

# Draft Programmatic Environmental Assessment for Drone Package Delivery Operations in the United States



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Thank you for the opportunity to submit this comment on the Federal Aviation Administration's (FAA) Notice of Availability, Notice of Public Comment Period, and Request for Comment regarding the Draft Programmatic Environmental Assessment (PEA) for Drone Package Delivery Operations in the United States (Docket ID FAA-2013-0259). This comment addresses the FAA's proposed national programmatic framework and its implications for future Part 135 drone package delivery approvals, including the scope of environmental review, tiering, and public involvement.

The Draft PEA proposes to establish a nationwide programmatic approval framework for drone package delivery operations. Once adopted, future delivery hubs, routing decisions, and operational expansions may be approved incrementally as implementation of an already approved program, rather than as new federal actions subject to separate, location-specific Environmental Assessments (EA). As a result, the Draft PEA does not merely evaluate current operations but establishes the procedural structure that will govern how future approvals are reviewed, disclosed, and evaluated under NEPA.

The Aviation-Impacted Communities Alliance (AICA) is a coalition of more than 90 local and national organizations advocating on a bipartisan basis for aviation policy that reflects the lived experience of affected communities, reduces harmful noise and health impacts, and promotes the safe and accountable management of the National Airspace System (NAS).

## Repeating the Mistakes of Nextgen

The FAA's NEPA framework, as implemented for NextGen, relied primarily on DNL-based noise significance thresholds and related analytical constructs that no longer reflect how communities experience aircraft noise. **By treating DNL as the most consequential determinant of noise significance, the framework functionally predetermines Finding of No Significant Impact (FONSI) and limits meaningful disclosure, engagement, and recourse. As a result, impacts are predominately treated as insignificant under FAA policy not because they are insignificant in daily life, but because the analytical framework does not capture high counts of overflight events, sequencing, and disruption.** At a December 16, 2025 House hearing on the *State of American Aviation*, the FAA Administrator described NextGen as a "boondoggle."<sup>[1]</sup>

That same DNL-centered framework is reflected in the to-date 23 FONSI's issued for drone delivery operations. Rather than evaluating effects in a manner that reflects lived experience, the FAA continues to rely on DNL-based screening that presumes no significant impact in advance.

## **FAA Discretion and Opportunity Within this PEA**

Many of the concerns raised in this comment can be addressed by the FAA within the scope of this PEA. The FAA has discretion to revise the structure and limits of its programmatic approval framework, including the analytical approaches used to evaluate impacts, the definition of thresholds and review triggers, and the circumstances under which location-specific environmental review and public involvement are required. Where the Draft PEA fails to do so, it is not because the FAA lacks authority, but because the FAA has adopted a framework that prioritizes administrative streamlining over substantive environmental evaluation and public accountability under NEPA.

Against this backdrop, the Draft PEA is fundamentally deficient in three interrelated ways that undermine meaningful environmental review.

### **Three Overarching Deficiencies**

- **Failure to Disclose and Represent Community Lived Experience:** The Draft PEA fails to adequately disclose how large volumes of very low-altitude drone operations would be experienced by communities on the ground. The analysis does not meaningfully characterize exposure associated with hundreds to thousands of daily overflight events at altitudes between approximately 150 and 375 feet.

A representative depiction of community lived experience would address the count of overflight events, cadence and clustering, concentration of operations over specific neighborhoods, hovering time over residences, assumed operating altitudes, expected ground-level noise, and permissible hours of operation. These defining elements of daily exposure are obscured through averaged proxies, generalized descriptions, and simplistic assumptions.

- **Second, FONSI Predetermination Through an Antiquated Metric and Threshold:** The Draft PEA relies on an analytical framework structurally predisposed to FONSI and a DNL metric and threshold that are no longer aligned with the new National Curve derived from the Neighborhood Environmental Survey (NES) published in early 2021.

By relying on an antiquated, pre-established screening threshold that is insensitive to a high count of events (the same DNL level can be achieved by 10 very loud events or 100 medium loud events or 1000 loud events), the framework treats the introduction of drone hubs or operations into any community as insignificant at the outset. In communities with little or no existing aviation noise, this approach normalizes first-time exposure as insignificant, while in already burdened communities it dismisses additional and cumulative impacts by relying on averaged cumulative constructs that do not meaningfully represent incremental burden or lived experience.

- **Third, Failure to Evaluate Local Conditions and Potential Noise Impacts:**

The Draft PEA establishes a framework that relies on internal FAA discretion to determine whether and how local conditions and potential noise impacts are analyzed, disclosed, and relied upon in approval decisions, rather than a framework that defines objective criteria and decision points, which govern when such analysis must occur prior to approval. By relying on tiering and

internal determinations without defining and describing objective triggers for a separate, location-specific, project-level EA, or explaining how noise-sensitive land uses will be evaluated, the proposed framework provides no transparent mechanism for reassessing significance when community-level impacts differ from programmatic assumptions.

These three deficiencies prevent the FAA from meeting its NEPA obligations to take a hard look at the reasonably foreseeable, location-specific environmental impacts of the proposed action and to disclose those impacts in a manner that supports informed public participation, particularly where reliance on DNL-based screening fails to convey overflight counts and localized community effects.

### **Key Implications of the Draft PEA for NEPA Review, Community Impacts, and Public Involvement**

The structural deficiencies identified above translate directly into procedural and substantive consequences for how drone package delivery operations are approved, expanded, and experienced at the community level.

1. **Future NEPA Reviews Are Predisposed Toward a FONSI, Repeating the Structural Failures of NextGen.** The Draft PEA extends an analytical framework that is largely disconnected from lived experience. To date, every location-specific, EA prepared for drone package delivery operations has resulted in a FONSI, including in cases where communities raised concerns regarding noise, disruption, and land use compatibility [2]. The Draft PEA mirrors the structural failures of NextGen, where reliance on DNL-based analysis and limited public engagement contributed to highly concentrated operations and sustained community disruption.
2. **Loudness and Intrusiveness of Individual Drone Overflights Are Not Clearly Disclosed.** The Draft PEA reports single-event noise exposure levels that, for certain en route operational profiles within the analyzed range, when translated using standard acoustical relationships, correspond to maximum sound levels generally in the mid-60s to low-70s dBA range [3][4]. These levels are comparable to disruptive aircraft overflights associated with NextGen arrival procedures at approximately 4,000 feet over specific neighborhoods. The Draft PEA does not clearly disclose how such event-level noise including the count of overflights would be experienced on the ground across the range of operators and flight profiles analyzed. Absent clear disclosure, decision makers and the public cannot assess the intensity or intrusiveness of individual drone events.
3. **The Draft PEA Functions as a De Facto Blanket Approval.** While local governments retain land-use authority over hub siting, the Draft PEA allows the FAA to approve hubs and authorize future operational changes through administrative amendments rather than separate, location-specific EAs. It does not clearly describe enforceable limits or triggers requiring further review or public involvement as operations evolve. Nor does it identify any enforceable role for local governments or affected communities in FAA decisions regarding operational volume, hours of operation, use cases, or routing once operations are authorized, leaving communities without a clear or reliable avenue for recourse.

4. **The Draft PEA Allows 24-Hour Operations in the Absence of Limits or Constraints Tied to Local Noise Ordinances.** Although the Draft PEA states that most deliveries are expected to occur between 7:00 a.m. and 10:00 p.m., it explicitly evaluates operations that may occur up to 24 hours per day without establishing limits, conditions, or review triggers related to nighttime frequency, intensity, or clustering. The Draft PEA does not analyze how such operations would be reconciled with local government noise ordinances or time-of-day restrictions, or how conflicts between FAA-authorized operations and local noise protections would be addressed.
5. **Overflowed Communities That Do Not Host a Delivery Hub Lack a Meaningful Role in FAA Decision Making.** For communities located beneath flight corridors or routing procedures serving a delivery hub not located within their jurisdiction, the Draft PEA provides no approval role and no mechanism for notification or input by either the affected community or its local government on routing, operational intensity, hours of operation, or subsequent changes once operations begin or are later intensified.
6. **The Draft PEA Operates to Supplant Location-Specific and Cumulative Noise Review.** The Draft PEA relies on a programmatic framework that may function, in practice, to supplant preparation of separate, location-specific, project-level EAs for noise impacts, even though those impacts are inherently local and cannot be meaningfully evaluated without location-specific review. Noise impacts vary substantially depending on surrounding land uses and community context, particularly for noise-sensitive locations such as schools, parks, hospitals, and residential neighborhoods. By relying on generalized assumptions and programmatic screening rather than evaluating how and where operations would occur, the Draft PEA obscures where the most sensitive community impacts would arise and limits public assessment of the real-world consequences of the proposed action.

In addition, the Draft PEA evaluates each drone delivery hub in isolation and does not require assessment of how multiple hubs operating within the same geographic area would interact or compound community impacts over time. As hubs are replicated, expanded, or intensified under the approved programmatic framework, the FAA may rely on internal screening processes exercised at the agency's discretion, which may occur without public notice or opportunity for involvement. This approach allows materially greater cumulative noise exposure to occur without reassessment, even where communities experience increasing event counts, expanded hours of operation, or repeated exposure across multiple corridors. The Draft PEA further fails to evaluate drone hub operations cumulatively with other aviation activity, including existing aircraft operations, airports, vertiports, and other very low-altitude operations.

