Integrating Freight into NEPA Analysis

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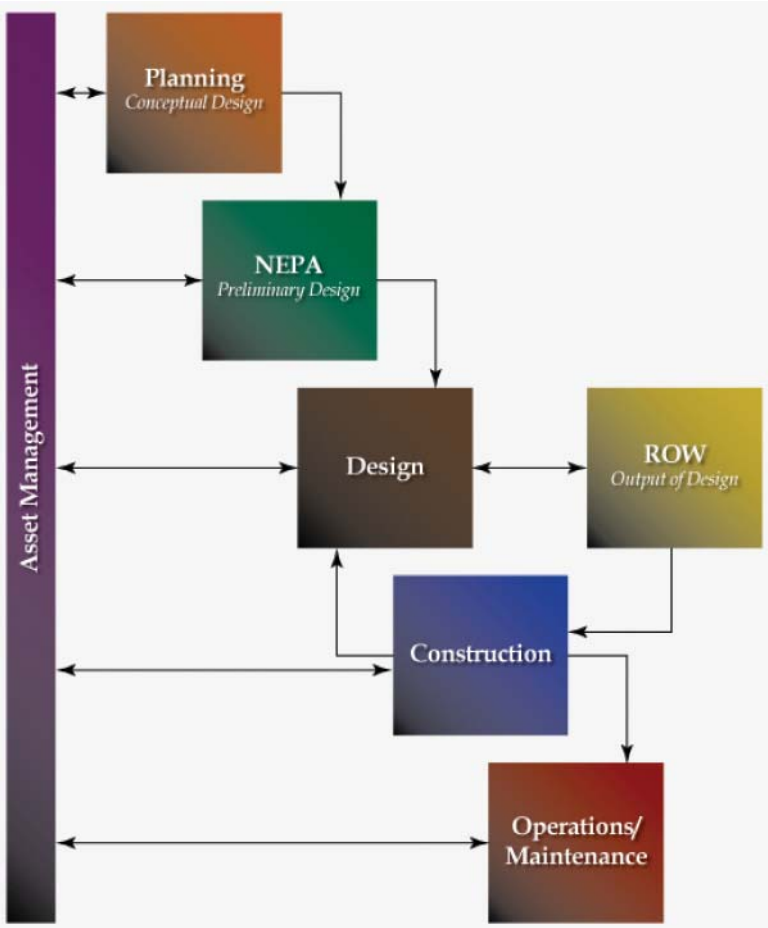
Integrating Freight into NEPA Analysis

Preface

The efficiency and effectiveness of freight transportation in the United States is critical to national, regional, and local goals and objectives related to: 1) economic growth and development; 2) ensuring livable communities; and 3) creating a sustainable environment (human and natural). In order to satisfy these goals and objectives it is increasingly important to integrate freight transportation issues and solutions throughout the transportation planning and project development process (Figure 1).

Figure 1. Integrating Freight into the Transportation Planning and Project Development Process



This handbook is designed to provide information on freight transportation to: 1) professionals responsible for advancing transportation projects through the National Environmental Policy Act (NEPA) process analysis; and 2) those freight stakeholders (public and private sector) interested in advancing freight transportation projects utilizing public sector highway funds that require NEPA analysis.

There are a number of resources available to those who desire a more in-depth understanding of NEPA and various characteristics specific to freight transportation. Some of these resources are listed in Appendix A and others are referred to in the text. Appendix B lists key legislation, regulations, and guidance to environmental planning.

Introduction

The National Environmental Policy Act (NEPA) requires analysis of the impacts of proposed Federal activities on the natural and human environments. Therefore, the use of Federal-aid highway funds to implement a transportation project requires that the project be advanced through the NEPA process as defined in law and regulation (23 CFR 771, etc.). The consideration of freight transportation within this process can be viewed from two perspectives: 1) the project itself is designed to resolve a freight transportation issue or need; and 2) there are freight-related features (warehousing, access to intermodal facilities, loading docks, etc.) that could be affected by the design and location of any transportation project in a given area. In the first case the project could be either solely focused on solving a freight transportation issue or the freight transportation issue could be one of several issues to be resolved. The second perspective requires analysis of impacts of a proposed transportation project on activities, facilities, and/or features associated with the movement of freight (warehouses, industry, retail stores, roads, ports, railroads, etc.). There is a need to understand how a project could change freight transportation activity; and how the changes in freight transportation activity could impact the environment.

Projects that may require the integration of freight considerations include the broad range of projects that can be funded through the Federal-aid highway funding as defined in Title 23 USC. These include but are not limited to: intersection improvements, reconstruction and rehabilitation of roadways, bridge replacements and/or rehabilitation, repaving, building highway on new location, expanding highway corridors, interchange improvements, additions of interchanges, roadway widening, access to intermodal facilities, accommodating rail expansion with roadway improvements, safety improvements, and many others.

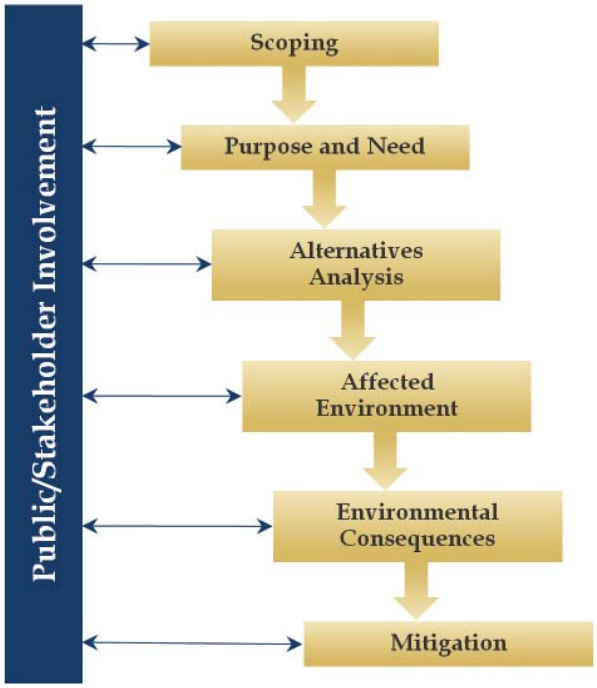
Ideally, freight transportation considerations will have been included in the transportation planning process, which precedes NEPA, and that information will help to frame the NEPA analysis.

The purpose of this handbook is to provide information on how to integrate freight considerations into the NEPA process and analysis. This handbook is one of a series of informational documents developed to improve the consideration of freight in the transportation planning and project development process (Figure 1).

This handbook is designed for NEPA practitioners as well as those interested in advancing freight projects and the guidance in this handbook will apply to Environmental Impact Statements (EIS), Environmental Assessments (EA), and projects categorically excluded (CEs) from the necessity to prepare an EIS.[1] Each of the seven steps described in this handbook and illustrated in Figure 2 are covered in greater detail in the National Highway Institute (NHI) Courses on planning and the environment as shown in Appendix A.

The NEPA regulations upon which the information in this handbook is based include the CEQ National Environmental Policy regulations (40 CFR 1500-1508) and FHWA NEPA regulations (23 CFR 771). FHWA technical guidance and documents are based on these regulations.

Figure 2. Overview of NEPA Process



[1] This will likely include CEs authorized by 23 CFR 771.117(d), and which are sometimes known as "documented CEs" or "Type 2 CEs." Please refer to procedures under agreement between your state DOT and the FHWA Division.

