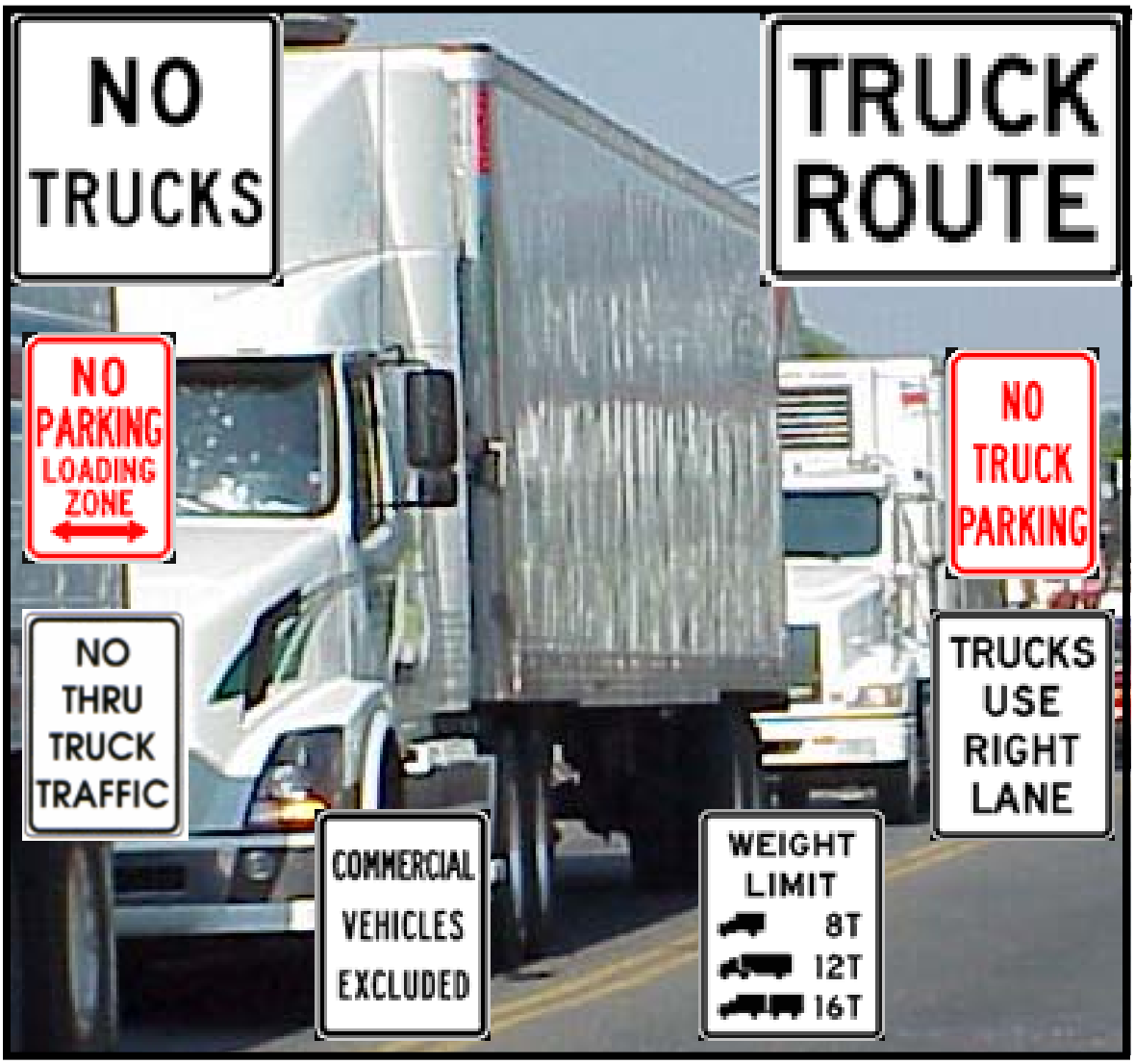
Trends in Heavy Truck Traffic Management

Executive Summary



Prepared for

Miami-Dade Metropolitan Planning Organization

Prepared by

Cambridge Systematics, Inc.