7. **Absence of Objective, Impact-Based Triggers Prevents Additional NEPA Review.** Whether future Operations Specifications (OpSpecs) amendments require further NEPA review is discretionary and may default to whether modeled DNL remains below screening thresholds that do not disclose or convey the count of discrete overflight events, the timing of those events, or whether a new hub or major expansion introduces first-time or substantially increased exposure in

a particular community. This allows materially worse community impacts to occur without prompting separate, location-specific, project-level EAs, or public involvement.

8. **Modeling Assumptions Are Characterized as Mitigation Rather Than Enforceable**

**Commitments.** Assumptions such as setbacks, delivery caps, deconfliction, and related planning constructs are presented as mitigation even though they are embedded in the baseline and action scenarios, not enforceable measures subject to monitoring or corrective action.

9. **The Draft PEA Fails to Present a Meaningful No Action Alternative.** The programmatic framework fails to present a no action alternative that reflects the absence of a nationwide blanket approval framework for drone delivery hubs and associated operations. A meaningful no action alternative could reasonably reflect continuation of prior FAA practice, under which delivery hubs and associated operations were evaluated through separate, location-specific, project-level EAs with discrete decision points and public involvement. By omitting a comparison to a valid no action alternative, the Draft PEA minimizes the consequences of adopting a nationwide programmatic approval framework and undermines the public's ability to evaluate what would differ if the proposed action were not adopted.

### **Comment Organization**

The discussion below is organized into four parts that build on the foregoing analysis. The first three parts address the Draft PEA deficiencies outlined at the beginning of this comment:

- **Part I** addresses the Draft PEA's failure to convey how drone package delivery operations would be experienced by communities on the ground, including the count of overflight events, timing and clustering of operations, concentration over specific neighborhoods, peak-period intensity, and event-based loudness, which together define lived experience but are obscured by an Average Annual Day DNL and DNL-equivalent constructs.
- **Part II** explains how the Draft PEA's reliance on DNL-based screening creates a functionally predetermined noise analysis framework that leads to FONSI, regardless of increases in operational overflight counts, operational intensity or community disruption.
- **Part III** examines structural and procedural deficiencies in the scope, structure, and future application of the programmatic action, including how tiering, initial OpSpecs approvals, and subsequent amendments, combined with discretionary internal FAA determinations, allow delivery hubs, routing, operating hours, and operational intensity to expand without objective, impact-based thresholds that require separate, location-specific EAs, public notice, or enforceable opportunities for community and local government involvement, affecting both host communities and communities that are routinely overflowed as operations expand and concentrate over time.
- **Part IV** addresses additional deficiencies not fully captured in the preceding Parts, including the absence of a transparent and enforceable safety determination and escalation framework as operations scale, a structural opacity in how safety risk is evaluated, revisited, and governed over time, a flawed and analytically compromised no action alternative, a mischaracterization of baseline assumptions and modeling inputs as mitigation, and a purpose and need framing that

prioritizes service enablement and streamlining of approvals over evaluation of environmental and community consequences, contrary to NEPA's core requirements.

### **Defining Community Lived Experience of Drone Package Delivery Operations**

An adequate representation of community lived experience reflects how drone package delivery operations are experienced on the ground by affected communities. For purposes of this comment, the term *lived experience* refers to the conditions and effects that shape how these operations are encountered by community members in daily life, as reflected in the elements listed below.

- **Count of overflight events:** count distinct overflight events.
- **Cadence of events:** temporal spacing between events and temporal clustering.
- **Timing of events:** time of occurrence (daytime, evening time, nighttime). A critical factor for penalties applied to noise metrics.
- **Concentration of operations:** horizontal concentration, repeated use of the same very narrow flight paths or corridors.
- **Persistence over time:** ongoing, recurring exposure over extended periods, including months or longer.
- **Event-based noise levels:** captured by N-Above (Number Above) metrics and the maximum sound level of individual events (Lmax). Because DNL incorporates a nighttime penalty, failure to apply a comparable nighttime adjustment to Lmax when comparing DNL and N-Above results in analytically inconsistent reporting.
- **Ambient acoustic context:** baseline ambient noise conditions, as defined by L90 (noise level that is present 90% of the time). A noise event that exceeds ambient noise by at least 3 dBs is audible.
- **Cumulative noise exposure:** combined exposure from multiple aircraft types (including drones), operators, vertiports, airports, and drone delivery hubs associated with the action, across all phases of operation.
- **Stationary noise:** noise from hovering and ground-based operations, including hub activity, launch and recovery, staging, charging, and associated equipment, including short-duration, high-intensity ground noise events such as engine power changes or run-up related noise, which may occur as repeated episodes over time.
- **Contextual and non-acoustic effects:** such as visual presence, visual intrusion, and lack of privacy.
- **Health impacts:** adverse health effects such as sleep disturbance, stress, cardiovascular effects, and other aviation-related health outcomes that are associated with high-count of overflight events, event loudness, and the timing.

**For purposes of this comment**, the lived experience definition above serves as the analytical benchmark for evaluating whether the Draft PEA meaningfully discloses and assesses community-level impacts under NEPA. References to *event-based exposure* denote the subset of lived experience most directly reflected in the count of overflight events, their timing and clustering, concentration over specific neighborhoods, persistence of exposure over time, and event loudness.

This analytical benchmark applies across drone delivery, Advanced Air Mobility (AAM), and NextGen because the same experiential elements shape how aviation impacts are perceived and experienced on the ground.

### **Requirements for Accurate Representation of Community Lived Experience**

The following items are not components of lived experience themselves. They are necessary conditions for accurately representing and disclosing lived experience in environmental analysis.

- **Transparency of representation:** the experiential elements listed above should be disclosed directly and not obscured through averaged proxies, generalized descriptions, or simplifying assumptions.
- **Validation with measured data:** modeled noise levels, event counts, and operational assumptions should be validated against real-world measurements to ensure outputs reflect actual community conditions.
- **Limits of source-noise reductions:** reductions in per-operation source noise, whether achieved through certification standards or modeling of quieter vehicle designs, do not necessarily mitigate impacts driven by high counts of overflight, clustering, or repeated exposure over time.

### **Conclusion: FAA Discretion to Avoid Repeating NextGen Failures**

The FAA retains discretion within this PEA to revise, rather than merely describe, the structure and limits of its programmatic approval framework. While improved transparency is necessary, transparency alone is not sufficient. The Draft PEA should move away from analytical approaches that functionally predetermine a FONSI, including reliance on DNL as the most consequential determinant of noise significance, and ensure that future approvals are evaluated against an analytical benchmark that reflects how operations are actually experienced by communities on the ground.

Absent such changes, the Draft PEA risks repeating the structural failures associated with NextGen, where implementation decisions and DNL-based averaged metrics were associated with extensive and persistent concentration of operations over affected communities, with limited notice, engagement, or meaningful recourse.

For these reasons, we respectfully urge the FAA to revise the Draft PEA accordingly. Without these substantive corrections, the proposed programmatic framework does not satisfy NEPA's disclosure, review, and public-participation requirements.

Respectfully submitted,

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## **Detailed Discussion and Recommendations**

### **Part I: Failure to Disclose and Represent Lived Experience**

Part I establishes how drone package delivery operations, including very low-altitude operations conducted by Unmanned Aircraft Systems (UAS), would be experienced by communities on the ground.

The Draft PEA does not meaningfully disclose or represent lived experience as defined earlier in this comment. Rather than presenting how drone package delivery operations would be experienced on the ground, the analysis relies on averaged and abstracted delivery operations as proxies for impact, rather than on the count, loudness, and timing of overflight events experienced by communities. As a result, the Draft PEA fails to disclose the information necessary for a meaningful evaluation of impacts, thereby undermining informed public participation under NEPA.

This deficiency is structural, not merely presentational. By organizing the analysis around annualized DNL-based screening values and internal assumptions, the Draft PEA omits event-based exposure that is central to how noise is perceived, how disruption occurs, and how impacts accumulate over time. The sections below identify specific ways in which the Draft PEA fails to disclose and represent lived experience and explain why those omissions materially undermine environmental review and public participation under NEPA, particularly where impacts are driven by event-based exposure that are obscured by annualized DNL averages.

As early as 2023, community organizations identified that AAM operations would introduce persistent, very low-altitude aircraft activity and concentrated overflight patterns that existing FAA environmental review frameworks and noise metrics are structurally incapable of evaluating, as documented in a Federal Register comment submitted by the Aviation-Impacted Communities Alliance [5].

#### **A. Ambiguity in Disclosure of Permissible 24-Hour Operations**

The Draft PEA states that drone package deliveries “would occur 7 days per week” and that the FAA “expects most deliveries would occur between the hours of 7:00 a.m. and 10:00 p.m.” It further states that “a small percentage of deliveries may occur outside those hours” and that, as a result, “this PEA accounts for some drone package deliveries to occur 24 hours per day,” citing examples such as medical deliveries to illustrate potential off-hour operations.

While this language acknowledges the possibility of off-hour activity, it does not clearly or affirmatively state that the proposed action allows drone delivery operations for any type of goods at any hour of the day or night, nor does it define the operational bounds of nighttime activity assumed in the analysis, including how frequently such operations may occur, whether they may occur on a routine basis, or whether any limiting conditions apply.

