documentation of the application of the adopted CATEX.⁵⁹

FAA EPSs should consult AEE for additional guidance on adopting other federal agencies' CATEXs.

Presently, no UAS-specific CATEXs have been drafted by other federal agencies; however, some existing CATEXs from other agencies may apply to UAS. Possible CATEX determinations applicable to UAS from other federal agencies are listed below.

⁵⁸ For example, see: <https://ceq.doe.gov/nepa-practice/categorical-exclusions.html>.

⁵⁹ 40 CFR § 1501.4(e).

- **Federal Emergency Management Agency**

- Appendix A. Department of Homeland Security List of Categorical Exclusions: M11. Information and data gathering and reporting in support of emergency and disaster response and recovery activities including ground and aerial reconnaissance and structure inspection.⁶⁰

- **National Aeronautics and Space Administration**

- 14 CFR § 1216.304(d)(5) Aircraft and Airfield Activities including: (i) Periodic aircraft (including unmanned aircraft systems) flight activities, including training and research and development, which are routine and comply with applicable Federal, state, Tribal, or local laws or requirements, and Executive Orders.

- **U.S. Department of Interior**

- 43 CFR § 46.210(e) Nondestructive data collection, inventory (including field, aerial, and satellite surveying and mapping), study, research, and monitoring activities.

- **U.S. Department of Energy**

- Appendix B to Subpart D of 10 CFR Part 1021. B3.2 Aviation Activities. Aviation activities for survey, monitoring, or security purposes that comply with FAA regulations.⁶¹

- **U.S. Geological Survey**

- Departmental Manual, Series 31, Part 516, Chapter 9A. Topographic, land use and land cover, geological, mineralogic, resources evaluation, and hydrologic mapping activities, including aerial topographic surveying, photography, and geophysical surveying.⁶²

⁶⁰ Available: https://www.fema.gov/sites/default/files/2020-07/fema_dhs_instruction-manual_023-01-001-01.pdf.

⁶¹ DOE identifies several determinations using CATEX B3.2 for UAS activities.

⁶² Available: <https://www.doi.gov/sites/doi.gov/files/elips/documents/516-dm-9.pdf>.

5 FAA and Applicant Coordination

5.1 When to Initiate Discussions about the NEPA Process

Initial dialogue between the FAA and an applicant/operator is best started early to discuss items such as project schedule, process, and data requirements. These conversations ideally occur during pre-application or pre-submittal meetings when an applicant is planning for future operations and knows the geographic area, type of aircraft, and type of operation.

If an applicant has not identified specific plans and therefore cannot describe the aircraft, operational information (e.g., tempo), and/or geographic location(s) where they plan to operate, it may be too early to begin discussing the specifics of a NEPA review. Specific information is critical to initiating a NEPA review.⁶³



Practice Tip—Questions to ask:

- What is the proposed location of the operation (provide a map/figure or coordinates for the operational boundaries)?
- How many operations per day/year (approximately) are expected to be flown? Is each operation a round trip or a one-way flight?
- What are the proposed operating hours?
- What type(s) of aircraft will be used? What is the aircraft's maximum weight?
- What is the aircraft's nominal flight altitude? For package delivery, what is nominal flight altitude for cruise (en route to and from) and delivery?
- Are there any historic/tribal properties, neighborhoods, schools, parks, wildlife or protected natural areas within the proposed operating area?
- Is the project controversial?
- Is the operation one that would typically be conducted by a manned aircraft or ground vehicle?
- Has any public outreach been conducted already?

It is important for the FAA EPSs and the FAA Program Leads for UAS operators to work closely together to avoid situations where NEPA-related dialogue with the UAS operator occurs late in the application/submission process. A new UAS operator should expect the NEPA review to take approximately one year (for an EA), depending on the complexity of the project, scale, and the level of public comment/engagement. As described in Section 3.6.2, the NEPA review may require interagency consultation(s), which affects the overall review schedule. **Refer to the 1050.1 Desk Reference for more information regarding interagency consultations and estimated timeframes for completing consultation.**

Initial discussions about the NEPA review should also include determining the scope of the applicant's proposed action, including identifying the applicant's plans for the foreseeable future (e.g., two to three years), which can be adequately analyzed now, versus the applicant's plans

⁶³ An exception is when the applicant knows the aircraft that will be used and its operational profile but does not have specific details about the geographic location(s). In these cases, the FAA could conduct the noise analysis. AEE-100 approves noise analyses for all projects and requires aircraft noise and operational information to prepare a generalized noise analysis. Also note that a NEPA review can be conducted/initiated in parallel to noise analysis.

many years later. If future operations are dependent on the success of initial operations, it may be appropriate to limit the scope of a NEPA review to initial operations. However, if future operations are contemplated and foreseeable, they should be analyzed at the same time. Section 3.4.2 contains additional material on this topic.

5.2 Preliminary Environmental Screening

It is important for the FAA and applicant to begin discussions early and identify any potential environmental concerns to reduce or prevent future delays. If an applicant is in the early project planning stages, but the project location(s) or flight route(s) is/are known, conducting a preliminary triage of sensitive resources to identify any possible concerns, such as sensitive biological resources, historic or cultural sites, or nearby *noise sensitive areas*⁶⁴ can help streamline the NEPA process. **The 1050.1 Desk Reference is an excellent source to identify the resources to investigate and determine whether consultation for sensitive resources may be needed.** Ideally, if a natural resource or human environment issue can be identified early, the applicant may be able to change the project design to avoid potential environmental impacts. Proactively adjusting applicant plans prior to final submission of required documentation may eliminate the need to conduct interagency consultations (e.g., ESA Section 7 consultation), as well as avoid potentially significant impacts, such as noise impacts on noise sensitive areas.

Conducting a preliminary environmental screening for the resources associated with the FAA's environmental impact categories, with particular emphasis on the resources identified in Table 5-1, and identifying if any resources overlap with the study area may help an applicant refine its project plan. Identifying possible resources of concern, at a minimum, will help with initially determining the level of NEPA review for the proposed action.

Table 5-1. Resources that May Require Consultation

Resource Type	Consultation Trigger(s)	Type of Consultation or Review	Oversight Agency	Regulatory Timeframe
Threatened and Endangered Species Critical Habitat	Potential effects to ESA-listed species, species proposed to be listed, critical habitat, or habitat proposed to be designated as critical habitat	ESA Section 7	U.S. Fish and Wildlife Service National Marine Fisheries Service	Informal consultation – 60 days Formal consultation – 135 days ⁶⁵

⁶⁴ *Noise sensitive area* means an area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife and waterfowl refuges, and cultural and historical sites. [FAA Order 1050.1F]

⁶⁵ U.S. Fish and Wildlife Service and National Marine Fisheries Service, 1998. Endangered Species Consultation Handbook, Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. See also 50 CFR Part 402.

Resource Type	Consultation Trigger(s)	Type of Consultation or Review	Oversight Agency	Regulatory Timeframe
Cultural Resources Historic Resources Tribal Resources	Potential to affect historic properties or tribal resources	NHPA Section 106 Government-to-Government Tribal Consultation	Advisory Council on Historic Preservation State Historic Preservation Officer Tribal Historic Preservation Officer Federally Recognized Tribes	30 days or more depending on findings ⁶⁶
Properties or Resources Protected by Section 4(f) of the Department of Transportation Act	Potential effects to Section 4(f) properties (significant publicly owned parks, recreational areas, waterfowl or wildlife refuges, or public or private historic sites)	Consultation with the official(s) having jurisdiction over the 4(f) property	U.S. Department of the Interior Official or agency having jurisdiction over the 4(f) property (e.g., local, state, or federal agency)	30 days or more
EJ Communities	Potential effects to minority populations or low-income populations	Engagement with EJ communities	FAA-initiated	Time for engagement depends on project details and potential impacts

In terms of noise screening, identifying the presence of *noise sensitive areas* near UA takeoff and landing locations should be considered and screened, if relevant. This is especially important for package delivery projects since potential noise exposure is greatest at the takeoff/landing location. **The results of the noise analysis can be used by the operator in appropriately siting its takeoff/landing location to avoid significant noise impacts.**

Potential impacts to other impact categories should be avoided, when possible, including, but not limited to, low-income and minority populations, areas where children congregate, areas with significant visual resources, wetlands, migratory bird travel routes and habitat, floodplains, and coastal zones. The impact analysis for most of these resources would not require interagency consultation, but if the resources are present within the study area, the NEPA process could take longer. Other aspects that should be considered in the preliminary screening are potential cumulative effects.⁶⁷

⁶⁶ See 36 CFR Part 800, Subpart B – The Section 106 Process (§§ 800.3 – 800.6).

