REDAC Subcommittee Remarks

Presented to: NASOps Subcommittee

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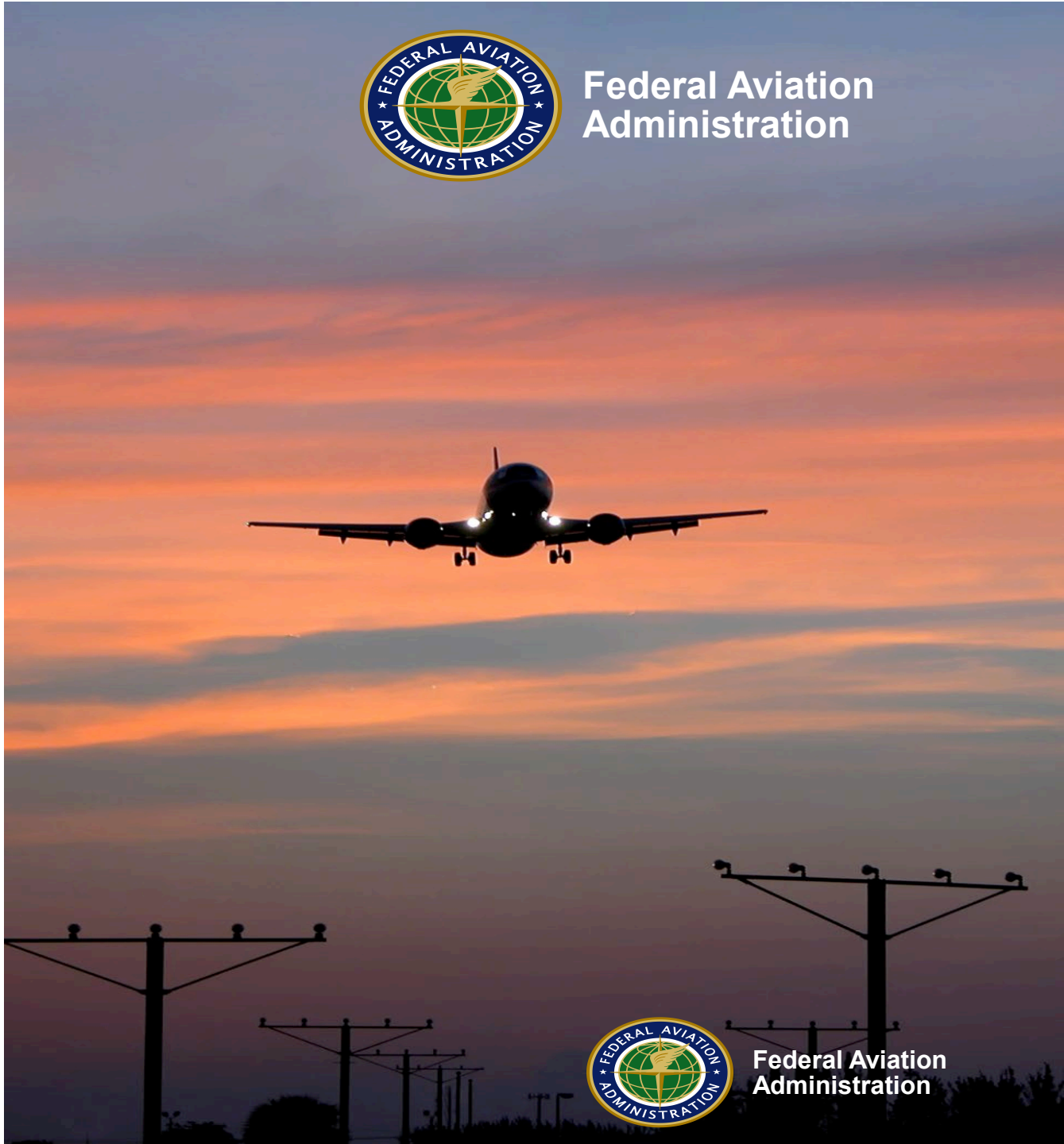


Purpose/Agenda

Purpose: Kickoff topics for consideration by the REDAC subcommittees.