As a result, the Draft PEA presents nighttime operations as exceptional in narrative form while simultaneously analyzing operations on a 24-hour basis, obscuring the practical reality that continuous operations are permissible under the proposed framework. This lack of clarity impairs public evaluation of the true scope of the proposed action and the baseline assumptions underlying the FAA’s impact analysis.

## B. Limitations of DNL-Based Proxies in Representing Drone Noise Exposure

The Draft PEA relies almost exclusively on annualized, DNL-based analytical proxies to characterize drone noise impacts, rather than on event-based noise metrics that reflect how noise is experienced on the ground. Constructs such as “average daily DNL-equivalent deliveries” are not noise metrics themselves, but proxy values layered onto DNL, which does not disclose the count, timing, or repetition of discrete noise events. As a result, the Draft PEA does not meaningfully convey how often drone overflights affect lived experience. The sections below examine how this reliance on DNL-based proxies obscures event-based exposure and community-level impacts.

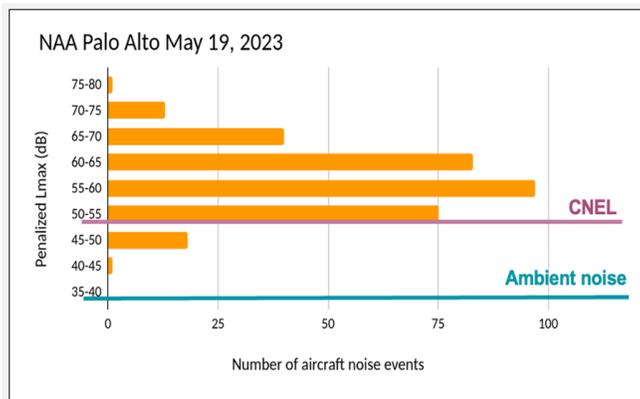
### B.1 Analytical Reliance on DNL-Based Proxies Obscures Event-Based Noise Exposure

The Draft PEA relies on averaged, DNL-based operational proxies rather than disclosing the event-based exposure necessary to evaluate lived experience. Specifically, the modeled noise results presented throughout the Draft PEA are organized around constructs such as “average daily DNL-equivalent deliveries,” rather than around the count, timing, concentration, or spacing of actual overflight events.

These DNL proxy values do not reveal how often drones pass overhead, how repeatedly they traverse the same homes or neighborhoods, or when those events occur during the day or night. Instead, they are outputs of an annualized DNL-equivalent construct that, by design, is insensitive to discrete event counts, temporal clustering, and peak-period intensity. This creates a fundamental mismatch between how noise is modeled for environmental review and how it is experienced by affected communities.

As GAO has documented, because DNL combines multiple components of noise into a single averaged value, it does not provide a clear picture of flight activity and associated noise levels at a given location. Substantial increases in overflight activity may therefore occur without a discernible change in DNL-based screening outcomes [6]. By relying on DNL-equivalent delivery values, the Draft PEA does not meaningfully disclose event-based exposure.

### B.2 Figure A: Real-World Aircraft Noise Experience at a Residential Location



**Figure A. Distribution of observed aircraft noise events by maximum sound level (CNEL-weighted).**

Note: CNEL includes additional penalties for evening and nighttime events. The figure illustrates the sound level ranges that dominate community noise experience.

Source: SFO Noise Office (ANEEM data), as presented by Fremont, M., *Representing Aircraft Noise Impacts – A Community Perspective*, Aviation Noise and Emissions (ANE), 2024

Figure A provides a real-world reference for how aircraft noise is actually experienced. It presents measured noise monitoring data at a residential location, showing the distribution of observed aircraft noise events by maximum sound level, expressed as penalized L<sub>max</sub> [7]. Penalized L<sub>max</sub> in the chart is L<sub>max</sub> with a 10 dB night penalty for events between 10pm and 7am (similar to the DNL night penalty) and a 5 dB evening penalty for events between 7pm and 10pm (similar to the CNEL evening penalty in California).

The data reflect noise from overflights associated with three airports operating NextGen arrival procedures and are presented solely to ground the analysis in lived experience. This example illustrates how aircraft noise is experienced on the ground through discrete, repetitive overflight events, rather than through annualized averages. Figure A is included to depict the sound level ranges of aircraft noise events that communities recognize as clearly audible and disruptive. The figure also shows that the majority of observed aircraft noise events exceed the 50 dBA CNEL value by many decibels (CNEL is the DNL-based metric used in California).

### **B.3 Averaged Noise Indices Fail to Represent Community Noise Experience**

#### ***Observed Single-Event Noise Experience***

The distribution of penalized L<sub>max</sub> values shows how many aircraft noise events occur at different single-event loudness levels. At this residential location, the data show 328 aircraft noise events over a 24-hour period that exceed the ambient sound level of approximately 35 dBA, with more than 300 events at or above 50 dBA penalized L<sub>max</sub>, and 137 events at or above 60 dBA penalized L<sub>max</sub>. These N-Above-Ambient counts reflect frequent, repetitive, and clearly noisy overflights that define residents' day-to-day noise experience, independent of annualized noise averages.

#### ***Annualized Context Using CNEL***

Figure A also presents the calculated Community Noise Equivalent Level (CNEL) at the location. CNEL is similar to DNL: it applies standard weighting, including a 5 dB penalty for evening events and a 10 dB penalty for nighttime events, to reflect increased sensitivity during those hours. The CNEL value characterizes the annualized noise context at the monitoring location assuming the same distribution of aircraft noise events every day of the year.

In this example, the resulting annualized CNEL is 50 dB, which is 15 dB below the FAA's longstanding DNL 65 significance and compatibility threshold. Yet many residents near this location experience frequent, clearly noisy, and disruptive overflight events on a routine basis, at a rate of over 300 per day exceeding the 50 dB CNEL level. Figure A demonstrates that substantial single-event noise activity can occur well below regulatory thresholds that govern environmental review and findings of significance. This example illustrates the disconnect between event-level noise experienced on the ground and the DNL-based averaged noise indices used for environmental screening, even where affected communities experience frequent and disruptive overflight activity.

## **B.4 Limits of Vehicle-Specific Noise Reductions Under a DNL-Based Framework**

Explanations that focus on reducing the noise of an individual drone overflight, such as whether a particular vehicle is quieter or louder, do not address the primary drivers of community impact where operations involve high counts of events, hundreds or thousands per 24 hours. Even meaningful reductions in per-event loudness do not materially mitigate impacts experienced on the ground when communities are exposed to extensive overflights.

These limitations are compounded by the Draft PEA's reliance on an annualized, averaged noise DNL, which is mathematically insensitive to a large number of noise events unless the events are extremely loud. 1 extremely loud noise event can result in the same DNL value as 1,000 moderately loud noise events. Under this DNL framework, reductions in single-event noise levels may register as negligible DNL changes, even as operational intensity and community disruption increase. FONSI outcomes therefore reflect the analytical structure applied and are guaranteed based on the current DNL threshold, regardless of how repeated overflight noise is actually experienced by affected communities.

## **B.5 Draft PEA Noise Assumptions Place Drone Overflights Within Familiar Aircraft Loudness Ranges**

### ***Upper-Bound En Route Noise Assumptions Fall Within Known Aircraft Loudness Bands***

As presented in the Draft PEA, package delivery drones are assumed to generate an en route Sound Exposure Level (SEL) of approximately 78.4 dB for a single delivery overflight. Using standard acoustical approximations for short-duration events, a 78.4 dB SEL for a very low-altitude overflight corresponds to a maximum sound level (L<sub>max</sub>) generally in the mid-60s to low-70s dBA range, depending on overflight duration, speed, altitude, and propagation conditions [3][4].

This peak loudness range places drone overflights within sound level bands already experienced by residential communities from existing aircraft operations, including commercial NextGen arrival procedures, rather than introducing an entirely novel noise exposure. As shown previously in Figure A, many existing aircraft overflights at residential locations occur within or above this same mid-60s to low-70s dBA range.

### ***Lower-Bound En Route Noise Assumptions Still Fall Within Audible Aircraft Noise Experience***

The Draft PEA also reports lower en route SEL values for other drone operators. Recalculating the Draft PEA's assumed en route noise exposure using a lower SEL value of 58.5 dB produces estimated single-event maximum sound levels generally in the mid-40s to low-50s dBA range, depending on overflight duration [8][4].

These values fall within the lower portion of the sound level distribution observed in NextGen-affected communities, rather than at the upper end represented by the 78.4 dB SEL example. They nevertheless remain audible and perceptible in residential environments, where individual overflight events are readily distinguishable from routine background sound.

### ***The Analytical Limitation Persists Across the Modeled Noise Range***

Regardless of whether single-event noise levels fall at the higher or lower end of the observed distribution, reliance on DNL-based cumulative noise indices do not count the number of events or other aspects of event-based exposure. This analytical limitation persists across a range of plausible SEL assumptions, including conservative ones.

As illustrated in Figure A, locations with annualized CNEL values well below the FAA’s DNL 65 significance threshold can still experience hundreds of discrete overflight noise events per day at audible and disruptive levels.