Freight Stakeholder Involvement can add a new dimension to typical public involvement processes. For the 2005 Detroit Intermodal Terminal Facility EIS, the study's outreach list included:

- *U.S. Department of Agriculture;*
- *U.S. Department of Commerce;*
- *U.S. Department of Transportation;*
- *U.S. Department of Energy;*
- *Federal Aviation Administration;*
- *Federal Railroad Administration;*
- *Michigan Department of Agriculture;*
- *Michigan Department of Labor and Economic Growth;*
- *CSX;*
- *Canadian National Railroad;*
- *Canadian Pacific Railway;*
- *Norfolk Southern Railroad;*
- *Ford Motor Company;*
- *DaimlerChrysler;*
- *General Motors; and*
- *Detroit Intermodal Freight Terminal Local Advisory Committee Members.*

1. Public/Stakeholder Involvement

An effective public involvement process for any transportation project requires the identification of the appropriate stakeholders to engage with in developing a project. This identification should include the consideration of freight transportation interests from both the public and private sectors. Additional information on developing and conducting public involvement can be found in Appendix A.

Overview of Challenges

Outreach to freight transportation stakeholders can be challenging. It is often difficult to identify all of the relevant freight stakeholders. For those stakeholders that are identified, it is sometimes difficult to achieve a meaningful dialogue. The demands of operating a freight-related company do not easily lend themselves to participation in the transportation project development process. Additionally, freight stakeholders can be reluctant to disclose operational information that they deem to be proprietary and could benefit their competitors.

What to Look For

The degree of freight stakeholder inclusion specified in state DOT public involvement processes varies by state. Existing transportation planning process regulations require states (and MPOs) to consider freight in the development of Transportation Improvement Programs (TIP), Statewide Transportation Improvement Programs (STIP), and Long-Range Transportation Planning (LRTP) efforts. These involvement opportunities begun in planning should be folded into the NEPA process for a given project. A first step is to conduct a review of the planning studies to determine to what extent freight was considered. When evaluating information gathered through freight stakeholder involvement during the planning process, some key questions to ask are:

- Did the sponsoring agency reach out to freight stakeholders and are there other stakeholders that were not involved that should be?
- Did the outreach produce meaningful comments from freight stakeholders?
- Was there specific data collected from or verified by freight stakeholders?
- Were the freight stakeholder comments and data considered and included in the planning analysis and documents?

- How will you fold freight stakeholder outreach into the public involvement process during the NEPA analysis given what already has been done?

The information from the planning process will help frame the public involvement approach during the NEPA analysis for a specific project. Benefits will include but are not limited to identifying the freight stakeholders to engage with and how to engage with them.

Who to Talk to

There are several types of freight interests to consider. Table 1 provides a list of potential freight stakeholder types and recommended methods for engaging with each.

Table 1. Freight Stakeholder Outreach

Freight Stakeholder Type	Recommended Method of Outreach
Trucking Firms	State and regional trucking association, owner-operator trucking associations – dispatchers among others. Individual trucking firms. The state DOT truck permitting section may have useful information.
Railroads	For Class I railroads, contact public affairs department at HQ location. For short line railroads, contact directly or through state-level short line railroad association. The state DOT rail division will be a valuable resource for contacts and information.
Marine Ports	Major ports have transportation planners that are typically accessible through state and city DOTs or MPO planning organizations. American Association of Port Authorities. Intermodal Association of North America. In-person visits are recommended for marine ports. The state may have a port office that could be a valuable resource for contacts and information.
Port Terminal Operator	Contact through marine port.
Warehouse/Distribution Center Operator	In-person visit, some states and regions maintain freight facility databases which is a potential source of this information.
Truck Stop Operator	On-line trucking information web sites provide a list of truck stops around the country. Once identified, an in-person visit is recommended.
Major Shippers	Chamber of Commerce, local economic development agency, referral from other freight stakeholders (carriers and others). The state Department of Commerce (or equivalent) could be a valuable resource).
Air Cargo Companies	Contact through airport staff that manages air cargo operations. The state DOT may have an Aviation section/department that could be a valuable resource.
Pipelines	Work with state Department of Energy and U.S. DOT Pipeline and Hazardous Materials Safety Administration for specific contacts.
Federal Agencies (Federal Motor Carrier Safety Administration, Federal Railroad Administration, Federal Maritime Administration)	Contact state representatives for each relevant agency.

Note: For a detailed discussion on freight stakeholder participation refer to the FHWA workshop course "Engaging the Private Sector in Freight Planning." Information on this course can be found at: http://www.ops.fhwa.dot.gov/freight/FPD/Docs/fpd_flyer0606.pdf.

A particular challenge for involving freight stakeholders is identifying a stakeholder whose facilities are located outside the defined project study area. For example, a trucking firm may be a frequent user of a rural interstate facility, even though their truck terminals are located in urban locations 50 miles or more from the study area. In these circumstances, statewide and regional associations will be important sources of information. This would include state trucking associations, state and local chambers of commerce, and state and local economic development agencies.

What to Ask

There are four types of input that should be received from freight stakeholders. First, what are their current uses of the facility being studied? These uses can be considered in terms of operations and trip characteristics of freight in the study area and include:

- The freight mode used;
- Origin-destination combinations served;
- Time of day of shipments;
- Number and types of trucks (or other vehicles) used;
- Vehicle routing; and
- The sensitivity of the shipments to the project alternatives being considered (time sensitivity of deliveries, ease of access to facilities, etc.).

Second, freight stakeholders should be provided with an opportunity to comment on the accuracy of freight forecasts used in the scoping process. Any assumed changes in the trip characteristics described above should be discussed with freight stakeholders. Third, freight stakeholders should be a source of input for identifying alternatives, particularly given their first-hand knowledge of the study area. Fourth, freight stakeholders should comment on the impact of project alternatives on their operations and trip characteristics. These types of input will be a recurring theme for each of the components of the NEPA process as discussed in the following sections.

2. SCOPING

Freight considerations should be integrated into the scoping process for environmental studies. Additional information on the scoping process can be found in NHI Course 142005 NEPA and the Transportation Decision-Making Process, Lesson No. 6. A link to this course can be found in the Appendix A.

"Freight-Focused Problem"

Freight-focused projects will have problems that are specific to freight which need to be addressed. This can include: road access to an intermodal facility, high numbers of truck-involved crashes, or delay on a key freight route (e.g., between port and nearby urban area).

As provided in the CEQ NEPA regulations at 40 CFR 1501.7, scoping is "an early and open process" designed to "identify the significant issues related to a proposed action." FHWA's technical guidance provides detailed information on the preparation of the Notice of Intent (NOI) to prepare an EIS and includes reference to conducting public scoping meetings.

Consideration of freight transportation in the scoping step begins with understanding the nature of the freight issue or issues to be considered. Is there a freight transportation problem to be solved and/or are their freight facilities and features in a study area that could be affected by a project? These perspectives are described as follows:

- "Freight-focused" projects are projects that address a specific freight transportation problem or need. Examples include: construction of truck-only lanes, highway capacity improvements due to increased truck volumes, highway reconstruction/paving due to increased volumes of trucks, interchange construction/reconstruction to provide or improve truck access, rail relocation, and developing an access road to a container port, rail yard, or pipeline/truck depot.

- "Freight-related" projects are projects in which freight is one of a number of transportation problems which are being addressed. Other problems or needs may include, but are not limited to: safety, capacity for all vehicles, access, and design to name a few.