Agenda

- Welcome – **THANKS**!

- FAA Reauthorization 2024
- Department of Transportation R&D Strategy
- DOT Scientific Integrity Policy
- REDAC Revitalization
- Questions?

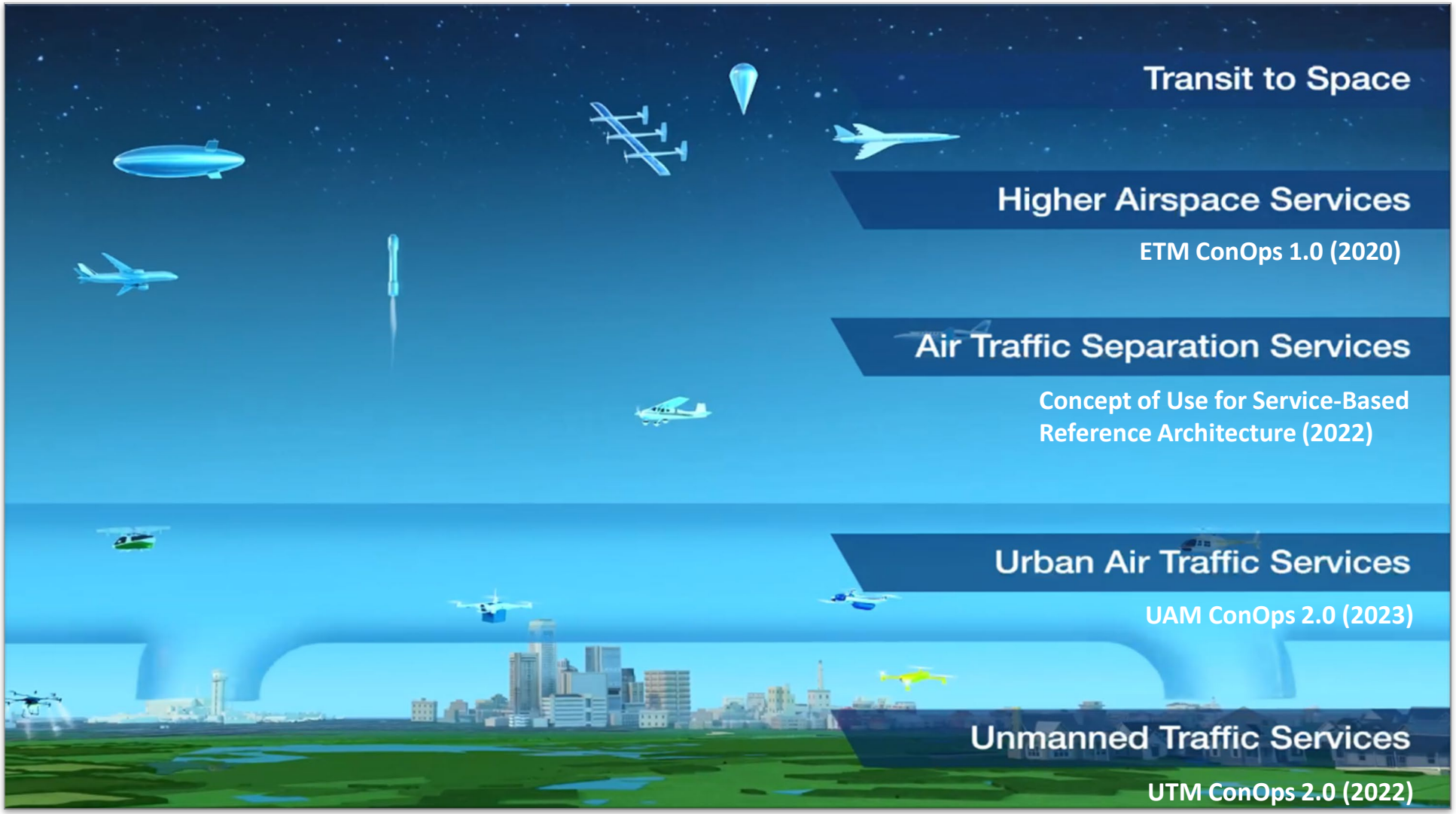
FAA Reauthorization 2024

FAA Budget Update

- FAA appropriation.
  - Full FY24 budget signed on March 8, 2024.
  - This was a “mini-bus” that included Transportation-HUD.