### ***En Route Noise Represents a Lower-Bound Condition Within the Draft PEA Operational Profile***

The Draft PEA, through its comparative modeling of operational phases, indicates that en route flight represents the lowest noise exposure condition among the drone operational phases evaluated. The Draft PEA further describes descent, hover, delivery, ascent, departure near delivery locations, and delivery hub activity as producing greater noise exposure than en route overflight. Accordingly, noise values presented for en route flight should be understood as representing a lower-bound condition within the overall operational profile analyzed.

In areas where aircraft overflights already occur, drone operations would therefore be additive rather than indistinguishable, increasing the count of audible noise events experienced each day without necessarily resulting in a discernible change in DNL-based screening outcomes.

## **B.6 False Equivalencies Created by DNL-Equivalent Delivery Constructs**

The use of “DNL-equivalent deliveries” further obscures community experience by collapsing fundamentally different operational scenarios into a single averaged value. Under the Draft PEA’s definition, DNL-equivalent deliveries are calculated as the number of daytime deliveries plus ten times the number of nighttime deliveries, reflecting the nighttime 10 dB weighting penalty embedded in the DNL metric.

As a result, a scenario described as “1,150 DNL-equivalent deliveries” could represent 1,150 daytime deliveries, corresponding to approximately 2,300 very low-altitude overflights distributed across daytime hours, or it could represent only 115 nighttime deliveries, corresponding to approximately 230 very low-altitude overflights concentrated during nighttime and sleep hours. Although these scenarios are treated as analytically equivalent within the DNL-based framework, they would produce materially different community impacts. By collapsing these distinct realities into a single proxy value, the Draft PEA minimizes the apparent scale, timing, and character of operational activity even as disruption and sleep disturbance risk increase.

The Draft PEA also relies on constructs, including the unit capacity threshold operations value, that operate solely within a DNL-based screening framework. When combined with DNL-equivalent delivery assumptions, these constructs reinforce a misleading impression of bounded activity while obscuring the potential for sustained growth in daily overflight events, particularly in communities already affected by aircraft noise.

### **B.7. Smaller, Very Low-altitude Drones Can Sound Just as Loud as Other Aircraft**

The equivalence arises not because drones are louder at the source than commercial aircraft, but because drones operate much closer to people on the ground, typically only a few to several hundred feet above ground level. This proximity to the ground reduces geometric spreading and atmospheric attenuation (the natural loss of sound energy as noise travels through the air), allowing even small sound sources to produce clearly audible noise events at residential locations.

### **C. Failure to Translate Deliveries and Operations into Community Overflight Events**

Although the Draft PEA provides numerical assumptions regarding delivery volumes, it does not clearly translate those figures into overflight event counts, which are necessary to evaluate event-based community exposure. The analysis refers to average annual daily deliveries, including scenarios of up to 1,150 deliveries associated with a single hub, but does not plainly disclose that each delivery typically involves a round trip, resulting in two distinct very low-altitude overflight events that may occur repeatedly over the same homes or neighborhoods.

As explained in Section B.6, failure to translate delivery volumes into overflight event counts obscures the scale, timing, and intensity of daily activity experienced by affected communities. By failing to present delivery scenarios in terms of overflight event counts and temporal intensity, the Draft PEA obscures the true scale and character of daily activity experienced by affected communities.

### **D. Lack of Disclosure of Peak-Period Intensity, Event Clustering, and Worst-Case Community Experience**

The Draft PEA does not adequately disclose whether modeled operations assume peak-period clustering, such as multiple deliveries occurring within short time windows, nor does it identify any maximum hourly or sub-hourly overflight rates. It also does not explain whether operations could be concentrated during early morning or nighttime hours, how repeated use of flight corridors could concentrate overflights over the same neighborhoods, or the duration of hovering and low-speed operations associated with individual deliveries.

As a result, the Draft PEA does not adequately disclose the reasonably foreseeable range of community exposure that could occur under the proposed framework. By relying on delivery-based proxies and annualized DNL-based screening rather than event-based exposure, the analysis does not convey whether noise impacts would consist of occasional events or sustained, closely spaced disturbance, even though peak-period intensity and clustering, rather than annual or daily averages, define how noise is experienced on the ground.

## **E. Lack of Transparency Regarding Future Approvals and Community Engagement**

The Draft PEA states that drone package delivery operations may be approved through initial issuance of an operator's OpSpecs and through subsequent amendments, based on FAA determinations that a proposal falls within the scope of the programmatic analysis. However, the document does not adequately disclose and describe the criteria, thresholds, or decision points governing when a new hub or operational change may proceed through these determinations versus when a separate, location-specific, project-level EA would be required, nor does it explain the standards the FAA will apply to determine whether tiering to the programmatic analysis is sufficient for either initial approvals or later amendments.

The Draft PEA likewise does not adequately disclose whether any conditions would trigger community notification or public involvement under these approval pathways. Absent such disclosure, communities have no clear or reliable basis for understanding when, how, or whether they would be informed or able to engage as drone delivery operations are first approved or subsequently expanded under the programmatic framework.

## **F. Insufficient Disclosure of Corridor Determination, Capacity, and Community Impacts**

### **F.1 Lack of Transparency in Corridor Determination and Use**

The Draft PEA discusses the use of very low-altitude flight corridors for drone package delivery operations but does not adequately disclose the factors that would govern corridor placement, how routing decisions would account for existing noise exposure or noise-sensitive land uses, or the extent to which the same corridors would be used repeatedly over time. These undisclosed corridor decisions directly shape the location, count, and persistence of these very low-altitude overflights, and therefore materially affect the noise impacts experienced by affected communities. Without such disclosure, the public cannot meaningfully assess or engage with the community-level consequences of the proposed programmatic framework.

### **F.2 Misleading "Capacity" Terminology Obscures the Absence of Operational Limits**

The Draft PEA introduces a "unit capacity threshold operations value" as a screening parameter that could reasonably be understood to imply an operational limit on the level of activity communities would experience. In practice, however, this construct does not function as a cap on overflights, noise events, or community exposure. It is solely an analytical input used for DNL-based screening and does not constrain the number, timing, routing, or sequencing of operations on the ground.

When combined with the lack of disclosure regarding corridor determination and reuse, this terminology creates a misleading impression of bounded activity while providing no enforceable mechanism to prevent persistent or escalating concentration of overflights over affected communities.

## Recommendations

The FAA should revise the Draft PEA to disclose event-based exposure necessary to evaluate how drone package delivery operations would be experienced on the ground.

At a minimum, the Draft PEA should:

1. **Affirmatively state whether operations are permitted at any hour** and disclose the assumptions regarding nighttime operations used in the analysis.
2. **Translate delivery volume assumptions** into explicit daily overflight event counts with expected noise levels for each modeled scenario using the N-Above metric.
3. **Disclose peak-period and worst-case operational characteristics**, including maximum hourly and sub-hourly overflight rates, event clustering, and shortest expected spacing between successive overflights.
4. **Present a clearly defined worst-case community exposure scenario**, reflecting maximum foreseeable overflight activity and delivery activity a neighborhood could experience.
5. **Explain how routing decisions and corridors are determined and used** and disclose foreseeable community impacts of corridor placement and repeated use.
6. **Clarify that “DNL-equivalent deliveries” and “unit capacity threshold operations value”** are analytical constructs, not operational limits that do not cap the number, timing, or sequencing of overflight events.

## Conclusion: Disclosure, Lived Experience, and NEPA Compliance

Collectively, the deficiencies identified in Part I show that the Draft PEA does not meaningfully convey how drone package delivery operations would be experienced by affected communities. Reliance on annualized DNL-based proxies obscures the event-based exposure that defines daily conditions on the ground, limiting informed community review.

As a result, communities lack a clear understanding of the scale and character of the proposed action and are unable to meaningfully assess its potential impacts.

## Part II. Noise Analysis Framework Structurally Predisposing a FONSI

Part II examines why the Draft PEA’s noise analysis framework is structurally incapable of evaluating the impacts on communities and predisposes FONSI under NEPA.

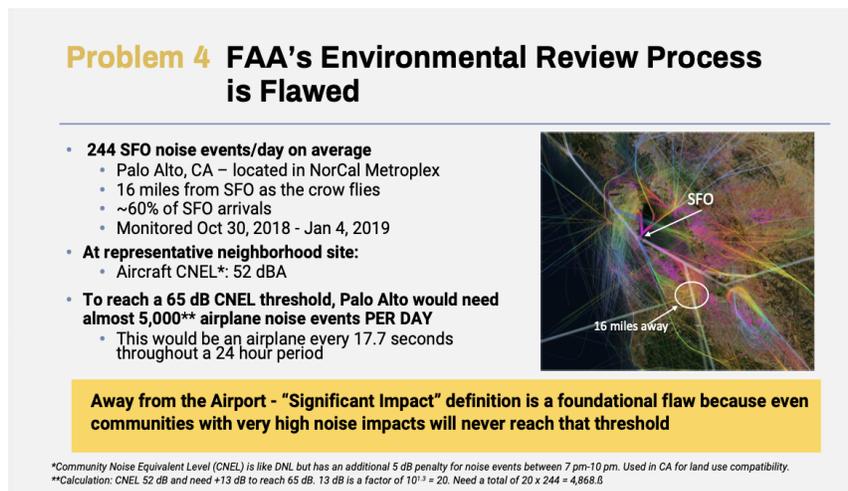
These deficiencies were explicitly raised during the FAA’s Noise Policy Review, where community organizations submitted detailed technical comments explaining that DNL-based screening thresholds obscure event-based exposure and fail to reflect community lived experience, as defined earlier in this comment [9]. To date, the FAA has not made substantive revisions to its noise policy framework for the Draft PEA.

