FDM 25-5-1 Introduction

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This section discusses the various types of socio-economic issues identified and used by the Federal Highway Administration (FHWA) in environmental impact analysis procedures. The Bureau of Environmental and Data Analysis (BEDA) has adopted these issues as an outline for conducting socio-economic analyses. Each is covered in greater detail in the following discussion.

1.1 Description of Socio-Economic Impact Factors

The understanding of a community's socio-economic factors requires a familiarity with the community beyond its physical characteristics. Although it is easy to define the precise characteristics of a city's street layout or utility distribution system and the effect of a project on them, it can be much more difficult to quantify the socio-economic impacts of a proposed project.

For example, it is relatively easy to gather a great deal of statistical information on the social, or demographic, composition of a community. This information can quantify population groups by age, sex, race, ethnic or religious groups, level of education, and employment to provide a demographic profile of the affected community. Similarly, economic factors such as income levels, tax rates, equalized values, unemployment figures and real estate sales can provide a valuable, though limited, view of the economic character of an area. However, reliance on these quantifiable factors alone could cause the analyst to misinterpret or underestimate the real or perceived effect of an action on the community. To accurately gauge the impacts of a project, the analyst must also understand and appreciate several non-quantifiable aspects of society.

Values are a community's concept of what ought to be. They can relate to behavior patterns or the collective worth placed upon a local institution, building, or area. They can rarely be quantified but often exert a great influence on a community and its reaction to a proposed project. It is important that these values be recognized for the forces they can represent.

Projects which infringe upon or sever a neighborhood can generate intense opposition, not only as a result of the displacement of people if new right-of-way is required, but also because of the disruption of neighborhood institutions and activity patterns. This might take the form of a school district or church parish being divided by a new roadway. It could also result from separating parts of an area perceived as an identifiable neighborhood because of its ethnic ties or its physical characteristics. The perception of a loss of access to schools, churches or other institutions, or of a separation from one's neighborhood, regardless of the actual distance of that separation, can often generate a greater perception of adversity than would be apparent from statistical analysis alone.

Similar areas of concern include the destruction, alteration, or isolation of local landmarks, which may or may not be historic in nature. While adverse impacts on the oldest home in a community may generate concern, impacts on a local church, school, or other community center could create even greater interest.

Another area of social and economic impact assessment which does not lend itself to quantitative analysis is that of local politics. This is not meant to imply that socio-economic impact analysis should be influenced by the wants and desires of local elected officials. However, there needs to be an awareness of the local political system, how it functions, what its goals and objectives are, and the fact that this is part of the social makeup of a community. For example, if a local council or politician has gone on record favoring or opposing a transportation related action, it may be difficult to dismiss or propose that alternative without carefully exploring it and clearly and factually explaining why it is or is not the most appropriate solution.

The examples cited above are not all-inclusive, but serve to illustrate several ways in which local values can affect social impact analysis. The greatest asset in successfully addressing these impacts is to be able to listen to what people are saying and to be sensitive to their concerns which may stem from issues entirely unrelated to the transportation reasons for the project or to accepted engineering considerations. A comparison of the existing project to previously constructed projects of a similar nature may help identify sensitive values and provide insight into methods of addressing them.

1.2 FHWA Categories

In order to provide a uniform basis for the discussion of socio-economic impacts in the environmental documentation process, a series of subject categories are provided herein. The scoping process would identify the specific and appropriate categories that should be discussed in an EIS. The FHWA uses the categories

listed below which were obtained from the publication "Preparation of Environmental Documents." While other formats for socio-economic analysis are available, the following has been adopted in order to ensure uniformity within and between the state and federal Departments of Transportation. A more complete discussion of each of the following categories is provided in Subjects 5 through 35 in this Section. The categories are:

- Neighborhood and Community Cohesion
- Regional Economic Impacts
- Public and Private Development Plans
- Existing Business Districts
- Affected Social Groups
- Relocation
- Energy Consumption

FDM 25-5-5 Impacts on Neighborhood and Community Cohesion

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Neighborhood and community cohesion refers to those social, psychological, economic, and physical attributes which give a defined geographic area a self-contained sense of community.

5.1 Concepts Definitions and Evaluation Factors

Impacts on neighborhood and community cohesion can be measured in a number of ways by a variety of socio-economic characteristics. Some are determined by simple observation of the area that would be affected by the proposed project alternatives, others by discussions with local officials and individuals, and still others by statistical analysis.

The impacts associated with neighborhood and community cohesion are generally not readily quantifiable. The splitting of neighborhoods, isolation of ethnic groups and impacts on local schools and community facilities become apparent from a review of the alternatives being analyzed. The degree to which these impacts disrupt a neighborhood or community is measured by the reaction of its residents and the degree to which they feel their lives have been disrupted. These issues may prove to be of very little importance in some projects while in others they may hold the key to public acceptance. The importance of these issues should be weighed for each project and responded to accordingly.

5.2 Neighborhood Splitting

Neighborhood splitting refers to the separation of one or more parts of an established neighborhood area by the construction of a transportation facility. A limited access highway might create a much greater physical barrier than a new arterial, but the perceived separation could be equally important to those affected in either case.

The most common method of evaluating neighborhood splitting is by observing the location of proposed alternatives in relationship to existing housing, commercial and institutional land uses. Secondly, local insights can be obtained by talking with municipal or county planning and engineering staffs, or with area residents themselves, to determine whether or not the perception of neighborhood separation or splitting exists, and on what basis. Reasons might include anticipated high traffic volumes which, in turn, might create a barrier to pedestrian or vehicular movement between neighborhood areas, or, as another example, the boundary effect of a large expanse of pavement.

In some cases, the acquisition of additional statistical information may be desirable. This can be obtained from U.S. Census information or locally developed resources. Census data can provide information on demographic or economic factors which could help define the boundaries of a neighborhood area, especially at the block statistic level. However, block statistics are generally only accessible by computer and can be inconvenient or difficult to use.

5.2.1 Isolation of Distinct Groups

This factor is similar to that described above under Neighborhood Splitting, and refers to the physical or psychological isolation of members of a distinct group from other members of that group. These can include ethnic groups or others, such as the elderly or handicapped. This isolation can be either real or perceived. An ethnic neighborhood can be physically isolated by changes made to the roadway system or by the construction of a new or upgraded facility which would divert traffic from an area, restrict the flow of traffic into, out of, or within an area, or eliminate access to a portion of one area from another or to an institution important to the lifestyle of a particular group. A group may also be made to feel that they are being isolated by a project, even if access and traffic flow to the area are relatively unaffected such as in the case of noise walls or other barriers to visibility into and out of an area.

The potential impacts of isolation will most likely be identified through observation in the field and discussions

with representatives of local groups and organizations. Many times, members of a group which feel they are being isolated will come forward and make it apparent that they anticipate a problem. These groups can include minorities, ethnic concentrations, handicapped, elderly, and other transportation or economically disadvantaged groups. In addition to observations and public comments, U.S. census materials can be consulted to determine which census tracts or blocks have concentrations of these various groups. Tracts or blocks showing fairly high concentrations should be examined carefully for the potential isolation of members of these groups.

5.2.2 New Development

This factor should be considered in light of announced new development, as well as planned, but as yet unannounced, development which could be assisted or discouraged by a proposed transportation project. Impacts on development opportunities are generally discovered by observing proposed alternatives as they are overlaid on maps or aerial photographs of the existing project area. In so doing, it can be determined whether existing development parcels are adversely or beneficially affected or if new parcels and related development opportunities are created by the project. The latter can include improved access to existing developed areas, new access to new areas of potential development, and the creation of parcels of land suitable for development or redevelopment by roadway reconfiguration or realignment.

In addition, contacts should be made early in the process with the local planning or community development office in the affected municipality, county or region. These agencies are most likely to be aware of any existing or proposed development plans and can provide guidance as to location, scale, uses, timing, etc. Area real estate brokers or investment bankers can also be sources of information on new projects.

5.2.3 Changes in Property Values

One of the most sensitive local issues can be the impact of a proposed project on neighborhood property values. This is an issue which can be influenced by the mere appearance of change and can also cause a change in community or neighborhood cohesion. It should be carefully weighed in an environmental impact analysis of proposed alternatives. The valuation of real property can be fairly subjective. Communities use relatively standardized assessment techniques for purposes of taxation; however, actual property values are determined by the less certain principles of the real estate market. It is not common for a community to change assessed values because of a nearby transportation project. Market values may, however, be affected in some manner.

Due to the subjective nature of property valuation and the uncertainties of the real estate market mentioned above, it is difficult to develop a quantitative estimate of changes in local property values. However, indications of potential changes in property values can be found in two ways. The first is through discussions with members of the District's Real Estate Section and local real estate firms. These individuals can often provide valuable insights into local markets and into the probable ways in which a particular action will affect those markets. The second is to compare before and after sales and assessment records for areas of similar development through or within which highway projects of like nature have been constructed.

In addition to evaluating these potential changes in actual property values, the analyst must also be aware of the perception that an action will precipitate a change in property values. Contacts should be made with the local planning department and, if appropriate, with representatives of the affected community to determine the views of residents and local financial institutions regarding the potential effects of the project on property values. In the case of a sensitive local real estate market, the perception that property values will rise or fall can, in some cases, become a self-fulfilling prophecy.

5.2.4 Changes in Travel Patterns

A change in travel patterns for area residents or in the routes and volumes of traffic through a neighborhood can affect the cohesion or fabric of a neighborhood. This can be temporary during construction or permanent, following a change in the area transportation system.