- FAA re-authorization passed on May 16, 2024.

NAS Operations Will Become Much More Diverse



Info-Centric NAS ConOps (2022)

FAA Reauthorization impact on Research Strategy (not a complete list)

Automation/Human Factors
- Sec 330 – Task Force on Human Factors in Aviation Safety.
- Sec 334 - Review and incorporation of human readiness levels into agency guidance materials.

New Entrants
- Sec 916 – Unmanned and Autonomous Flight Advisory Committee.
- Sec 952 - Sense of Congress on FAA leadership in advanced air mobility.
- Sec 955 – Rules of operations of Powered-Lift.
- Sec 1009 – High-speed flight testing.
- Sec 1011 - Operating High-Speed Flights in High Altitude Class E Airspace.
- Sec 1025 - Research plan for commercial supersonic research.
- Sec 1110 - Advancing global leadership on civil supersonic aircraft.

Digital Engineering
- Sec 220 - Safety and efficiency through digitization of FAA systems

Safety Analytics & Risk Synthesis
- Sec 315 - Review of FAA Use of Aerospace Safety Data.
- Sec 319 - Safety Data Analysis for Aircraft Without Transponders.
- Sec 348 – Improvements to ASIAS and sharing.

Structures, Materials, & Manufacturing
- Sec 1005 - Advanced materials center of excellence enhancements.

Artificial Intelligence
- Sec 1024 – Technology Review of AI/ML Technologies.
- Roadmap for Artificial Intelligence Safety Assurance.

Sustainable Flight
- Sec 956 – Advanced Propulsion Systems Regulations.
- Sec 1019 – Hydrogen Aviation Strategy.
- Sec 1109 – FAA Leadership in Hydrogen Aviation.

Cybersecurity
- Sec 394 – Securing aircraft avionics systems.
- Sec 395 - Civil aviation cybersecurity rulemaking committee.
- Sec 396 - GAO report on cybersecurity of commercial aviation avionics.

NAS Operations Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1016. Research and development of FAA's aeronautical information systems modernization activities**	This section directs the FAA, in coordination **with the John A. Volpe** National Transportation Systems Center, to establish a research and development program to assist with the continuous modernization of the FAA's aeronautical information systems including the Notice to Air Missions (**NOTAM**) system, the Service Difficulty Reports System (**SDRS**), and the Aviation Safety Information Analysis and Sharing (**ASIAS**) system. This section directs the FAA to enter into an agreement with a federally funded research and development center **to complete a review of FAA efforts to modernize its aeronautical information systems** and provide recommendations on how the FAA and Volpe Center can improve coordination efforts. The Volpe Center is required to submit a report with recommendations to the FAA and appropriate committees of Congress based on the review no later than one year after the enactment of the Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1027. Research plan on the remote tower program**	This section directs the FAA to submit a comprehensive plan for additional research, development, testing, and evaluation needed to **mature remote tower technology** and to provide a strategic **roadmap for research needed to inform operational certification** of remote towers in the national airspace system. The FAA is required to submit the plan to Congress no later than six months after the enactment of the Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1044. Federal Aviation Administration unmanned aircraft system and advanced air mobility research and development**	This section directs the FAA, in coordination with NASA, and other Federal agencies to carry out and support research, development, testing, and demonstration activities and technology transfer to facilitate **the safe integration of advanced air mobility and unmanned aircraft systems** into the national airspace system. The section specifies that activities conducted under the section shall not duplicate other Federal activities related to the integration of unmanned aviation systems or advanced air mobility or delay the deployment of unmanned aircraft systems, advanced air mobility, or their associated elements and related technologies.