## A. DNL's Inability to Represent Community Lived Experience of Aircraft Noise

### A.1 DNL Permits Substantial Increases in Overflight Activity Without Indicating Increased Impact

DNL aggregates sound energy over a period. The FAA relies on an Average Annual Day to estimate a DNL level that does not reflect how noise is experienced on the ground. As a result, a community may already be experiencing hundreds of disruptive aircraft noise events per day while modeled DNL exposure levels remain well below the FAA current significance threshold of DNL 65. As shown in Figure B below, based on actual noise recordings over a 2-month period, residents experienced approximately 240 aircraft noise events per day. Yet the modeled exposure is approximately 52 dB CNEL placing the community far below the 65 dB DNL significance threshold, despite substantial and persistent daily disruption.

This example illustrates how DNL collapses thousands of discrete aircraft noise events into a single averaged value, rendering the count, timing, and concentration of overflights that drive disruption effectively invisible.



**Figure B. Relationship Between Overflight Frequency and DNL Exposure**

Source: Adapted from *Community Perspectives on Legislation*, presented at the Aviation Noise and Emissions Symposium, February 2021 [10].

Reverse-engineering a 65 dB CNEL significance threshold further demonstrates the severity of this disconnect. At this location, where residents already experience more than 240 aircraft noise events per day, nearly 5,000 comparable overflights per day would be required for impacts to be considered significant. This would translate into one aircraft approximately every 17.7 seconds over a full 24-hour period. This operational intensity is orders of magnitude beyond what communities already experience as disruptive, yet it is what the DNL framework implicitly requires to acknowledge significance.

Event-based metrics such as N-Above capture the count and event-level loudness of overflight noise, critical elements of community lived experience that DNL does not reflect. The N-Above metric registers the existing burden of overflight activity and directly reflects incremental changes by counting the number of discrete noise events with a maximum sound level (L<sub>max</sub>) that exceeds a defined noise level,

rather than averaging sound energy over time. This example demonstrates why event-based metrics provide a more transparent and representative basis for evaluating community noise impacts than DNL-based screening alone.

## **A.2 Use of DNL as a Significance Trigger Functionally Predetermines a FONSI**

FAA Order 1050.1G relies on DNL-based thresholds to determine whether noise impacts are significant and whether additional environmental review or public involvement is required. As demonstrated in section A.1, DNL does not register the event-based exposure, particularly the count of overflight events that define lived experience.

Because DNL is used as the significance trigger, reliance on this metric allows high-volume UAS operations to proceed without triggering significance determinations, even as daily noise disruption experienced by affected communities increases materially. By selecting a metric that is structurally incapable of acknowledging event-based exposure, the FAA functionally predetermines a FONSI for UAS operations.

As a result, the PEA framework substitutes a DNL-based screening threshold for NEPA's substantive inquiry, effectively determining in advance that noise impacts are not significant to affected communities on the ground.

In addition, the Draft PEA evaluates drone noise in isolation, without assessing how new UAS operations add to existing noise from all aviation aircraft operations affecting the same communities. By failing to evaluate additive and cumulative noise impacts from multiple aircraft operations across the NAS, including conventional aircraft and UAS operating from or near airports, drone hubs, vertiports, and along shared flight corridors, the framework further understates total community noise exposure and obscures significance determinations required under NEPA.

## **B. Continued Reliance on DNL 65 and the Schultz Curve Is No Longer Supported**

### **B.1 Outdated Community Response Assumptions Embedded in the 65 dB DNL Threshold**

The Draft PEA relies on the 65 dB DNL threshold as an indicator of noise significance, even though the community response assumptions embedded in that threshold are no longer valid. The threshold reflects legacy assumptions about community annoyance and adverse response dating to the period when the metric was adopted, rather than current empirical understanding of how communities respond to aircraft noise.

This issue is distinct from DNL's failure to represent event-based exposure, as discussed in Parts I and II. Even if DNL were otherwise capable of reflecting operational intensity, continued reliance on outdated response assumptions embedded in the threshold itself undermines the credibility of noise significance determinations affecting lived experience.

## **B.2 Updated Evidence Confirms that the 65 dB DNL Threshold No Longer Reflects Community Response**

The FAA’s Neighborhood Environmental Survey (NES), published in 2021, demonstrates that the historical relationship between DNL and community annoyance no longer reflects measured community response. NES survey data extended only to approximately 50 dB DNL; however, the FAA shared a response curve and formula that allow extrapolation beyond the surveyed range. Applying that FAA-provided formulation to the historical 12.3 percent “highly annoyed” criterion associated with the 65 dB DNL threshold indicates that a comparable level of community annoyance now occurs near the 46 dB DNL threshold [11].

Despite this evidence, the Draft PEA continues to rely on the 65 dB DNL significance threshold without adjustment, recalibration, or acknowledgment of the changed dose-response relationship reflected in the NES results. As a result, the Draft PEA applies a significance threshold that no longer corresponds to current empirical understanding of community response, undermining the credibility of its noise impact conclusions and their relevance to community lived experience.

## **C. DNL Is Particularly Ill-Suited to Evaluating UAS Noise**

### **C.1 Operational Characteristics of Very Low-altitude UAS that DNL Fails to Capture**

Very low-altitude UAS operations concentrate and intensify the same operational characteristics that DNL fails to capture for conventional aviation, making the metric’s deficiencies particularly consequential for event-based exposure. Although single-event noise levels associated with UAS operations may overlap with those of conventional aircraft, the way these operations occur and are experienced on the ground differs in ways that are directly relevant to lived experience and are not represented by annual average metrics such as DNL.

Key characteristics include:

- **High counts of discrete overflight events**  
UAS operations will often involve hundreds or more of daily overflights, likely along the same routes, resulting in frequent and repetitive noise intrusions rather than isolated events.
- **Very low operating altitudes**  
Operations will typically occur below 400 feet AGL, increasing proximity, audibility, and visual presence, and intensifying noticeability and disruption
- **Concentration along narrow, fixed corridors**  
UAS flights are likely to be concentrated over specific neighborhoods or corridors, increasing cumulative exposure for affected residents rather than dispersing noise impacts across a broader area.
- **Extended temporal distribution of operations**  
Operations may occur across large portions of the day and, in some cases, into evening, night, or early morning hours that are particularly sensitive for communities.

- **Event-based audibility rather than continuous background noise**

Noise is experienced as a single event, discrete interruptions to daily activities, not as a steady background condition that can be meaningfully represented through long-term averaging.

These characteristics define event-based exposure, which DNL systematically suppresses because it typically averages sound energy over an annual period, thus suppressing the dimensions of lived experience. Therefore, DNL is poorly suited to evaluating the community impacts of very low-altitude, high-volume UAS operations.

## **C.2 Illustrative Example: DNL Insensitivity to Large Increases in UAS Operations**

This limitation is illustrated in a FONSI issued by the FAA for proposed drone package delivery operations in North Carolina, where FAA analysis showed that increasing drone activity from zero to hundreds of daily operations did not change modeled DNL levels at locations as close as 25 feet from the centerline of the flight procedure, despite the substantial increase in very low-altitude overflight activity [12]. This example demonstrates how annual DNL averaging can mask material changes in operational intensity and community disturbance, allowing significant increases in UAS activity to be characterized as environmentally insignificant.

## **C.3 Draft PEA Modeling Shows the DNL Significance Threshold Is Functionally Unreachable**

The Draft PEA's own noise modeling demonstrates how disconnected DNL-based significance thresholds are from event-based exposure. Under En Route Operations, which the FAA treats as the lowest-intensity phase of UAS flight, the Draft PEA shows that up to 1,150 average daily deliveries, equivalent to approximately 2,300 en route overflights, result in modeled DNL levels just under 60 dB.

This means that communities could experience thousands of daily UAS overflights and still remain approximately 5 dB below the 65 dB DNL significance threshold. Because a 3 dB increase in DNL represents a doubling of sound energy, a 5 dB increase represents more than a threefold increase in energy. In practical terms, this implies that several thousand additional overflights per day would be required, beyond those already modeled, before noise impacts would be considered significant under the FAA's framework.

The Draft PEA therefore confirms, using its own modeling, that DNL is structurally incapable of recognizing severe, high-frequency UAS noise exposure as significant, even at operational levels that would be widely experienced as profoundly disruptive by affected communities.

## **D. Screening Threshold Derived to Avoid Significance and Further Review**

The Draft PEA relies on an internal screening level of approximately 59.7 dB DNL, derived by back-calculating from the FAA Order 1050.1G significance threshold of 65 dB DNL. This internal value is not an independent indicator of community impact. Rather, it reflects the FAA's application of a  $\pm 1.5$  dB modeling uncertainty margin and additional conservatism to ensure that modeled noise levels remain sufficiently below the regulatory threshold so that neither DNL-based significance criterion can be triggered.

