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CALTRANS DIVISION OF RESEARCH, INNOVATION AND SYSTEM INFORMATION

Research Notes

Recommendations for Update of California Airport Land Use Handbook

Help identify areas from the 2011 Handbook that need to be updated, and new areas will have to be added to address the arrival of emerging technologies and new aviation concepts.

Modal

MAY 2024

Project Title:
Recommendations for Update of California Airport Land Use Handbook

Task Number: 3917

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WHAT IS THE NEED?

California has long led the way regarding innovative planning practices. The California Airport Land Use Planning Handbook (Handbook) provides guidance to Airport Land Use Commissions (ALUC), local jurisdictions, California Department of Transportation (Caltrans) planning staff and others seeking guidance regarding airport land compatibility planning. The Handbook has been used as the basis for similar documents in other states. The document incorporates relevant elements of the Public Utilities Code (PUC), related laws, and best planning practices. The Handbook was most recently updated by the Caltrans Division of Aeronautics (Aeronautics) in 2011. During the 10 years since the previous update, there have been changes to state law and planning practices. These changes include a greater awareness of equity issues within land use decision-making. In 2020 Aeronautics initiated a process to update the handbook. The intent of this research is to provide a more in-depth review of the needs of Handbook users, changes to statutory expectations, existing information and data sources, and current best practices.

The current Handbook is based on outdated data and does not address several current issues. A revised Handbook will provide California ALUCs, professional practitioners, decision-makers, and interested parties an updated and more comprehensive guidance to airport land use planning. It will also help entities outside of California seeking to update guidance. The document will also enhance California's leadership position in multi-modal, sustainable, and equitable planning.

WHAT ARE WE DOING?

The University of California, Berkeley(UCB) team will conduct a virtual project kickoff meeting with Caltrans. The purpose of the

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kickoff meeting is to review and refine (if needed) UCB's proposed approach and to discuss Caltrans' goals, objectives, and scope for this work effort. In addition, the team's approach to the project and the schedule, roles, and responsibilities will be discussed in detail, along with potential risks and associated mitigation plans and any program assumptions. They will then conduct a thorough review of the 2011 ALUC Handbook, including the appendices, with the aim of identifying a candidate list of needs for updating. They will construct a template to guide the review that is designed to identify a comprehensive list of opportunities for updating and improving the Handbook. Following this, they will review other literature, particularly recent literature on airport land use planning, to identify developments in this area that might be captured in the Handbook update.

After the Initial reviews, the Researchers will Identify additional databases that can be used to address safety issues. Identify gaps and provide methodologies for data analyses. They will explore additional relevant databases to provide more precise safety studies. They will compare the original NTSB data fields and information for the years 2000 through 2009 with the newer databases. They will provide initial studies using the new database data on Safety, Noise, Temperature, Precipitation, Floods, and rising sea levels. Next, they will identify emerging transportation modes and technologies and determine their contributions to the handbook. There will be stakeholder engagement and community engagement. Finally, a digitized and written guide will be presented summarizing findings and data analysis.

WHAT IS OUR GOAL?

Identify areas of the ALUCP Handbook will have to be updated, and new areas will have to be added to address the arrival of emerging technologies and new aviation concepts. Also include found gaps in current data or outdated data from the 2011 publication.

WHAT IS THE BENEFIT?

The result of this research will be used by the Caltrans Division of Aeronautics to know what specific content updates are needed to be updated since the completion of the previous 2011 Handbook. The research will also be used to form a detailed scope of work and solicit a vendor. The research project is vital and urgently needs to answer the following questions: Are the Airport Safety Zones and the factor in density and intensities recommended in the Handbook still appropriate? What other elements are necessary to update? Topics include laws affecting land use, housing, and equity and the emergence of new technologies, the use of UAS, the impacts of AAM, and other state policies. The research will be a cost and time savings of the actual project of revising the Handbook, making the task more efficient and cost-effective as much of the data evaluation will already have been completed by this research project.

WHAT IS THE PROGRESS TO DATE?

July 1, 2023 – December 30, 2023

Task 2 is ongoing with a continuous update to the Literature Review.

Task 4.1.1. Safety and Risk with Emerging Technologies: Subtask 2: Drone incidents was delivered as a 32-page summary report focusing on the probability of a drone incident (i.e. probability of a drone violating six Airport Safety Zones) at CA airports that are the most impacted by drones.

Task 4.1.2. Impact of Wildlife Strikes was delivered as a 71-page report that presents bird-strike accidents and incidents at CA airports over all 6 Zones frequency and (probability per airport for the entire period), and
bird-strike accidents and incidents by phases of flight, aircraft damage type, aircraft speed and altitude and distance/altitude, aircraft type,

seasonality, bird species, and weather conditions (visibility, temperature, precipitation). The dataset used to develop this report is also delivered to comply with Task 9 deliverable.

Task 4.2. Noise Exposure was delivered as a 107-page report with (1) noise estimations using BTS Noise data at CA airports taking into considerations FAA's new Environmental Survey for noise annoyance levels and Environmental Justice variables; and (2) difference in noise levels with electric (i.e. green aircraft) operating at the noisiest airports and on routes that can accommodate smaller electric/green aircraft. The dataset used to develop this report is also delivered to comply with Task 9 deliverable.

Task 4.3. Wind Analysis for California Airports was delivered as a 24-page report that includes calculations for CA airports for probability of crosswind occurrences that include speeds that exceed 10.5 knots at single- and multi-runway airports and demand for each relevant aircraft design group. The dataset used to develop this report is also delivered to comply with Task 9 deliverable.

Task 6. The research team completed all in-person and virtual stakeholder engagements as part of Task 6. The research team also provided a summary of findings to Caltrans and responded to questions/ comments about the summary.

For the digitalization strategy (Task 9) and continuation of this project, the researchers have organized metadata for all the deliverables that created and used GIS and other opensource datatypes so that the researchers' methods are reproducible and traceable for other users.

Task 8 shows accidents plotted in safety Zones 5 and 6. Accident locations for each are shown on the same map so the reader can easily discern the boundaries and accident locations.