⁶⁷ Cumulative effects are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time. [40 CFR 1508.1(i)]

Based on the type of project and the results of the preliminary environmental screening, the level of NEPA review should be apparent—a CATEX, an EA, or EIS. The results of the environmental screening should be shared with the applicant to enable the applicant to include environmental impact considerations into their project planning. The goal is to avoid or minimize environmental impacts as much as possible. **FAA Order 1050.1F, Paragraph 2-3 conveys the importance of early planning and aspects to consider when conducting an initial environmental review.**

5.3 When to Initiate the NEPA Review

Preliminary screening and early discussions are important to inform the FAA and the applicant of any possible permitting or required consultations and may assist with determining the level of NEPA review. The initiation of a NEPA review should not start until the applicant has submitted its final submission package to the FAA, including a detailed description of its ConOps and noise measurement data, as applicable, and submitted any addition information in response to a data needs request (see Section 3.5).

As part of initiating the NEPA review, the FAA project team and applicant (including any contractors supporting the applicant) should conduct a kick-off meeting. The meeting will clearly define roles and responsibilities, timelines, and expectation management. For an EA, a one-year timeline is the standard schedule, measured from the point in which the FAA determines an EA is the appropriate level of NEPA review; for an EIS, a two-year timeline is standard. However, if the applicant makes significant changes to the scope of operations once the EA has started, the project schedule may need to be adjusted accordingly. **Refer to the beginning of Chapter 3 for more information regarding NEPA review timelines.**

5.4 Applicant-Prepared NEPA Documents

When the level of NEPA review is determined to be an EA, the FAA requests applicants prepare the EA with FAA supervision and direction.⁶⁸ Applicants can do this by hiring staff and/or contractors that have experience conducting environmental impact assessments and preparing NEPA documents. According to the CEQ Regulations, an agency may direct an applicant or authorize a contractor to prepare an environmental document under the supervision of the agency.⁶⁹ Irrespective of who drafts the EA, the FAA is ultimately responsible for the accuracy, scope, and content of the EA.⁷⁰ Applicants and contractors must collaborate closely with the FAA on items such as the description of the proposed action and alternatives and analytical methodologies. Frequent communication is key to ensure deadlines and expectations are met, and a quality, legally compliant document is delivered. Regarding methodologies, of particular importance is the noise methodology. Since the FAA does not have an approved model or methodology for predicting noise levels for UAS projects, prior written approval from AEE is required before implementing a noise prediction methodology (see Section 7.6 below for more information). **Refer to Chapter 11 of the 1050.1 Desk Reference for more information.**

⁶⁸ See 40 CFR § 1506.5

⁶⁹ Ibid.

⁷⁰ Ibid.

When the level of NEPA review is determined to require the development of an EIS, the FAA will follow the process outlined in Appendix C of FAA Order 1050.1F. Either the FAA prepares the EIS in-house (using agency personnel and resources), or the FAA selects a contractor to prepare the EIS. One method of selecting a contractor that may be used is known as “third party contracting.” Refer to Appendix C of FAA Order 1050.1F for more information.

When a contractor drafts the NEPA document, there are certain aspects of a NEPA review that need to be performed by the federal government. In particular, the FAA leads consultations with tribal governments and interagency consultations required by special purpose laws (e.g., ESA and NHPA).⁷¹ Contractors can assist with consultations by drafting consultation letters, scheduling and leading meetings (under FAA supervision), and/or preparing related material; however, the FAA is responsible for conducting the consultation.

A NEPA review is ultimately a federal responsibility. However, an applicant-prepared NEPA document has the potential benefit of expediting the process, making it quicker to complete the NEPA review. Plus, the applicant is aware of the status of each element of the NEPA review as it is being prepared. **FAA Order 1050.1F, Paragraph 2-2 describes the responsibilities of the FAA, applicants, and contractors when preparing a NEPA document.**

⁷¹ While the ESA regulations allow for the FAA to designate a non-federal representative to conduct informal consultation or prepare a Biological Assessment (50 CFR § 402.02), the FAA typically does not designate a non-federal representative when conducting ESA consultation for UAS-related actions.

6 Programmatic NEPA Reviews

The FAA Reauthorization Act of 2024 requires the FAA to examine and integrate programmatic-level approaches to the requirements of NEPA by which the FAA can (1) leverage an environmental review for UA operations within a defined geographic region, including within and over commercial sites, industrial sites, or other sites closed or restricted to the public; and (2) leverage an EA or EIS for nationwide programmatic approaches for large scale distributed UA operations.⁷² A programmatic NEPA review assists decisionmakers and the public in understanding the environmental impact from proposed large-scope federal actions and activities. When individual proposed actions are adequately analyzed in a programmatic document, the programmatic document can serve as the NEPA review for those actions.

A programmatic review can be used to establish boundaries for analyses, documentation, and decisions of subsequent project-level decisions to minimize repetition and delay. Programmatic reviews and documentation can also identify mitigation measures to avoid environmental impacts on resources and alleviate the need for subsequent reviews. When a programmatic NEPA document is prepared, the FAA may still require project-specific NEPA documents for individual actions where more detailed analyses are warranted (this is called *tiering*⁷³).

As noted in Chapter 3, the FAA has prepared two⁷⁴ programmatic NEPA documents for UAS-related activities and is in the process of preparing another. The FAA prepared a programmatic EA for establishing FRIAs and a programmatic EA for Part 135 UAS package delivery operations in North Carolina. The programmatic EA for package delivery can be used to support the FAA's approval of multiple operator requests in North Carolina for package delivery operations using various types of aircraft, flight plans, and operational cadences. Refer to the "Environmental Checklist for the PEA for Drone Package Delivery in North Carolina" posted on the FAA's website.⁷⁵

The FAA is continuing to pursue strategic approaches for NEPA review of proposed UAS commercial operations to facilitate and streamline individual reviews of proposed UAS operations. For example, the FAA is in the early stages of planning to prepare a national programmatic EA for Part 135 UAS package delivery operations in the United States.



Example Scenario — A programmatic EA may be prepared for UAS package delivery operations in a large area (e.g., a 30-nautical mile radius around an airport) or several large areas in a state or region. The programmatic EA broadly assesses the geographic area(s) and discloses likely environmental impacts in that area. Upon receiving an application from a UAS operator for package delivery operations within the area(s) analyzed in the programmatic EA, the applicant and the FAA may employ tiering, as described above, if additional NEPA review is necessary.

⁷² See Section 909 of the FAA Reauthorization Act of 2024.

⁷³ See 40 CFR § 1501.11 and FAA Order 1050.1F, Paragraph 3-2.

⁷⁴ FRIA (2023) and NC (2024)

⁷⁵ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

7 Environmental Analysis for UAS Actions

Chapter 4 of FAA Order 1050.1F provides a list of environmental impact categories that may be relevant to FAA actions and must be considered (see list below). Given the nature of UAS operations and expected environmental impacts, not all of the environmental impact categories need to be analyzed in detail. Environmental impact categories may be dismissed from detailed review if they will not be affected or would sustain minimal impacts from each alternative presented in the NEPA document. For each impact category that is dismissed from detailed review, the NEPA document must explain the reason for dismissing it.⁷⁶

Air Quality

Biological Resources (including Fish, Wildlife, and Plants)

Climate

Coastal Resources

Department of Transportation Act, Section 4(f)

Farmlands

Hazardous Materials, Solid Waste, and Pollution Prevention

Historical, Architectural, Archeological, and Cultural Resources

Land Use

Natural Resources and Energy Supply

Noise and Noise-Compatible Land Use

Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks

Visual Effects (including Light Emissions)

Water Resources (including Wetlands, Floodplains, Surface Waters, Groundwater, and Wild and Scenic Rivers)

Dismissing certain impact categories from detailed analysis depends on factors such as project location, timing of project operations, operations frequency, and type of operations proposed. It is important to consider all proposed actions and operations, including the no action alternative, to ensure a determination of no or minimal impacts from the proposed action and other alternatives is accurate. Providing a list of impact categories or resources at the beginning of the *Affected Environment and Environmental Consequences* chapter, with a description of why those resources are not further analyzed, is an effective and efficient method to dismiss resources. Once the resources are dismissed, further inclusion in the NEPA document is not necessary. Currently, there is little or no construction activities supporting UAS activities. In instances where infrastructure development would occur as part of the proposed action, detailed analysis may be required for additional environmental impact categories that may have been dismissed in previous NEPA analysis of UAS proposed actions.