By constraining modeled operations to remain below this screening level, the Draft PEA effectively ensures that significance determinations are avoided by design, regardless of how event-based exposure intensifies over time. The screening level functions not as an early warning of potential impact, but as a mechanism to prevent modeled outcomes from approaching regulatory thresholds.

This screening framework allows aviation noise to be introduced into previously quieter areas, including residential neighborhoods with little or no prior aviation exposure, without triggering additional environmental review or public involvement. At the same time, it makes it unlikely that incremental drone noise in already burdened communities will trigger further review, even as cumulative impacts increase. Rather than facilitating evaluation of community impact, the framework operates to foreclose additional analysis and public involvement by holding modeled noise just below significance thresholds.

The same analytical approach operationalizes the disconnect illustrated in section A.1, where a community would need thousands of daily overflight events before modeled DNL approaches the significance threshold. In both contexts, extreme operational intensity can occur without meaningful recognition of community impact.

## **Recommendations**

Based on the deficiencies identified above, the FAA should revise the Draft PEA to correct the structural limitations of its noise analysis framework and ensure compliance with NEPA's disclosure and significance requirements:

1. **Incorporate event-based noise metrics**, such as N-Above, because count of events, sequencing, timing, and geographic concentration of operations are primary drivers of community disturbance, including along UAS corridors, near hubs, and at delivery locations. Otherwise, clearly disclose and justify the exclusion of such metrics, noting that environmental tools such as AEDT (Aviation Environmental Design Tool) are capable of modeling N-Above metrics, as they currently model DNL.
2. **Disclose how modeled sound exposure relates to lived experience**, including the relationship between modeled sound exposure levels (SEL) and single-event noise levels such as L<sub>max</sub>, so that decisionmakers and the public can assess how individual drone overflights would be experienced on the ground.
3. **Eliminate reliance on internal screening thresholds that function to preclude meaningful evaluation of significance**, including the approximately 59.7 dB DNL screening level derived by back-calculation from FAA Order 1050.1G.
4. **Disclose, or acknowledge** the absence of, a defined framework for identifying, evaluating, and responding to substantial increases in UAS overflight activity when DNL-based screening thresholds do not change, even where such increases may involve thousands of overflights per day over affected communities.

5. **Evaluate additive and cumulative noise impacts across all aviation operations**, including how drone operations combine with noise from conventional aircraft, as well as other aviation activity associated with airports, drone hubs, vertiports, and shared flight corridors affecting the same communities, rather than assessing drone noise in isolation.
6. **Ensure that noise analysis methods do not functionally predetermine outcomes**, by avoiding exclusive reliance on averaged metrics that are mathematically insensitive to increases in the count of events, timing, and concentration.

### **Conclusion: DNL-Based Screening Functionally Predetermines FONSI**

As demonstrated in Parts I and II, the Draft PEA's noise framework relies on averaged screening constructs that do not reflect how drone operations are experienced by communities on the ground. By using DNL-based thresholds and internally derived screening levels that are insensitive to event-based exposure, including the count and concentration of overflight events, the Draft PEA predetermines noise significance and undermines NEPA's purposes of disclosure, informed decision-making, and public involvement as operations intensify and expand.

### **Part III. Lack of Clarity in the Scope, Structure, and Future Application of the Programmatic Action**

Part III addresses a distinct structural deficiency in the Draft PEA. While Parts I and II focus on how noise impacts are disclosed and evaluated, this Part examines how the Draft PEA's programmatic approval framework would operate over time, including how future approvals and operational changes may proceed without clear criteria, separate, location-specific, project-level EAs, or meaningful public involvement.

Several of the structural and analytical deficiencies identified in this Part originate from FAA Order 1050.1G, which preserves outdated noise thresholds, expands FAA discretion in determining environmental significance, and limits opportunities for public involvement, as documented in formal comments submitted by the Aviation-Impacted Communities Alliance [13].

#### **A. Discretionary Amendment Framework Without Impact-Based Triggers**

##### **A.1 OpSpecs Amendments Allow Operational Expansion Without Disclosed and Clearly Described Impact-Based Criteria**

The Draft PEA discloses that Part 135 drone package delivery operators may later expand or modify operations through amendments to their OpSpecs, including changes to hub locations, delivery volumes, operating areas, and operational characteristics. The Draft PEA states that the FAA will review such amendments to determine whether they fall within the scope of this PEA or require additional environmental review.

However, the Draft PEA does not disclose and clearly describe any objective, impact-based criteria governing how that determination will be made. It does not identify thresholds tied to changes in operational intensity, routing concentration, or cumulative exposure, all of which directly affect

community lived experience. As a result, decisions regarding whether operational changes require additional NEPA review occur through discretionary scope determinations rather than transparent, noise impact-based criteria.

## **A.2 DNL-Based Screening Becomes the De Facto Trigger for Amendment Review**

In the absence of any conveyed event-based exposure or alternative noise evaluation framework applicable to OpSpecs amendments, the DNL-based screening approach established for the programmatic approval effectively governs amendment scope determinations unless the FAA determines otherwise. In practice, continued compliance with DNL-based significance thresholds becomes the de facto trigger for determining whether amendments remain within the scope of the PEA.

As a result, operational expansions may proceed as administrative amendments so long as modeled DNL does not change materially, even where community impacts increase substantially through higher numbers of overflights, expanded hours of operation, or increased concentration over the same neighborhoods. Although the FAA retains discretion to consider other factors, the Draft PEA does not convey what those factors are or how they would be applied.

Given DNL's insensitivity to event-based exposure, reliance on DNL-based screening at the amendment stage allows operational intensity to increase without meaningful disclosure, additional environmental review, or public involvement. The public therefore cannot discern when OpSpecs amendments will trigger further NEPA review or how cumulative impacts from successive amendments will be evaluated over time.

## **A.3 Open-Ended Programmatic Scope and Loss of Public Transparency**

The practical scope of the PEA programmatic approval is effectively open-ended over time. Under the framework described above, operational expansions may proceed through successive administrative amendments even when they materially increase or newly introduce impacts to lived experience.

Absent clear, objective triggers distinguishing routine administrative amendments from changes requiring location-specific, project-level EAs, the Draft PEA prevents the public from meaningfully evaluating how future determinations regarding additional NEPA review or public involvement will be made. The framework does not convey when changes in scale, intensity, routing concentration, or affected communities would require location-specific, project-level EAs.

NEPA requires agencies to identify when subsequent actions become sufficiently different in scale, intensity, or location to warrant further environmental review. By establishing a programmatic approval that relies on discretionary scope determinations and a significance framework that does not evaluate lived experience impacts as defined earlier in this comment, the Draft PEA obscures the real-world consequences of incremental expansion and limits the public's ability to understand when and how meaningful environmental review will occur.

## **B. Tiering Framework that Locks in Assumptions and Forecloses Re-evaluation of Impacts**

### **B.1 Tiering Establishes the Analytical Baseline**

Rather than requiring re-evaluation of cumulative operations when new hubs, routing changes, or operational expansions are proposed, the Draft PEA relies on tiering to carry forward the assumptions and impact determinations of the programmatic analysis into future approvals. The Draft PEA describes tiering as a process under which subsequent approvals rely on the conclusions, assumptions, and impact determinations of the PEA, with any further environmental review limited to issues the FAA determines were not already addressed. Once the FAA determines that a proposed amendment or expansion falls within the scope of the PEA, the analytical framework and assumptions of the programmatic analysis become the reference point for future review.

As structured, tiering provides no mechanism to re-evaluate the cumulative noise exposure and community impacts of previously approved hubs, routes, and operational volumes as operations expand, intensify, overlap geographically, or change in character over time.

### **B.2 Incremental Expansion Results in Compounding Community Impacts Without Reassessment**

In practice, the tiered programmatic framework allows incremental operational expansion to accumulate into materially different community impacts without any cumulative or separate, location-specific, project-level reassessment. Increases in delivery volume, the addition of hubs within the same region, expanded nighttime operations, or higher counts of overflights over the same neighborhoods along narrow, repeatedly used flight paths or corridors may proceed while being treated as already analyzed under the PEA.

Over time, this approach permits operational conditions to change substantially at the community level, even as each successive approval is characterized as routine implementation. The result is compounding noise exposure and disruption experienced by affected neighborhoods without renewed evaluation of combined effects, location-specific consequences, or whether impacts have crossed thresholds that would otherwise warrant additional EAs or public involvement.

### **B.3 Absence of Post-Authorization Feedback or Validation**

Critically, the Draft PEA includes no requirement for post-implementation evaluation or reassessment based on actual operational outcomes. As demonstrated by prior FAA modernization efforts, including NextGen, the absence of a feedback mechanism allows operational realities to substantially diverge from initial assumptions without triggering required environmental review or public accountability.

Without post-authorization validation of event-based exposure, there is no mechanism to determine whether modeled assumptions accurately reflect conditions experienced on the ground or whether impacts to lived experience have intensified beyond what was anticipated.

### **C. Programmatic Approval Reclassifies Future Actions as Implementation Rather Than New Federal Actions**

Once adopted, the Draft PEA establishes a programmatic approval framework under which future drone delivery hubs, routing decisions, and operational expansions may be treated as implementation of an already authorized program rather than as new federal actions requiring preparation of separate, location-specific, project-level EAs.