Changes in travel patterns are generally identified during the alternative analysis phase of a project. These changes can have actual physical impacts on a neighborhood, as in the cases of routing more traffic through a residential area or removing traffic from a commercial area. Impacts on drivers themselves can be perceived as being either positive or negative, depending on whether distances and travel times are shortened or lengthened. This information should be obtained through the analysis of alternatives.

5.2.5 Changes in School Districts

Changes in school districts can also evoke an emotional response from residents. If a project would result in a change in school district boundaries, the effect of those changes should be addressed.

This issue will more likely affect urban rather than rural projects where school districts typically cover much larger areas and are often served by widespread bus transportation. In an urban area, imposition of a major

transportation facility such as a limited access highway or a four to six lane urban arterial could result in a realignment of neighborhood school districts in order to minimize the need for children to cross the new roadway. This realignment could result in the removal of children from the friends and familiar surroundings of one school to a new, unfamiliar one. The result of these changes could be a cause for significant concern on the part of parents in a project area. The greatest concern could be raised if a proposed project resulted in the acquisition and demolition of a school. This would result in the wholesale reassignment of all students attending that school and potentially create the greatest amount of disruption.

Evaluating potential school district changes is done largely through observation and questioning. Information on school districts should be obtained from the local Board of Public Education. By comparing existing boundaries with the alternatives under study, the probability of conflict can be assessed. An interview with local school officials will also be useful in determining how the school system may react to the proposed project. An analysis should be made of the numbers of students involved, the changes in their school destination, and the effect of these changes on the distance traveled from home and the time required to do so.

5.2.6 Reduction of Recreational Resources

The potential reduction or removal of recreational resources should also be considered in an environmental analysis. Area residents or special interest groups concerned with the environment, children, recreational issues, etc., could be affected by the potential removal, separation, or significant alteration of parkland, forest, wild or natural areas, playgrounds, or other recreational features.

In addition to local concerns, the acquisition of recreational or natural areas can result in the need to meet Section 4(f) and 6(f) requirements. These regulations are discussed in more detail in FDM 21-25-1 4(f) and FDM 21-25-5 6(f).

The evaluation of any impacts on recreational resources is principally achieved through observation and discussion. Potential alternatives should be compared with the location of local recreational resources and 4(f) and 6(f) lands. If any conflicts appear to exist, discussions with local park and recreation officials will help to evaluate the extent and significance of those conflicts and help to gauge the public response. Additional public reaction may be obtained through the project's public involvement program.

5.2.7 Effect on Community Facilities and Services

Each community provides public facilities and services upon which its citizens depend. These are often provided by the local government, but can also be privately operated. Examples include health care institutions; emergency services such as police, fire, and ambulance; cultural institutions such as libraries, ethnic centers, churches, theaters; educational facilities including public, parochial, and private schools; city halls or county courthouses and all other publicly operated services; recreational facilities such as swimming pools, gyms and parks; major shopping centers including malls and commercial strips; and transportation facilities including airports, railroad properties, and mass transit services.

Community facilities and services are most often affected by their displacement or removal from one location to another, isolation created by the "barrier" effect of a new transportation facility, and increased or decreased accessibility. Each community facility will be used by different portions of the population to varying degrees. It will be reached by one or more modes of transportation, which may be used differently by different parts of the local population and which may be affected in different ways by the proposed action.

The accessibility of a community facility or service is determined by the amount of use it receives or service it delivers. Potential impacts on a facility or service can be measured by changes in the level of use projected as a result of a proposed project.

To determine the amount of any impact, it is first necessary to determine existing user levels through direct observation or, if available, through statistics collected by the staff of the facility or service. Interviews with individuals operating the facility or service can also be useful in assessing user activity. Information on the socio-economic characteristics of users should also be collected from the same sources. A comparison between the existing user levels and any changes projected as a result of the proposed project will indicate how the community facilities and services will be affected.

Particular attention should be paid to these facilities and services when minorities (as defined by Title VI of the Civil Rights Act of 1964), elderly, or handicapped individuals are the primary users. Other groups for which accessibility to community facilities and services should be given special consideration include nondrivers, those dependent upon public transportation, school age children, pedestrians, and bicyclists (as per FHWA Technical Advisory T6640.8A).

5.2.8 Highway and Traffic Safety/Public Safety

Highway traffic safety and general public safety should be carefully considered in evaluating the social and

economic impacts of a transportation project. A project should result in improved traffic and safety conditions or, at least, should not worsen conditions.

Traffic and accident statistics for the project area should be examined to develop a profile of its safety history. In addition, consultation with the District Office Traffic Section, and interviews with local police officials or traffic engineers can also provide insights as to how, where, and what kinds of accidents have occurred in the project area. The proposed solution should be measured against how well it improves the existing situation.

FDM 25-5-10 Regional Economic Impacts

February 15, 1988

10.1 Impact Categories

Under the general heading of economic impacts, there are several subjects which should be addressed in an environmental document. Some are suggested by the Federal Highway Administration (FHWA) in Technical Advisory T6640.8A others are based on past project experience in Wisconsin. They are:

1. Construction Impacts, including Land Acquisition
2. Employment
3. Regional Multipliers
4. Tax Revenues
5. Retail Sales

Several types of economic impacts can be expected to result from a highway construction project. Basic categories include those economic impacts brought about by the project itself through expenditures for construction, construction related employment opportunities, permanent employment created by surrounding new development, and impacts on the surrounding business community.

10.2 Construction Related Impacts

Construction related economic impacts result from expenditures made before or during the actual construction of a project. They include the acquisition of property, the purchase of goods and services, and the creation of construction related jobs.

The evaluation of construction related economic impacts is primarily a quantitative analysis which estimates the number of dollars being generated in the local economy by the purchase of goods and services and the number of construction jobs created by a given project. There is also an interest in the number of residential, business, or farm properties being acquired and removed from the local economy and tax base.

10.2.1 Property Acquisition

Property acquisition can often be one of the most controversial aspects of a transportation project. In addition to the social impacts of displacement and relocation, the expenditure of public funds for acquisition of property and the relocation of residents or businesses has an economic impact on the project area, as well as on the individuals involved.

Removal of residences most often results in a shift in location for the owner or tenant within the same community, resulting in minimal disruption to the overall economic structure of the community. Removal of businesses or industries could result in a similar relocation within the community, again with minimal overall economic disruption. However, it could also result in a business closing or relocating outside of the community with a resulting loss of area jobs and economic activity. The analyst should explore this question of potential relocatees, either through conversations with the local planning staff or with the WisDOT Region Real Estate staff.

The acquisition of property can also become as much an emotional issue as an economic one in terms of both homes and business/industrial or agricultural properties being acquired. Depending upon the features of an individual project, the more subjective social concerns stemming from acquisition and relocation should be considered along with the financial. Additional information regarding relocation impacts is found in FDM 25-5-30.

10.2.2 Agricultural Impacts

In rural areas, the acquisition of farmland raises a different set of issues. Under Wisconsin statutes (as discussed in FDM 20-20-30), an Agricultural Impact Statement (AIS) must be filed by the Wisconsin Department of Agriculture, Trade and Consumer Protection in cases where concentrations of farmland (over five acres from a single farm operation) are being acquired for transportation projects. (An AIS is optional in cases where one to five acres are being acquired from any single parcel.) The cost of acquisition is one aspect of the economic impacts of a project. The other is the loss of agricultural productivity on any acreage acquired. Both factors

should be considered in the economic analysis of the project.

Economic impacts on agricultural properties can be measured in two ways: by the loss of productivity, and the loss of local property tax revenue. As stated, the Department of Agriculture, Trade and Consumer Protection is charged with preparing AIS's for projects which acquire larger amounts of agricultural land. If available, this information can be used to help determine any economic impacts of a project. It can be generally assumed that if the acreage required for a project is not enough to warrant an AIS, the overall impact on the local economy will be insignificant.

10.2.3 Purchases of Goods and Services

One of the larger construction related impacts on the local economy involves the purchases of goods and services. These include building supplies such as steel and concrete, heavy equipment rental, and other materials used in the construction of the project.

Construction supplies generally constitute 40 to 70 percent of total project construction costs depending upon the type of project. A potential budget for the project should be developed with some indication as to the proportion of the budget which can be assigned to labor versus materials. These costs should be developed in concert with the engineering staff engaged in developing the alternatives which are under study. Following assignment of the proportions of cost to labor and materials, a percentage of costs spent locally must be ascertained. In the case of projects in larger metropolitan areas where plentiful materials and services exist, this can be a fairly high percentage such as 75-80 percent. In more rural areas where goods and services have to be imported, this percentage could be as low as 50 percent or even less. This percentage of local expenditure is an estimate based upon the analyst's best judgement. The purpose is to provide an indicator of the magnitude of the potential economic impact rather than a precise measure. The amount of these purchases should then be evaluated to determine their impact on the local economy.

10.2.4 Construction Related Employment

Construction dollars not spent on the purchase of goods and services are spent on labor. Any construction project will result in the creation of construction jobs. The jobs created exist for the duration of the project only and, in many cases, reflect a shifting of existing construction jobs within a labor market. This is an important aspect of the project and should be included in the analysis. To estimate the number of construction jobs, the proportion of the construction cost assigned to labor, prevailing area wage rates, and the construction period should be ascertained.

Most of these jobs will be in direct construction roles, although some support positions will be needed as well.

10.3 Permanent Employment

Permanent employment can be created, transferred, reduced, or eliminated by a transportation project. Jobs can be created if the project results in the opening or enlargement of a staffed transportation related facility such as a new airport, rail or bus terminal, highway garage, maintenance facility or office. More often, however, jobs are created by private investment around newly created or improved transportation facilities. This type of secondary employment is seen when new development areas are opened up or when access is improved to an area which had been relatively inaccessible. Permanent employment can also be transferred as a result of a transportation project, which may cause the relocation of area businesses to other sites in the general area. Finally, jobs can be eliminated if a plant or business is forced to disband or to move out of the community as a result of a project.