February 2005

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Executive Summary

Trucks are a daily fact of life on American streets and highways. Trucks, especially heavy trucks and tractor-trailers, are the mode of choice for the majority of local regional distribution and delivery activity across the United States, in Florida, and especially here in Miami-Dade County. As such, the effective management of truck traffic is a common goal throughout the industrialized nations of the world, and unsurprisingly, across most urbanized areas of the United States. Trucks, especially large or heavy trucks, because of their size, weight, and subsequent operating characteristics, can disrupt traffic flows, exacerbating already congested roadways. Accidents involving trucks have a higher tendency to be severe and are more apt to result in injuries and/or fatalities.

On November 7, 2003, while on her way to a charity event in Kendall, Miss Florida sustained critical injuries due to the impact of her automobile with an 18-wheel semi-trailer truck. The crash occurred when a pickup changed lanes and caused Miss Florida's vehicle to veer out of control. The semi-trailer also swerved and tipped over onto the car. The pickup did not collide with either vehicle and left the scene. The driver of the semi-trailer, along with two shipping companies, is being sued for damages. This accident, along with a history of similar incidents, served as a stimulus to the elected officials of Miami-Dade to call for investigating opportunities for the development of a truck management program.

The ***Trends in Heavy Truck Traffic Management Study*** was therefore undertaken to identify opportunities for improved truck operations in Miami-Dade County. The impetus for the study was borne out of a political will to better manage the safety issues associated with passenger vehicle-truck conflicts. The primary objective of this project was to develop recommendations for a heavy truck management program for Miami-Dade County that facilitates the efficient and reliable movement of freight while maximizing passenger safety and security.

Addressing issues associated with heavy trucks is not a simple undertaking. Many highway users believe that trucks should be banned from certain areas, or restricted to off-peak or night travel. On the other hand, industry and other freight stakeholders wish to see investments to improve truck access to key freight hubs and downtown areas by improving road geometries at key intersections, providing adequate loading/unloading zones, and adjusting signal timings to facilitate freight movements. The Miami-Dade MPO recognizes all of these viewpoints and has carried out several projects to begin addressing these issues. In 1996, an initial freight and goods movement study was completed that documented the existing freight system, collected data from the trucking industry to quantify port access routes, and worked to provide a mechanism for integrating freight into the existing transportation planning program. Other

facility-specific efforts have been completed to look specifically at truck access to Miami International Airport and the Port of Miami.

The ***Trends in Heavy Truck Traffic Management Study*** complements and extends the previous work, as the Miami area and the Southeast Florida region contemplate the appropriate role of trucks in an urbanized area and begin to assess strategies to better manage freight operations. This study provides an in-depth look at existing practices in heavy truck management programs around the United States as well as in major cities throughout the world.

The study approach focused around five major activities, consisting of:

1. Identifying cities to be used for case studies;
2. Developing and preparing the case studies;
3. Documenting the existing conditions in Miami-Dade County;
4. Integrating the case study findings with the identified needs of Miami-Dade County to begin formation of a program; and
5. Preparing recommendations to guide the development of a truck management program.

SUMMARY OF CASE STUDIES

The individual case studies provided insights into the different approaches used by the specific cities to promote improved management of their heavy trucks. While these city-specific programs were useful, they were all customized to reflect each city's distinct needs, and often were based on local politics or specific regional concerns. To begin to identify possible program elements for the Miami truck management program, the individual case studies were categorized and summarized to identify broad classes of program types as well as more specific program elements that could then be evaluated for their applicability to Miami.

In reviewing the experiences of other cities around the world, it became evident that communities were using a wide spectrum of program elements to control or manage their truck traffic. Different and sometimes apparently conflicting activities, one motivated by a desire to restrict truck traffic and the other to promote truck access, can be undertaken to achieve similar objectives. In some cases, elements were deployed in a restrictive manner, while in other cases elements were deployed that promoted increased freight mobility. For example, truck route restrictions (based on restricting movements) versus truck route designation (based on providing a complete truck route system) both reflect truck routing techniques and the desire to effectively manage truck travel along certain corridors.