- "Freight impact analysis" is the analysis of the impacts to freight activities, and facilities (distribution centers, loading docks, intermodal facilities, industry access, and access in and out of ports, truck access and flows on roadways (for example) of any project alternatives.

FREIGHT-FOCUSED

For freight-focused projects, a thorough examination and understanding of freight transportation problems in an area will be required to develop alternatives and assess the impacts of these alternatives on the full spectrum of environmental resources. This analysis will eventually focus on the specific issues that are relevant. This understanding also will be important to developing mitigation measures if needed.

Freight-Related

For freight-related projects, the scoping phase is critical to defining the freight problems to be resolved in concert with other problems and setting the study boundaries. For example, a major freight facility such as an intermodal rail yard or big box retail distribution center may need to be identified within the study area boundary, a multimodal corridor under study could have trucks as 30 percent of the total vehicular traffic contributing to the defined problems, and/or truck-related accidents could be one of a number of issues that need to be addressed. This will ensure that freight transportation problems are addressed as appropriate while avoiding a comprehensive freight review which is needed for a freight-focused project.

Freight Impact Analysis

The freight impact analysis will include, but may not be limited to the potential impacts that project alternatives have on freight operations (movement) and freight facilities. The analysis of impacts to freight facilities and freight operations could be folded in with the "social and economic" impact analysis for a given project or considered separately. Information on freight impact analysis will be folded into the Affected Environment section as well as the Environmental Consequences and Mitigation sections.

If there are conflicts between freight and the local community regarding the proposed project, conflict resolution opportunities should be identified as part of the project study (early in the process). The project sponsor must strive to be an honest broker of the facts and not aligned with either conflicting interest.

3. Purpose and Need

Freight transportation issues should be considered in the development of Purpose and Need Statements for any project. Additional information on developing Purpose and Need Statements can be found in NHI Course 142005 *NEPA and the Transportation Decision-Making Process, Lesson No. 4.* A link to this course can be found in Appendix A.

CEQ NEPA regulations are brief in the description of Purpose and Need: "The statement shall briefly specify the underlying Purpose and Need to which the agency is responding in proposing the alternatives, including the proposed action." (40 CFR 1502.13). FHWA technical guidance states that the Purpose and Need statement will:

> *"Identify and describe the proposed action and the transportation problem(s) or other needs which it is intended to address (40 CFR*

1502.13). This section should clearly demonstrate that a 'need' exists and should define the 'need' in terms understandable to the general public. This discussion should clearly describe the problems which the proposed action is to correct. It will form the basis for the 'no action' discussion in the 'Alternatives' section, and assist with the identification of reasonable alternatives and the selection of the preferred alternative."[2]

Freight-Focused Projects

For freight-focused projects, the Purpose and Need should articulate the freight transportation problems to be resolved and the nature of freight activity in the study area. The problem(s) to be resolved should be defined in detail. Ideally, much of the information related to the Purpose and Need for freight-focused projects should be found in previous planning documents of the project. The types of information that should be included in the Purpose and Need Statement are found in Table 2.

Table 2. Description of Freight Data

Freight Element	Types of Information to Consider for Inclusion
Freight Facility Information	Map indicating the location and type of freight facilities in the study area.
	For projects involving freight rail, a map showing rail facilities, rail lines, and at-grade rail crossings in the study area is needed.
	Square footage of each facility in the study area.
	Number of employees at each facility in the study area.
	Number of vehicles (trucks, trains, ships, planes) per day or year in and out of each facility in the study area.
	Types and amount of commodities in and out of each facility.
Volume Data	Hourly classification counts to separately identify truck volume peaks and auto volume peaks.
	On- and off-ramp classification counts to better understand specific destinations of trucks on corridors.
Level of Service Data (LOS)	Separate LOS estimates for morning, midday, and afternoon periods for highway corridors.
	Identification of congested freight rail lines, where relevant.
Freight Forecasts	Growth of freight traffic should be developed from freight-specific sources. See section on sources of freight data for more information.
Safety Data	For highway corridors, report accident rates separately for truck-only accidents, truck-auto accidents, and auto-only accidents. Also report fatality rates separately by vehicle class, where relevant.
	For rail corridors, report accidents separately for passenger transit and freight rail.
	When relevant, report accidents at at-grade highway-rail crossings.
Road Geometry	Identify locations of steep grades, sharp curves, short weaves, and reduced vertical clearances that impact truck operations.
Pavement Condition	Describe pavement condition using information from state DOT road network database, FHWA HPMS data, stakeholder input, and/or field observation.
Origin-Destination Data	Identify split between through traffic versus traffic destined into and out of the study area. Identify routing information and determine potential for diversion to other routes and modes.
Economy	Describe the freight component of the study area's economy, including the number of employees and output by dollar or tonnage for specific industries.
Land Use	Land use data, including the existing and future location of facilities that generate or attract freight shipments should be collected to provide as much industry detail as possible because truck, rail, and port trip generation characteristics vary substantially by industry.

[2] FHWA Technical Advisory T 6640.8A.

Hourly Classification Counts

A typical freight scenario has truck volumes which peak in the middle of the day, while auto volumes typically peak during the morning and afternoon commute periods. Therefore, hourly classification counts are the best means to identify truck and auto peak-volume periods. Similarly, LOS estimates should be provided by time periods to ensure that the congestion for the typical truck and auto periods is estimated.

Freight-Related Projects

The Purpose and Need for freight-related projects should include a definition of the freight transportation problem(s) to be resolved (as with the freight-focused project) along with any other transportation issues. The problem(s) should be clearly defined. Information that can be of use in defining the freight problem(s) could include but is not limited to:

1. Truck volume percentages may be high on one segment of a corridor and low on other segments indicating that freight analysis should be focused in one area.

2. A specific interchange or intersection could have a high level of truck-involved accidents indicating that truck-focused safety improvements should be targeted at that location.

3. Traffic has a high percentage of trucks (e.g., 20 percent or more). In this case, it will be important to describe the nature of those truck flows (commodity distribution, origin-destination pairs, truck types, etc.) to determine if there are problems related to these volumes and to focus where solutions will need to be considered.

4. Traffic volumes through a small town may have reached a level that is a problem for the town. Forecasts may show this traffic (including trucks) increasing in the future. The truck portion of this problem needs to be accurately defined (origin and destination, volumes, etc.) so that the appropriate solutions that are balanced between vehicle types can be developed. For example, solutions appropriate for increasing car volumes may be possible within the confines of the town on existing roadways but could result in substantial displacements (residents and businesses) if designed to accommodate truck volumes and movements.

After the nature of the problem(s) has been established, Table 2 should be reviewed to determine which of the freight elements are relevant for the Purpose and Need. The problem definition will drive the rest of the environmental and alternatives analysis.

Data Sources

A key component of the Purpose and Need is the presentation of available data for freight elements in the study area (Table 2). Some freight data should be available from preceding planning studies, but it may need to be supplemented or updated to complete the environmental analysis. A list of key freight data types and potential sources of related data is shown in Table 3. The NHI Courses listed in Appendix A also include several specific freight data sources.