In reviewing the existing job market, several resources can be consulted. One source of general employment data is the U.S. Census which can provide totals of employed, types of employment, and other economic, and demographic information. However, as a project becomes further removed from the census year, or if a project involves an area which does not allow for the efficient use of census tracts for an information base, other state or local sources should be used in addition to census material. Some cities or counties may have employment information which updates the census material. In most cases, the city or county planning departments are responsible for maintaining this data.

The Wisconsin Department of Transportation maintains computer tapes of the Unemployment Compensation (UC) Master File on a yearly basis. The UC file provides employment data by four-digit Standard Industrial Classification (SIC) codes and by minor civil division. The Wisconsin Job Service is also an important source of information. The Job Service monitors county labor figures, determines the number of county residents that are employed and unemployed, and generates a monthly unemployment rate. This agency also develops labor market statistics for the major employment sectors in each Standard Metropolitan Statistical Area (SMSA) and the manufacturing sector is generally broken down to two-digit SIC codes. In addition, each Job Service District Office has a staff labor market analyst who can be of assistance in developing a profile of the existing employment situation. In addition to the District offices, all the information generated by the Wisconsin Job

Service, as well as statewide labor statistics are maintained by the Labor Market Information Bureau of the Wisconsin Department of Industry, Labor and Human Relations and are available for use.

Once a profile of the existing labor market has been developed, the extent of any employment changes caused by the transportation project can be evaluated and an assessment made as to the extent of any impact. If known, estimated permanent jobs should be included. However, it is quite difficult to assess changes to permanent employment in absolute numerical terms and, in the great majority of cases, it is not necessary. An assessment of the impacts to the permanent employment of the area can generally be stated in relative terms. For example, an increase or decrease in employment may be realized due to a change in local or regional access. An area opened up to new commercial or industrial development would probably experience a net increase in permanent employment, while a restriction of access could result in a decrease. The relative magnitude of any increase or decrease could be discussed.

10.4 Regional Multipliers

The impact of an economic action on a region is not limited to the initial expenditures for labor and materials. A dollar spent in the economy is respent a certain number of times before it is finally spent for some good or service outside the region. It is possible to provide some estimate of how many times a dollar is respent locally by applying a gross output multiplier to the cost of a proposed alternative. The multiplier provides an estimate of the total economic activity generated in a region by a construction project. These multipliers have been developed by the Bureau of Economic Analysis (BEA) of the U.S. Department of Commerce.

The application of the multiplier is shown here. If a construction project in the Portage area, for example, is scheduled to cost $10,000,000, an estimate of the total economic activity generated by the project locally would be calculated as follows:

1. construction budget x 80 percent (the estimated amount of that budget to be actually spent in Portage area) = $8,000,000
2. x 2.301 (the gross output multiplier for heavy construction for the economic area in which Portage is located) = $18,408,000 in economic activity

This represents the total amount of economic activity in the region defined by the Bureau of Economic Analysis. In this case, Portage is in an economic area which includes the Wisconsin counties of Dane, Iowa, Columbia, Sauk, Richland, Green Lake, Marquette, Adams and Waushara. Similar districts are outlined for the remainder of the state. Multipliers for each as well as a map showing the boundaries of each district are shown in Attachment 10.1.[1]

The importance given to the effect of the gross output multiplier depends to a great degree on the size and health of the area economy. To use the previous example, $18 million of economic activity has one effect on a community of 1,000 and another on a community of 1,000,000 and the degree of impact should determine the relative importance of this issue.

Users of this manual should note that some problems are inherent in using the gross output multipliers. The last regional figures generated date from 1977 and, although there have not been major shifts in the economy since that item (discounting inflation), some variations may have occurred. Therefore, it is important to remember that use of the gross output multiplier is intended as a level of magnitude indication of regional economic activity and not as an absolute dollar estimate.

Secondly, one problem inherent in the gross output multiplier technique is double-counting. The Bureau of Economic Analysis of the U.S. Department of Commerce, in its 1977 publication "Industry-Specific Gross Output Multipliers for BEA Economic Areas," provides a method for alleviating this problem and may be consulted for guidance, especially in the case of more complex projects requiring a Type I-Environmental Impact Statement. This publication can be consulted in the Planning Analysis and Data Section of the Division of Planning and Budget located in Room 901; Hill Farms Transportation Building in Madison.

10.5 Tax Revenues

The effect of a project on tax revenues, especially local property tax revenues, can be an area of great interest in socio-economic impact analysis. The property tax levy is the most important revenue raising mechanism for local units of government. As such, local governments are interested in proposals which could affect the amount

[1] The multiplier used above is found in a 1977 report by the Bureau of Economic Analysis entitled "Industry-Specific Gross Output Multipliers for BEA Economic Areas." Since publication of that report, modifications have been made to the input-output model used to generate these multipliers, making the factors presented here somewhat out of date. Unfortunately, the latest version of these multipliers has never been published by the Federal government and they are available on a reimbursable basis only. A decision was made, therefore, to include the 1977 figures under the assumption that changes were relatively minor and that the 1977 figures will still provide a reasonable estimate of economic activity.

of revenue generated.

Transportation projects can remove property from the tax roles, thereby reducing the local tax base. A highway construction project can also cause some reduction in property values in areas which will be relatively less accessible after a project is completed. This causes a redistributive effect as the tax burden is shifted among all the remaining properties. The effect of this impact varies with the size of the project, the kinds of properties removed, and the size of the taxing jurisdiction. In other cases, transportation projects can result in increased development opportunities, which will eventually increase the local tax base. In some cases, both conditions may exist at different times over the life of the project, making the ultimate impact on property taxes difficult to quantify.

It is not possible to determine the exact impact of a transportation project on local tax revenues for a series of years into the future following construction. It is, however, possible to identify any long-term expected trends toward loss, gain or no change. Immediate losses in tax revenue due to property acquisition can be calculated, however, and are considered a direct impact of the project. To evaluate the extent of the immediate impact of any transportation project upon local property tax revenues, a profile of the existing situation should be developed using the following types of information:

1. The total amount of property taxes collected in a community, along with the percentage distributed to each of the various taxing jurisdictions participating in the local levy.
2. The current tax rate.
3. The most recent assessments for any properties which may be acquired by the proposed project.
4. The schedule for reassessment of property values and trends in recent assessments (values increasing, decreasing, or stable).
5. An assessment of the general economic health of the community and the extent to which the residents can afford potential tax increases (to cover lost revenue in the project area) or a correspondent decrease in local services.

A number of indicators can be used to develop this profile, including unemployment figures, income data from census materials, average equalized property values for the community on portions of its housing and commercial/industrial vacancy rates, and housing conditions, as well as any other similar socio-economic summary information which may be available for a specific area.

The profile of existing conditions serves as the basis for evaluating future conditions. To assess the immediate impacts of a project on the local property tax levy, it is necessary to calculate the amount of property tax revenue lost minus additional revenue gained by any identified new development. The methodology for these calculations follows:

<u>Step 1: Determine Assessed Valuation</u>
The assessed value for each parcel or partial parcel to be acquired should be determined. This information can generally be obtained from the local assessor. Assessed values of full parcels are generally listed on the community's assessment roll. Partial acquisitions will require that a prorated value be determined. Once again, the local assessor can usually provide assistance.

<u>Step 2: Tax Rate</u>
The most recent property tax rate can be obtained from the city or county treasurer or assessor. It will be on the basis of a dollar amount per thousand dollars of assessed value.

<u>Step 3: Calculate Lost Property Tax Revenue</u>
Multiply the tax rate (Step 2) by the assessed valuation (000's) of properties removed from the tax base by the project or by the assessed projected values of properties expected to be added because of the project; i.e., a new shopping mall, apartment house, etc. (Step 1).

For example, if the assessed value of a property to be removed was $50,000 and the local property tax rate was $24.62, then 50(000) x 24.62 (tax rate/$1,000) = $1,321 in taxes lost.

This amount would be divided proportionately among the several taxing jurisdictions making up the local property tax bill. In Wisconsin, this generally includes the municipality, county, school district, Vocational Technical and Adult Education (VTAE) and sewerage district.

Several resources are available to assist with this analysis. The Wisconsin Department of Revenue has two publications of note. The first is <u>Town, Village and City Taxes</u>. Published biannually, this publication includes information on every municipality in the state, including its population, 100 percent equalized values, local assessment percent of equalized value, Tax Incremental Finance district information, taxes by jurisdiction, tax

credits, and breakdowns by school district when more than one are represented in a municipality. The second publication is Municipal Resources Provided and Expended, which provides information on local budgets as well as taxes.

In addition to the local assessor, the WisDOT Bureau of Real Estate, local elected officials, and local real estate agents can also provide information on local property taxes. This analysis should only be undertaken in cases involving multiple properties in which property data can be aggregated and in which no single property's value or property tax liability can be identified.

10.6 Retail Sales

A transportation project which passes through or changes the access to a commercial property or district could affect retail sales in those areas either during the short-term of the construction period or the longer term following construction. Sales volumes could decrease if access is reduced and businesses removed, or increase if access is improved and development opportunities created.

Changes in retail sales in the vicinity of a transportation project can serve as an indicator of the effect of the project on the local commercial sector. Changes can result from the removal of businesses, a reduction in access to existing businesses, or improved access to an area resulting in increased development potential.