⁷⁶ See FAA Order 1050.1F, Paragraph 4-2(c), Environmental Impact Category Not Affected. For example, refer to previous drone EAs posted on the FAA's website: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

The following environmental impact categories are typically analyzed in detail; however, as noted, project-specific conditions may require additional impact categories to be analyzed in detail:

- Air Quality
- Biological Resources (Wildlife)⁷⁷
- Department of Transportation Act, Section 4(f)
- Environmental Justice
- Historical, Architectural, Archeological, and Cultural Resources
- Noise and Noise-Compatible Land Use
- Visual Effects (including Light Emissions)

The impact categories analyzed in detail in the NEPA document may vary on a project-by-project basis.

The following sections provide recommended approaches to assessing the potential impacts on the impact categories identified in the previous section as those most often analyzed in detail. **This information is consistent with that information provided in the 1050.1 Desk Reference with a focus on UAS projects. Refer to the 1050.1 Desk Reference for more information. Additionally, for examples, refer to recent NEPA documents for UAS proposed actions posted on the FAA's website.**⁷⁸

The CEQ Regulations (40 CFR § 1508.1(i)) define *effects* or *impacts* as changes to the human environment from the proposed action or alternatives that are reasonably foreseeable and include the following:

1. Direct effects, which are caused by the action and occur at the same time and place.
2. Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.
3. Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative effects can result from actions with individually minor but collectively significant effects taking place over a period of time.
4. Effects include ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, such as disproportionate and adverse effects on communities with

⁷⁷ UAS projects typically do not have the potential to affect fish and plants. Therefore, fish and plants are often dismissed from detailed analysis.

⁷⁸ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

environmental justice concerns, whether direct, indirect, or cumulative. Effects also include effects on Tribal resources and climate change-related effects, including the contribution of a proposed action and its alternatives to climate change, and the reasonably foreseeable effects of climate change on the proposed action and its alternatives. Effects may also include those resulting from actions which may have both beneficial and adverse effects, even if on balance the agency believes that the effects will be beneficial.

7.1 Air Quality

Air quality is the measure of the condition of the air expressed in terms of ambient pollutant concentrations and their temporal and spatial distribution. Air quality regulations in the United States are based on concerns that high concentrations of air pollutants can harm human health, especially for children, the elderly, and people with compromised health conditions; as well as adversely affect public welfare by damage to crops, vegetation, buildings, and other property.

Under the Clean Air Act, the U.S. Environmental Protection Agency (EPA) developed the National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide, nitrogen dioxide, ozone, particulate matter, sulfur dioxide, and lead. The EPA determined these criteria air pollutants may harm human health and the environment, and cause property damage. The EPA regulates these pollutants to permissible levels through human health-based (primary standards) and environmental-based (secondary standards) criteria.

According to the Clean Air Act, the NAAQS are applicable to all areas of the United States and associated territories. For the poor air quality regions that have ambient concentrations of criteria pollutants above the NAAQS, the EPA has designated these areas as not being in attainment of the NAAQS, or *nonattainment areas*. Each *nonattainment area* is required to have an applicable State Implementation Plan that prescribes mitigation measures and timelines necessary to bring ambient concentrations of criteria pollutants below the NAAQS. When a nonattainment area attains the NAAQS, EPA designates the area as a *maintenance area* because the applicable State Implementation Plan ensures the ambient concentrations of criteria pollutants do not increase above the NAAQS again. For UAS proposed actions planned to occur in a nonattainment or maintenance area, the proposed impacts to air quality must conform to the conditions of the applicable State Implementation Plan, also known as General Conformity. **Refer to Chapter 1 and Appendix B.1 of the 1050.1 Desk Reference for more information about General Conformity.**

While the flight of the UA may not result in air emissions (unless it is powered by fuel), there may be aspects of the proposed action that result in air emissions (e.g., use of generators to power the control station or charging batteries). If there are aspects of the proposed action that result in air emissions, the FAA has a responsibility to disclose the extent of a project's impact on the attainment and maintenance of the NAAQS and any applicable state air quality standards. Thus, a project's impact on air quality is assessed by evaluating whether it would cause a new violation of a NAAQS or contribute to a new violation in a manner that would increase the frequency or severity of the new violation.

When assessing the significance of potential impacts on air quality, refer to the FAA's significance threshold included in FAA Order 1050.1F, Exhibit 4-1:

- The action would cause pollutant concentrations to exceed one or more of the NAAQS, as established by the EPA under the Clean Air Act, for any of the time periods analyzed, or to increase the frequency or severity of any such existing violations.

The FAA's Aviation Emissions and Air Quality Handbook provides information on how to conduct an air quality analysis.⁷⁹ **For further description of the analysis of air quality impacts, refer to Section 1.3 of the 1050.1 Desk Reference.**

7.2 Biological Resources (Wildlife)

Biological resources include fish, wildlife, plants, and their respective habitats. They are valued for their intrinsic, aesthetic, economic, and recreational qualities. Typical categories of biological resources include:

- common terrestrial and aquatic plant and animal species and their habitats; and
- special status species (i.e., state or federally listed threatened or endangered species, marine mammals, and species of concern, such as species proposed for federal listing, species that are candidates for federal listing, or migratory birds) and their habitats, including environmentally sensitive and designated or proposed critical habitat.

UAS projects typically do not have the potential to affect fish and plants. Therefore, fish and plants are often dismissed from detailed analysis.

Potential stressors to wildlife from UAS operations include noise, visual effects, and the potential for direct strike. Terrestrial wildlife species may be sensitive to noise, causing them to temporarily or permanently abandon forage, reproduction, or nesting sites. Stress resulting from the disruption or relocation may lead to diminished species health, decreases in reproduction, or possible mortality. Determining the level of noise from a project will help ascertain what, if any, effects to wildlife could occur from the proposed operations. Due to the transient nature of UA operational noise, single event metrics—such as maximum A-weighted sound level (L_{Amax})⁸⁰ and sound exposure level (SEL)⁸¹—may be most useful when considering potential effects to wildlife from UA noise. L_{Amax} and SEL can be used to evaluate the expected level of disturbance or behavioral response in wildlife.⁸²

Other aspects to consider include timing of operations. The behavior of bats, birds, or other sensitive species may be affected depending on the planned hours of operation. For example, if an ESA-listed bat is present in the study area, limiting operations to after sunrise and before sunset when bats are not active may avoid effects to the bat. Also, avoiding operations near (within 1,000 feet) of eagle nests would avoid or minimize potential effects to eagles and may avoid the need to

⁷⁹ Available at: https://www.faa.gov/regulations_policies/policy_guidance/envir_policy/airquality_handbook.

⁸⁰ L_{Amax} is a single event metric that is the highest A-weighted sound level measured during an event.

⁸¹ SEL is a single event metric that accounts for both the noise level and duration of the event, referenced to a standard duration of one second.

⁸² See, for example, Federal Railroad Administration, High-Speed Ground Transportation Noise and Vibration Impact Assessment, Appendix A, Section A.5, Effects on Livestock and Wildlife (September 2012). Available: <https://railroads.dot.gov/elibrary/high-speed-ground-transportation-noise-and-vibration-impact-assessment>.

obtain an eagle permit. If operation is at night, changes in outdoor lighting, as well as lighting on UA, could be a concern for light sensitive or migratory wildlife species.



Practice Tip—Questions to ask which may help with analysis of impacts to wildlife include the following:

- Operating hours
- Type of UA proposed
- L_{Amax} and SEL for proposed operations
- Changes in lighting

Website links to helpful sources for biological resources:

- USFWS IPaC Online System: <https://ecos.fws.gov/ipac/>
- USFWS Environmental Conservation Online System: <https://ecos.fws.gov/ecp/>
- USFWS Critical Habitat Portal: <http://criticalhabitat.fws.gov/crithab/>
- State Wildlife Action Plans: <https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans>
- Birds of Conservation Concern: <https://www.fws.gov/media/birds-conservation-concern-2021>

When assessing the significance of potential impacts on biological resources, refer to the FAA's significance threshold included in FAA Order 1050.1F, Exhibit 4-1:

- The USFWS or NMFS determines the action would be likely to jeopardize the continued existence of a federally listed threatened or endangered species or would result in the destruction or adverse modification of federally designated critical habitat.

The results of the ESA Section 7 consultation, if required, determine whether this significance threshold is reached. **Please refer to Chapter 2 of the 1050.1 Desk Reference for further information on biological resources**, including the effects determinations for ESA-listed species and critical habitat (i.e., *no effect*; *may affect*, *not likely to adversely affect*; or *may affect, likely to adversely affect*).

