

# **Nontraditional and Emerging Transportation Technology (NETT) Council**

## Annual Report

December 2024



U.S. Department of Transportation

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# Purpose

This annual report for Calendar Year 2023 provides an overview of the activities of the Nontraditional and Emerging Transportation Technologies (NETT) Council, fulfilling the requirement outlined in 49 U.S.C. § 313(h).<sup>1</sup>

# Background

## NETT Council Mission and Purpose

The NETT Council was established in December 2018 by U.S. Department of Transportation (DOT) Order 1120.34 as an internal DOT body for non-traditional and emerging transportation technologies not yet established enough to fit into modal categories or that require new policy approaches. The NETT Council was later authorized as described in Section 25008 of the Infrastructure Investment and Jobs Act (IIJA, Pub. L. 117-58) and codified at 49 U.S.C. § 313.

The NETT Council is tasked with identifying and resolving jurisdictional, regulatory, and program gaps or inconsistencies associated with nontraditional and emerging transportation technologies, modes, or projects pending or brought before the DOT. The intent of the NETT Council is to reduce, to the maximum extent practicable, impediments to the prompt and safe deployment of new and innovative transportation technology, including with respect to safety oversight, environmental review, and funding and financing issues.

## Legislative Requirements

Pursuant to 49 U.S.C. § 313(f) the NETT Council must meet no fewer than four times per year and annually post a report on a publicly accessible website describing the activities of the Council in the preceding year (49 U.S.C. § 313(h)). This document fulfils the requirement for an annual report.

# Highlights of NETT Council Activities

The Department took several notable actions in 2023 to continue the NETT Council's progress and fulfill its mission within DOT, consistent with requirements and direction outlined in IIJA.

## Topic Identification

The NETT Council focused on several topics which were identified from a combination of stakeholder input offered via the Spring 2022 Request for Comments<sup>2</sup>, ongoing stakeholder engagement conducted

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<sup>1</sup> "Not later than 1 year after the date of establishment of the Council, and not less frequently than annually thereafter until December 31, 2026, the Council shall post on a publicly accessible website a report describing the activities of the Council during the preceding calendar year."

<sup>2</sup> <https://www.federalregister.gov/documents/2022/03/09/2022-04728/non-traditional-and-emerging-transportation-technology-nett-council-request-for-comment>

by DOT's Operating Administrations and Secretarial Offices, and review and expertise offered by the NETT Council Technical Working Group.

To be a candidate for NETT Council consideration, DOT generally identifies technologies (and associated issues) that are (1) at a sufficient level of maturity for government engagement, (2) aligned with Departmental priorities, and (3) not under an existing regulatory framework.

Topics were prioritized using the following factors, as outlined in the [NETT Council Guidelines for Technology Identification, Prioritization, and Management](#):

- Alignment with the FY 2022-26 DOT Strategic Plan and the DOT Innovation Principles
- Current technology readiness level
- Anticipated date of readiness for commercial use in the United States
- Potential type(s) of action needed:
  - Evidence of regulatory and/or programmatic needs, gaps, or uncertainties
  - Need for cross-modal coordination
  - Gap in existing relevant Operating Administration activities
  - Information and/or clarification(s) needed

The following sections discuss the topic areas in greater detail, including the scope, ongoing activities, and objectives for each.

## Topics Covered

### Advanced Air Mobility (AAM) Intermodal Integration

The NETT Council identified a need to continue to monitor and begin planning for the multimodal implications of emerging AAM concepts, particularly focused on how future AAM facilities can integrate effectively and equitably with other transportation modes and multimodal facilities. Working through a new Advanced Air Mobility Interagency Working Group established to implement the requirements of the Advanced Air Mobility Coordination and Leadership Act (AAMCLA)<sup>3</sup>, the NETT Council will monitor the following issues:

- Assess alignment of potential multimodal AAM benefits with DOT priorities
- Identify existing relevant DOT activities, resources, products, and authorities as they relate to the planning, coordination, funding, and operation of multimodal facilities designed for AAM operations
- Identify and define potential DOT roles and responsibilities in areas relevant to multimodal vertiports
- Provide input to the AAM Interagency Working Group responsible for implementing the AAMCLA to inform development of National AAM Strategy

### Artificial Intelligence (AI)

The NETT Council identified AI as a rapidly emerging technology with both opportunities and risks that cross transportation modes. In October 2023, the *Executive Order on the Safe, Secure, and Trustworthy*

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<sup>3</sup> <https://www.transportation.gov/mission/office-secretary/office-aviation-and-international-affairs/advanced-air-mobility/advanced>; Pub. L. 117–203, (Oct. 17, 2022).