To assess the magnitude of change caused by a project, it is first necessary to develop a profile of the existing situation. For projects affecting single commercial establishments or small commercial districts, it may be difficult to get enough information from interviews with local businessmen, as this information may be considered confidential. However, general comments on the health of a business and the perceived effects of a project on that business may be available and useful in drawing some conclusions on the impacts of a project. For larger areas, it may be advisable to consult the U.S. Census of Wholesale and Retail Trade or County Business Patterns, both Census Bureau publications, or the County Business Statistics gathered by the State of Wisconsin and available in the Division of Planning and Budget Library in Room 901 of the Hill Farms Transportation Building in Madison. Once a profile has been developed, it is possible to compare it with potential changes caused by the transportation project.

The extent of a projected loss in area sales versus the total sales can provide an indication of the impact of a project which removes businesses or restricts access to them. Similarly, a project which opens up new areas for development can yield a projected increase in retail sales.

LIST OF ATTACHMENTS

Attachment 10.1 Gross Output Multipliers

FDM 25-5-15 Public and Private Development Plans

February 15, 1988

Some transportation projects in urban or semi-developed areas may have an impact on specific existing or future development projects which should be reviewed as part of an environmental analysis.

15.1 Indicators of Development Plans

As a result of a transportation project, a parcel of land may become developable or undevelopable. Likewise, developable land may become more or less attractive if access is significantly changed. The potential effect on development can be both short-term during construction and longer term following construction.

An important factor to consider is whether or not potential development parcels exist following completion of a proposed project. If they do, the probability that development of some sort will actually take place on the site should be assessed.

15.2 Data Sources

In reviewing public and private development patterns and assessing any impacts caused by proposed transportation projects, the following sources should be consulted:

1. State officials
2. Regional Planning Commission staffs
3. County planning and zoning officials
4. Local planning and zoning officials
5. Urban transportation plans as mandated under 23 USC 134
6. Local developers and businessmen

15.3 Evaluation Factors

Several factors can be considered and sources consulted to help determine the potential impacts of a project on public and private development potential. The first step is to review the alternatives under consideration to determine whether or not any development opportunities are created or lost. If neither situation occurs, no further analysis is necessary.

If opportunities are lost, it is necessary to determine the extent to which those opportunities were real or simply hoped for. If opportunities are gained, the extent to which local market conditions will allow these opportunities to be fulfilled should be determined. In assessing the development potential of a parcel, it is also important to determine the present or future availability of municipal services and accessibility to and from the parcel after completion of the proposed project.

The FHWA's Technical Advisory T6640.8A suggests that local, county and state officials be consulted on existing development plans for both the public and private sector. It also suggests that an area's Urban Transportation Plan (as per 23 USC 134) be consulted on this issue. It is also recommended that the appropriate Regional Planning Commission (RPC) or local planning department be consulted on development potential. It can also be useful to interview or survey local developers or those familiar with local private sector development regarding the potential for new development in the project area.

If a survey of local business people and developers seems appropriate, one can be conducted by mail, telephone, or by personal interviews. A survey questionnaire may be helpful if a series of interviews with local businessmen or developers is desired. A standard set of questions around which to base the interview will serve to guide the conversations along the same lines and assist in obtaining the most critical information needed in each case. A formal public opinion survey would only be advisable in major projects involving a full Environmental Impact Statement and significant levels of public controversy. It is probably not advisable in the majority of cases. If a survey is to be done, an outside expert, such as those at UW-Madison and UW-Milwaukee might be brought in as a consultant to conduct the survey and analyze the results.

Following the collection of information on public and private development plans, it is necessary to evaluate any effects of the proposed transportation project on them. In the case of lost development potential, it will be necessary to determine how likely the proposed development was and whether or not it could or would be built elsewhere. In the case of gained potential, it will be necessary to determine the likelihood of implementation, a projected timetable, and to make a statement on the probable type of development and the developers, if known.

FDM 25-5-17 Indirect and Cumulative Effects of Projects *April 13, 1998*

Introduction

This document is a summarized, quick-access version, of *Indirect and Cumulative Effects Analysis for Project-Induced Land Development: Technical Reference Guidance Document*. The Technical Reference Guidance Document includes information to meet three purposes:

1. Provide a framework for conducting indirect effects analysis.
2. Provide background and reference information on land use planning, regulation, and the relationship between transportation and land use.
3. Provide more detailed information on specific analysis techniques.

The Guidance Document is available from the Region Environmental Coordinator. This procedure includes guidance pertaining to only the first purpose, the framework. This document is not a complete “how-to” document. It provides information useful for structuring the analysis and for reviewing analysis proposals. Staff responsible for producing analysis conclusions are referred to the Technical Reference Guidance Document.

The intent of this document is to help staff conduct indirect and cumulative effects analysis. *No framework step or analysis technique is to be considered compulsory.*

Environment documents are required to include reasonably foreseeable direct and indirect effects, including changes to land use. Project-induced land development means changes in land use that are a result, in whole or in part, of decisions made about the transportation system. A particular transportation improvement proposal will be only one of many factors contributing to changes in land use. See Attachment 17.1.

The many factors affecting land development and the lack of consistent and predictable transportation influence, makes analyzing the indirect effects of project-induced land development a difficult, complex and far from precise process. No one analytical technique answers all the questions. To complicate the process further, there may be serious disagreement among the interest groups about whether identified potential land use changes

are beneficial or adverse. Therefore, the framework focuses on gathering localized information, using local input and assessing planning and preparedness, instead of producing hard and fast predictions. Land use planning (as in developing a local land use plan) is not an appropriate technique for indirect effects analysis.

Cumulative Effects Analysis

The framework described in this document identifies a project's potential indirect and cumulative effects on land development through one process. It does this by assessing the project's potential to change land development patterns as part of the system of land development present in the project study area. The system approach helps envision the project's effects as they interact with the other factors that affect land use patterns and land development . Although this document often simply refers to "indirect effects," it should be understood that the analysis applies to both indirect and cumulative effects.

Steps

The steps of the analysis framework are listed below and described in Attachment 17.2. The steps are not designed to be done strictly sequentially. Steps 1 and IV need to be started early in the process because they will define the area and issues under scrutiny in Steps II and III. However, the information gathered under II and III may change the initial conclusions of other steps.

I. Define the Project Study Area

II. Analyze the Existing Patterns and Trends for Land Use and Development

III. Analyze the Extent of Land Use Planning and Regulation

IV. Understand the Type of Transportation Project

V. Assess the Potential for Project Induced Land Development

VI. Assess Potential Consequences to the Human Environment

VII. Describe Tools to Manage Land Development

The main goal of Steps I-III is to understand the reasonably foreseeable future land development patterns without the transportation proposal, in other words under the no-build scenario. The main product of Steps IV and V is to understand the reasonably foreseeable future land development patterns with the implementation of project build alternatives.

Applying the Analysis Framework

The analysis framework will aid in assessing the potential for impacts for both Type I and II actions, as defined in FDM 21-5-1. The framework does not dictate that the analysis be any pre-specified scope. For some projects, a few paragraphs of text may adequately address the issues raised in the analysis framework. At the other extreme, studies supplementary to the environmental document may be needed.

Through the internal and external environmental impact scoping process, it needs to be decided how comprehensive an analysis is appropriate to adequately assess a proposed project's indirect and cumulative effects. *It is strongly recommended that the project manager organize an internal meeting early in the process to discuss the appropriate scope of the study. At a minimum, the Region's planning, design, and real estate sections, the FHWA and the bureau of environment's specialist in indirect effects analysis should be present at the meeting.*

For Type I actions, community characteristics indicate when more expansive indirect effects analysis may be needed. Larger communities (greater than 50,000) and/or faster growing counties are two such characteristics. For Type II actions, the screening worksheets (See Chapter 21), provide places to discuss indirect effects.

I. Define the Project Study Area

Definition:

The project study area is the geographic area that may be affected by the transportation project's indirect or cumulative impact on land development.

General Principles:

- The final product of the definition process is a map showing the extent of the project study area.
- The project study area for indirect effects analysis will generally be larger than what is traditionally defined as the area under study for direct impacts.
- It will probably be unnecessary to conduct the same level of detailed analysis throughout the entire project study area

- Agreement or consensus from all agencies on the extent of the project study area early in the analysis process in highly desirable.

Method Options

See Attachment 17.3.

Option 1: Trafficshed

Define the project study area to be the entire area served by the transportation project to reach a major destination.

Option 2: Commutershed

Define the project study area to be the area served by the transportation project for commuting to a major destination. Analysis of travel time and/or existing commuting patterns will establish a commuter threshold.

Option 3: Growth Boundary

Define the study area to be the area expected to develop in the next 20 years.

Option 4: Interview

Define the project study area by asking “experts” what land area may be affected by the project.

Option 5: Combine Project Study Area Definition Methods

Define the project study area by verifying the results of a technical method (such as Options 1-3) with interviews of local experts.

Interchanges and Intersections

Include land within a half-mile radius of interchanges and major intersections.

Matching Project Types to Definition Methods

The type of project will influence which definition method works best. Table 17.1 shows five types of transportation projects and a matrix exploring how the project study area definition methods fit the project types.

- Radial Commuting Route - A project which connects a rural or exurban area to its urban core.
- Small Community Bypass - A project which bypasses a community, primarily to improve intercity travel.
- Urban Project - A project contained entirely within the urban service area designated for sewer service or within the MPO 20-year growth boundary.
- Rural Major Arterial - A project which improves a rural intercity route, primarily to promote intercity travel.
- Tourism Destination - A rural or small community project, designed primarily to move tourists into (and out of) a major tourist destination.