The FAA does not have a threshold of significance for non-listed species. Additional factors to consider when assessing the significance of potential impacts include whether the action would have the potential for:

- A long-term or permanent loss of unlisted plant or wildlife species, i.e., extirpation of the species from a large project area (e.g., a new commercial service airport);
- Adverse impacts to special status species (e.g., state species of concern, species proposed for listing, migratory birds, bald and golden eagles) or their habitats;
- Substantial loss, reduction, degradation, disturbance, or fragmentation of native species' habitats or their populations; or
- Adverse impacts on a species' reproductive success rates, natural mortality rates, non-natural mortality (e.g., road kills and hunting), or ability to sustain the minimum population levels required for population maintenance.

The following recommended **mitigation measures** should be considered, as applicable, when conducting the environmental review to avoid or minimize potential effects:

- Until there is sufficient science and data regarding drone-animal interaction, avoid or minimize operations during the dark to avoid effects to bats
- Avoid operations within 150 feet of known bat hibernacula and roosts
- Avoid operations within 1,000 feet of eagle nests
- Installation of pulse lighting to avoid or reduce the potential for bird or bat strike
- Monitor avian radar for flocks of birds to avoid or reduce the potential for bird strike

7.3 Department of Transportation Act, Section 4(f)

Section 4(f) of the Department of Transportation (DOT) Act⁸³ protects significant publicly owned parks, recreational areas, wildlife and waterfowl refuges, and public and private historic sites. Section 4(f) provides that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife or waterfowl refuge of national, state, or local significance, or land of an historic site of national, state, or local significance, only if there is no feasible and prudent alternative to using that land and the program or project includes all possible planning to minimize harm resulting from the *use*.

The term *use* includes both direct or physical use and indirect or *constructive use* to Section 4(f) resources. Direct use is the physical occupation or alteration of a Section 4(f) property or any portion of a Section 4(f) property. A *constructive use* does not require direct physical impacts or occupation of a Section 4(f) resource. A *constructive use* would occur when a proposed action would result in substantial impairment of a resource to the degree that the protected activities, features, or attributes of the resource that contribute to its significance or enjoyment are substantially diminished. The determination of *use* must consider the entire property and not simply the portion of the property used for a proposed project.

Section 4(f) resources where a quiet setting is a generally recognized feature or attribute receive special consideration. Parks, recreation areas, and wildlife and waterfowl refuges that are privately owned are not subject to Section 4(f) provisions. **More information about this environmental impact category can be found in Chapter 5 of the 1050.1 Desk Reference.**

Procedural requirements for complying with Section 4(f) are set forth in DOT Order 5610.1C, *Procedures for Considering Environmental Impacts*.⁸⁴ The FAA also uses Federal Highway Administration (FHWA)/Federal Transit Administration regulations in 23 CFR Part 774 and

⁸³ 49 U.S.C. § 303(c).

⁸⁴ Available:

https://www.transportation.gov/sites/dot.gov/files/docs/Procedures_Considering_Environmental_Impacts_5610_1C.pdf

FHWA guidance (e.g., Section 4(f) Policy Paper). These requirements are not binding on the FAA; however, the FAA may use them as guidance to the extent relevant to aviation projects.

Potential effects to Section 4(f) properties or resources might occur from UAS operations (e.g., noise-related or visual effects). UAS operators can avoid effects to Section 4(f) properties by restricting overflights of these properties (particularly those properties where a quiet setting is important) and establishing a sufficient buffer around takeoff and landing areas to minimize any increase in noise within nearby Section 4(f) properties. When assessing the significance of potential impacts on Section 4(f) properties or resources, refer to the FAA's significance threshold included in FAA Order 1050.1F, Exhibit 4-1:

- The action involves more than a minimal physical use of a Section 4(f) resource or constitutes a *constructive use* based on an FAA determination that the aviation project would substantially impair the Section 4(f) resource.



Practice Tip—Helpful sources and website links for DOT Act Section 4(f):

- FHWA Section 4(f) website: <https://www.environment.fhwa.dot.gov/legislation/section4f.aspx>
- FHWA Section 4(f) Policy Paper:
<https://www.environment.fhwa.dot.gov/legislation/section4f/4fpolicy.aspx>

The following recommended **mitigation measures** should be considered, as applicable, when conducting the environmental review to avoid or minimize potential effects:

- According to the National Park Service (NPS), launching a UA from or landing a UA on lands and waters administered by the NPS within the boundaries of the park is prohibited except as approved in writing by the park superintendent
- Comply with any local, state, or federal requirements regarding operations within local or state parks and state or federal forests
- Avoid flying over significant public parks, including park units administered by the NPS

7.4 Environmental Justice

EJ focuses on “the fair treatment of populations and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”⁸⁵ When preparing analysis of impacts to minority and low-income communities (EJ communities), many other resources should be considered aside from economics. Resources such as air quality, climate, noise, hazardous materials, and water quality may lead to direct or indirect impacts to these communities.

⁸⁵ See: <https://www.epa.gov/environmentaljustice>.

Most types of UAS operations have a limited potential to affect EJ communities given their infrequent or transient nature. Using a UAS for package delivery presents the greatest risk (and potential benefits) to EJ communities. For example, siting a takeoff/landing area too close to an EJ community could result in noise concerns. On the other hand, commercial package delivery could offer increased access to groceries, pharmacy items, or other goods, which has the potential to be a positive effect for EJ communities.

EO 12898, *Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations* and EO 14096, *Revitalizing Our Nation's Commitment to Environmental Justice for All*, as well as DOT Order 5610.2(a), provide direction on how to consider and address effects to EJ communities.⁸⁶ FAA Order 1050.1F describes requirements for public involvement on EJ.⁸⁷

The FAA has not established a significance threshold for EJ. However, the FAA has identified factors to consider when assessing the potential significance of impacts, including whether the proposed action would have the potential to lead to a disproportionate and adverse impact to an EJ population (i.e., low-income or minority population), due to:

- Significant impacts in other environmental impact categories, or
- Impacts on the physical or natural environment that affect an EJ population in a way that the FAA determines is unique to the EJ population and significant to that population.

For further description of the analysis of EJ impacts, refer to Section 12.2 of the 1050.1 Desk Reference. Other helpful guidance includes the CEQ guidance on EJ and the federal interagency working group “Promising Practices” document on EJ methodologies.⁸⁸

⁸⁶ Engagement with communities could be required, either prior to or during the NEPA process. See: <https://www.federalregister.gov/documents/2023/04/26/2023-08955/revitalizing-our-nations-commitment-to-environmental-justice-for-all>.

⁸⁷ See FAA Order 1050.1F Paragraph 2-5.2(b).

⁸⁸ See the documents located on this website: <https://www.epa.gov/environmentaljustice/ej-iwg-promising-practices-ej-methodologies-nepa-reviews>. See also https://www.epa.gov/sites/default/files/2015-02/documents/ej_guidance_nepa_ceq1297.pdf.



Practice Tip—Links to helpful sources for EJ:

- Department of Health and Human Services: <https://aspe.hhs.gov/topics/poverty-economic-mobility/poverty-guidelines>
- U.S. Census Data: <https://www.census.gov/programs-surveys/acs/>
- EJSCREEN: <http://www.epa.gov/ejscreen>
- U.S. Department of Labor's National Agricultural Worker's Survey: <https://www.dol.gov/agencies/eta/national-agricultural-workers-survey>
- U.S. Department of Housing and Urban Development Homeless Data Exchange: <http://www.hudhdx.info/>
- Promising Practices for EJ Methodologies in NEPA Reviews (<https://www.epa.gov/environmentaljustice/ej-iwg-promising-practices-ej-methodologies-nepa-reviews>)
- CEQ EJ Guidance under NEPA (<https://www.epa.gov/environmentaljustice/ceq-environmental-justice-guidance-under-national-environmental-policy-act>)

The following recommended **mitigation measure** should be considered, as applicable, when conducting the environmental review to avoid or minimize potential effects:

- Site takeoff/landing areas a sufficient distance from an EJ community to avoid significant noise impacts (as determined by the noise assessment)

7.5 Historical, Architectural, Archeological, and Cultural Resources

Historical, architectural, archeological, and cultural resources encompass a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. Such resources include past and present expressions of human culture and history in the physical environment, such as prehistoric and historic archaeological sites, structures, objects, and districts, which are considered important to a culture or community. Historical, architectural, archeological, and cultural resources also include aspects of the physical environment, namely natural features and biota, which are a part of traditional ways of life and practices and are associated with community values and institutions. **Refer to Chapter 8 of the 1050.1 Desk Reference for more information.**

Most UAS operations pose limited risk to historical, architectural, archeological, and cultural resources. For example, most proposed operations do not involve ground disturbance, so it is unlikely that archeological resources will be encountered. However, thorough consideration of cultural resources must be conducted to ensure effects are not overlooked.