DOT R&D Strategic Plan

Grand Challenges are to achieve:

• Zero Fatalities: Advance a future without transportation-related serious injuries and fatalities.

• Resilient Supply Chains: Create an integrated multimodal freight system that can withstand and rapidly recover from severe disruptions.

• Equitable Mobility for All: Create an equitable transportation system that provides safe, affordable, accessible, multimodal transportation options for all users, and where individuals and communities have a greater voice in transportation decisions affecting them.

• Net-Zero Emissions: Create a transportation system that supports an economy with net-zero greenhouse gas emissions.

• The Future Transportation System-of-Systems: Develop connected intelligent infrastructure that provides people-centered mobility.

STRATEGIC GOALS	RESEARCH PRIORITIES	GRAND CHALLENGES
Safety	• Human Factors • Data-Driven System Safety • Cybersecurity	**Zero Fatalities:** Advance a future without transportation-related serious injuries and fatalities.
Economic Strength and Global Competitiveness	• Resilient Supply Chains • Advanced Asset Management • System Performance • Create Pathways to Good Quality Jobs	**Resilient Supply Chains:** Create a multi-modal freight system that can withstand and rapidly recover from severe disruptions.
Equity	• Equity and Accessibility Assessment • Mobility Innovation • Wealth Creation	**Equitable Mobility for All:** Create an equitable transportation system that provides safe, affordable, accessible, and convenient mobility options for all users.
Climate and Sustainability	• Decarbonization • Sustainable and Resilient Infrastructure	**Net-Zero Emissions:** Create a transportation system that supports an economy with net-zero greenhouse gas emissions.
Transformation	• Integrated System-of-Systems • Data-Driven Insight • New and Novel Technologies	**The Future Transportation System-of-Systems:** Develop connected intelligent infrastructure that provides people-centered mobility.

Scientific Integrity Policy

DOT Scientific Integrity Policy

- **"DOT leadership at all levels shall recognize, support, and promote this policy and its underlying principles, as well as model behavior exemplary of a strong culture of Scientific Integrity."**
  - Ethics, honesty, objectivity, and transparency
  - Professional practices
  - Protection from inappropriate influence (e.g., political interference, conflicts of interest)
  - Diversity, Equity, Inclusion, & Accessibility (e.g., address impacts on underrepresented groups)
- Ensure scientific **accuracy** in agency communications
- Ensure proper **credit** is given for scientific contributions & accomplishments
- Ensure **independent review** of scientific programs, methodologies, results
- Ensure that Federal research resources are **protected and conserved, including data**
- Ensure scientific findings used in policy decisions are publicly available (e.g., **open access**)
- Ensure protection of **human subjects** (e.g., Institutional Review Board)
- Promote **professional development** for scientists (e.g., publications, professional societies)
- Establish DOT **Scientific Integrity Committee** and associated policies, processes, roles & responsibilities

https://www.transportation.gov/sites/dot.gov/files/202402/DOT%20Scientific%20Integrity%20Policy%20Final%20508.pdf

REDAC Revitalization

Revitalized FULL REDAC Framework/Deliverables

Full REDAC Membership Framework

Industry
Currently: 6 Proposed: 6

- Airframe Manufacturers
- Operators
- Avionics Manufacturers
- Engine/Propulsion Manufacturers
- Fuels Experts
- Airports Representatives
- General Aviation
- Labor (ALPA, AOPA, etc.)

Academia
Currently: 1 Proposed: 4

- University Transportation Centers
- Aeronautics Programs
- Aviation Research Partners

Other Government & Advisory Committees
Currently: 1 Proposed: 2

- International Authorities
- Other Government Agencies (e.g., NASA)
- Other Advisory Committee Representatives (NAC, DAC, etc.)