Table 17.1 Matching Project Type and Project Study Area Definition Methods

Area Definition Method	Project Type				
	radial communting route	small community bypass	urban project	rural major arterial	tourism destination
interview	**YES**	**YES**	**YES**	**YES**	**YES**
trafficshed	MAYBE	UNLIKELY	MAYBE	UNLIKELY	MAYBE
commutershed	**YES**	UNLIKELY	NO	NO	NO
growth boundary	NO	MAYBE	MAYBE	NO	MAYBE

II. Analyze the Existing Patterns and Trends

For most projects, the analysis will need to distinguish between developed areas and agricultural/rural areas and to identify areas of natural resource interest.

Types of land use include:

1. Industrial

2. Residential
3. Commercial/Retail
4. Highway service facilities
5. Central business district
6. Institutional
7. Sewer service areas and other utilities
8. Transportation infrastructure
9. Parks and open space
10. Agricultural
11. Areas of natural resource interest
12. Areas of cultural resource interest

Trends

For most projects, the analysis will need to include the past and projected future population growth by county, city, village, and/or town in the project study area.

Example questions and techniques to assist conducting more detailed analysis of land use patterns and trends are included in the Technical Reference Guidance Document.

III. Analyze the Extent of Land Use Planning and Regulation

Plans

Types of land use plans

- Private
- Local
- County
- Regional
- State
- Comprehensive
- Small area plans
- Land use type specific plans

Inventory Relevant Land Use Plans

Any local or regional plan that is related to land development in the project study area may be relevant to this section. Plans not traditionally thought of as land use plans, such as area wide transportation plans may also be important. The inventory should include new or ongoing planning efforts.

Regulations

Types of Regulations

- Land Use Management
- Zoning Ordinances
- Subdivision/Plat Review
- Official Mapping

Infrastructure Management

- Sewer/water service
- Septic systems
- Access management

Natural Resource Management

- Public or private ownership
- Conservation easements

Regulations in the Entire Project Study Area

For each county, city, village, or town in the project study area:

- Does it have a general zoning ordinance?
- Does it have land regulations designed to preserve agricultural or open space land uses?

Example techniques to conduct a more detailed analysis of plans and regulations are included in the *Technical Reference Guidance Document*.

Implementation of Plans

- Is the project study area consistently covered by up-to-date land use plans?
- Do the plans have regulations implementing them?

Describe the reasonably foreseeable future land development pattern without the proposed transportation improvement.

IV. Understand the Type of Transportation Project

Project design characteristics that might affect future land use decisions are the same characteristics that are of interest to present land users.

Location

- Existing alignment
- New alignment
- Bypass alternatives
- Interchange/intersection

Access Management

- Full access control (grade separated interchanges)
- Partial access control (at grade intersections)
- Frontage roads/internal streets
- Limited or purchased access rights
- Restricted use (e.g. field access)
- No access control

Capacity

- Additional traffic lanes
- HOV lanes
- Additional modes:
    - Bicycle lanes
    - Bus lanes
    - Bicycle routes
    - Sidewalks
    - Pedestrian over/under pass
    - Rail

Travel Patterns

- Changes in traffic volumes
- Changes in traffic mix

Traffic Control

- Divided highway
- Raised median:
    - Cross street, with or without median openings
    - Driveway, with or without median openings
- Interchange configuration
- Traffic signals
    - Left, right turn signals
- Stop signs

- Left/right turn lanes
- Continuous left turn lanes

Other

- On-street parking
- Shoulders
- Noise barriers
- Landscaping
- Traveler accommodations/amenities
- View of and from the facility
- Drainage features

V. Assess the Potential for Project Induced Land Development

Step 1

Utilize any indirect effects analysis done for the project as part of a regional or MPO transportation plan.

Step 2

Identify any existing land development proposals that are dependent upon the implementation of a specific transportation alternative.

Step 3

Design an analysis approach for the project alternatives under review. The approach should have two components:

"Expert" Evaluation

- "Expert" here refers to the analyst(s) who will gather the information and make initial findings.
- Use background data collected in II, III, and IV.
- Get outside help if needed.

The ideal analyst would be someone familiar with environment impact analysis procedures, the theoretical and experiential relationship between transportation infrastructure and land use, and the land development trends and institutions in Wisconsin. Use land use professionals from consultants or public agencies to compensate for any gaps in knowledge on the part of in-house staff.

Involve Public Expertise

- Use a resource for the "expert" evaluation.
- Develop consensus around analysis methodologies.
- Document differences of opinion about analysis conclusions.

Table 17.2 Examples of Alternative Analysis Design

Example 1	Example 2
Evaluation Evaluate growth trends and comment on the effect of the transportation project as compared to other land use change inducing trends. Public Involvement Ask local/county/regional land use professionals to review. Present analysis to an advisory committee made up of local experts or officials.	Evaluation Develop projected land development scenarios, according to the effects of highway corridor alternatives. Public Involvement Interview local land use professionals and/or officials for their input on potential effects.

Example 3	Example 4
Evaluation Produce an initial "professional judgment" of the effects of the transportation project on land use. Public Involvement Form a public task force made up of local and/or outside "experts" to react to and adjust the analysis.	Evaluation Gather background information. Public Involvement Use expert survey techniques to analyze the impacts of the transportation project on land use.

Step 4

Use Steps 1-3 to produce a description of the project alternatives' potential impact on the developed areas, agricultural/rural areas, and areas of natural resource interest. At a minimum ask:

- Is there an effect?
- Can the magnitude of the effect be estimated?

Questions to assist more detailed analysis of the twelve land use types are included in the *Technical Reference Guidance Document*.

Step 5

Assess whether the effects described above are compatible with adopted land use plans. Are the communities prepared, in terms of planning and regulation, for the effects?

VI. Assess the Potential Consequences to the Human Environment

Location and Type of Development Known

Analyze the environmental impacts of the development.

Location of Development Unknown

Provide general descriptions of the types of environmental impacts that are associated with the identified pattern of induced development: Urbanization? Suburbanization? Recreational/Tourism Development? Rural Residential?

VII. Describe Tools to Manage Land Development

Identify Potential Land Use Management Tools

NEPA requires that, for projects with a significant impact, the environmental document identify all relevant mitigation measures that could improve the project. Mitigation measures that are outside the jurisdiction of the lead agency or the cooperating agencies are also to be included. Categories of land use management tools:

- Transportation Facility Design and Access Management
- Planning
- Regulation
- Education

The environmental document should include any actions WisDOT is taking to improve the project, and thereby lessen its indirect effects. Actions include coordinating with local governments and landowners, incorporating design features to serve or better accommodate existing and /or planned land uses, and providing access management.

Match the Tools With Key Issues and Potential Consequences

The discussion of potential consequences, developed in Step VI, will provide a framework for matching tools to key issues and indirect effects.

Identify Who Has Control Over the Indirect Effects and the Authority or Jurisdiction to Exercise the Tools

- Local Government
- County/Regional Government
- State Government
- Federal Government

- Private Sector

Analyze the Likelihood That the Tools Will Be Implemented

LIST OF ATTACHMENTS

Attachment 17.1	Transportation's Role in Land Use
Attachment 17.2	Secondary & Cumulative Effects Analysis for Project-Induced Development
Attachment 17.3	Option Examples

FDM 25-5-18 Economic Development Effects of Projects

January 11, 1999

18.1 Introduction

This procedure provides a method for evaluating how a project affects an area's existing economic development and its potential for economic development. If the evaluation reveals that there are likely to be significant effects to either the existing or potential economic development, it is strongly recommended that a consultant be hired. The consultant should be familiar with the evaluation of project-level indirect and cumulative effects and understand how those effects influence the actual and potential economic development of an area.

This procedure provides a suggested framework for evaluating an area's existing and potential economic development. These evaluations are difficult to conduct and they are affected by a combination of complex factors and conditions, only one of which is transportation. Consequently, there is no single method that will provide unequivocal results. Because of this, the following procedure borrows heavily from FDM 25-5-17. Extensive use of studies developed for the State Highway Plan have also been adopted to help the investigator determine whether economic development issues may need additional consideration in an EIS.

18.2 Preliminary Evaluation

The first step is to review the alternatives under consideration to see whether it is likely that any development opportunities would be created or lost. If it appears that economic development opportunities are neither created nor lost, no further analysis is necessary. The reasoning leading to this conclusion should be included in the Environmental Impact Statement (EIS).

If indications are that opportunities would be lost, it is necessary to understand the extent to which those opportunities were real or simply hoped for. Similarly, if the indication is that opportunities would be gained, the extent to which local market conditions will allow these opportunities to be fulfilled should be anticipated. In assessing the development potential of a parcel, it is also important to foresee the availability of municipal services and accessibility to and from the parcel after completion of the proposed project.

The FHWA's Technical Advisory T6640.8A [1] suggests that local, county and state officials be consulted on existing development plans for both the public and private sector. Furthermore, an area's Urban Transportation Plan should be reviewed on this issue. It is also recommended that the appropriate Regional Planning Commission (RPC) Metropolitan Planning Organization (MPO) or local planning department be consulted on existing economic development and the area's economic development potential. It can also be useful to survey local developers or those familiar with local private sector development regarding the potential for new development in the project area.

If a survey of local business people and developers seems appropriate, one may be conducted by mail, telephone, or by personal interviews. A survey questionnaire may be helpful if a series of interviews with local business people or developers is desired. A standard set of questions around which to base the interview will serve to guide the conversations along the same lines and assist in obtaining the most critical information needed in each case. A formal public opinion survey would be advisable only for major projects documented with an Environmental Impact Statement (EIS). Moreover, formal surveys should only be used if there are significant environmental, social or economic effects or high levels of public controversy. It is not advisable in the majority of cases. If a formal public opinion survey is to be done, an outside expert, might be brought in as a consultant to develop, conduct and analyze the results of the survey.