Table 3. Freight Data Sources

Type of Freight Data	Potential Sources of Data
Truck Counts	State DOTs, MPOs, special counts collected as part of previous planning studies. May need to update truck counts for a specific project.
Truck Volume Estimates	Truck components of travel demand models, estimated truck percentages applied to total volume data.
Origin-Destination Data	Roadside truck surveys, state-level O-D data from freight flow databases (e.g., FAF), input from freight stakeholders.
Freight Flow Data	FHWA Freight Analysis Framework database, Bureau of Transportation Statistics Commodity Flow Survey Data, proprietary commodity flow databases (e.g., TRANSEARCH).
Freight Forecasts	Extrapolation from historical truck counts and rail volumes, FHWA FAF data, extrapolations of employment forecasts, interviews of freight stakeholders, and proprietary TRANSEARCH database.
Freight Shipment Characteristics	Roadside truck surveys, input from freight stakeholders.
Freight Facility Databases	Land use databases, previous planning studies, visual observation of study area.
Freight Safety Data	State accident databases for highway safety data, FRA for rail safety data.
Economic Data	The U.S. Economic Census contains county-level economic data (some data is suppressed due to confidentiality concerns), state Departments of Labor maintain county-level industry-specific employment databases and often can provide 10- to 15-year forecasts, Proprietary sources such as Dun & Bradstreet provide zip code-level employment information by industry, socioeconomic data also can be found in state and regional travel demand model databases.

4. Alternatives Analysis

Freight considerations should be integrated into the Alternatives Analysis process for environmental studies. Additional information on Alternatives Analysis can be found in NHI Course 142005 *NEPA and the Transportation Decision-Making Process, Lesson No. 7.* A link to this course can be found in Appendix A.

Proprietary Freight Data

Private sector firms can also be good sources of freight data. In the case of proprietary freight data, it is important to work directly with the providers of this data to determine what components of the data can be published in formal reports and what components must remain private. Methods of protecting proprietary data include removing company names from freight flow data, providing a data range rather than a specific value and aggregating data across large geographic areas to include several companies in a single geographic unit.

CEQ NEPA regulations describe the importance of the alternatives analysis:

> *"This section is the heart of the environmental impact statement. Based on the information and analysis presented in the sections on the Affected Environment (Sec. 1502.15) and the Environmental Consequences (Sec. 1502.16), it should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decision-maker and the public."*

FHWA guidance recommends that the Alternatives Analysis section of environmental documents begin with a concise discussion of how and why the "reasonable alternatives" were developed for detailed study and explain why other alternatives were eliminated.[3] The development and analysis of alternatives for freight-focused projects will differ somewhat from the process used for freight-related projects as described in the following sections. However, one subject that is relevant for both types of projects is freight diversion.

The two types of diversion to consider are modal diversion and route diversion. Typically, modal diversion occurs between the truck mode and the intermodal rail mode as the total logistics costs associated with shipping goods on one or both modes changes. However, truck-rail modal diversion is limited to only certain types of commodities of distances roughly 500 miles or more. Route diversion occurs most frequently by trucks using alternative highways. Route diversion also can occur between rail lines if significant operational changes are expected for the rail network.

It is important that the alternatives analysis examines whether the road network and freight origin-destination combinations are conducive to diversion for each of the alternatives. If freight diversion is possible for any of the alternatives, it is important that the analytical tools utilized for the study are capable of generating diversion estimates. A detailed discussion of estimating techniques for modal diversion can be found in

[3] FHWA Technical Advisory T 6640.8.

the FHWA NHI Course *Multimodal Freight Forecasting in Transportation Planning.* A link to this course can be found in Appendix A.

Freight-Focused Projects

Identifying Alternatives. For freight-focused projects, all alternatives developed should focus on solving freight transportation problems. Reasonable alternatives should be developed in consultation with government agencies, the general public, private sector freight stakeholders, as well as any other organizations and interest groups that could have an interest. It is very important to keep track of all comments on alternatives whether developed during the planning or NEPA phases of a project so that responses can be folded into the modifications of alternatives to improve the overall project outcome. Private sector freight stakeholders often have the expertise to substantially affect the development of alternatives. Additional efforts may be needed during the NEPA process to reach out to freight stakeholders if their comments were not solicited or are not well documented from the planning phase.

Freight Diversion – Key Analytical Considerations:

- *Commodity type – e.g., high-value versus low-value, function in overall supply chain;*
- *Distance shipped;*
- *Shipper/receiver delivery requirements – e.g., small, frequent shipments versus large, infrequent shipments;*
- *Availability of modal options; and*
- *Operational characteristics of modal options.*

Alternatives should be considered across three solution categories: 1) infrastructure solutions; 2) operations solutions; and 3) policy solutions. Examples of each of the types of solutions are shown in Table 4.

Table 4. Examples of Freight Solutions

Solution Category	Examples
Infrastructure	New alignments, adding lanes, improving roadway geometry, access to intermodal facilities, highway reconstruction, intersection design, truck climbing lanes, Interstate access, truck parking, use of alternative routes, etc.
Operational	Improved traffic signalization, changing mixed-flow lanes to managed lanes, system integration, variable message signs, accident response management, systemwide management for truck parking, real-time traffic information, web-based port schedules (for pick up and delivery), weigh-in-motion, rationalizing cross-town movements (reducing number of truck trips), E-ZPass, urban truck parking management, etc.
Policy	Defining the National Network, Regional Truck Size and Weight permitting, adopting weigh-in-motion (also Operations), routing for hazardous materials, city management of loading zones, overall land use and zoning approaches, facilitating diversion from one mode to another, etc.

Screening Alternatives. Robust freight data and analytical tools are keys to analyzing alternatives for freight-focused projects as well as the potential for environmental impacts. The most common analytical tool utilized for estimating truck traffic is the travel demand model. When utilizing a travel demand model for a freight-focused project, it is important to first understand the level of accuracy of the model relative to trucks in the study area. It is not uncommon for travel demand models to be validated on the basis of total vehicle volumes across regional screenlines. While this may be sufficient for regional or statewide planning purposes, it may not provide a sufficient level of accuracy for developing alternatives for a specific project and location during the NEPA and Preliminary Design phases. It may be particularly problematic when estimating truck volumes for specific projects. To verify the accuracy of the travel demand model, truck volumes need to be checked with model outputs at multiple locations in the study area. If the model and the volume data are substantially different, then either the model will need to be recalibrated or off-model techniques will be needed to estimate the impacts of alternatives. Forecasted truck volumes along a roadway also should be evaluated for reasonableness by checking growth rates with sources such as FHWA's Freight Analysis Framework (FAF) forecasts, employment forecasts, and private sector freight stakeholders. When modeling/forecasting it is important to remember that trucks are not just big cars. They are on the road for different reasons and they behave differently (schedules, turning radii, etc.).

It is important to identify the potential environmental impacts of each alternative so that the nature and magnitude of the impacts are included as a factor in determining which alternatives (that meet the project purpose and need) should be advanced through the NEPA analysis and selection process. The emphasis on selecting reasonable alternatives to advance begins with: 1) consideration of alternatives that avoid impacts while meeting the purpose and need; 2) then the alternatives that minimize impacts; and 3) finally consideration of the potential mitigation of impacts of each alternative.

Identifying appropriate screening criteria for freight-focused projects also is an important step. A comprehensive stakeholder involvement process is likely to generate a number of alternatives that will need to be reduced to a set of reasonable alternatives for detailed analysis. A first level of evaluation can be conducted to eliminate alternatives that clearly do not meet the Purpose and Need of the project. Further screening may include: 1) the degree to which the alternative solves the problem; 2) whether or not the alternative is based on a proven technology; 3) compatibility with existing or planned transportation systems; 4) compatibility with local and/or community goals and objectives; and 5) an appropriate balance

of environmental avoidance and/or impacts by alternative. A second level of screening can then be conducted with more detailed analysis of freight activity including performance metrics as shown in Table 5 and specific environmental impacts. These criteria should flow directly from the Purpose and Need Statement for the project as illustrated in Table 5.