Emerging Areas
Currently: 0 Proposed: 2

- Cyber Technologies
- Unmanned Aircraft Systems
- Commercial Space
- Smart Airport Technologies

- **FULL REDAC SOLICITATION - 2023 - Recommendations included existing interested parties and new selectees. If all nominees except, the FULL Committee = 14 to 16 members**

- **REDAC ETHICS/LEGAL COUNSEL REVIEW – 2023 – 2024. Packages prepared for legal review Fall/Winter 2023. Included REPs, SGEs, and RGEs. Anticipated completion date of Phase I Ethics Review is February 2024.**

- **Phase I Recommendation Packages will need to be vetted through AOA for signature, with informational memos to OST and WH - 2024. Anticipated reviews EOY.**

REDAC Revitalization Update

REDAC Membership Revitalization Package 2023-2024

- ✓ Nominee Evaluations (Phase I) – **COMPLETED**
- ✓ DOT/FAA Legal Counsel Reviews – **COMPLETED**
- ✓ FAA AOA-1 Review and Authorization - **COMPLETED**
- ✓ OST and White House Documentation 2024 Revisions (Phase II) - **PENDING**

Questions & Discussion

Environment and Energy Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1008. CLEEN engine and airframe technology partnership**	This section adjusts the FAA's Continuous Lower Energy, Emissions, and Noise (**CLEEN**) Program to ensure eligibility of both **subsonic and supersonic** aircraft projects for cooperative agreements. In carrying out the CLEEN program, this section authorizes that FAA may provide that no less than two cooperative agreements awarded involve small businesses, provided the submitted proposal of the small business meets FAA Acquisition Management System and requisite technology readiness levels for entry into the agreement as determined by the FAA.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1011. Operating high-speed flights in high altitude class E airspace**	This section requires the FAA, in consultation with NASA and relevant stakeholders to conduct research to identify, to the maximum extent practicable, the minimum altitude above the upper boundary of Class A airspace at or above which **high-speed flights operating above Mach 1** that do not produce appreciable sonic boom overpressures to reach the surface under prevailing atmospheric conditions.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1017. Center of excellence for alternative jet fuels and environment**	This section authorizes the continued operation of the FAA's Center of Excellence for Alternative Jet Fuels and Environment (**ASCENT**) and streamlines operational governance for the Center's research and development mission and coordination with relevant Federal agencies. The section also expands the Center's research and development activities on the use of alternative aviation fuels to further include the use of **hydrogen** and the safe use of **alternative aviation fuels** in commercial aircraft that also apply **electrified propulsion** systems.

Environment and Energy Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1020. Aviation fuel systems**	This section requires the DOT to review, plan and offer recommendations with respect to **coordination** and implementation issues relating to **aircraft powered by new aviation fuels and fuel systems**. In conducting such activities, the section requires consultation with the DOE, NASA, the Department of the Air Force, and other appropriate agencies and specifies that such activities conducted under the section shall not duplicate other Federal programs or efforts. The DOT is required to brief Congress on the results of the review no later than one year after the enactment of the Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1025. Research plan for commercial supersonic research**	This section directs the FAA, in consultation with NASA and industry, to provide a briefing to Congress to identify any plans to build upon existing research and development and identify additional research needed to support the development of Federal and international policies, regulations, standards, and recommended practices relating to the **certification and operation of civil supersonic aircraft** and supersonic overland flight.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1026. Electromagnetic spectrum research and development**	This section directs the FAA, in consultation with the NTIA and FCC, to conduct research and development related to the **use and management of radio frequency spectrum** in civil aviation, including for unmanned aircraft systems and advanced air mobility. The section directs such activities to address impacts to civil aviation safety when reallocating radio frequency spectrum adjacent to that spectrum allocated for aviation use cases, mitigation and implication of new emerging technologies on spectrum interference, and related operational specifications and spectrum requirements for civil aviation. The FAA is required to submit a relevant report to Congress no later than two years after the enactment of this Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1030. Turbulence research and development**	This section directs the FAA, in coordination with NASA and NOAA, to conduct applied research and development on **monitoring and understanding severe turbulence** and inform the development of measures to mitigate its impact on airline crewmembers and the flying public. The section also directs the FAA to avoid duplication with existing Federal research and development activities and authorizes the FAA to enter into agreements with commercial providers relating to turbulence data and instruments.