As part of the NHPA Section 106 process, the FAA, in consultation with the SHPO, defines an area of potential effects (APE) for the *undertaking*. If the APE overlaps or is within proximity of a historic property (e.g., a historic district, national historic landmark, national historic trail, etc.), the potential for effects must be analyzed.⁸⁹ Generally, potential effects from UAS operations to above-ground historic properties are related to noise or visual disruptions. Therefore, identification of historic properties should focus on properties where the setting and/or feeling is an important

⁸⁹ See 36 CFR § 800.4.

characteristic of the historic property. Historic properties sensitive to UAS operations (e.g., commercial package delivery) include, but may not be limited to, battlefields, memorials, cemeteries, landmarks, museums, places of worship, and sites with an associated cultural/natural/scenic landscape, in particular, with minimal modern disturbances in their present viewsheds and generally associated with the 19th century or earlier. It is important to discuss identification efforts with the SHPO. UAS operators can implement measures to avoid effects to historic properties, such as ensuring takeoff/landing areas are sited sufficient distances away from sensitive historic properties and avoiding or minimizing overflight of such properties.

In addition to Section 106 consultation, the FAA must conduct government-to-government consultation with American Indian and Alaska Native Tribes in accordance with FAA Order 1210.20, *American Indian and Alaska Native Tribal Consultation Policy and Procedures*. FAA Order 1201.20 presents FAA policy for agency programs, policies, and procedures affecting federally recognized American Indian and Alaska Native Tribes. Order 1201.20 carries out the relevant consultation provisions of DOT Order 5301.1A, and it also complies with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*. In addition, the *Memorandum on Uniform Standards for Tribal Consultation* issued by President Biden on November 30, 2022, provides standards for federal agencies.⁹⁰

The FAA has not established a significance threshold for historical, architectural, archeological, and cultural resources. The FAA identified factors to consider when assessing the potential significance of impacts, including whether the proposed action would result in a *finding of no adverse effect* through the Section 106 process. However, an adverse effect finding does not automatically trigger preparation of an EIS (i.e., a significant impact).



Practice Tip—Helpful sources and website links for Historical, Architectural, Archeological, and Cultural Resources:

- FAA Section 106 Consultation Handbook: https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/section-106-handbook.pdf
- Advisory Council on Historic Preservation website: <https://www.achp.gov/protecting-historic-properties/section-106-process/introduction-section-106>
- National Register of Historic Places Database: <https://www.nps.gov/subjects/nationalregister/database-research.htm>
- SHPO Directory: <https://ncshpo.org/directory/>
- Tribal Historic Preservation Officer Directory: <https://members.nathpo.org/thpodirectory/FindStartsWith?term=%23%21>
- FAA Order 1210.20: <https://www.faa.gov/documentlibrary/media/1210.pdf>

The following recommended **mitigation measures** should be considered, as applicable, when conducting the environmental review to avoid or minimize potential effects:

⁹⁰ See: <https://www.whitehouse.gov/briefing-room/presidential-actions/2022/11/30/memorandum-on-uniform-standards-for-tribal-consultation/>.

- Include a 0.5-mile buffer around sensitive historic properties when siting a takeoff/landing area. Sensitive historic properties include battlefields, memorials, cemeteries, landmarks, museums, places of worship, and sites with an associated cultural/natural/scenic landscape, particularly those with minimal modern disturbances in their present viewsheds and generally associated with the nineteenth century or earlier.
- See also the measures identified above for Department of Transportation Act, Section 4(f), with respect to 4(f) properties that are also historic properties

7.6 Noise and Noise-Compatible Land Use

Noise is considered unwanted sound that can disturb routine activities (e.g., sleep, conversation, student learning) and can cause annoyance. Noise is often the predominant aviation environmental concern of the public. Aircraft noise in communities around airports historically generated most of the noise issues. There are increasing concerns in suburban and rural areas farther from airports where ambient noise is lower than it is in the more urbanized areas that tend to surround many commercial service airports. There are also special noise sensitivities with respect to certain resources such as national parks.

The compatibility of existing and planned land uses with proposed aviation actions is usually determined in relation to the level of aircraft noise. Federal compatible land use guidelines for a variety of land uses are provided in Table 1 in Appendix A of 14 CFR Part 150, Land Use Compatibility with Yearly Day-Night Average Sound Levels.

For aviation noise analyses, the FAA has determined that the cumulative noise energy exposure of individuals to noise resulting from aviation activities must be established in terms of Day Night Average Sound Level (DNL),⁹¹ the FAA's primary noise metric. The Community Noise Equivalent Level (CNEL) may be used in lieu of DNL for FAA actions needing approval in California.

DNL and CNEL account for the noise levels of all individual aircraft events, the number of times those events occur, and the period of day/night in which they occur. Both noise metrics logarithmically average aircraft sound levels at a location over a complete 24-hour period, with a 10-decibel (dB) adjustment added to those noise events occurring from 10:00 p.m. and up to 7:00 a.m. the following morning. The 10-dB adjustment is added because of the increased sensitivity to noise during normal nighttime hours and because ambient (without aircraft) sound levels during nighttime are typically about 10-dB lower than during daytime hours. In addition, CNEL includes a 4.77-dB adjustment added to noise events occurring during the evening from 7:00 p.m. and up to 10:00 p.m. **Refer to Chapter 11 of the Order 1050.1 Desk Reference for more information.**

⁹¹ **Average Sound Level** means the level, in decibels, of the mean-square, A-weighted sound pressure during a specified period, with reference to the square of the standard reference sound pressure of 20 micropascals. **Day-Night Average Sound Level (DNL)** means the 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m., and midnight, local time. **Yearly Day-Night Average Sound Level (YDNL)** means the 365-day average, in decibels, of the day-night average sound level.

AEE has approved models for detailed noise analysis. Prior written approval from AEE is required to use another equivalent methodology or computer model. Presently, a non-standard noise methodology must be used to assess UA noise, and therefore, FAA practitioners must submit a request to AEE-100 to use a non-standard noise methodology.⁹² The proposed non-standard methodology, AEE's approval, and noise report should be appended to the NEPA document. This coordination with the FAA should be considered when developing the NEPA review schedule.⁹³

Examples of AEE-approved UAS noise analysis can be found in the appendices of recent EAs for UAS proposed actions posted on the FAA's website.⁹⁴

When assessing the significance of noise impacts, refer to the FAA's significance threshold included in FAA Order 1050.1F, Exhibit 4-1:

- The action would increase noise by DNL 1.5 dB or more for a noise sensitive area that is exposed to noise at or above the DNL 65 dB noise exposure level, or that will be exposed at or above the DNL 65 dB level due to a DNL 1.5 dB or greater increase, when compared to the no action alternative for the same timeframe. For example, an increase from DNL 65.5 dB to 67 dB is considered a significant impact, as is an increase from DNL 63.5 dB to 65 dB.

In addition to the significance threshold for noise, the FAA has identified the following factor to consider for evaluating significance of noise impacts:

- Special consideration needs to be given to the evaluation of the significance of noise impacts on noise sensitive areas within Section 4(f) properties (including, but not limited to, noise sensitive areas within national parks; national wildlife and waterfowl refuges; and historic sites, including traditional cultural properties) where the land use compatibility guidelines in 14 CFR Part 150 are not relevant to the value, significance, and enjoyment of the area in question. For example, the DNL 65 dB threshold does not adequately address the impacts of noise on visitors to areas within a national park or national wildlife and waterfowl refuge where other noise is very low and a quiet setting is a generally recognized purpose and attribute.

UAS commercial package delivery operators can implement **mitigation measures** to avoid significant noise impacts by siting takeoff/landing areas sufficient distances away from noise sensitive areas. These distances depend on the UA's noise level and the number of proposed operations, and are identified as part of the noise analysis. For examples, refer to previous noise analyses conducted for commercial package delivery proposals.⁹⁵

⁹² See Section 11.1.4 of the 1050.1F Desk Reference.

⁹³ Note that an UAS operator can use a noise analysis from a previous EA if the same aircraft is used, and the planned operational profile is similar enough to not change the noise impacts, reducing the amount of time required for the noise analysis. Consult with AEE-100.

⁹⁴ See: https://www.faa.gov/uas/advanced_operations/nepa_and_drones.

⁹⁵ Ibid.



Practice Tip—AEE has approved models for use for detailed noise analysis. However, these models are not appropriate for UAS actions. Prior written approval from AEE is required to use another equivalent methodology or computer model.