Table 5. Performance Metrics Examples

Sample Problem Described in Purpose and Need Statement	Corresponding Performance Metric(s) Estimated in Alternatives Analysis
Congestion between a port terminal and nearby warehouse region.	Estimated travel-time savings between the port and the warehouse location, and reduction in the number of truck trips.
High truck accident location.	Estimated reduction in truck-involved accident rate and accidents and severity of accidents.
Trucks traveling through towns/urban areas causing travel-time delays, community disruption, property, and economic impacts.	Number of or percentage of trucks diverted from through town movement, travel-time differential.
Port access schedule resulting in long truck lines at specific times of the day contributing to poor air quality in nonattainment areas, congestion, and inefficient freight movement.	Number of trucks that shift port access to off-peak times, travel-time improvements for port access.

Freight-Related Projects

Identifying Alternatives. As discussed in the Public/Stakeholder Involvement Section identifying alternatives for freight-related projects will require consultation with: 1) relevant government agencies; 2) the general public; and 3) private sector freight stakeholders. It is just as important to ensure that outreach extends to the private sector freight stakeholders for freight-related projects as for freight-focused projects. The list of participating government agencies should be checked to confirm that appropriate freight-interested government agencies are consulted in developing alternatives (Army Corps of Engineers Port Division, state freight rail office, state economic development agency, etc.).

Alternatives should be considered across the same three categories as for freight-focused projects: 1) infrastructure; 2) operational; and 3) policy. The relationship between the project and freight which was established in the Purpose and Need Statement should be used to generate alternatives that address freight needs as well as the other identified transportation needs for the project. The same alternatives that would be considered for a freight-focused project also may be relevant for freight-related projects. The difference is that the development of alternatives will have to balance the degree to which they can satisfy all of the identified transportation problems not just freight issues.

Screening Alternatives. It is expected that some alternatives will improve freight movement while others may make freight movement more challenging. In many instances, the improvement of freight movements on a transportation project also will provide improvements for the movements of passenger vehicles. In screening freight-related projects, it is critical to have metrics that estimate both freight and other types of transportation improvements. Examples of metrics may include, but are not limited to: truck travel times, auto travel times, truck-involved accidents, auto-involved accidents, and percent truck and/or auto diversions. Developing alternatives to address multiple problems can be complicated and may require a balancing of benefits. Analytical tools that are capable of addressing diverse issues will need to be used and the applicability of travel demand models (or other analytical tools) to both passenger vehicle and freight vehicle traffic in the project's study area will need to be examined carefully.

Conflicts in developing alternatives may occur so the screening of alternatives will need to incorporate a number of perspectives. For example: problems for a specific project may be defined as congestion and safety on an urban roadway and intersection affecting both truck and automobile movements. One solution might be to narrow the lane widths to add a lane so more cars and trucks can move through the intersection or to improve a turning movement. While benefiting autos this could increase the severity of the problem for the trucks traveling through the area as the lanes might not be wide enough for their safe passage causing further problems (property damage, traffic jams, crashes, etc.).

A number of approaches to screening alternatives may need to be considered that will be sensitive to the variety of problems identified in the Purpose and Need and the potential impacts of those alternatives on the natural and human environment. One concept that may be considered if used in concert with other approaches is to monetize performance metrics. This involves estimating a dollar value for performance metrics such as truck delay, auto delay, truck-involved accidents, auto-only accidents, fatalities, and emissions similar to what is done for benefit/cost analyses. This allows for an unbiased process (from one perspective) to be used to compare alternatives that benefit freight relative to alternatives that benefit passenger vehicles to alternatives that benefit both. The FHWA Highway Economic Requirements System[4] is a good source for factors to convert travel time and accidents into dollar amounts for both passenger vehicles and trucks. This method would have to be balanced with other screening approaches to reach the best solution(s) which includes consideration of the No-Build alternative.

[4] Highway Economic Requirement System for State Use, FHWA, 2008.

5. Affected Environment

Defining the affected environment in a project study area provides the foundation upon which alternatives can be developed, the environmental consequences of alternatives can be evaluated, and measures to avoid, minimize, and/or or mitigate impacts can be developed. The existing condition of the affected environment can be used as a baseline for comparison of any build alternative against the No-Build. Both quantitative and qualitative descriptions are needed. Examples include but are not limited to: identifying the location, size, and quality of wetlands; describing and mapping significant historic properties, and mapping neighborhoods, towns, communities, schools, hospitals, businesses, and parks. Mapping the resources and features that make up the affected environment, should include identification of freight transportation-related activities, features and facilities such as: truck volumes on roadways in the study area, noting highways with high truck volumes, the location of freight distribution centers, manufacturing locations, intermodal facilities (including pipeline/truck depots), marine ports, retail centers, air cargo facilities, border crossings, rail lines and rail yards, as well as other locations requiring freight transportation services. These types of facilities could be incorporated into descriptions of existing social and economic factors for a project study area or stand alone if warranted.

The information on the affected environment is critical to developing alternatives for freight-focused and freight-related projects that limit the nature and extent of environmental impacts while solving the problems. This information also is important to accurately assessing the impacts that freight-focused and freight-related projects have on the environment and determining how to avoid, minimize, and/or mitigate those impacts. Finally, the definition of the affected environment, including freight features and facilities (highways, rail, distribution centers, ports, intermodal yards, etc.), provides critical information for consideration when developing alternatives for any transportation improvement project.

6. Environmental Consequences

The environmental consequences step represents the core of the environmental impact analysis for a project. This section includes information on how freight-focused and freight-related projects should be evaluated with respect to their environmental impacts and folds in the analysis of any transportation project on freight features and facilities. Additional information on Environmental Consequences can be found in NHI Course 142005 *NEPA and the Transportation Decision-Making Process, Lesson No. 6.*

A link to this course can be found in Appendix A.

The CEQ regulations at 40 CFR 1508.8 define "effects" as follows:

> *Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects also may include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.*

FHWA technical guidance regarding environmental consequences recommends that this section includes the probable beneficial and adverse social, economic, and environmental effects of alternatives under consideration and describes the measures proposed to mitigate adverse impacts. The information should have sufficient scientific and analytical substance to provide a basis for evaluating the comparative merits of the alternatives.[5]

Freight-Focused and Freight-Related Projects

For both freight-focused and freight-related projects, there could be direct, indirect, and cumulative environmental impacts. Direct impacts may include but are not limited to the impacts related to freight-focused or freight-related projects that may introduce more freight transportation (trucks, trains, etc.) into a project study area, and the impacts of building a freight-focused or freight-related transportation facility on all environmental resources and features. These impacts may in turn create additional indirect impacts that need to be considered.

Table 6 provides examples of types of impacts to the various environmental resources and features that could occur with the development and construction of freight-focused and freight-related projects.

Ultimately, freight-focused and freight-related projects are no different than any other transportation projects with respect to their potential to have impacts on a variety of environmental resources and features. Each project will need to have a carefully crafted Purpose and Need Statement and be scoped to define the areas of focus that will be needed in the environmental analysis. Creating a comprehensive definition of the affected environment, including mapping and quantitative as well as qualitative data, will be just as important for these types of projects as for any transportation project and should be done early in the process to support the development of alternatives as well as the impact analysis.