Airports Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1014. Airfield pavement technology program**	This section directs the DOT to carry out an **airfield pavement technologies research** and development program to improve the long-term performance and safety of airfield pavements. Under the program, this section provides that the DOT may **issue grants to and enter into cooperative agreements** with institutions of higher education and nonprofit organizations that research and develop the latest airfield pavement technologies.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1024. Technology review of artificial intelligence and machine learning technologies**	This section directs the FAA to conduct a review of current and planned artificial intelligence (AI) and machine learning technologies that may be used to improve airport safety and efficiency and examine the **application of (AI) and machine learning technologies to specific airport infrastructure and airport operations**. The FAA is required to submit a relevant **report** to Congress on the results of the review no later than one year after the enactment of this Act.

Human Factors Subcommittee

Title	Section	Verbiage
Title III – Aviation Safety Improvements Subtitle A – General Provisions	**Sec. 319. Safety data analysis for aircraft without transponders**	This section directs the FAA, in coordination with the National Transportation Safety Board (NTSB), to collect and analyze data relating **to accidents and incidents involving aircraft exempt from air traffic control transponder and altitude reporting equipment** and use requirements. It also directs the FAA, if appropriate, to develop recommendations on how to reduce the number of incidents and accidents associated with such aircraft
Title III – Aviation Safety Improvements Subtitle A – General Provisions	**Sec. 330. Task Force on Human Factors in Aviation Safety**	This section directs the FAA to convene a **task force on human factors in aviation safety**. The task force is expected to produce a written report identifying the most significant human factors and the relative contribution of such factors to aviation safety risk, providing recommendations on potential revisions to aviation regulations, and reviewing pilot training requirements to ensure adequate understanding of automated systems, among other things.
Title III – Aviation Safety Improvements Subtitle A – General Provisions	**Sec. 365. Modernization and improvements to aircraft evacuation**	This section requires the FAA to conduct a study on improvements to the safety and efficiency of evacuation standards for manufacturers and carriers of transport category airplanes. This section requires an Aviation Rulemaking Committee (ARC) to review the findings of the FAA's study and develop recommendations **regarding improvements to the evacuation standards**. In addition to requiring the FAA to submit reports to Congress on the study conducted and the ARC recommendations, the section also requires the FAA to issue a notice of proposed rulemaking to implement, as appropriate, the ARC recommendations.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1028. Air traffic control training**	This section directs the FAA to carry out a research program to evaluate opportunities to modernize, enhance, and **streamline on-the-job training and training time**, as required by the Administrator, **to become certified professional controllers** at the FAA. In carrying out such research, the FAA is required to assess the benefits of advanced technologies to enhance training and training time and collaborate with labor organizations and other stakeholders. The FAA is required to submit a relevant report to Congress no later than one year after enactment of the Act.