In most cases, cities, counties, and states develop truck management programs for their individual jurisdictions. In an ideal situation, the state and local programs are coordinated to ensure connectivity of the networks. However, in many instances, this linkage is missing, causing bottlenecks for trucks where disconnects in truck-friendly or truck-acceptable facilities occur. These disconnects can result from little or no coordination between programs, or lack of formalized programs by one or both of the jurisdictions. Additionally, many cities impose restrictions on an ad hoc basis often in response to general community or specific neighborhood opposition to truck movements. This becomes especially problematic when residential communities and industrial areas "grow up" together, or when industrial areas are redeveloped into residential communities.

After gathering the case study information for the benchmark cities, it became clear that the variety of individual truck management practices could be categorized into two principal approaches, "restrictive" and "pro-freight collaborative." The truck management practices of most cities were then categorized into either of these two approaches. Still, in several instances, a clear distinction could not be made, and these cities were labeled as "neutral."

- Truck management practices were classified as restrictive when the action contemplated or carried out was intended to preserve the non-freight (residential, business other than industry) community's travel patterns or routes at the expense of those of trucking and goods movement-related industries.
- Truck management practices were determined to be pro-freight when the action contemplated or carried out was intended to improve, advance, optimize, or maximize the ability of trucks to move effectively in an urban region, thus aiding operations of the freight industry.

The categorization of the case study cities ultimately was a subjectively analytic process. Many cities had components that were both restrictive and pro-freight, making an exact determination difficult. Elements of the truck management programs in the case study cities can conflict at times, underlining that the creation of an effective program, whether restrictive or pro-freight in nature, is a complex undertaking. Several general characteristics emerged during the categorization process that demonstrate common elements in how different types of cities approach truck management. These are presented in Table ES.1. Table ES.2 categorizes the truck management programs of the case study cities.

The detailed information collected and analyzed as part of the preparation of the case studies revealed several lessons learned/themes. Table ES.3 presents these findings/conclusions.

Table ES.1 Types of Truck Management Programs

Pro-Freight and Collaborative City Characteristics

- World class cities that have a large industrial presence;
- Cities with major seaports that are gateways for national and international markets;
- Cities are concerned with long-haul trips (with local origins and destinations) that serve national and international markets, as well as through trips; and
- Local politicians and policy-makers recognize the importance of heavy trucks to the community.

Neutral City Characteristics

- Cities that are neither major industrial nor commercial centers and those that exhibit limited heavy truck activity;
- Cities that have conflicting program elements, reflecting both restrictive and pro-freight interests;
- Cities, such as Atlanta, that are addressing freight needs by focusing on an intermodal approach; and
- Cities for which there was limited data.

Restrictive City Characteristics

- World-class cities with minor industrial activity;
- Cities with a limited number of heavy trucks primarily fulfilling domestic goods movement needs;
- Cities primarily concerned with short-haul trips made by large trucks in the center of busy commercial areas;
- Large trucks perceived to be of limited importance and compete, as a minority, with the movement of passengers; and
- Local politics prioritized community interests over industry needs.

Table ES.2 Classification of Truck Management Program Types

Restrictive	Neutral	Pro-Freight Collaborative
London, England	Atlanta, Georgia, U.S.	Frankfurt, Germany
Paris, France	Phoenix, Arizona, U.S.	Baltimore, Maryland, U.S.
Singapore, Singapore	Jacksonville, Florida, U.S.	Chicago, Illinois, U.S.
Vancouver, BC, Canada	St. Petersburg, Florida, U.S.	Portland, Oregon, U.S.
Boston, Massachusetts, U.S.	Tampa, Florida, U.S.	Seattle, Washington, U.S.
San Francisco, California, U.S.	West Palm Beach, Florida, U.S.	Los Angeles, California, U.S.
	Miami-Dade, Florida, U.S.	New York, New York, U.S.
		Fort Lauderdale, Florida, U.S.
		Orlando, Florida, U.S.