Following the collection of information on public and private development plans, it is necessary to evaluate any effects the proposed transportation project may have on them. In the case of lost development potential, it will be necessary to determine the likelihood of its development and whether or not it could be built elsewhere. In the case of gained potential, it will be necessary to establish its probability of implementation and show a projected timetable. The likely type of development and the developers, if known or anticipated, should be indicated in the EIS whenever possible.

18.3 Evaluation of Economic Development Issues

The text on economic effects in an EIS should focus on project-related changes to both existing economic development and to the potential for economic development of the area. These changes are often directly related to changes in land use. A transportation improvement project may generate effects that either encourage or discourage economic development in an area. The project may generate these effects either directly or indirectly and may cause them to happen at different times throughout the life of the improvement.

The major project activities that may affect economic development are:

- Design
- Real Estate Acquisition
- Construction
- Operations

The economic development issues that may be affected by an improvement include:

- Land Use or Development Potential
- Employment
- Tax Revenues
- Sales and Services

18.4 Design

Highway design affects economic development because it may change an area's development potential. Land use and development potential are intertwined and both are influenced by the design of a proposed highway. See Attachment 18.1. For example, if the planned land use is agricultural but the potential for development is high due to the presence of other infrastructure (e.g. electric power, sewer, water) and the area's economy is healthy, then a roadway improvement may alter planned land use to accommodate the area's economic development. On the other hand, if the land use is commercial and the infrastructure is present but the area's economy is stagnant, then a major transportation improvement may not enhance the potential for development. The likelihood that either situation will occur is what the highway designer must consider.

The design of a highway addresses a number issues, one of them being the area's existing and anticipated economy. Designers must be sensitive to issues regarding an area's economic development potential when evaluating their projects. For example, less intensive projects often require consideration of economic effects in a linear fashion based on existing trends. For projects acquiring substantial amounts of right-of-way, or important right-of-way, designers must determine if other conditions exist or may soon exist that advance or retard an area's economic development potential. However, before a project's effects may be evaluated, it is necessary to understand what may be affected.

18.4.1 Economic Data Sources

A number of sources of economic information exist. Those that reflect the project area should be used. While much can be obtained from census documents, other sources should be used as well. The publication "The Economic Importance of the State Trunk Highway Transportation System" provides some of the latest findings on Wisconsin highway specific information. This report is available from the Economic Planning and Development Section, Bureau of Planning, Division of Transportation Investment Management (DTIM). This document was prepared for the State Highway Plan in August of 1997. The Bureau of Planning also has summary information on each transportation Region, including a list of high profile companies and manufacturers.

Sources of economic data are widely available in hard copy or on the Internet. Internet sites that will lead you to economic data include:

- http://www.fedstats.gov/
- http://badger.state.wi.us/

In rural communities, agricultural statistics are appropriate, and in urban or industrial areas, labor statistics reveal much about the current economy. A wealth of economic statistics is generated each year by federal, state, and local governmental agencies. Most of the agencies will provide their statistics upon request. The DTIM library located at the Hill Farms State Transportation Building (HFSTB) in Madison also contains many statistical sources.

The U.S. Bureau of the Census conducts several special censuses designed to provide economic information. These are consolidated under the Economic Census Series. A CD-ROM of this information is kept by DTIM's Economic Planning and Development Section.

The Wisconsin Department of Workforce Development maintains unemployment information by state, county, and city for communities with more than 50,000 population. The Wisconsin Department of Commerce maintains business development information. This information can be of great use in determining the employment effects of a proposed project on an area.

Another useful source of economic data available in certain communities is the Overall Economic Development Plan. This plan is mandated by the U.S. Department of Housing and Urban Development is available in those communities participating in the entitlement portion of the Community Development Block Grant program and can provide good base information on local economic conditions.

Finally, there could be several local sources of economic data in a community. The municipality, MPO, county, or RPC may have developed its own set of economic data that can be used as part of the environmental analysis. See FDM 5-1-5 for a list of RPCs and MPOs in Wisconsin.

18.4.2 Indicators Of Development Potential

A transportation project may make a parcel of land more or less desirable for development. Likewise, developable land may become more or less attractive if access or visibility is significantly changed. The potential effect on development can be short-term prior to and during construction and long term following construction.

An important indicator to consider is whether parcels with a high potential for development, e.g., parcels with in-place infrastructure in an area with a vibrant economy, will exist following completion of a proposed project. If they do, the probability that development of some sort will actually take place on the site should be assessed. Factors that may influence the probability of development include taxes, interest rates, labor pool and others. Local real estate brokers or developers, financial institutions, planners, economic development agencies or a Region's real estate staff, may provide useful information.

18.4.3 Other Sources of Data

In reviewing public and private development patterns and assessing any effects caused by proposed transportation projects, the following sources should be consulted:

1. State Officials
2. Regional Planning Commission staffs
3. County planning and zoning officials
4. Local planning and zoning officials
5. Urban transportation plans as mandated under 23 USC 134
6. Local developers and business organizations

18.4.4 Land Use/Economic Development Analysis Methods

The analysis of effects on an area's economic development potential should be incorporated into the consideration of land use effects. The analysis must first focus on current trends and conditions and how they would change over the life of the project. Coupled with this should be a consideration of whether the level of improvement that is being proposed is likely to alter the conditions away from existing trends.

A more detailed analysis of plans should substantially follow that shown below. The more detailed analysis should be reserved for those projects that will generate substantial changes to the areas affected. These are most often the right-of-way acquisition and construction intensive projects.

1. Define the Project Study Area - In general the more right-of-way acquisition or construction, the larger the study area . See FDM 25-5 Attachment 17.3. The area immediately adjacent to the project is almost always affected by projects that rehabilitate an existing roadway. Projects on new location or where a transportation facility's capacity is greatly enhanced may affect the economy beyond where the project is located.
2. Analyze Trends and Patterns of Existing Land Use and Economic Development - The past is often prologue and existing trends may be reasonably considered over the design life of a project. This linear projection has a higher degree of confidence when no major changes are made to an area's infrastructure. The more real estate acquisition or construction on a project, the greater the likelihood that new trends will develop. Therefore, more investigation may be required to determine how a larger project is likely to alter conditions from the linear projection of existing trends. See Attachment 18.2.
3. Analyze the Extent of Land Use Planning and Regulation - Land use plans are the record of decisions about how people and local units of government want their area to develop. The regulations governing land use and economic development are the "ground rules" that have been established to assure the

work of land use planning is consistently done. It is important to consider whether any plan is relevant to actual development; it should be recognized that often there is no connection. Another important point to consider and clarify is whether the established plans and goals have been incorporated into the area's zoning. See Attachment 18.3.

It is important to inventory all local or regional plans for the area affected by or affecting the project. Again, the larger the project the larger the probability that more plans will need to be considered. It is also important to note the absence of plans for any local or regional area or if conflicts exist between plans from adjacent communities or overlapping governmental units such as sewerage districts.

The next step is to review the plans for their latest adoption date, statements about the proposed project, if any, and statements about future land use or economic development. The plans should also be reviewed to see how often they have been updated. Other plans, such as transportation plans should also be reviewed for the same characteristics.

4. Relate the Highway Project to Other Issues - Designers are increasingly being asked to balance the purpose and need for a project with environmental, social, and economic issues as well as the traditional transportation related issues, e.g., safety and capacity. Consequently, before an environmentally sensitive design may be developed, these issues need to be analyzed and the project's effects on them evaluated. This is necessary because the issues that affect design, also affect the surrounding land use and economic development potential. See Attachment 18.1.

5. Describe Project Induced Land and Economic Development - Induced changes are those that are inspired, swayed or influenced by the project. They are not always obvious nor are they inevitable. They may also occur beyond the immediate study corridor or community, but the more remote they are in time and distance from the proposal, the less likely they will be detectable or connectable to the project using current techniques. Therefore it is recommended that the study be confined to the project corridor and the area immediately around it. Induced changes to an area's economic development potential may be evaluated using a method similar to that used to determine induced land use changes. For more information see FDM 25-5-17, Item V, "Assess the Potential for Project- Induced Land Development."

   This step should include a review of economic and land use analyses done by others, a review of existing development related proposals, and the development of an analysis approach. The analysis approach should include both Expert Evaluation and Public Involvement mentioned in FDM 25-5-17, Item V.

6. Assess Potential Consequences to the Quality of the Human Environment - This step is the reporting phase of the investigation. The changes from the linear projection of land use and economic development potentialities caused by the project are identified and reported. The effects of the proposal are often characterized as an acceleration or deceleration of existing trends, but the designer must also recognize any wholly new trends related to the project. For example, a project creating access to new land may add to the conditions needed to change it from one use to another, e.g., from open space to commercial. See Attachment 18.4 for more guidance.

7. Identify Tools to Manage Land/Economic Development - Once effects have been identified and evaluated, it is necessary to determine which land use or economic development tools are needed to mitigate adverse effects or enhance beneficial effects. See Attachment 18.5. Before tools can be used, however, it is necessary to review the first 6 steps of this evaluation to determine what type of land use or level of economic development is planned. It is also necessary to identify who has the authority to use a given tool and whether they intend to use it and to what degree.

Steps 6 and 7 above are summarized and included in the project's EIS.

18.4.5 Bypass Considerations

If an alternative calls for bypassing a community or a commercial/industrial area, the designer must consider the potential economic effects to the area being bypassed and the potential economic development effects to the area where the bypass would be located. Designers should review "The Economic Impacts of Highway Bypasses On Communities" by WisDOT's Economic Planning & Development Section. The major findings of this study are:

1. Bypasses have little adverse impact on overall economic activity in most communities, although smaller communities have the greatest potential for adverse impacts due to large traffic diversion to the bypass.

