

# DRISI

CALTRANS DIVISION OF RESEARCH,  
INNOVATION AND SYSTEM INFORMATION

TRANSFORMING IDEAS INTO SOLUTIONS

# Research

# Notes

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

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## Recommendations for Update of California Airport Land Use Handbook

Help identify areas from 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.

### 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, 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 issues of equity 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 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The current Handbook is based on outdated data and does not address several current issues.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 position as a leader in multi-modal, sustainable and equitable planning.



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## WHAT ARE WE DOING?

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

The research team 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 related to airport land use planning, in order 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 and gaps and provide methodologies for data analyses. They will explore additional relevant databases to provide more precise safety studies. They will compare the original National Transportation Safety Board data fields and information for the years 2000 through 2009 with the newer databases.

Furthermore, the researchers will provide initial studies using the new database data on safety, noise, temperature, precipitation and floods, and rising sea levels. Next, they will focus on identifying emerging transportation modes and technologies and determine their contributions to the handbook. There will be stakeholder and community engagements. 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 need to be added to address the arrival of emerging technologies and new aviation concepts. It will also include found gaps in current data or outdate data from the 2011 publication.

## WHAT IS THE BENEFIT?

The research result will be used by the Caltrans' Division of Aeronautics for understanding what specific content updates are needed 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 that factor in density and intensities recommended in the Handbook still appropriate? What other elements are necessary to update? Topics include how laws affecting land use, housing, and equity, the emergence of new technologies, the use of Unmanned Aerial System, and impacts of AAM and other state policies.

Revising the Handbook is cost- and time-efficient, since much of the data evaluation will already have been completed by this research.

## WHAT IS THE PROGRESS TO DATE?

**January 1, 2023 – March 31, 2023**

Task 1b: Review the latest version of the ALUC Handbook

Task 2: Review literature

During the project period, the research team worked on the literature review, including review of the existing Airport Land Use Planning (ALUP) handbooks from 2002 and 2011. A list of key themes on interest for updating the ALUP

handbook's approach on safety and compatibility standards was identified to set the scope of the literature review and data gathering. The list of topics was expanded from a preliminary literature search by Senior Caltrans Librarian Kendra Stoll (Dec 15, 2020) and based on feedback from meetings with Caltrans:

Traditional ALUP handbook topics include:

- Land use planning guidelines from the state and other aeronautical research and government agencies
- Noise pollution and compatibility planning
- Economic development
- Urban development, including infill, conversion, expansion, transit-oriented development
- Wildlife hazards

New topics based on California Transportation Plan (CTP) 2050 (Caltrans, 2021) and emerging technology:

- Equity and environmental justice
- Climate change, including climate mitigation and air quality, and climate adaptation (adapting to increased risk of accidents from climate-related hazards);
- Urban air mobility, including multimodal and active transportation, vertiports, electric vertical takeoff and landing vehicle (eVTOLS)
- Drone and laser incidents

For Task 2, a table was created to help organize a systemic literature review metadata, online repositories, and quick access to the metric or conceptual relevance of reviewed material. Tasks 1b and 2 deliverables drafts currently being developed.

Task 3: Identify additional databases that can be used to address safety issues:

During the project period a GIS data inventory was concomitantly developed with the literature review. The data inventory is in a table format, with metadata information (airport data types,

layer or attribute data, data sources, authors, date of last update, spatial resolution when applicable, geographical coverage, and data format). For each topic identified in the systemic literature review, online repositories with relevant data is being organized with information on authors, temporal granularity, temporal and spatial resolution, geographic scope, relevant indicators or thresholds, data format, and scientific references.

National Transportation Safety Board (NTSB) data and data analysis methodologies were explored using geospatial statistics (hot spot analysis).

Task 4.1. A spatiotemporal analysis of the NTSB accident dataset was prepared together with GIS models of airport safety zones.