Note: The classifications presented above are based on available information. Pertinent information regarding the foreign cities was limited.

Table ES.3 Case Study Conclusions/Findings

- There are no examples of the ideal comprehensive truck management program.

  The 'ideal' truck management program does not exist. Successful practices in different areas emerged from the case studies but no one comprehensive program appeared to be ideal.

- A truck management program is but one of many elements of a freight plan.

  Truck management programs cannot be planned and implemented in isolation of the other freight movement needs. A truck management plan is but one component, among other modal needs, for improving the movement of freight.

- External factors other than the program often contribute to the success or failure of a truck management plan.

  Program success appears to not only be a function of the type of program but is also influenced by such factors as enforcement, and the social, economic, and political environments in which they are implemented.

- A successful truck management program needs to have multiple program elements and tools.

  Multiple elements and combinations thereof constituted most of the more successful truck management programs, applying a multitude of tools, including regulation, technology and others to organize and facilitate the operation of heavy trucks in their jurisdictions.

- An effective truck management program is dependent on the consideration of the needs of all stakeholders.

  Programs that involve outreach efforts, convene stakeholders, encourage communication, and collect data on operations or impacts are found to be more effective. Educational outreach efforts are key to building consensus and political support to fund truck management programs.

- Coordination among planning and operational staff and across agencies is crucial for development.

  Truck management programs are more effective when they include mechanisms to enable coordination among the organizations involved in administering truck management programs. Coordination among adjoining cities, counties, and their state partners when designating truck routes helps provide an integrated and complementary system.

- Outreach to the industry and the public is necessary to develop the political will to drive the program.

  Truck management programs are more effective and more easily accepted when stakeholders are educated and allowed to provide input. The implementation of programs is ultimately a determination of political will, and the education of the primary constituents is needed to ensure the benefits of the program are understood and supported.

- Technology and innovation are becoming a larger force in truck management solutions.

  The use of technology and innovation are key ingredients in the formulation of a successful truck management program. They allow for the development and use of efficient, cost-effective techniques that otherwise would not be possible, making programs more efficient and cost-effective.

- Security is an important consideration.

  The terrorist attacks in 2001 have increased safety and security considerations with regard to cargo movement and related management practices. Any truck management program under consideration now needs to include, at a minimum, coordination with security-related programs.

- Political will may be the most significant factor in program implementation.

  Political will was found to be a significant determinant in the successful implementation of truck management programs. The success of programs has been tied more to political will rather than specific program elements.

SUMMARY OF MIAMI-DADE COUNTY NEEDS

As part of the development of an enhanced truck management program, it is important to understand any existing activities already in place. Interviews were conducted with representatives from cities in Miami-Dade, Miami-Dade County, and the Florida Department of Transportation to learn of current activities. In general, the interviews did not reveal an extensive amount of information relating to truck traffic management practices. In fact, most municipalities contacted were unable to identify a contact person or provide specific responses to the questionnaire. This, in and of itself, was very informative, as it indicates that existing activities are limited. Table ES.4 summarizes the needs identified from the city, county, and state representatives.

TRUCK MANAGEMENT PROGRAM RECOMMENDATIONS

In developing recommendations for a new truck management program, it is crucial to recognize the institutional and organizational make up of the community; understand the current operational conditions; identify an appropriate set of goals and objectives; define technically sound and reasonable program elements; develop a realistic implementation plan; and acknowledge the political will of the community. A program that incorporates all of these elements will be successful.

The recommendations developed as part of this study do not prescribe a specific set of management techniques. The specific program elements will be selected and finalized as part of the initial program activities.

