Positioning Aviation for Skies Unlimited

- Air Traffic Control’s Next Generation
- Implementing Sustainability Measures
- Testing Ecologically Friendly Fuels
- Addressing Flaws in Security
- Efficient and Affordable Economics
The Transportation Research Board is one of six major divisions of the National Research Council, which serves as an independent adviser to the federal government and others on scientific and technical questions of national importance, and which is jointly administered by the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine. The mission of the Transportation Research Board is to provide leadership in transportation innovation and progress through research and information exchange, conducted within a setting that is objective, interdisciplinary, and multimodal. The Board’s varied activities annually engage about 7,000 engineers, scientists, and other transportation researchers and practitioners from the public and private sectors and academia, all of whom contribute their expertise in the public interest. The program is supported by state transportation departments, federal agencies including the component administrations of the U.S. Department of Transportation, and other organizations and individuals interested in the development of transportation.

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Expanding the Benefits of Aviation: Answering Key Challenges
Seth Young and Peter Mandle
After more than 100 years, aviation with fixed-wing aircraft remains the newest and most revolutionary mode of transportation. The timely movement of people and goods around the world depends on a smoothly functioning aviation system. Authors examine key challenges, including new air traffic control technologies, sustainability, alternative fuels, security, and economics.

7 NextGen, the Next Generation Air Transportation System: Transforming Air Traffic Control from Ground-Based and Human-Centric to Satellite-Based and Airplane-Centric
William J. Dunlay, Jr., and Jasenka Rakas
NextGen is a congressionally mandated initiative to modernize the U.S. air traffic control system through satellite-based technologies that can increase the precision of aircraft flight paths, radar displays, and operating times, improving capacity, efficiency, predictability, flexibility, environmental effects, and safety. Several critical milestones have been achieved, but the long time frame for implementation raises challenges.

14 Aviation Sustainability: A Movement Evolves
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21 Commercial Aviation's Pursuit of Sustainable Alternative Aviation Fuels
Nathan L. Brown
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28 Aviation Security Update: Policy, Management, Technologies, and Behavior Detection
Art Kosatka, Bonnie A. Wilson, Vahid Motevalli, and Richard W. Bloom
To obtain a snapshot of aviation security today and directions for the future, four authors examine different facets of aviation security: policy, including government agency structures; airport security management, including the need for information exchanges across the entire system; screening technologies, including unaddressed vulnerabilities; and behavior detection and profiling.
features articles on innovative and timely research and development activities in all modes of transportation. Brief news items of interest to the transportation community are also included, along with profiles of transportation professionals, meeting announcements, summaries of new publications, and news of Transportation Research Board activities.

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34 Meeting the Economic Challenges of the Aviation Industry
Brian David Ballard and John W. Fischer
The authors present an overview of the economics of the U.S. aviation industry, including the effects of deregulation and continuing regulation; revenue trends; the volatility of fuel prices; the costs of airport operations; the causes and cost of delays; infrastructure improvements; passenger fees and taxes; security fees; the viability of the aviation trust fund; the impact of NextGen; and more.

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Feature articles in the next TR News explore the applications of nanotechnology in transportation, examine asset management for low-volume road systems, review the metamorphosis of traffic data from the Long-Term Pavement Performance studies, and more.

The Pulstar reactor, developed under the sponsorship of the National Science Foundation, characterizes the porosity of materials at nanoscale.