7.7 Visual Effects

Visual effects deal broadly with the extent to which the proposed action or alternative(s) would either: (1) produce light emissions that create annoyance or interfere with activities; or (2) contrast with, or detract from, the visual resources and/or the visual character of the existing environment. Visual effects can be difficult to define and assess because they involve subjectivity. Proposed UAS actions do not commonly result in adverse visual effects, but these effects may occur in certain circumstances. For clarity and uniformity, visual effects are broken into two categories: 1) Light Emission Effects; and 2) Visual Resources and Visual Character. **Refer to Chapter 13 of the 1050.1 Desk Reference for more information.**

Unless there is a constructed aspect of the proposed operations, the main visual effect from UAS operations is the sight of the UA during its flight profile. For example, for a package delivery operation, this starts with the UA taking off at the launch/landing site, en-route flight path to the delivery location, delivery, en-route flight path back to the landing site, and landing at the landing site. The number of flights per day and whether the operator flies fixed routes or varies the flight routes factor into the degree of visual impact. Stakeholders located near the UAS launch/landing site have the potential to experience the greatest level of visual impact because that is where operations are concentrated. Section 4(f) and historic properties should be considered in regard to visual resources and analyzed in those respective resource sections, where appropriate (refer to Sections 7.3 and 7.5 above).

The FAA has not established a significance threshold for visual effects; however, the FAA has identified the following factors to consider when assessing the significance of visual effects:

- The degree to which the action would have the potential to affect the nature of the visual character of the area, including the importance, uniqueness, and aesthetic value of the affected visual resources.
- The degree to which the action would have the potential to contrast with the visual resources and/or visual character in the study area.
- The degree to which the action would have the potential to block or obstruct the views of visual resources, including whether these resources would still be viewable from other locations.

Overall, effects to visual resources most often occur only in the airspace. The effects will vary depending on other air traffic already present in the operating area. Each project will have unique aspects to consider, such as the project location, surrounding environment, and proximity to populated areas. Refer to the **mitigation measures** above for Department of Transportation Act

Section 4(f) and Historical, Architectural, Archeological, and Cultural Resources, which serve to avoid or minimize potential visual effects.

7.8 Cumulative Effects

As described at the beginning of Chapter 7, the FAA must consider cumulative effects when evaluating the overall significance of the proposed action's effects. If the proposed action would cause significant incremental additions to cumulative impacts, an EIS is required. The analysis of potential cumulative effects is typically analyzed in a distinct section or chapter in the NEPA document. **Section 15 of the Order 1050.1 Desk Reference addresses cumulative impacts. See also CEQ's *Considering Cumulative Effects Under the National Environmental Policy Act*.**⁹⁶

A cumulative effects analysis requires consideration of past, present, and reasonably foreseeable actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. As defined and described in Section 15.1 of the Order 1050.1 Desk Reference:

Past actions are actions that occurred in the past and may warrant consideration in determining the environmental impacts of an action. The FAA has discretion to determine whether, and to what extent, information about the specific nature, design, or present impacts of a past action are useful for the analysis of the impacts of the proposed action and alternative(s). Present impacts of past actions that are relevant and useful are those that may have a significant cause-and-effect relationship with the direct and indirect impacts of the proposed action and alternative(s). For example, past industrial or military activities may have contaminated portions of a project site.

Present actions are any other actions that are occurring in the same general time frame as the proposal (e.g., a state transportation department implementing roadwork on a nearby thoroughfare). Such actions may have traffic, noise, or other environmental concerns that should be considered in conjunction with those that would be generated by the proposed action and alternative(s) under consideration.

Reasonably foreseeable actions are actions that may affect projected impacts of a proposal and are not remote or speculative. An action may be reasonably foreseeable even in the absence of a specific proposal. Coordination with other agencies and local governments and review of planning documents, if available, can be helpful in identifying reasonably foreseeable actions. For example, the local government may have plans describing future actions for developing a property adjacent to where new aviation infrastructure is proposed. Future actions not grounded in planning documents, projected development trends, or regional or local plans would typically be considered remote and speculative, and thus need not be analyzed. In addition, future actions may be considered improbable or remote even though they have been mentioned in planning documents (e.g., general statements about future growth opportunities and unrefined lists of potential projects). Such actions should be mentioned in the NEPA document with an indication that they are not reasonably foreseeable.

⁹⁶ Available: https://ceq.doe.gov/publications/cumulative_effects.html.

Refer to Chapter 15 of the 1050.1 Desk Reference for more information on cumulative impacts. Also, refer to recent UAS-related NEPA documents on the FAA's website⁹⁷ for example cumulative effects analyses.

⁹⁷ https://www.faa.gov/uas/advanced_operations/nepa_and_drones

Glossary

Term	Definition
Average Sound Level	The level, in decibels, of the mean-square, A-weighted sound pressure during a specified period, with reference to the square of the standard reference sound pressure of 20 micropascals.
Certificate of Waiver or Authorization (COA)	An FAA grant of approval for a specific flight operation
Community-Based Organization (CBO)	A membership-based association entity that: <ul style="list-style-type: none"> (1) is recognized by the Administrator of the FAA; (2) is described in section 501(c)(3) of the Internal Revenue Code of 1986; (3) is exempt from tax under section 501(a) of the Internal Revenue Code of 1986; (4) the mission of which is demonstrably the furtherance of model aviation; (5) provides a comprehensive set of safety guidelines for all aspects of model aviation addressing the assembly and operation of model aircraft and that emphasize safe aeromodelling operations within the national airspace system and the protection and safety of individuals and property on the ground, and may provide a comprehensive set of safety rules and programming for the operation of unmanned aircraft that have the advanced flight capabilities enabling active, sustained, and controlled navigation of the aircraft beyond visual line of sight of the operator; (6) provides programming and support for any local charter organizations, affiliates, or clubs; and (7) provides assistance and support in the development and operation of locally designated model aircraft flying sites. [49 U.S.C. § 44809]
Concept of Operations (ConOps)	A document that describes how a proposed unmanned aircraft system (UAS) will be used in practice. It outlines how the UAS will operate, who will operate it, when, and how it will be coordinated with other systems.
Controlled Airspace	A generic term that covers the different classifications of airspace and defined dimensions within which air traffic control service is provided in accordance with the airspace classification. Controlled airspace consists of Class A, Class B, Class C, Class D, and Class E airspace.
Day-Night Average Sound Level (DNL)	The 24-hour average sound level, in decibels, for the period from midnight to midnight, obtained after the addition of ten decibels to sound levels for the periods between midnight and 7 a.m., and between 10 p.m., and midnight, local time.
L_{Amax}	A single event metric that is the highest A-weighted sound level measured during an event.

Term	Definition
Light Detection and Ranging (LiDAR)	A remote sensing method that uses light in the form of a pulsed laser to measure ranges (variable distances) to the Earth. These light pulses—combined with other data recorded by the airborne system — generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.
Low Altitude Authorization and Notification Capability (LAANC)	A collaboration between FAA and industry. It directly supports unmanned aircraft system integration into the airspace. LAANC provides 1) drone pilots with access to controlled airspace at or below 400 feet, 2) awareness of where pilots can and cannot fly, and 3) air traffic professionals with visibility into where and when drones will operate.
Noise Sensitive Area	An area where noise interferes with normal activities associated with its use. Normally, noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife and waterfowl refuges, and cultural and historical sites.
Operations Specifications (OpSpecs)	Each air carrier certificate holder conducting operations must obtain OpSpecs containing items such as the type of aircraft, kinds of operations authorized, authorization and limitations for routes and areas of operations, any authorized deviation or exemption from any FAA requirement, and an authorization permitting, or a prohibition against, accepting, handling, and transporting hazardous materials.
Remote Identification (ID)	Remote ID is the capability of an unmanned aircraft in flight to provide certain identification, location, and performance information that people on the ground and other airspace users can receive.
Small Unmanned Aircraft	An unmanned aircraft weighing less than 55 pounds, including the weight of anything attached to or carried by the aircraft
Sound Exposure Level	A single event metric that accounts for both the noise level and duration of the event, referenced to a standard duration of one second.
Type Certificate	Type certification is the approval of the design of the aircraft and all component parts (including propellers, engines, control stations, etc.). The Los Angeles Aircraft Certification Office is the main certification office for unmanned aircraft systems type certification.
Unmanned Aircraft	An aircraft that is operated without the possibility of direct human intervention from within or on the aircraft
Unmanned Aircraft System (UAS)	An unmanned aircraft and associated elements (including communication links and the components that control the unmanned aircraft) that are required for the operator to operate safely and efficiently in the national airspace system
Visual Observer	A person who is designated by the remote pilot in command to assist the remote pilot in command and the person manipulating the flight controls of the small unmanned aircraft system to see and avoid other air traffic or objects aloft or on the ground
Yearly Day-Night Average Sound Level (YDNL)	The 365-day average, in decibels, of the day-night average sound level.