To promote its success, the program should develop a system that balances the needs of all roadway users by providing a proactive rather than a reactive approach to the management of trucks. A ***proactive*** program works to implement management techniques that prevent or minimize conflicts by design, as opposed to a ***reactive*** program that tries to clean-up conflicts, often in an ad hoc fashion, after they exist. The following set of recommendations is provided to stimulate, encourage, and support the development of a truck management program for Miami-Dade County. These recommendations are ***not*** intended to create political conflicts with previously established boards or committees like the FTAC. Rather they are intended to outline recommendations to help set up a new program to address truck traffic issues.

- Table ES.5 presents recommendations to guide the institutional/organizational setup activities;
- Table ES.6 presents recommendations to guide the development of specific goals for the truck management program; and
- Table ES.7 presents recommendations to facilitate the selection of specific truck management techniques.

Table ES.4 Miami-Dade Truck Management Needs

- **Congestion throughout the region limits the reliability and mobility of the regional system.**
  The roadways of Miami-Dade County experience frequent and regular congestion. Drivers experience significant delay. If current trends continue, congestion will continue to worsen in the future.
- **Continued growth in the population and traffic volumes will continue to challenge the already congested infrastructure.**
  The key load centers, like Port of Miami and Miami International Airport, will be a focal point for the added volumes.
- **Access to the Port of Miami is restricted and improvement options are burdened by technical and political challenges.**
  Current highway access requires trucks to traverse local roadways. In addition, rail access is constrained and poorly maintained.
- **Lack of a formalized truck management program has resulted in a reactive environment.**
  Planners and operators respond to community complaints to better manage truck traffic; however, no general, programmatic, proactive systemic initiatives have been promoted. In addition, many planning and operations staff are not familiar with truck management techniques.
- **There has been a lack of education and outreach activities related to truck traffic.**
  Local residents almost universally do not understand the economic impact that freight shipments have on their region's economy. In addition, no initiatives have been undertaken to make drivers more aware of how to handle their vehicles in the presence of heavy truck traffic.
- **Political opposition to truck traffic has resulted in an environment that could promote increasingly restrictive behavior.**
  As in many areas, trucks have received negative press for their involvement in crashes, disturbing neighborhoods, and slowing overall traffic operations. The perceptions engendered by these events will likely lead to restrictive truck management practices unless a balance can be provided by increasing citizens' (and politicians') respect for trucks' contributions to the overall quality of life, and subsequently 'making a place' for them on the area's roadways.
- **No champion or advocate has emerged in the operational environment to promote a proactive truck management program.**
  Currently, as already noted, the region operates on a reactive basis, responding to development plan reviews on a regular basis, and irregularly to community complaints.
- **Existing legislation/regulations do not support an efficient, cost-effective truck management program.**
  One example is that current laws require roadway restriction signs to be posted on every block for a given street. Legislative changes that restrict truck movements in all residential neighborhoods with out any signs would be beneficial.

Table ES.5 Institutional/Organizational Setup Recommendations

Identify program leadership. • The effectiveness of a program is directly driven by and dependent on the expertise and authority of its leadership.
Establish a Technical Advisory Committee (TAC). • This committee should evaluate and select the key technical elements of the program.
Develop program strategy and operations plan. • The program leadership should adopt a set of goals and objectives, define the program functional elements, and develop an operational plan.
Define implementation activities. • Specific actions should be defined that guide the implementation of the program.
Establish ongoing program monitoring activities. • In order to ensure that the program is effective, monitoring activities should be established.

Table ES.6 Truck Management Program Goal Development Recommendations

Adopt the LRTP goals as the high-level guiding principles. • It is crucial that all the elements of the County's transportation program feed into and contribute to achieving the long-range goals and objectives.
Develop specific truck management program goals. • The truck management program must have a specific set of achievable goals that guide its implementation and operation.
Solicit input and approval of the goals from the TAC, implementing agencies, affected highway users, and affected communities. • For this program to be effective, the impacted stakeholders must support the overall direction of the program.
Monitor goals over time and modify as necessary. • As with any program, it must be able to evolve over time and adapt to changes in need, advances in technologies, and unforeseen external.