[5] FHWA Technical Advisory T 6640.8A.

The following sections provide examples for consideration in developing the impact analysis for freight-focused and freight-related projects.

Table 6. Impacts of Freight-Focused and Freight-Related Projects on Environmental Resources and Features

Resource or Features	Description of Potential Impacts and Effects
Economic	There could be an increase in employment and output as freight activity increases. Increased freight traffic may be detrimental for nonfreight-focused industries (e.g., tourism, recreation). Improvements of freight access could result in desired economic development. Add to the tax base.
Energy	Fuel efficiency for trains is better on a ton-per-mile basis relative to trucks. Fuel efficiency for trucks is better on a miles-per-gallon basis relative to autos. Reliable travel speeds improves efficiency for all modes.
Social/Environmental Justice	Industrial areas that require truck and other modal access are often surrounded by residential neighborhoods that can be low-income and minority in composition. Improving freight access into and out of a community may benefit to businesses as well as residents. Freight projects may generate jobs to improve economically disadvantaged regions. Alternatives may cause severing of community and neighborhood ties.
Air Quality	Freight vehicles are typically powered by diesel engines which have particular emissions characteristics. Increasing the volume of these vehicles into an area can result in impacts that will need to be mitigated and innovative approaches may need to be used. Decreasing freight congestion improving travel time may decrease the amount of total pollutants emitted. Idling may be decreased at intersections or at an intermodal facility gate also providing AQ benefits. Greenhouse gas analysis is also included here.
Noise	One truck is the equivalent of 32 cars in terms of noise generated. Freight trains are even louder.
Visual	Trucks, trains, and cargo ships are typically considered to be eyesores by local residents and tourists alike.
Bicycle and Pedestrian	Bicycle and pedestrian paths can be negatively impacted by alternatives that introduce more freight traffic or that are located in the vicinity of pedestrian/bicycle path.
Land Use	Freight projects may generate a variety of freight-related land uses that may or may not be compatible with an area's established planning and zoning policies. Expanding a port facility may create conflicts within a municipality that would like to develop high-end residential properties instead.
Farmland/Rural Character	Freight projects may preserve or increase viability of prime, unique, or important farmland by providing additional access to markets for these goods.
Significant Historic Properties (Archaeology, Buildings, Landscapes, etc.)	A Freight facility that is being modified (improve capacity and/or function) may be a significant historic property. Expansion of existing facilities or building new facilities may impact one or more types of historic properties directly, indirectly, and/or cumulatively.
Wetlands	As with all transportation projects freight-focused and freight-related projects can impact wetlands in a variety of ways that will need to be evaluated carefully.
Section 4(f) Properties and Resources (Public Parks, Historic Properties, Wildlife Refuges, etc.)	A freight facility may be identified as a Section 4(f) resource (significant historic property) or may be in or near a Section 4(f) resource, with the potential to impact that resource. Alternatives such as a highway on new location benefiting freight transportation could result in a "taking" from a Section 4(f) property (park, recreation, area, historic property).
Coastal Zone, Water Quality, T&E Species, Floodplain	Freight-focused and freight-related projects may have direct, indirect, and/or cumulative impacts on these resources.

Energy, Air Quality, and Noise

Trucks and trains have vastly different operating characteristics relative to autos. Therefore, changes in freight movement also could have notable impacts on energy consumption, air quality, and noise. These changes must be explored for both freight-focused and freight-related projects. These can be described as performance metrics in the Alternatives Analysis to enable comparisons between alternatives with vastly different performance characteristics. More information on these environmental impacts can be found in the FHWA NHI Course Integrating Freight into the Transportation Planning Process Session on Freight Impacts. This course also includes reference material that can be used to estimate energy, air quality and noise impacts from changes in freight activity.

Social, Economic, and Environmental Justice

In terms of social impacts, FHWA recommends that freight be incorporated into the consideration of changes in an area that can affect populations in various ways, including, but not limited to, neighborhoods and communities. These changes may be beneficial or adverse, and may include, but are not limited to: splitting neighborhoods, improving access to goods and services, introducing more job opportunities, affecting the cost of goods, isolating a portion of a neighborhood or an ethnic group, generating new development, affecting property values, or separating residents from community facilities, and improving safety. Other aspects to consider include changes in travel patterns and accessibility (e.g., vehicular, commuter, bicycle, or pedestrian) along with impacts on school districts, recreation areas, churches, businesses, tax base, police, and fire protection. This should include both the direct impacts and the indirect impacts to a population. Analysis of the social impacts of freight-focused and freight-related projects is both qualitative and quantitative, and it does require having good data on the traffic impacts of various alternatives.

Freight-focused and freight-related projects may be located in areas that are populated by low-income and minority people. As stated in Executive Order 12898:

> *"[E]ach Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations…"*

Historically, residential housing in the vicinity of heavy or light industry historically housed the people that worked at those facilities (factories, docks, and rail yards). This housing tends to be less expensive then other areas and may be home to minority and/or low-income populations that may or may not work at these facilities. Therefore, issues of Environment Justice (EJ) will need to be addressed as would be the case with expanding major arterial, highways, and Interstates. In addition a project may affect access to jobs for low-income and minority populations and this impact should also be taken into consideration. FHWA conducts an EJ analysis as part of the NEPA analysis of impacts on all communities affected by a project.

The quantitative aspect of this analysis involves overlaying changes in freight activity with socioeconomic data. Where travel demand model outputs are available, a map should be generated that shows changes in the volumes of trucks and trains and how that overlaps with various neighborhoods, income groups, ethnic groups, as well as businesses. Off-model estimation techniques can be utilized for circumstances where travel demand models are not available. In addition the population and business travel patterns and transportation needs can be quantified and mapped.

The qualitative aspect of this analysis involves stakeholder involvement. The outreach must involve the freight community to determine how alternatives could impact their operations. The outreach also must include, but is not limited to, the general public, neighborhood and community groups, businesses, schools, and community facilities to determine the impacts of alternatives on an area.

Indirect and Cumulative Impacts

Indirect effects are effects that are caused by a proposed action, but are later in time (although reasonably foreseeable) or farther removed geographically. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, location of freight facilities, and related effects on air and water and other natural resources. For example, a road project may shift existing and anticipated industrial growth to a different area of a region and this will in turn change the pattern of freight movement in the region. The growth already may have been happening, but the road project "indirectly" influenced where it took place. Another example of indirect affects could be that a road project on new location may influence the location of freight distribution centers in the future resulting in development and changes in traffic and specifically truck access into and out of an area. Indirect effects, while difficult to quantify and assess, must be linked to a discernable direct effect due to the project.

The Lackawanna Valley Industrial Highway Project

Analysis of both indirect and cumulative impacts was included in the NEPA analysis for this highway project on new location in Northeast Pennsylvania. The location of the new interchanges linking the surrounding towns and cities to the new highway were anticipated to affect the location of future freight distribution centers and warehousing that would serve the broader region. This in turn would affect traffic patterns in the study area and future development. There would be a resulting cumulative effect with respect to developed versus undeveloped land and loss of some types of habitat. Mitigation for the potential indirect and cumulative impacts included additional funding for local transportation plans and environmental analysis and mitigation recommendations for parcels subject to development.