2. Medium and large-sized communities continue to have high traffic volumes on their original routes,

indicating their ability to serve as "destinations."

3. Very little "retail flight" has occurred in communities with bypasses.
4. Most communities view their bypasses as beneficial, while understanding the changes and challenges which must be addressed proactively.

In addition to the above report, the State Highway Plan also developed a process for determining the bypass selection policy. The process is divided into three phases, only two of which are pertinent for this procedure. These two help identify the effects that may be created by a project alternative that bypasses a community. This process should be used prudently and only where a bypass alternative must be considered throughout an environmental document. If it is determined that a bypass would not be built, the alternative should be dropped from further consideration and the environmental document should explain why it was dropped.

The process is divided into 3 phases.

- Phase I - Benefit/Cost Analysis (quantitative)
- Phase II - Community Impact Assessment (qualitative)
- Phase III - Environmental Screening Assessment (qualitative) (Phase III is redundant for purposes of this procedure because it attempts to emulate environmental studies that are part of the environmental documentation.)

Phase I

The benefit/cost analysis is intentionally narrow in scope to focus only on changes in travel times, fuel consumption, and vehicle crashes as they relate to the differences to construct and maintain a bypass facility versus the existing facility. Other factors were not included because of the inherent uncertainty of their applicability across-the-board for all potential bypasses. That is, the analysis is intended to be simple and provide a relative indicator of the differences in vehicle operation, construction, and maintenance costs between the existing route and the bypass route. The Benefit/Cost Analysis is given a weight of 20, resulting in the maximum score assigned to Phase I of 100 points. See Attachment 18.6 for more information on this phase and scoring.

Phase II

The community impact assessment considers seven qualitative factors that are important in the bypass decision-making process. These factors are:

1. Projected traffic congestion levels on the existing facility.
2. Reduction in trucks on the existing facility.
3. Reduction in "bypassable" auto traffic on the existing facility.
4. Community population.
5. Percent of county-wide retail trade within the specific community.
6. Population growth trends (percent growth compared to the average state-wide growth).
7. The existence of the bypass facility along WisDOT's Corridors 2020 Multilane Connector system.

Values for each of the seven factors rage from 0.5 to 5. Each individual factor is weighted differently within the Phase II analysis (ranging from 1 to 4 points) A maximum score of 100 points is possible within Phase II. See Attachment 18.7 for more information on this phase and scoring.

The point scores of both phases are summed and the alternative with the highest Bypass Evaluation score is considered the best choice. This does not mean that other reasonable alternatives may be summarily dismissed based solely on their Bypass Evaluation score. It will still be necessary to consider other detailed environmental, social and economic factors for a project. It should be remembered that the original purpose of the Bypass Methodology was to evaluate the potential to bypass a community at a system-plan level, consequently, at the project-level, all reasonable alternatives that satisfactorily address the purpose and need for the project must be fully considered, notwithstanding their Bypass Evaluation score.

18.5 Real Estate Acquisition

Property acquisition can be one of the most controversial aspects of a transportation project. The expenditure of public funds for acquisition of property and the relocation of residents, community facilities (e.g. schools, churches, parks, etc.).businesses or industries has an economic effect on the project area. Removal of residences results in a shift in location for the resident although this most often occurs within the same community. The resulting disruption to the economic structure of the community overall is likely minimal, but

locally, in the old neighborhood, it might be more important.

The acquisition of businesses to make way for a project could result in similar effects within a community, again with minimal overall economic disruption to the community as a whole, but more important in the neighborhood. For example economic effects would be greater if a business or industry moves from an area where its employees walk to their work to a new area on the outskirts of the same community where its employees need to drive or use public transit. It is therefore important to distinguish who benefits and who does not.

The most severe economic development effect occurs when a business closes or relocates outside of the community, resulting in a loss of jobs and economic activity. That may have long-lasting and far-reaching economic effects upon the community. It should be remembered that when a business relocates it may be a benefit to another community. This too should be considered and, if found to occur, it should be reported. The question of potential relocatees must be fully considered by investigating the people, businesses or industries that are likely to be dislocated by the project. This can be done through face-to-face conversations with the affected parties or through interviews with local planning organizations or with the WisDOT Region real estate staff.

The acquisition of property can also become as much an emotional issue as an economic one for both residents and businesses. Depending upon the features of an individual project, the more subjective social concerns stemming from acquisition and relocation should be considered along with the financial. Additional information regarding relocation effects is found in FDM 25-5-30.

18.5.1 Agricultural Real Estate

In rural areas, the acquisition of farmland raises a different set of issues. Under Wisconsin statutes (see FDM 20-20-30), an Agricultural Impact Statement (AIS) must be prepared by the Wisconsin Department of Agriculture, Trade and Consumer Protection (DATCP) in cases where over five acres are being acquired from a single farm operation. An AIS is optional in cases where one to five acres are being acquired from any single farm. Information concerning farm operations in the EIS must be obtained from DATCP or the AIS if it is completed in time for inclusion in the Draft EIS.

Economic effects on agricultural properties is generally measured in two ways: 1) By the loss of productivity, and 2) The loss of local property tax revenue. It can be generally assumed that if the acreage required for a project is not enough to warrant an AIS, the overall effect on the local agricultural economy will be insignificant.

18.6 Construction Related Effects

Construction activities might affect an area's economic development positively or negatively. During construction the immediate project area is often difficult to reach and the area's economic development may be inhibited for the duration of the project's construction. This is usually a short-lived phenomenon, but because of external factors, such as changes in interest rates, it may alter what is developed and when that development takes place. Also during construction, the influx of government expenditures for the project may stimulate the economy through the acquisition of property, the purchase of local goods and services, and the creation of construction related jobs. This too is often of a short-lived nature because upon completion of the project, the government ceases to expend the funds.

One evaluation of general construction related effects involves estimates of the number of dollars currently being generated in the local economy and comparing it to an estimate of the dollars generated by the purchase of goods and services added because of the project. These include building supplies such as steel and concrete, heavy equipment rental, and other materials used in the construction of the project as well as the hiring of local workers.

Construction supplies generally constitute 40 to 70 percent of total project construction costs depending upon the type of project. To determine the potential effect on an area's economic development the budget for the project should be evaluated with a view to understanding the proportion of the budget that can be assigned to local labor and materials versus those that will likely be purchased from other places. These costs should be developed in concert with the engineering staff engaged in developing the alternatives that are under study. Following assignment of the proportions of cost to labor and materials, a percentage of costs spent locally must be ascertained.

In the case of projects in larger metropolitan areas where plentiful materials and services exist, this can be a fairly high percentage such as 75-80 percent. In more rural areas where goods and services have to be imported, this percentage could be as low as 50 percent or even less. This percentage of local expenditure is an estimate based upon the analyst's best judgment. The purpose is to provide an indicator of the magnitude of the potential economic effect rather than a precise measure. The amount of these purchases should then be evaluated to determine their effect on the local economy.

Construction jobs exist for the duration of the project. In many cases, construction jobs rather than requiring new workers to enter the labor force it merely reflect a shift of existing construction workers within a labor market from one construction job to another. This is an important aspect of the project and should be included in the analysis.

To estimate the number of construction jobs, the proportion of the construction cost assigned to labor, prevailing area wage rates, and the construction period should be ascertained.

Most of these jobs will be in direct construction roles, although some support positions will be needed as well.

18.7 Operations

Operations includes all the activities that occur after design, real estate acquisition and construction have been completed. Maintenance activities sustain the physical and operational characteristics of the improvement for the remainder of its design life. They may also sustain any effects resulting from the three previous major project activities.

18.7.1 Employment

Permanent jobs can be created if the project results in the opening or enlargement of a staffed transportation related facility such as a new airport, rail or bus terminal, highway garage, maintenance facility or office. More often, however, jobs are created by private investment around newly created or improved transportation facilities. This type of secondary employment is seen when new development areas are opened up or when access is improved to an area that had been relatively inaccessible. Permanent employment can also be transferred as a result of a transportation project that causes the relocation of businesses to other locations in the general area. Finally, jobs can be eliminated if a business is forced to disband or to move out of the community as a result of a project.

The project's effect on permanent employment can be estimated by analyzing the changes brought about by the project. These are the changes from the linear projections mentioned in the section on the Land Use/ Economic Development Analysis Methods. If the anticipated changes show that an area will gain or lose businesses, then the changes in employment may also be estimated. However, it is quite difficult to assess changes to permanent employment in absolute numerical terms and, in most cases, it is not necessary. Instead an assessment of the effects to the permanent employment of the area can generally be stated in relative terms. For example, an increase or decrease in employment may be realized due to a change in local or regional access. An area opened up to new commercial or industrial development would probably experience a net increase in permanent employment, while a restriction of access could result in a decrease. The relative magnitude of any increase or decrease could be discussed.

18.7.2 Tax Revenues

The property tax levy is the most important revenue raising mechanism for local units of government. As such, local governments are interested in proposals that could affect the amount of revenue generated.

Transportation projects can remove property from the tax roles, thereby reducing the local tax base. A highway construction project can also cause some reduction in property values in areas which will be relatively less accessible after a project is completed. This causes a redistributive effect as the tax burden is shifted among all the remaining properties. This effect varies with the size of the project, the kinds of properties removed, and the size of the taxing jurisdiction. In other cases, transportation projects can result in increased development opportunities, which will eventually increase the local tax base. In some cases, both conditions may exist at different times over the life of the project, making the ultimate effect on property taxes difficult to quantify.

