



Caltrans Division of Research,
Innovation and System Information

Research

Notes

Planning
Policy
Programming

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Project Title:
UTC-Warehousing and Distribution Facilities
in Southern California: The Use of the
Commodity Flow Survey to Identify Logistics
Sprawl and Freight Generation Patterns (NCST)

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Warehousing and Distribution Center Facilities in Southern California

Assessing how warehousing and distribution facilities contribute to land use changes and the decentralization of goods movement centers.

WHAT IS THE NEED?

The impacts of the freight system on environmental justice, safety and mobility have dominated, in many cases, the general attitude towards the freight system, completely disregarding its link to the economy and quality of life. Therefore it is imperative that public and private efforts are invested to achieve a more sustainable system that maximizes its efficiency while minimizing the negative effects. There are other factors that have contributed to this phenomena, including the complexity of the system, lack of supporting knowledge and data, and appropriate decision support tools (e.g., models, planning guidelines).

Studying warehouses and distribution centers is important to improve the freight system because: 1) they are fundamental to goods movements, especially after the changes in logistics process experimented in the last few decades; 2) this sector has grown very rapidly in recent years; 3) modern distribution centers are very large facilities with sizes exceeding 500,000 square feet; 4) due to the large freight volumes handled, they generate (produce and attract) a large number of consolidated freight trips; and 5) low freight costs have allowed them to move away from the markets they serve, finding the required land without paying a premium. To this effect, this project intends to fill a gap by analyzing the freight patterns of one of the key economic agents of the freight transportation system: warehouses and distribution centers.



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WHAT ARE WE DOING?

Understanding freight patterns of warehouses and distributions centers will benefit, directly and indirectly, all planning stakeholders in the State and Region. The following list describes the tasks that will be developed as part of the study:

Task 1 – Literature review: The team will conduct a comprehensive literature review in two fronts: 1) warehousing and distribution centers freight activities in the Southern California Region; and 2) freight modeling techniques to assess logistics sprawl, spatial and temporal effects, and modeling.

Task 2 – Data collection, gathering and assembly: During this task the research team will identify additional sources of information such as land use and parcel data, and information to be acquired from data aggregators that could be integrated with that available to the team. In this task, the team will also identify the appropriate stakeholders to conduct in-depth interviews and be able to identify important factors to be included during the modeling effort. The team will design the survey instrument to be administered, design the sample and conduct the survey (mail-out).

Task 3 – Freight modeling: This is one of the most important tasks of this project and involves data analysis and the modeling efforts as described in the methodology.

Task 4 – Analysis of results: During this tasks the team will also analyze the impacts of the results for the improvement of the CFS and related products data collection for the Census Bureau.

Task 5 – Compose papers and reports: Interim and final report and scientific paper writing.

WHAT IS OUR GOAL?

The goal of this study is to provide Caltrans with a greater understanding of the complexity of the goods movement system in Southern California and in turn, assist the Department in more specifically assessing how warehousing and distribution facilities contribute to land use changes and the decentralization of goods movement centers, which can contribute to increases in vehicle miles traveled (VMT) and associated impacts.

WHAT IS THE BENEFIT?

The research will provide the State with planning tools (econometric and statistical models) to monitor and forecast the freight movements associated with warehouse and distribution center facilities. Exploring the distribution patterns of these facilities over time and the spatial concentration and temporal patterns of freight activity in Southern California would also serve as an indication of the expected trends in other locations such as the San Joaquin Valley. The results will also help the State and planning organizations in the implementation and development of the sustainable freight policy. The models will also allow estimating the freight movements associated with this facilities and enhance modeling capabilities of various stakeholders.

WHAT IS THE PROGRESS TO DATE?

During this quarter, the research team concentrated on identifying the relevant literature concerning: logistics sprawl, modeling, and freight and freight trip generation. Moreover, the team started gathering secondary data that will be using during the modeling effort. In the following quarters, the team will acquire additional economic information from data aggregators about the characteristics of warehouse and distribution center facilities in the study area. The data will be merged with the available commodity flow survey (CFS) microdata to construct a richer dataset. Other tasks to be performed to complement the modeling activities include: outreach activities, conducting formal and informal interviews with stakeholders, developing the data collection instrument and conducting the data collection activities.