Cumulative effects are defined[6] as:

> *"The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions."*[7]

Analyzing cumulative effects differs from the traditional environmental impact assessment because the analysis must consider expanding the geographic area of study beyond that of the proposed project and expanding the temporal limits to consider past, present, and future actions that may affect the resource elements of concern. For freight-focused and freight-related projects, this means that the entire supply chain of goods movement must be considered in the overall analysis, including those elements of the supply chain that occur outside of the study area boundaries. Cumulative effects can be positive as well as negative depending on the resource element being evaluated.

Freight Impact Analysis

This section addresses the analysis of the impact of any transportation project on freight activities, facilities, features, and operations in a project study area. This will ensure that as alternatives are developed for transportation projects, freight is taken into consideration when determining the impacts and the balancing of those impacts with other environmental (human and natural) resources and features. From this perspective freight transportation may be considered an element or subset within the context of social and economic resources or features. A project alternative that has a negative impact on access to an intermodal freight facility, warehousing, expansion of a port facility, access to industrial sites, or precludes the efficient development of these types of facilities may have a detrimental impact on the economy in the area, including, but not limited to jobs, community viability, and the tax base. While general (people and transit) access to a community may be the objective of a particular project access by freight carriers also may need to be considered. Viability of that community could be negatively affected if freight access into and within the community is impeded (access to: hospitals to deliver life saving product, delivery to stores of food, and to gas stations to deliver fuel for example). Some examples of impacts to freight facilities and operations that may need to be considered include but are not limited to:

[6] Per the Council on Environmental Quality's (CEQ) regulations implementing the procedural provisions of the National Environmental Policy Act (NEPA).

[7] 40 CFR 1508.7.

1. Changing access to warehousing areas: can create safety and access problems for trucks; the possibility of increasing truck traffic through communities creating safety, air quality, and noise issues for residents; and increases in costs to transport freight resulting in increased costs of products to consumers, etc.).

2. Changing design of highways to narrow lane widths to increase the number of lanes on a highway in a high-volume truck corridor can result in unsafe conditions for trucks and autos due to the size of trucks (width and length).

3. Application of tolling to an existing or new limited access freeway can cause trucks to leave the freeway to avoid tolls thus increasing trucks on parallel roads that are not necessarily designed to handle high volumes of truck traffic. This could result in safety problems (increased crashes), as well as accelerating the deterioration of pavements and bridges due to truck weights and loading factors and an increase of trucks through towns and cities negatively affecting traffic flow and safety of autos, pedestrians, and bicycles.

4. The design and placement of roundabouts to deal with traffic congestion and flow could result in trucks not being able to maneuver through intersections resulting in safety problems and increased congestion.

5. Poor signal timing that restricts the number of trucks that can pass through an intersection in areas with large volumes of trucks can exacerbate congestion and increase the potential for crashes.

7. MITIGATION

Mitigation in the Alameda Corridor

The Alameda Corridor (Figure 3) EIS developed several mitigation actions, including:

1. *The placement of noise barriers and the potential use of building insulation at specific locations to mitigate noise impacts.*
2. *Potentially significant safety impacts involve possible train derailments and cargo spills. Specific mitigations include signalization, and centralized traffic control. In addition, ACTA will prepare an emergency response plan in consultation with other agencies.*

Potentially significant traffic impacts involve reducing pedestrian and vehicular access at certain locations, traffic detours, and general inconveniences during construction. Mitigations include the development of a construction management plan to target specific areas, restriction of construction-related parking, hauling, excavation, and staging activities, and maintained access to businesses, schools and residences.

FREIGHT-FOCUSED AND FREIGHT-RELATED PROJECTS

The impacts of increased freight activity in the study area will need to be fully evaluated so that measures to mitigate impacts can be developed. There are examples where improved freight transportation has resulted in positive mitigation measures for a community (Alameda Corridor). Considerations may include, but are not limited to: mitigating the impacts of more trains on a local rail line, more trucks on major and minor roadways, or changing truck traffic patterns into and out of a community to access intermodal facilities. Mitigation examples for freight-focused projects include:

1. Mitigation measures that directly address the increased freight transportation activity, such as developing sound or visual barriers that reduce the intrusion of freight transportation noise and visual impacts on local neighborhoods;

2. Alterations in local transportation networks, such as rerouting truck traffic, and building rail/road or road/road grade separations to minimize the interaction between trucks/trains and autos/pedestrians/bicycles; and

3. Improving pedestrian and bicycle access, improving the local network of roads by repaving and repairing, and improve transportation safety within the community may be considered.

Two examples of potential mitigation measures to consider for freight-focused projects include the following:

Example 1: An increasingly popular method to mitigate the air quality impacts of increased truck activity is to accompany freight improvement projects with truck parking locations that have idle emissions reduction technology. Trucks in commercial truck stops or rest areas typically leave their engines running to maintain power in the truck cab while the truck is parked. However, newer technology allows truck drivers to plug into a power source to maintain power to truck systems while turning off the engine. The alternatives generally save fuel and reduce emissions compared to idling the main engine.[8]

[8] For a listing of current idle reduction technologies, please visit EPA's web site at http://www.epa.gov/smartway/transport/what-smartway/idling-reduction-available-tech.htm.

Example 2: Barrier walls are another common mitigation concept for freight-related projects because of their multipurpose functionality. They can be used during the construction process to minimize noise due to construction and, later, freight facility operations. They also can be used as a security feature to inhibit theft both during construction and facility operations. It is important to develop a barrier wall concept that is consistent with the natural surroundings of the project. The Detroit Intermodal Facility Terminal Final EIS provided a specific example of the use of barrier walls for a freight project.

Freight Impact Analysis/Mitigation

Mitigating the impacts of a transportation project on freight facilities and operations will require coordination with the freight stakeholders and the public in some cases. This coordination is important while impact analysis is performed and alternatives are considered, and later when appropriate mitigation is developed. The freight stakeholders have specific knowledge that could be the key to selecting appropriate mitigation measures for each alternative developed. Mitigation of impacts on freight facilities and operations should be tailored to the nature of the impact and the resource. Working with freight stakeholders during the identification of mitigation options is critical to the success of a project. Examples of mitigation for impacts to freight facilities and operations could include but are not limited to:

1. Mitigation of impacts to truck operations during construction or reconstruction of a highway could include but are not limited to: a) advance notice of construction schedules to trucking companies that use the corridor; b) posting notices/schedules on corridors removed from the project location but that provide access for truckers to the project corridor (truckers can then plan alternative routing); and c) ensuring that work zone safety measures take into account truck volumes in the corridor.

2. The impacts of changing access for trucks into and out of an intermodal facility may require mitigation measures that ensure the continued safe and efficient access for trucks, including geometric design (lane widths and turning radii), pavement design and materials (pavement needs to hold up to truck weights for the long term), potential grade separations, and efficient routing that avoids rerouting trucks through residential communities.