Table ES.7 Truck Management Technique Recommendations by Functional Area

Functional Area	Recommendation
Program Development	Miami-Dade County should designate one person to act as the truck program facilitator.
Regulation	Miami/Dade County should investigate the opportunity and support for streamlined regulations supporting truck operations and route delineation.
Enforcement, Penalties, and Pricing	Miami/Dade County should define a realistic enforcement program to support its management techniques.
Incentives	Miami-Dade County should explore the potential impact that incentives could have on compliance with new program elements.
Neighborhood/Local Focus	Miami/Dade County should develop a protocol for involving local stakeholders in outreach efforts.
Land Use Strategies	Miami/Dade County should promote the inclusion of truck access/truck traffic into land use planning decisions.
Intermodal	Miami/Dade County should integrate intermodal connectivity needs into its truck management program to ensure preservation and enhancement of key intermodal routes and hub connectors.
Investment and Funding and Public-Private Participation	Miami/Dade County should explore opportunities available for funding its truck management program activities.
Information Exchange	Miami/Dade County should develop an outreach plan as part of the truck management program.
Technology and Innovation	Miami/Dade County should explore the use of technology and innovation as part of the truck management program.
Political Will Power	Miami/Dade County should work with the current political leaders to develop support for an integrated, balanced truck management program.

PROGRAM DEVELOPMENT AND IMPLEMENTATION

The specific recommendations defined above provide an outline of opportunities for Miami-Dade to consider as it works to develop a truck management program for the County. As the final program components are identified, selected, and formed into a comprehensive program, it is important that four key functional areas be addressed. These consist of: 1) planning; 2) funding; 3) outreach; and 4) enforcement. The following summarizes these elements.

- **Planning –** The planning element will drive the entire program. This activity defines the parameters and technical direction of the program. Regardless of the technical complexity ("let's put up more truck signs versus let's develop a multifaceted, integrated truck management program"), short- and long-range plans should be developed. Without a plan, there will not be a program.
- **Funding –** The definition of the technical direction for the program should incorporate a financial feasibility component. For example, if one activity calls for the development of a designated truck route network, funding will need to be identified for: 1) development of criteria; 2) data collection to

support the application of the criteria; 3) preparation and placement of signs; and 4) outreach to the industry to notify the of the new program.

- **Outreach –** Building a relationship with the impacted stakeholders is a critical component for a truck management program. The development of an outreach program to support all program activities will be invaluable to the program success. In addition, it provides access to the system users, which accelerates the learning curve for the planners and operations staff in identifying and understanding specific bottlenecks and needs. In addition, outreach activities should support educational initiatives to promote the importance of regional mobility for trucks.
- **Enforcement –** A truck management program relies on the effective communication and enforcement of the program. The regulatory community needs to show its commitment to the program to ensure that the trucking industry will accept it as a legitimate program; without this acceptance the program will not be successful. Therefore, an enforcement feasibility or reasonableness test should be applied to each technical element.

Key Implementation Steps

Focusing on these four elements, Table ES.8 presents a specific list of recommended steps for advancing the development of a truck management program for Miami-Dade County.

Table ES.8 Next Steps for the Development of a Truck Management Program

1.	Establish a program development/management committee.
2.	Identify and work with the operations agencies that are/will be responsible for implementing and enforcing the program.
3.	Define and adopt specific program goals/objectives/strategies to guide development.
4.	Identify, define, and develop a specific set of truck management techniques for inclusion in the program.
5.	Define a schedule and timeframe (short- and medium-term) for development and implementation of each selected program element.
6.	Develop educational/outreach material and conduct outreach to promote program elements, build acceptance of the program, and gather input from the system users.
7.	Finalize the truck management program and begin implementation.
8.	Integrate program into overall regional transportation programs, as appropriate.
9.	Support overall integration of truck management and planning into the planning process.
10.	Build political support with elected officials on an ongoing basis throughout the entire process.

Hopefully, following the recommendations included in this study, a truck management program can be implemented in the near future and successfully continued to mutually benefit motorists, trucking concerns, and the local economy.