Appendix A: UAS NEPA Review – Data Needs

Proposal: Unmanned Aircraft Systems (UAS) Package Delivery under 14 CFR Part 135

The Federal Aviation Administration’s (FAA) approval (e.g., issuance of an Operations Specification) of UAS package delivery operations in the national airspace system is a major federal action subject to the National Environmental Policy Act of 1969 (NEPA) and requires an environmental review. To support the NEPA review, the FAA requires aircraft, operational, and acoustic data from the applicant/operator. This document outlines the data needs for the NEPA review. Applicants can provide the data to the FAA in a variety of formats and may be accomplished through a single consolidated data package or individual files or documents over multiple submittals. For example, some or all of the data may be provided in the Concept of Operations (ConOps) document or appended to the ConOps document.

Data Needs

Applicant/Operator Background Information

- Overview of the applicant/operator and why a Part 135 approval is needed for UAS operations: [Click or tap here to enter text.](#)
- How the applicant plans to initially operate and the area(s) where they plan to operate: [Click or tap here to enter text.](#)
- General plans for future operations in terms of frequency, type of aircraft, as well as potential changes to the operating area(s): [Click or tap here to enter text.](#)
- Are there any historic/tribal properties, neighborhoods, schools, parks, wildlife, or protected natural areas within or adjacent to the area of operations? [Click or tap here to enter text.](#)
- Is there a possibility the operations could cause significant public controversy in the area? [Click or tap here to enter text.](#)
- Has any public outreach been accomplished already? [Click or tap here to enter text.](#)

Aircraft and Operations Information

Details on the type of aircraft that will be operated:

- Fixed wing ☐ rotorcraft ☐ hybrid ☐
- Size dimensions: [Click or tap here to enter text.](#)
- Gross lift-off weight: [Click or tap here to enter text.](#)

The general area(s) the aircraft will operate—

- In what communities are deliveries anticipated to occur? [Click or tap here to enter text.](#)

- What are the anticipated/assumed distribution of deliveries among these communities? Click or tap here to enter text.
- Are there any anticipated differences in the amount of payload among deliveries? Yes ☐ No ☐
 - If yes, how will payload amounts be distributed among operations? Click or tap here to enter text.
- Is this a type of operation that would typically be conducted by a ground vehicle? Yes ☐ No ☐
 - If yes, please include what type(s) of vehicle would typically be used. Click or tap here to enter text.

Level of Operations—

- The initial planned daily or annual level of operations: Click or tap here to enter text.
- The daily or annual level of operations that are reasonably foreseeable within a defined forecast period: Click or tap here to enter text.
- Specify if operations are anticipated to occur all days of the week, only on certain days, or a certain number of days per week, month, or year: Click or tap here to enter text.

Distribution of Operations—

- Describe the distribution of operations by time of day, including identification of any operations anticipated to occur between 10 PM and 7 AM. If operations will be conducted in California, please also identify any operations anticipated to occur between 7 PM and 10 PM. Click or tap here to enter text.
- If more than one aircraft will be operated, how will operations be distributed among the aircraft? Click or tap here to enter text.
- Information on seasonal variation in operation levels, and if applicable, how operations will be distributed by season? Click or tap here to enter text.
- If more than one location will be used for launch and recovery of the aircraft within the same operating area, how will launch and recovery operations be distributed between multiple locations? Click or tap here to enter text.

Unusual/Infrequent Operations—

- Are there any unusual/infrequent operations that could occur, such as:
 - En-route hovering or holding? Yes ☐ No ☐
 - Maintenance hover/run-up checks? Yes ☐ No ☐

- Aircraft landings or departures from locations not associated with launch, delivery, or recovery? Yes ☐ No ☐
- If any of these types of unusual/infrequent operations would occur, provide details on the frequency, duration, distribution, and general nature of these operations to the extent possible consistent with the operations data requested above: [Click or tap here to enter text.](#)

Flight Profile Information

Provide the flight profile information for each unique type of flight operation. Examples include but are not limited to the following (see sample flight profile at end of form):

- Launch/Takeoff
- En-route/cruise outbound
- Delivery
- En-route/cruise inbound
- Recovery/Landing.

[Click or tap here to enter text.](#)

Provide data for flight profiles associated with each unique type of flight operation. This data should include the following items:

- A generalized description of the flight profile and graphical depiction of the flight profile if available. [Click or tap here to enter text.](#)
- Point-based information on the flight profile at regular intervals along a typical/representative sample flight path. This could be from a representative flight log or a more generalized representation of the flight profile. The flight profile information should include to the maximum extent possible:
 - Time: [Click or tap here to enter text.](#)
 - Distance along the flight profile in feet. Alternatively, if a sample representative flight log is used cartesian coordinates or latitude and longitude along the flight profile may be used: [Click or tap here to enter text.](#)
 - Altitude in feet Above Ground Level (AGL): [Click or tap here to enter text.](#)
 - Indicated airspeed in knots. If indicated airspeed is not available, ground speed may be used. [Click or tap here to enter text.](#)
 - Engine power as a percentage of max power. [Click or tap here to enter text.](#)
 - Duration for flight activities where aircraft remain in a hover or stationary state (if applicable). [Click or tap here to enter text.](#)
- The format of the flight profile information may be provided in a tabular or graphical format and may be a direct log from an aircraft flight tracking or management system, a simplified spreadsheet, other text-based file format, or simplified graphical presentation similar to what is detailed in Attachment A: [Click or tap here to enter text.](#)

Flight Path Information

Provide a description, graphic depiction of, and Geographic Information System (GIS) files (if available) for the following:

- The general operating area(s) where the aircraft will operate: [Click or tap here to enter text.](#)
- Any applicant-identified avoidance areas/zones: [Click or tap here to enter text.](#)

If specific flight paths or simulations of representative flight paths are available, please provide the following items listed in the “Flight path information” text entry cell below.

- Data for each flight path that includes the following:
 - The latitude and longitude of points along the flight path at regular intervals.
 - Anticipated altitudes at each track point in feet AGL or above Mean Sea Level.
 - The flight path should begin and terminate at the launch/recovery location and represent the flight segments used to navigate to and from each delivery location.
 - The number/distribution of operations that will use each flight path
 - If available, GIS files associated with the flight paths.

[Click or tap here to enter text.](#)

If specific flight paths or simulations of representative aircraft flight paths are not available, please provide the following:

- Launch/Takeoff—
 - Launch/Takeoff locations and common representative flight paths that aircraft will use to depart the launch area and reach cruise altitude: [Click or tap here to enter text.](#)
 - The distribution of aircraft operations among the representative flight paths: [Click or tap here to enter text.](#)
- En-route/Cruise Inbound and Outbound—
 - The maximum density of en-route/cruise operations anticipated over any one location within the general operating area(s): [Click or tap here to enter text.](#)
 - If any variability in aircraft altitudes is expected during the en-route flight phase, the distribution of altitudes at which aircraft are anticipated to operate while en-route within the general operating area(s): [Click or tap here to enter text.](#)
 - If any variability is expected between how the aircraft will fly outbound to a delivery location versus inbound, identify differences between the outbound and inbound en-route/cruise flight phases: [Click or tap here to enter text.](#)
- Delivery—
 - Within each anticipated delivery community, provide the anticipated distribution of delivery locations and operations: [Click or tap here to enter text.](#)

- Recovery/Landing—

- Provide recovery/landing locations and common representative flight paths that aircraft will use to descend from cruise altitude and be recovered: [Click or tap here to enter text.](#)
- The distribution of aircraft operations among the representative flight paths: [Click or tap here to enter text.](#)

For all common representative flight paths, the flight paths should include the coordinates of points along the flight paths with representative altitudes to the maximum extent available. If available, please provide GIS files of each of the representative flight paths: [Click or tap here to enter text.](#)