*Development and Use of Artificial Intelligence* (Executive Order 14110 or “AI Executive Order”) directed agencies across the Federal government to take action to harness the good and mitigate the risk associated with AI.<sup>4</sup> Among other actions, Section 8(c) directed the Secretary of Transportation to task the NETT Council with the following action:

*Assess the need for information, technical assistance, and guidance regarding the use of AI in transportation. As part of this effort, NETT should:*

- *Support existing and future initiatives to pilot transportation-related applications of AI, including through technical assistance and connecting stakeholders;*
- *Evaluate the outcomes of such pilot programs in order to assess when DOT, or other Federal or State agencies, have sufficient information to take regulatory actions; and*
- *Establish a new DOT Cross-Modal Executive Working Group, which will consist of members from different divisions of DOT and coordinate applicable work among these divisions, to solicit and use relevant input from appropriate stakeholders.*

The NETT Council reviewed these actions at its November and December 2023 meetings. It is currently conducting a baseline assessment on current AI pilots being supported by the Department and establishing its Cross-Modal Executive Working Group.

#### Digital Infrastructure (DI) Deployment Considerations

The NETT Council identified Digital Infrastructure as a continuing priority area, recognizing increases in digitalization across and between transportation modes. The NETT Council convened a working group with representation from across operating administrations and offices within the Office of the Secretary.

The Digital Infrastructure Working Group kicked off in February 2023 and met regularly through May 2023 with the following initial goals:

- Define digital infrastructure, constituent components, and relevant use cases
- Identify existing programs and activities that relate to DI (including funding programs, relevant guidance, research)
- Identify specific stakeholder needs and propose needed NETT work product(s), potentially including guidance/guidelines
- Explore tools and processes that DOT can use to address stakeholder needs and shape DI
- Clarify DOT authorities and responsibilities across modes as they relate to DI, including relevant guidance, funding eligibility, grant programs, and financing

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<sup>4</sup> <https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/>

The Working Group shared findings with the NETT Council in July 2023 for further discussion and consideration, including observations on how digital infrastructure is defined across modes, a summary of example DOT projects that involve digital infrastructure, and considerations for future action.

### Multimodal Battery Safety

The NETT Council initially identified multimodal battery safety as a topic to consider due to potential issues related both to the use of batteries as a power source and transport of battery powered devices across multiple modes of transportation. However, given the relative maturity of the use of battery propulsion in multi-modal transportation, this topic was transferred from the NETT Council to the Executive Safety Council for further action.

## Meetings Held

The NETT Council met four times during calendar year 2023, each time convened by the Deputy Secretary and/or Under Secretary of Transportation for Policy in their chair and vice-chair roles.

Focus areas for meetings included the following (see Appendix for more extensive summaries of each meeting):

- **February 2023:** The NETT Council met on February 15, 2023, during which the Council reviewed updates on activities in three areas of exploration: Digital Infrastructure, Advanced Air Mobility Intermodal Integration, and Multimodal Battery Safety. This review included an overview of, and plans for, a recently launched Digital Infrastructure Working Group, activities focused on the development of an Advanced Air Mobility National Strategy, and coordination activities focused on battery safety.
- **July 2023:** The NETT Council met on July 20, 2023, to receive updates on recent activities relevant to its focus topics and to receive updates on Multimodal Battery Safety and Advanced Air Mobility, to discuss upcoming work in focused on Artificial Intelligence, and to review findings on Digital Infrastructure.
- **November 2023:** The NETT Council met on November 6, 2023, to discuss the January 2024 kickoff meeting of the Transforming Transportation Advisory Committee (TTAC), the recently released *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence*, and to receive updates on the AAM Leadership and Coordination Act Implementation.
- **December 2023:** The NETT Council met on December 6, 2023, fulfilling its requirement for holding four meetings per calendar year. The Council discussed the *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence* and additional discretionary actions on AI, as well as plans for 2024.