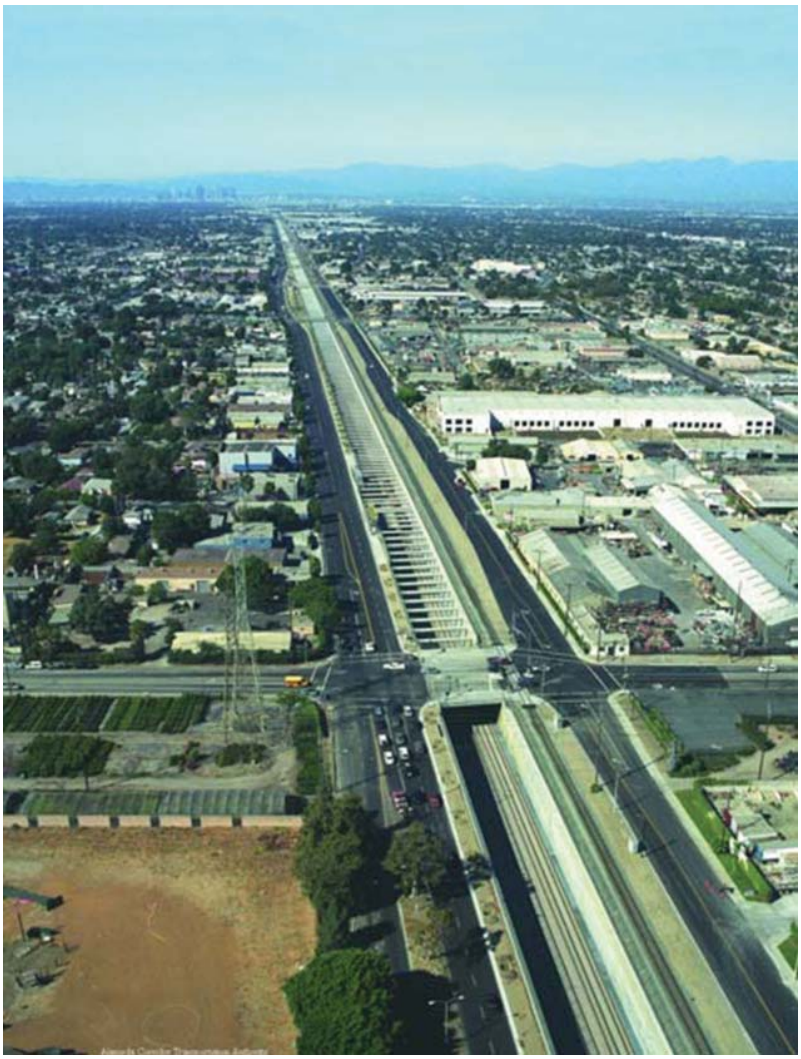
3. Changing the traffic patterns (including creation of bike lanes and other livable amenities) into, out of, and within a community may impact truck access to industry; loading docks for hospitals; delivery

to stores, etc. Mitigation considerations should be developed among the affected parties and could include but are not limited to: rerouting trucks within the community efficiently to maintain access to facilities; providing areas for loading and unloading trucks on streets (top of the street or bottom of the street) for deliveries to stores, restaurants, and offices; and balancing the location and design of pedestrian and bicycle facilities in corridors that also require truck access.

Conclusion

FHWA has adopted the policy of managing the NEPA project development and decision-making process as an "umbrella," under which all applicable environmental laws, executive orders, and regulations are considered and addressed prior to the final project decision and document approval. Freight considerations are a vital component in this process. Conclusion of the NEPA process results in a decision that addresses multiple concerns and requirements, including freight. The FHWA NEPA process enables transportation officials to make project decisions that balance engineering, freight, and transportation needs with social, economic, and natural environmental factors. During the process a wide range of partners, including the public, businesses, interest groups, and agencies at all levels of government, provide input into project and environmental decisions.

Figure 3. Alameda Corridor Rail Line



Source: American Society of Civil Engineers.

Appendix A
List of Relevant FHWA Training Materials

FHWA National Highway Institute Courses

- FHWA-NHI 139001 – Integrating Freight in the Transportation Planning Process
- FHWA-NHI 139002 – Uses of Multimodal Forecasting in Freight Planning
- FHWA-NHI 139003 – Advanced Freight Planning
- FHWA-NHI 139005 – Linking Freight to Planning and the Environment
- FHWA-NHI 139006 – Integrating Freight in the Transportation Planning Process – Web-Based Standard Version
- FHWA-NHI 142005 – NEPA and Transportation Decision-Making
- FHWA-NHI 142036 – Public Involvement Techniques for Transportation Decision-Making
- FHWA-NHI 142052 – Introduction to NEPA and Transportation Decision-Making – Web-Based

See the following URL for details on these courses:
http://www.nhi.fhwa.dot.gov/training/nhistore.aspx.

FHWA Workshop

- Engaging the Private Sector in Freight Planning

See the following URL for details on this workshop:
http://www.ops.fhwa.dot.gov/freight/FPD/Docs/fpd_flyer0606.pdf.

Appendix B
References for NEPA Legislation, Regulations, and Guidance

Legislation

- Federal-Aid Highways, Title 23, United States Code, "Highways," National Environmental Policy Act of 1969, as amended (NEPA), plus numerous other related statutes and orders.

http://environment.fhwa.dot.gov/projdev/tdmpdo.asp.

Regulations

- "Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act" – 40 CFR Parts 1500-1508, November 29, 1978 (Council on Environmental Quality – CEQ).

- "Environmental Impact and Related Procedures" 23 CFR 771, August 28, 1987 (FHWA).

http://environment.fhwa.dot.gov/projdev/tdmpdo.asp.

Federal Highway Administration (FHWA) Guidance

- "Guidance for Preparing and Processing Environmental and Section 4(f) Documents" – FHWA Technical Advisory T6640.8A, October 30, 1987.

http://environment.fhwa.dot.gov/projdev/tdmpdo.asp.

- FHWA Technical Advisory T6640.8.

http://www.environment.fhwa.dot.gov/projdev/impTA6640.asp.

Other Guidance

- *Questions and Answers about NEPA Regulations,* Council on Environmental Quality (CEQ) Memorandum, March 16, 1981.

- The RED BOOK – *Applying the Section 404 Permit Process to Federal-Aid Highway Projects,* FHWA, et al., September 1988.

- FHWA Environmental Guidebook (primarily an internal document) – An all-inclusive compendium of environmental guidance information which includes the following:

  - *Section 4(f) Policy Paper,* October 5, 1987 as updated June 7, 1989;

  - *Transportation Enhancement Activities,* FHWA Memorandum, April 24, 1992;

  - *Cooperating Agencies,* FHWA Memorandum, March 19, 1992; and

  - *Purpose and Need,* FHWA Memorandum, September 18, 1990.

- NEPA and Transportation Decision-Making – Project Development and Documentation Overview, August 21, 1992, http://environment.fhwa.dot.gov/projdev/tdmpdo.asp.

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16. Abstract

The efficiency and effectiveness of freight transportation is critical for economic growth and development, ensuring livable communities, and creating a sustainable human and natural environment. It is increasingly important to integrate freight transportation issues and solutions throughout the transportation planning and project development process.

This handbook is designed to provide information on freight transportation to: 1) professionals responsible for advancing transportation projects through the National Environmental Policy Act (NEPA) process analysis; and 2) public and private sector freight stakeholders interested in advancing freight transportation projects utilizing public sector highway funds that require NEPA analysis.

NEPA requires analysis of the impacts of proposed Federal activities on the natural and human environments. Therefore, the use of Federal-aid highway funds to implement a transportation project requires that the project be advanced through the NEPA process as defined in law and regulation. This handbook considers freight transportation from two perspectives: 1) a project that itself is designed to resolve a freight transportation issue or need; and 2) a project in which freight-related features (warehousing, access to intermodal facilities, loading docks, etc.) could be affected by the project's design and location.

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