Acoustic Data

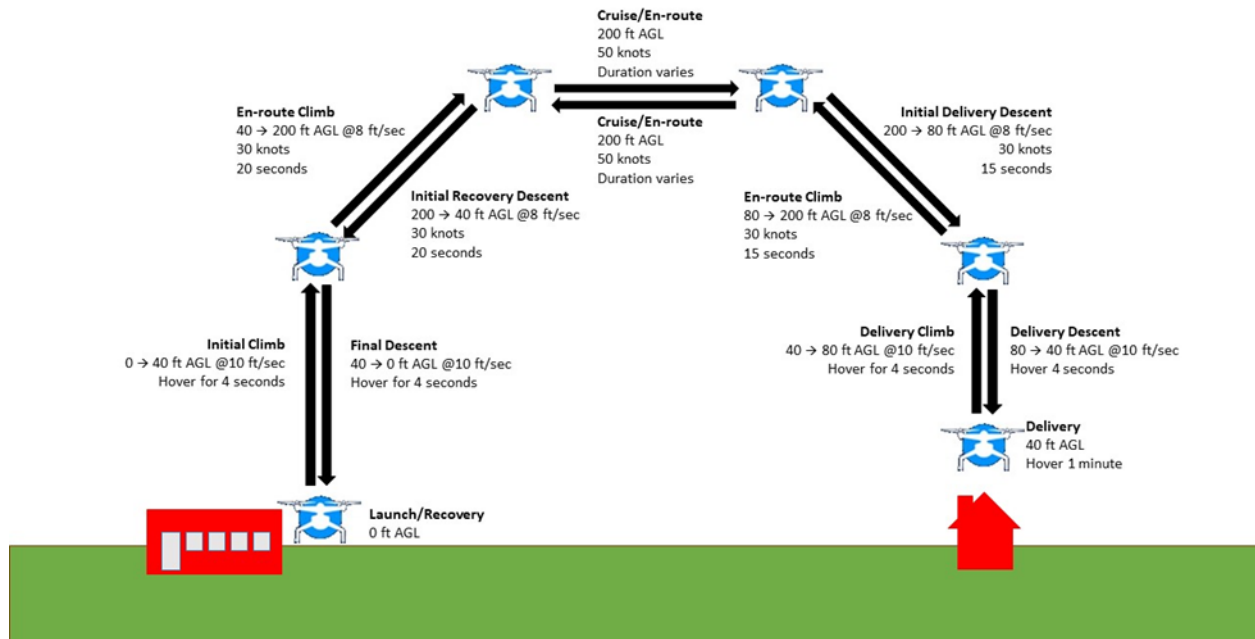
Provide acoustic measurement data representing actual flight profiles of the aircraft for the following flight phases, as appropriate, based on the flight path information as described above.

- Launch/Takeoff: [Click or tap here to enter text.](#)
- En-route/Cruise Outbound: [Click or tap here to enter text.](#)
- Delivery: [Click or tap here to enter text.](#)
- En-route/Cruise Inbound: [Click or tap here to enter text.](#)
- Landing: [Click or tap here to enter text.](#)

If the measurement data for the flight phases as referenced above are not available, provide overflight measurement data for the aircraft at typical known operating speeds and altitudes. In addition, acoustic data for aircraft hover can be used to predict operational profiles. Provide acoustic measurement data for hover at known distances, angles, altitudes, and power settings or engine revolutions per minute for the aircraft. [Click or tap here to enter text.](#)

If no acoustic measurements have been conducted for the aircraft to date, please coordinate further with the FAA.

Sample Flight Profile



Appendix B: Sample CATEx Documentation Checklist

Project Title: [placeholder]		
Location: [placeholder]		
Identify the categorical exclusion under review from the applicable list of FAA categorical exclusions contained in FAA Order 1050.1F, Paragraph 5-6. [placeholder]		
PART I – PROPOSED ACTION		
Describe the components of the proposed action and their consistency with the above FAA categorical exclusion under review. Cite to any previously issued National Environmental Policy Act (NEPA) document used to justify the use of the categorical exclusion. If previously issued NEPA document does not exist, cite any evidence of previous operations to justify the use of the categorical exclusion. [placeholder]		
PART II – EXTRAORDINARY CIRCUMSTANCES		
An extraordinary circumstance exists if a proposed action involves any of the following circumstances <u>and</u> has the potential for a significant impact. Indicate whether any of the following circumstances are present for the proposed action. For each “yes” response, include an attachment to this form that 1) describes the potential impact, 2) assesses whether the impact would be significant (per FAA Order 1050.1F, Exhibit 4-1), 3) if the impact would be significant, assesses whether there are circumstances present that lessen the impacts or other conditions sufficient to avoid significant effects, and 4) if the impact would be significant and circumstances present do not lessen impacts, addresses whether the proposed action can be modified to alleviate or resolve the extraordinary circumstance. As needed, provide documentation of consultation with applicable resource agencies. For each “no” response, please provide a brief rationale in the space below.		
(1) An adverse effect on cultural resources protected under the National Historic Preservation Act of 1966, as amended, 54 U.S.C. § 300101 et seq. If “no,” provide rationale here: [placeholder]	Yes <input type="checkbox"/>	No <input type="checkbox"/>
(2) An impact on properties protected under Section 4(f). If “no,” provide rationale here: [placeholder]	<input type="checkbox"/>	<input type="checkbox"/>
(3) An impact on natural, ecological, or scenic resources of federal, state, tribal, or local significance (e.g., federally listed or proposed endangered, threatened, or candidate species, or designated or proposed critical habitat under the EndangeredSpecies Act, 16 U.S.C. §§ 1531-1544). If “no,” provide rationale here: [placeholder]	<input type="checkbox"/>	<input type="checkbox"/>

<p>(4) An impact on the following resources: resources protected by the Fish and Wildlife Coordination Act, 16 U.S.C. §§ 661-667d; wetlands; floodplains; coastal zones; national marine sanctuaries; wilderness areas; National Resource Conservation Service-designated prime and unique farmlands; energy supply and natural resources; resources protected under the Wild and Scenic Rivers Act, 16 U.S.C. §§ 1271-1287, and rivers or river segments listed on the Nationwide Rivers Inventory; and solid waste management.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p>Yes</p> <p><input type="checkbox"/></p>	<p>No</p> <p><input type="checkbox"/></p>
<p>(5) A division or disruption of an established community, or a disruption of orderly, planned development, or an inconsistency with plans or goals that have been adopted by the community in which the project is located.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(6) An increase in congestion from surface transportation (by causing decrease in level of service below acceptable levels determined by appropriate transportation agency, such as a highway agency).</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(7) An impact on noise levels of noise sensitive areas.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(8) An impact on air quality or violation of federal, state, tribal, or local air quality standards under the Clean Air Act, 42 U.S.C. §§ 7401-7671q.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(9) An impact on water quality, sole source aquifers, a public water supply system, or state or tribal water quality standards established under the Clean Water Act, 33 U.S.C. §§ 1251-1387, and the Safe Drinking Water Act, 42 U.S.C. §§ 300f-300j-26.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(10) Impacts on the quality of the human environment that are likely to be highly controversial.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>
<p>(11) Likelihood to violate any federal, state, tribal, or local law relating to the environmental aspects of the proposed action.</p> <p><i>If “no,” provide rationale here:</i></p> <p>[placeholder]</p>	<p><input type="checkbox"/></p>	<p><input type="checkbox"/></p>

<p>(12) Likelihood to create a significant impact on the human environment, including, but not limited to, actions likely to cause a significant lighting impact on residential areas or commercial use of business properties, likely to cause a significant impact on the visual nature of surrounding land uses, likely to cause environmental contamination by hazardous materials, or likely to disturb an existing hazardous material contamination site such that new environmental contamination risks are created.</p> <p><i>If "no," provide rationale here:</i></p> <p>[placeholder]</p>	<p>Yes</p> <p><input type="checkbox"/></p>	<p>No</p> <p><input type="checkbox"/></p>
<p>PART III – RECOMMENDATION</p>		
<p><i>Check one of the following:</i></p> <p><input type="checkbox"/> No extraordinary circumstances exist as documented above and in any attachments. Therefore, the categorical exclusion applies, and the proposed action is categorically excluded from further NEPA review (i.e., preparation of an EA or EIS is not required).</p> <p><input type="checkbox"/> One or more extraordinary circumstances exist, but can be lessened, as explained in the attached documentation. Therefore, the categorical exclusion applies, and the proposed action is categorically excluded from further NEPA review (i.e., preparation of an EA or EIS is not required).</p> <p><input type="checkbox"/> One or more extraordinary circumstances exist, and cannot be lessened, as explained in the attached documentation. Therefore, preparation of an EA or EIS is recommended.</p> <div style="display: flex; justify-content: space-between;"> <div data-bbox="198 1100 662 1131"> <p>_____ (Signature of Responsible FAA Official)</p> </div> <div data-bbox="776 1100 1162 1131"> <p>_____ (Date)</p> </div> </div>		