# Appendix: NETT Council Meeting Summaries

## February 2023

The NETT Council met on February 15, 2023. This meeting provided an update on Departmental activities in Digital Infrastructure, Advanced Air Mobility, and Multimodal Battery Safety.

### Digital Infrastructure (DI)

The DI Working Group (DIWG) held its first meeting on February 6<sup>th</sup>, 2023. The group will focus its activities on defining digital infrastructure and constituent components, identifying existing programs and activities that relate to DI, identifying specific stakeholder needs and proposing NETT work product(s) to address these needs, exploring tools and processes that U.S. DOT can use to address stakeholder needs and shape DI, and clarifying U.S. DOT authorities and responsibilities as they relate to DI.

NETT Council members noted that stakeholders have requested support for the basic infrastructure and guidance on eligibility for discretionary grants. The working group should consider vulnerable road users (VRUs) and resiliency/cybersecurity as well as ways to improve the US's competitiveness in the global market.

### AAM Intermodal Integration

Representatives from the Federal Aviation Administration (FAA) and the Office of the Assistant Secretary for Aviation and International Affairs (OST-X) provided an overview of the current state of AAM and related Departmental activities:

- FAA has begun to look at integration of vertical electric takeoff and landing (eVTOL) aircraft into the National Airspace System (NAS).
- FAA discussed its development of an implementation plan and rulemaking activities surrounding a new "powered lift" aircraft category. FAA is also working with eVTOL developers on proposed airworthiness criteria.
- With respect to vertiport facilities, FAA has released design guidelines, which address both shared and distinct features with existing heliports.

DOT was recently tasked through the *AAM Coordination and Leadership Act*<sup>5</sup> with convening an interagency working group to produce an AAM National Strategy over the next year. DOT will first convene the interagency working group the week of February 20<sup>th</sup>, 2023, and its work will focus on developing recommendations regarding the safety, operations, security, infrastructure, air traffic concepts, and other Federal investment or actions necessary to support the evolution of early AAM to higher levels of activity and societal benefit; and a comprehensive plan detailing the roles and responsibilities of each Federal department and agency, and of State, local, and Tribal governments, necessary to facilitate or implement the recommendations in the report.

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<sup>5</sup> PL 117-203

## Multimodal Battery Safety

Representatives from the Pipeline and Hazardous Materials Safety Administration (PHMSA) provided an overview of its work on lithium-ion battery safety. PHMSA has identified potential sources of risk and opportunity, including increasing availability and distribution of lithium-ion batteries, increasing energy density of the batteries, and improving battery lifecycle with opportunities for reuse or recycling.

PHMSA works with an array of Federal organizations to improve lithium battery safety and has recently launched a social media campaign. They additionally work with SAE on this topic.

## July 2023

The NETT Council met on July 20, 2023, to receive updates on recent activities relevant to its focus topics and to discuss future objectives. Details on the topics covered during the meeting are outlined below.

## Multimodal Battery Safety

Given the relative maturity of the use of battery propulsion in multi-modal transportation, this topic has been transferred from the NETT Council to the Executive Safety Council. The Executive Safety Council is the appropriate body to address this issue in the long term, particularly since it relates to an increasingly commonplace technology with clear areas of modal responsibility.

## Artificial Intelligence

The NETT Council received updates on White House initiatives focused on AI, including the release of an [AI Bill of Rights](#) and an [AI Risk Management Framework](#) developed by the National Institute of Standards and Technology, and the development of a national strategy on AI. Additionally, each Department is required to have a Responsible AI Official to ensure that use cases are monitored and aligned with government-wide principles. All AI use cases must be registered with the Responsible AI Official to allow the Department to continue to manage cybersecurity risks and alignment with principles.