Under this structure, proposals deemed consistent with the PEA may proceed through tiering and internal FAA determinations without preparation of a location-specific EA, public notice, or an opportunity for public comment. Additionally, the Draft PEA enables subsequent approvals to be characterized as routine implementation of an existing program, rather than as discrete federal actions subject to independent, location-specific NEPA review.

### **D. Absence of Clear Triggers or Process to Enforceable Pathway to Location-Specific Environmental Assessments**

The Draft PEA does not identify any explicit triggers by which local conditions would require preparation of a separate, location-specific, project-level EA. In the absence of disclosed thresholds, objective decision criteria, or defined, enforceable criteria requiring documented reconsideration of whether reliance on the programmatic analysis remains appropriate, tied to operational intensity, geographic concentration, or cumulative community exposure, affected communities have no visible pathway to initiate or compel preparation of a location-specific EA.

As a result, incremental expansion may proceed without preparation of location-specific EAs, renewed disclosure, or public involvement, even where local conditions diverge materially from the assumptions underlying the programmatic analysis and impacts on community lived experience increase over time. This lack of an enforceable pathway leaves affected communities without a transparent mechanism to trigger location-specific NEPA review as local conditions and event-based exposure evolve over time.

### **E. Lack of Transparency Regarding Local Authority at and Beyond Initial Hub Siting**

The Draft PEA does not disclose the scope of authority, if any, that communities or the local and state governments that represent them would have to limit, condition, or mitigate very low-altitude drone operations, either at the time of initial hub siting or after FAA approval is granted. While local governments may retain land-use authority to approve or deny whether a delivery hub is located within their jurisdiction, the Draft PEA does not disclose whether that authority includes the ability to impose operational conditions, such as limits on the number of overflight events, timing of operations, operating hours, routing constraints, or other community-level protections.

The Draft PEA also does not disclose whether any locally imposed conditions, if permitted at the siting stage, would remain enforceable once FAA authorization is granted, particularly as operations expand through nighttime activity, programmatic tiering, or operational amendments. As a result, affected

communities and decision-makers are left without a clear understanding of whether the impacts described elsewhere in this comment would be subject to local adjustment or effectively fixed once FAA approval is granted.

## **F. Exclusion of Overflown, Non-Host Communities from FAA Decision-Making**

### **F.1 Structural Exclusion of Overflown , Non-Host Communities**

Communities that do not host a delivery hub but are routinely overflown are structurally excluded from FAA decision-making under the Draft PEA's approval framework. These communities have no authority over hub siting, no role in routing, corridor placement, or operational intensity decisions, and no identified mechanism for input when flight paths serving hubs located elsewhere result in repeated, concentrated very low-altitude operations over homes, schools, and other noise-sensitive locations within their neighborhoods.

### **F.2 Failure to Disclose the Exclusion of Overflown, Non-Host Communities and Resulting Procedural Implications**

The Draft PEA does not disclose this exclusion or explain its implications. It does not distinguish between host and non-host communities, nor does it explain that communities experiencing direct overflight impacts may have no procedural role, no local authority, and no identified avenue for recourse as operations are introduced or expanded.

By failing to disclose this structural outcome, the Draft PEA obscures how decision-making authority, procedural protections, and operational impacts will be distributed across jurisdictions as drone delivery operations scale.

## **G. Failure to Identify and Evaluate Impacts at Noise-Sensitive Locations as Required Under NEPA**

The Draft PEA does not identify or evaluate impacts to specific neighborhoods, schools, or other noise-sensitive land uses within communities that would be routinely affected by drone delivery operations. Instead, the analysis treats noise-sensitive areas generically, without disclosing where such receptors are located or how repeated very low-altitude operations would affect them, even though NEPA requires agencies to evaluate environmental impacts at the locations where they occur and to consider how land use, proximity, and exposure patterns affect the severity of noise effects.

By failing to identify noise-sensitive locations and evaluate foreseeable exposure at those locations, the Draft PEA allows repeated very low-altitude operations to occur over and near homes, schools, and other noise-sensitive sites without localized analysis of event-based exposure. Generic treatment of noise-sensitive areas cannot substitute for location-specific environmental analysis where impacts are foreseeable and concentrated, undermining NEPA's requirement for accurate disclosure of environmental effects.

## Recommendations

To provide transparency regarding the scope and future application of the programmatic action, including how impacts would be experienced by affected communities as described earlier in this comment, the FAA should:

1. **Identify and disclose objective, impact-based criteria governing OpSpecs amendments and tiered approvals**, clearly specifying when changes in operational intensity, hours of operation, routing concentration, overlapping hubs, geographic expansion, or affected communities would trigger preparation of a separate, location-specific, project-level EAs, rather than continued reliance on the assumptions and impact conclusions of the programmatic analysis.
2. **Clearly describe the decision points governing tiering**, including how and when internal determinations are used versus when a separate location-specific EA is required, so that the public can understand how future approvals will be evaluated over time.
3. **Require post-authorization validation and reassessment based on actual operations**, including evaluation of overflight event counts, routing concentration, operational intensity, and noise exposure experienced on the ground, rather than reliance solely on modeled assumptions.
4. **Explain the extent to which FAA authorization may constrain or preempt local and state authority**, and identify what tools, if any, remain available to local governments and affected communities to address impacts after initial approval is granted.
5. **Require community notification and an opportunity for public engagement for material Op Specs amendments**, including when amendments introduce or substantially expand operations in specific locations, and when communities are overflowed but do not host a delivery hub.
6. **Explain how the FAA intends to satisfy NEPA's requirement that Environmental Assessments meaningfully evaluate noise impacts on noise-sensitive land uses**, given that such land uses are inherently location-specific and context-dependent and cannot be adequately assessed through a nationwide programmatic analysis alone.

## Conclusion: Structural Opacity Forecloses Meaningful Future Review

The Draft PEA does not clearly describe the scope or structure of the FAA's programmatic action, or the practical consequences for communities, including when and whether communities would receive notice, have an opportunity for involvement, or be subject to expanding operations without separate, location-specific, project-level EAs. By relying on discretionary amendment and tiering processes rather than clearly defined triggers for preparation of such EAs, the document obscures how future decisions affecting specific locations would be made.

As implemented, the programmatic framework fixes the analytical baseline established at initial approval, even as operations expand, intensify, overlap geographically, or affect new communities and noise-sensitive locations. In the absence of defined criteria, post-authorization validation, or a transparent pathway to separate, location-specific EAs, incremental expansion may proceed through administrative determinations with limited notice, reduced public involvement, and diminishing transparency over time.

## **Part IV. Additional Issues Not Adequately Addressed in the Draft PEA**

Part IV addresses additional structural and analytical deficiencies in the Draft PEA that affect how safety is evaluated and governed as drone package delivery operations scale, how baseline conditions and alternatives are defined under NEPA, and how the purpose and scope of the federal action are framed. These deficiencies further limit public understanding of how risks, impacts, and accountability will be addressed over time and how communities may be affected as operations expand in volume, geographic reach, and complexity.

Several of the issues identified in this Part reflect a broader and well-documented concern regarding how safety risk is evaluated, managed, and reassessed as aviation operations scale. As outlined in *Realizing a Modernized, Proactive National Airspace System*, a bipartisan policy letter submitted to Congress by the Aviation-Impacted Communities Alliance and more than 80 national and local organizations, safety risk in the National Airspace System increases when operational growth is not explicitly linked to objective thresholds, defined reassessment triggers, and transparent accountability mechanisms. The Draft PEA does not explain whether or how these principles will be applied to drone package delivery operations as they expand, leaving unclear when safety reassessment, additional environmental review, or meaningful public engagement would occur as impacts intensify [14].

### **A. The Draft PEA Fails to Explain How Safety Risks Will Be Evaluated and Managed as Drone Operations Scale**

#### **A.1 Failure to Disclose the Basis and Application of Safety Determinations**

The Draft PEA does not identify whether safety determinations made at initial OpSpecs authorization or during subsequent amendments and operational expansions are informed by a defined analytic framework, safety model, or set of evaluation criteria, nor does it disclose whether assessments of increased operational density, expanded airspace use, additional operational dependencies, or changes in traffic complexity rely on quantitative analysis, qualitative risk assessment, predefined safety margins, or other objective indicators. Absent disclosure that such a framework exists and is applied both at initial approval and as operations scale, including defined thresholds that would require safety reassessment rather than discretionary review, the Draft PEA provides no basis for understanding how the FAA concludes that drone delivery operations remain safe as flight volume, geographic scope, and operational complexity increase.

Recent FAA scrutiny of a drone delivery incident in Texas highlights the absence of a disclosed framework in the Draft PEA for safety reassessment and escalation when operational risks emerge during deployment [15]. In addition to incident-driven risk, new low-altitude commercial aerial uses, such as advertising aircraft operating over California communities, further illustrate how the lower airspace is becoming increasingly congested with novel applications. Yet the Draft PEA does not disclose how cumulative safety risk from multiple co-located very low-altitude operations will be evaluated, managed, or escalated over time [16].