Aircraft Safety Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1005. Advanced materials center of excellence enhancements**	This section authorizes the continued operation of the FAA's Joint Advanced Materials Center of Excellence (JAMS COE). In addition to the Center's existing advanced materials research activities, this section directs the Center to conduct applied research and training on airframe structure composites, additive manufacturing, thermoplastic composites, and carbon fiber polymers. This section also codifies the Center's research and development activities relating to aircraft structure crash worthiness and passenger safety and incorporates new and additional focus areas relating to the safe and accessible air travel of individuals with a disability, including the facilitation of safe wheelchair restraint systems.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1006. Center of excellence for unmanned aircraft systems**	This section authorizes the continued operation of the FAA Center of Excellence for Unmanned Aircraft Systems (also known as the Alliance for System Safety of UAS Through Research Excellence or "ASSURE"). This section expands the Center's research and development focus to incorporate advanced air mobility and ensure participation of higher education and research institutions that offer undergraduate degree programs in aeronautical sciences providing pathways to commercial pilot certifications. This section also directs the FAA to leverage the capacity and capabilities of the Center, other FAA programs and facilities, existing Federal and non-Federal test ranges and testbeds, and NASA to conduct research to validate consensus safety standards.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1007. ASSURED safe credentialing authority**	This section requires the FAA to establish credentialing authority for the FAA's program of record known as "ASSUREd Safe" under the FAA Center of Excellence for Unmanned Aircraft Systems no later than six months after enactment of the Act. This section specifies that the credentialing authority would offer services including standards development, education, and testing for use by first responders in a variety of emergency response operations. This section directs the Center of Excellence for Unmanned Aircraft Systems to coordinate with the National Institute of Standards and Technology (NIST) and the Federal Emergency Management Agency (FEMA) in establishing and coordinating services offered by ASSUREd Safe.

Aircraft Safety Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1012. Electric propulsion aircraft operations study**	This section directs the GAO to initiate a study to assess the safe and scalable operation and integration of electric aircraft into the national airspace system. In conducting the study, the section directs the GAO to include relevant technical competencies, data development and collection required for standards development, necessary regulatory standards and guidance, and airport infrastructure requirements to support electric aircraft operations. The section directs GAO to submit a report to Congress with the results of the study and appropriate recommendations for legislative and administrative action no later than two years after the enactment of the Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1018. Next generation radio altimeters**	This section directs the FAA, in coordination with the National Telecommunications and Information Administration (NTIA), Federal Communications Commission (FCC) and aviation and commercial wireless industries to establish an accelerated research and development program to inform standards and technology developing and testing needed to ensure appropriate FAA certification actions and industry production to meet installation requirements for next generation radio altimeters in necessary aircraft by 2028. The section authorizes FAA to award grants for radio altimeter research and development activities, including through public-private partnership grants, to enable accelerated technology development and support future production and installation of radio altimeters. This section also directs the FAA to submit a report to Congress within six months of the enactment of the Act on the steps taken to date to carry out this program.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1019. Hydrogen aviation strategy**	This section requires the FAA, acting jointly with the DOE, to exercise leadership in conducting research and development, including the development of a research strategy, relating to the safe use of hydrogen in civil aviation, including the safe and efficient use and sourcing of hydrogen for commercial aircraft propulsion. In conducting such research and development activities, the FAA and DOE are directed to coordinate with NASA and obtain input from industry and academic stakeholders to inform adjustments to policies and further actions relating to the use of hydrogen in civil aviation. This section requires the FAA and DOE to submit a report to Congress detailing relevant actions taken and future actions relating to policies and research and development activities no later than three years after the enactment of the Act.

Aircraft Safety Subcommittee

Title	Section	Verbiage
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1023. Air traffic surface operations safety**	This section directs the FAA, in consultation with NASA and other appropriate Federal agencies, to research technologies and operations that enhance air traffic surface operations safety. This section also directs the examination of certain technologies and operations including emerging in-cockpit technologies to enhance ground situational awareness, and adjustments to account for and enable the safe operation of advanced aviation technology. The FAA is required to submit a relevant report to Congress no later than 18 months after the enactment of this Act.
Title X – Research and Development Subtitle A — General Provisions	**Sec. 1029. Report on aviation cybersecurity directives**	This section directs the FAA to provide a report to Congress no later than six months after the enactment of the Act on the status of the FAA's implementation of the strategic framework developed pursuant to section 2111 of the FAA Extension, Safety, and Security Act. (P.L. 114- 190) This section specifies the report should include an assessment of FAA's progress in developing and implementing such cybersecurity framework, and a description of prioritized research and development activities for the most needed improvements to safeguard the national airspace system.