The NETT Council may be called upon to assist with an assessment of stakeholder needs as the Office of Management and Budget (OMB) updates draft AI policy and the White House leads additional work on AI. A forthcoming request will solicit nominations for representatives of OST offices and operating administrations to further inform the development of a NETT Council initiative focused on AI, including potential stakeholder engagement, research, and funding opportunities.

Attendees noted that agencies need help understanding the difference between predictive analytics and machine learning. They also noted that while using a new technology can be a risk, *not* engaging with new technology can also be a risk.

## Digital Infrastructure

The Digital Infrastructure Working Group (DIWG) provided a briefing on its work to the NETT Council, having met bi-weekly for several months. The group noted that defining DI across modes/domains presents challenges, as it continues to evolve as a concept amongst stakeholders. The working group determined that DOT is currently investing in DI projects such as digital twin development, advanced asset inspection technologies, digital construction technologies and Building Information Modeling (BIM), data exchange standards and coordination, and communications technologies. The group also noted that instances of private DI alter the way public spaces and public assets are used, which could impact U.S. DOT Strategic Goals.

Recommendations included:



- Continue to use the term digital infrastructure as an informal umbrella term, relying on examples and constituent technologies and programs rather than an explicit definition.
- Encourage specificity where possible (i.e., reference specific technologies and applications; taxonomies may help).
- Continue monitoring and engaging in stakeholder activities to better understand the focus and scope of their interests in digital infrastructure.
- Develop and publish a brief overview of how DOT interprets and is acting upon digital infrastructure, including project examples and example funding programs that include an explicit or implicit focus on elements of digital infrastructure.
- As stakeholder activities evolve, consider creating unifying language in future NOFOs that fund digital infrastructure.
- Explore opportunities to provide technical assistance to state and local stakeholders to support effective use of public sector-procured digital infrastructure tools and systems; Assign working teams, as needed, to identify and prioritize these opportunities.
- Identify opportunities to further coordinate, promote, or invest in specific digital infrastructure use cases (e.g., to address pain points); Assign working teams, as needed, to advance specific digital infrastructure use cases.
- As stakeholder activities evolve, consider creating unifying language in future NOFOs that fund digital infrastructure.

The question of how DI impacts the workforce was brought up during the meeting and will be a topic area for the NETT Council to continue to explore.

#### Advanced Air Mobility Intermodal Integration

The NETT Council received an update on the work of the AAM Interagency Working Group, convened by DOT to develop a national AAM strategy consistent with the AAM Leadership Coordination Act. The group will be engaging with state and local departments of transportation to understand their issues and needs as well as with infrastructure owner-operators who are leaders in this space. The Interagency Working Group will also engagement with stakeholders through events such as the Transportation Research Board (TRB) Annual Meeting and weekly lunch and learns.

## November 2023

The NETT Council met on November 6, 2023, to discuss the upcoming kickoff meeting of the Transforming Transportation Advisory Committee (TTAC), the new *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence*, and to receive updates on the AAM Leadership and Coordination Act implementation.

Details on the topics covered during the meeting are outlined below.

#### Transforming Transportation Advisory Committee (TTAC)

TTAC is a Federal Advisory Committee established to provide advice and recommendations to the Secretary on matters relating to transportation innovation. TTAC was established in the summer of 2022 and membership selected to provide diverse points of view, perspectives, experience, and expertise.

The NETT Council was asked to provide feedback on potential tasks for TTAC. Suggestions from the NETT Council included evaluating the ADS impact on infrastructure, roles and responsibilities associated with connectivity, coordination with the modes, and a focus on safety, equity, and accessibility.

## Artificial Intelligence

Members received an overview of the recently released [Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence](#). The Executive Order focuses on both harnessing the good and mitigating the risks associated with AI.