## **A.2 Failure to Disclose Operational Tracking and Third-Party Accountability**

The Draft PEA does not disclose whether or how operational tracking, decision authority, and accountability are structured when routing, corridor management, scheduling, or deconfliction functions are performed by third-party service providers on behalf of drone package delivery operators. The document does not describe who is responsible for managing operational risk under these arrangements, what oversight the FAA retains, or how conflicts of interest, performance limitations, or coordination failures would be identified and addressed as operations scale.

Nor does the Draft PEA disclose or describe whether basic operational information necessary to evaluate safety and environmental consequences is systematically tracked or made available, including how many operations occur, where they occur, how they are distributed across communities, how they concentrate along specific corridors, how responsibility is allocated among operators and third-party entities, and how

accidents and near misses will be documented and assessed. The Draft PEA further does not explain how third-party service providers would adjudicate competing demands among multiple operators, resolve conflicts between users of shared corridors or airspace, or prioritize safety when commercial interests diverge.

## **B. Flawed “No Action” Alternative and Mischaracterization of Mitigation**

### **B.1 The No Action Alternative is Not Defined as the Absence of the Proposed Programmatic Framework**

Under NEPA, the no action alternative is intended to describe the reasonably foreseeable conditions that would occur if the proposed federal action were not approved and to provide a baseline against which the impacts of the proposed action can be meaningfully evaluated.

In this Draft PEA, the proposed action is the establishment of a nationwide programmatic framework that enables future drone package delivery approvals, including new delivery hubs, expanded operations, and streamlined tiering of subsequent authorizations. A meaningful no action alternative would therefore describe conditions in which this programmatic approval framework is not adopted, and future proposals would proceed, if at all, through individual, location-specific, project-level environmental review.

### **B.2 The Draft PEA Mischaracterizes No Action as a Continuation of the Proposed Programmatic Framework**

Rather than describing a future without the proposed programmatic framework, the Draft PEA presents the no action alternative in a manner that assumes continuation of drone delivery activity, operational growth, and future approvals under largely similar analytical and procedural conditions. By treating the no action alternative as a variation of the proposed action rather than a substantively different decision

pathway, the Draft PEA minimizes the apparent consequences of adopting a nationwide programmatic approval structure and obscures the significance of the FAA’s decision to replace location-specific EAs with reliance on a programmatic framework and tiered approvals.

### **B.3 Proposed-Action Analytical Assumptions Are Improperly Embedded in the No Action**

The Draft PEA further undermines the no action analysis by incorporating analytical assumptions and screening constructs that are part of the proposed action into the no action baseline. These include assumed operational levels, delivery volumes, screening thresholds, and other modeling constraints used to support FONSI.

These assumptions are not conditions that exist independently of the proposed action. They are analytical tools used to evaluate the action itself. When they are embedded in the no action alternative, the analysis implicitly assumes that the effects of the programmatic approval would occur even in its absence.

### **B.4 Consequences for NEPA Baseline Integrity and Public Participation**

Because the no action alternative is not clearly defined or meaningfully distinguished, the Draft PEA fails to provide a valid baseline for evaluating the environmental consequences of the proposed action. As a result, the baseline does not allow decisionmakers or the public to distinguish between conditions that would occur without the programmatic framework and impacts attributable to its adoption.

Without adoption of the programmatic framework, noise impacts would be evaluated through separate, location-specific, project-level EAs, with public notice and opportunities for participation to inform agency decision-making. Under the PEA framework, subsequent approvals may proceed with limited notice or opportunity for participation, even as approvals continue to be granted and impacts accumulate over time.

### **B.5 Mischaracterization of Mitigation Measures as Enforceable Impact Controls**

The Draft PEA conflates enforceable mitigation measures with baseline assumptions and analytical inputs used in modeling and screening analyses. Throughout the document, elements such as assumed operational limits, routing practices, compliance expectations, and screening thresholds are treated as if they function as mitigation, despite not being identified as enforceable commitments subject to monitoring, reporting, or corrective action.

Under NEPA, mitigation measures must be clearly defined, enforceable, and subject to oversight to ensure that predicted impacts remain below significance thresholds. Analytical assumptions and modeling constraints, by contrast, are tools used to evaluate potential impacts and do not, by themselves, limit or control future operations. By failing to clearly distinguish between these categories, the Draft PEA obscures which impact reductions, if any, are assured through enforceable measures versus which are contingent on assumptions that may change as operations expand.

This mischaracterization undermines the credibility of the impact analysis and further limits public understanding of what protections, if any, would be in place as drone package delivery operations scale.

## **C. Purpose and Need is Framed to Enable Service and Streamline Approval Rather Than Evaluate Environmental Consequences**

### **C.1 Purpose and Need Are Defined Around Service Enablement and Streamlining of Approval**

The Draft PEA's Purpose and Need statement reflects a framing that prioritizes enabling drone delivery services rather than evaluating and protecting environmental and community conditions. For example, the PEA states, "The purpose of the proposed action is to provide commercial drone package delivery service to customers, including businesses and households." It further states that the action is needed to provide businesses with "another option" for delivering goods. Elsewhere, the PEA explains that a central purpose of the programmatic approach is to "streamline NEPA review for multiple repetitive actions and alleviate the need for subsequent individual reviews."

Taken together, these statements frame the federal action primarily as a mechanism to enable a new transportation option and reduce future environmental review and public involvement, rather than as an evaluation of the environmental consequences of introducing widespread, repetitive, very low-altitude aviation activity.

### **C.2 Purpose and Need Framing Are Inconsistent With NEPA's Requirement for Environmental Evaluation**

NEPA requires agencies to take a hard look at environmental impacts before authorizing actions that introduce new or expanded activity. By emphasizing service enablement and administrative efficiency, the Draft PEA minimizes consideration of community-specific consequences and obscures how impacts to lived experience would be disclosed, evaluated, and addressed as operations scale.

## **Recommendations**

To address the additional deficiencies identified in Part IV, the FAA should:

1. **Clearly identify, formalize as needed, and publicly disclose the safety determination framework used to evaluate initial and expanded operations**, including defined operational thresholds tied to flight volume, overflight density, geographic coverage, hours of operation, routing concentration, aircraft mix, and interdependent operations, so that safety determinations are transparent, objective, and scalable.
2. **Require mandatory safety reassessment and escalation when thresholds are met**, including defined, non-discretionary decision points at which the FAA would be required to formally re-evaluate safety, document whether prior assumptions remain valid, and determine whether additional conditions or location-specific environmental review are required.
3. **Disclose and clearly describe safety oversight and accountability as operations scale**, including how accidents and near misses are tracked and investigated and how responsibility for managing risk is assigned, monitored, and enforced and how conflicts of interest are identified and addressed when routing, scheduling, corridor management, or deconfliction functions are performed by third-party or delegated service providers that are funded by, affiliated with, or acting on behalf of drone operators, including how competing demands among multiple operators are adjudicated.

4. **Revise the no action alternative to reflect the absence of the programmatic framework**, describing continuation of the prior FAA practice under which delivery hubs and associated operations would be evaluated, if at all, through separate, location-specific, project-level Environmental Assessments with discrete decision points and public involvement.
5. **Correct the purpose and need framing to align with NEPA**, ensuring that it emphasizes evaluation of environmental and community consequences as the basis for decision making, rather than service enablement or streamlining of future approvals.
6. **Correct the mischaracterization of mitigation measures**, by clearly distinguishing enforceable commitments subject to monitoring and corrective action from baseline assumptions and analytical inputs embedded in modeling scenarios.

### **Conclusion: Structural Opacity in Safety Governance and Analytical Framing**

The Draft PEA does not adequately disclose or clearly describe how safety determinations are made, revisited, or escalated as drone package delivery operations expand in scale, complexity, and geographic reach. Without a disclosed safety framework that includes defined thresholds, reassessment triggers, incident tracking, and accountability mechanisms, decisionmakers and the public cannot understand how safety risk is governed as event-based community exposure increases.

At the same time, the Draft PEA's treatment of the no action alternative and its framing of Purpose and Need obscure the real consequences of adopting a nationwide programmatic approval framework, minimizing meaningful consideration of alternatives and escalating impacts to community lived experience.

Absent revision, the Draft PEA risks embedding these safety governance and analytical deficiencies into a nationwide approval framework, allowing drone operations to expand while localized and cumulative impacts increase without clear evaluation, accountability, or public disclosure.

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- [3] Technical Note: Authors calculation based on Draft PEA-reported SEL values using standard acoustical relationships. Draft PEA's 78.4 dB SEL for en route drone operations, converting SEL to L<sub>max</sub>:  $L_{max} \approx SEL - 10 \times \log_{10}(\text{duration in seconds})$ . For typical drone overflight durations: 5-second overflight:  $L_{max} \approx 78.4 - 7 = 71.4$  dBA, 10-second overflight:  $L_{max} \approx 78.4 - 10 = 68.4$  dBA, 15-second overflight:  $L_{max} \approx 78.4 - 11.8 = 66.6$  dBA
- [4] Technical Note: While the Draft PEA reports single-event noise in terms of SEL rather than L<sub>max</sub>, the disclosed SEL values inherently reflect assumptions regarding event duration, flight speed, operating altitude, and source–receiver geometry embedded in the FAA's modeling. Those same assumptions are therefore carried through any subsequent interpretation of the SEL values.
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