The Executive Order provides the following definition for “artificial intelligence” or “AI”:

*A machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments. Artificial intelligence systems use machine- and human-based inputs to:*

- *perceive real and virtual environments;*
- *abstract such perceptions into models through analysis in an automated manner; and*
- *use model inference to formulate options for information or action.*

Section 8(c) outlines the provisions directed to DOT:

*(c) To promote the safe and responsible development and use of AI in the transportation sector, in consultation with relevant agencies:*

*(i) Within 30 days of the date of this order, the Secretary of Transportation shall direct the Nontraditional and Emerging Transportation Technology (NETT) Council to assess the need for information, technical assistance, and guidance regarding the use of AI in transportation. The Secretary of Transportation shall further direct the NETT Council, as part of any such efforts, to:*

*(A) support existing and future initiatives to pilot transportation-related applications of AI, as they align with policy priorities articulated in the Department of Transportation’s (DOT) Innovation Principles, including, as appropriate, through technical assistance and connecting stakeholders;*

*(B) evaluate the outcomes of such pilot programs in order to assess when DOT, or other Federal or State agencies, have sufficient information to take regulatory actions, as appropriate, and recommend appropriate actions when that information is available; and*

*(C) establish a new DOT Cross-Modal Executive Working Group, which will consist of members from different divisions of DOT and coordinate applicable work among these divisions, to solicit and use relevant input from appropriate stakeholders.*

*(ii) Within 90 days of the date of this order, the Secretary of Transportation shall direct appropriate Federal Advisory Committees of the DOT to provide advice on the safe and responsible use of AI in transportation. The committees shall include the Advanced Aviation Advisory Committee, the Transforming Transportation Advisory Committee, and the Intelligent Transportation Systems Program Advisory Committee.*

*(iii) Within 180 days of the date of this order, the Secretary of Transportation shall direct the Advanced Research Projects Agency-Infrastructure (ARPA-I) to explore the transportation-related opportunities and challenges of AI — including regarding software-defined AI enhancements impacting autonomous mobility ecosystems. The Secretary of Transportation shall further encourage ARPA-I to prioritize the allocation of grants to those opportunities, as appropriate. The work tasked to ARPA-I shall include soliciting input on these topics through a public consultation process, such as an RFI.*

The first deliverable for the NETT Council will be to establish an organizational structure for the DOT Cross-Modal Working Group required by the Executive Order. This will be addressed at the NETT Council's next meeting.

#### Advanced Air Mobility Intermodal Integration

Members received an update on implementation of the AAM Coordination and Leadership Act, which directed DOT to lead an Interagency Working Group in developing a national strategy for AAM. The goal of the IWG is to align various agencies and work on a seamless policy that addresses AAM impact on security, labor, and other topics.

The first part of the one-year study period included an examination of the approach being taken by state and local governments. To further explore this issue, the IWG will host a meeting to engage with state and local agencies on how they are planning for AAM. Members of the IWG also recently met to discuss economic development, security procedures and considerations, vertiport planning, and facilitating access to utilities.

#### December 2023

The NETT Council met on December 6, 2023, fulfilling its requirement for holding four meetings per calendar year. The Council discussed the *Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence* and additional discretionary actions on AI.

#### Artificial Intelligence Executive Order Implementation

Per requirements OMB guidance in [Advancing Governance, Innovation, and Risk Management for Agency Use of Artificial Intelligence](#), DOT selected the Senior Advisory for Innovation within the Office of the Under Secretary of Transportation for Policy as the Department's Acting Chief AI Officer. The requirement is at the departmental level, so the role is intended to be DOT-wide but will involve significant coordination with the modes and is unique from the existing position of Chief Data Officer.

DOT is considering how to integrate/coordinate the functions of the existing NETT Council and the AI governance board, the latter of which will be required by the Executive Order and forthcoming OMB guidance (in [draft form](#) at the time of the meeting).

#### Discretionary AI Activities

Due to the large interest in AI by stakeholders and DOT leadership, the Office of the Secretary is exploring activities in addition to those required by the Executive Order. The Office of Public Engagement gave a brief presentation on the types of stakeholder engagement activities that could be hosted and member provided additional suggestions. A new program/initiative is also under development within the Office of the Assistant Secretary for Research and Technology (OST-R) to fund emerging applications of AI to improve and create tools for transportation planners and safety engineers. This funding opportunity would be part of the Small Business Innovation Research (SBIR)

program, with a broad scope encourage creativity by applicants. OST-R is aiming to launch this program in early 2024.