It is not possible to determine the exact effect of a transportation project on local tax revenues for a series of years into the future following construction. It is possible, however, to identify some long-term trends toward loss, gain or no change. Immediate losses in tax revenue due to property acquisition can be calculated and are considered a direct effect of the project. To evaluate the extent of the immediate effect of any transportation project upon local property tax revenues, the existing situation should be reviewed using the following types of information:

1. The total amount of property taxes collected in a community, along with the percentage distributed to each of the various taxing jurisdictions participating in the local levy.
2. The current tax rate.
3. The most recent assessments for any properties which may be acquired by the proposed project.
4. The schedule for reassessment of property values and trends in recent assessments (values increasing, decreasing, or stable).

5. An assessment of the general economic health of the community and the extent to which the residents can afford potential tax increases (to cover lost revenue in the project area) or a corresponding decrease in local services.

A number of indicators can be used to more fully understand current conditions, these include but are not limited to:

1. Unemployment figures,
2. Income data,
3. Average equalized property values for the community,
4. Commercial/industrial vacancy rates, and
5. Housing conditions

To assess the immediate effects of a project on the local property tax levy, it is necessary to calculate the amount of property tax revenue lost minus additional revenue gained by any identified new development. The procedure for these calculations follows:

Step 1: Determine Assessed Valuation

The assessed value for each parcel or partial parcel to be acquired should be determined. This information can generally be obtained from the local assessor. Assessed values of full parcels are generally listed on the community's assessment roll. Partial acquisitions will require that a prorated value be determined. Once again, the local assessor can usually provide assistance.

Step 2: Obtain Tax Rate

The most recent property tax rate can be obtained from the city or county treasurer or assessor. It will be on the basis of a dollar amount per thousand dollars of assessed value.

Step 3: Calculate Lost/Gained Property Tax Revenue

Use the following formula to calculate the change in property tax revenues.

$$\Delta T = \frac{(V_A - V_B) \times r}{1000}$$

Where:

ΔT =	the change in property tax revenues for a given parcel
V_B =	the assessed value of the parcel before the project is built (from step 1)
V_A =	the projected assessed value of the parcel after the project is built (from step 1)
r =	the property tax rate per $1000 of assessed value (from step 2)

If a parcel is to be completely removed from the tax roles then $V_A = 0$. If a parcel is to be added to the tax roles then $V_B = 0$.

This calculation should be made for each parcel that will be removed from the tax base (in whole or in part) as well as for each parcel that is added to the tax base or whose value increases as a result of the transportation project. The estimated net change in property tax revenue for a community will be the algebraic sum of all the gains and losses calculated above.

It should be noted that the local units of government set the property tax rate and determine the assessments. If property is lost, the property tax rate may go up or the existing properties may be assessed at a higher value. If new developments occur, the opposite may also happen.

For example, if the assessed value of a property to be removed is $51,000 and the local property tax rate is $24.62 per thousand, then:

$$\frac{51000 \quad x \quad \$24.62}{1000} = \quad \$1255.62$$

in net assessments lost. Conversely if the projected assessed value of a property to be added to the project area's tax base is $87,500 and the local property tax rate is $24.62 per thousand, then

$$\frac{87{,}500 \quad x \quad \$24.62}{1000} = \$2{,}154.25$$

in net assessments gained. If both were to occur the net change in assessments would be

$ 2154.24

- $ 1255.62

$ 898.62

or a net gain of $898.62.

This amount would be divided proportionately among the several taxing jurisdictions making up the local property tax bill. In Wisconsin, this generally includes the municipality, county, school district, Vocational Technical and Adult Education (VTAE) and sewerage district.

Several resources are available to assist with this analysis. The Wisconsin Department of Revenue, Bureau of Local Financial Assistance currently has two publications of note available only in hard copy. The first is Town, Village and City Taxes. Published biannually, this publication includes information on every municipality in the state, including its population, 100 percent equalized values, local assessment percent of equalized value, Tax Incremental Finance district information, taxes by jurisdiction, tax credits, and breakdowns by school district when more than one is represented in a municipality. The second publication is Municipal Resources Provided and Expended, which provides information on local budgets as well as taxes.

In addition to the local assessor, the WisDOT Bureau of Real Estate, local elected officials, and local real estate agents can also provide information on local property taxes. To maintain privacy, this analysis should be undertaken only in cases involving multiple properties in which property data can be aggregated and in which no single property's value or property tax liability can be identified.

18.8 Sales and Services

A transportation project that passes through or changes the access to a commercial property or district could affect sales and services in those areas either during the short-term of the construction period or the longer term following construction. Sales volumes could decrease if access is reduced and businesses removed, or increase if access is improved and development opportunities are created. The ability to provide service may be similarly affected because of the changes in access and accessibility

Changes in sales and services in the vicinity of a transportation project can serve as an indicator of the effect of the project on the local commercial sector. Changes can result from the removal of businesses, a reduction in access to existing businesses, or improved access to an area resulting in increased development potential.

To assess the magnitude of change caused by a project, it is first necessary to understand the existing situation. For projects affecting single commercial establishments or small commercial districts, it may be difficult to get enough information from interviews with local business people, as this information may be considered confidential. However, general comments on the health of a business and the perceived effects of a project on that business may be available and useful in drawing some conclusions on the effects of a project. For larger areas, it may be advisable to consult the U.S. Census of Wholesale and Retail Trade or County Business Patterns, both Census Bureau publications, or the County Business Statistics gathered by the State of Wisconsin's Department of Commerce. Once it is understood what is currently happening in an area it is necessary to compare it with potential changes caused by the transportation project.

18.9 References

[1] FHWA Technical Advisory t6640.8A, Guidance for preparing and processing Environmental and Section 4(f) Documents. Available on the internet at http://www.fhwa.dot.gov/legsregs/directives/techadvs/t664008a.htm

LIST OF ATTACHMENTS

Attachment 18.1	Highway Design Issues That May Affect Land Use Decisions
Attachment 18.2	DM 25-5 Attachment 18.2 Trends and Patterns of Existing Land Use and Development
Attachment 18.3	DM 25-5 Attachment 18.3 Extent of Land Use Planning and Regulation
Attachment 18.4	DM 25-5 Attachment 18.4 Assess potential Consequences to the Human Environment
Attachment 18.5	DM 25-5 Attachment 18.5 Tools to Manage Land Development

Attachment 18.6	DM 25-5 Attachment 18.6 Methodology Overview
Attachment 18.7	DM 25-5 Attachment 18.7 Phase II Screening: Qualitative Community Impact Assessment

FDM 25-5-20 Business District Impacts

February 15, 1988

This subject area is limited to the evaluation of the potential effects of a proposed transportation project on existing business districts. These can include downtowns, shopping centers and malls, strip commercial districts, and smaller neighborhood commercial areas. This differs from the previous subject in that it deals with existing business areas rather than potential development. It also includes many of the same factors discussed under Subject 10 - Regional Economic Impacts, as specifically applied to business districts.

20.1 Indicators of Business District Impacts

Impacts on existing business districts can be either negative or positive and of short or long duration. Negative impacts can range from the acquisition of a business or businesses, and subsequent demolition, to a loss of vehicular or pedestrian access. It can also include temporary or permanent losses in business volume. Positive impacts generally provide better access or open up new parking or development areas within a business district with a corresponding increase in business volumes. Short-term impacts are related to construction activities and are temporary in nature. Long-term impacts are generally permanent or extend past the immediate future. Any of these conditions can exist alone or in combination with one or more of the others.

20.2 Evaluation Factors

The impacts of a proposed project on local business districts should be evaluated in essentially the same way regional economic impacts are assessed. Issues such as lost or gained tax revenues, employment opportunities, accessibility, retail sales, the availability of goods and services, and the effect on the spatial distribution of development should be addressed. FDM 25-5-10 provides information on assessing impacts in these subject areas.

In cases directly affecting business districts, additional analysis may be required. One methodology, used by the WisDOT in past environmental analyses involves the development of an inventory of the businesses in the affected district. Each business is listed by the type of activity, its basic relationships with its clientele, the level of disruption caused by construction and, if applicable, longer term changes in access. Each business in the district could be classified in one of four ways: destination-oriented, non-destination-oriented, highway-oriented and interchangeable. Understanding how a business fits into these categories can help to determine the extent of the potential impacts upon it.

20.2.1 Destination-Oriented Businesses

Destination-oriented businesses are those in which patrons know prior to their trip that they will be traveling to that business at that location. These types of businesses are generally of a specialty nature offering services or products found no where else in the area or in very few places, or of a quality which makes them unique. Destination-oriented businesses also include those which have developed a loyal clientele more interested in the particular product or service than its location. Professional offices, such as those for doctors or attorneys, and unique specialty commercial or service outlets are examples of these types of businesses.

20.2.2 Non-destination-Oriented Businesses

Non-destination-oriented businesses do not rely on customers getting to their locations. This category includes services in which the businesses go to the client (e.g., plumbers, manufacturer's representatives, etc.) or in which goods are manufactured or sold to other than the general public. Any manufacturer or wholesaler would be included in this category.

20.2.3 Highway-Oriented Businesses

Highway-oriented businesses are dependent upon their locations along major highways or arterials for their survival. These include most retail uses generally associated with strip commercial development. Service stations and restaurants (particularly fast-food) are examples of this type of business.

20.2.4 Interchangeable Businesses

Interchangeable businesses are those which provide goods and services also supplied by several other vendors in other locations. Patrons of interchangeable businesses are not tied to a particular vendor or location. Most general merchandisers, retailers, convenience stores, restaurants, etc., are found in this category.

Placement in these categories can help determine the potential effects of construction and longer term changes in access, etc., on the businesses in the district. This analysis can identify businesses which will be simply

inconvenienced by a project and those which could have serious difficulties or even fail based upon the degree to which they depend upon casual customers.

FDM 25-5-25 Affected Social Groups

February 15, 1988

One aspect of any project is its affect on people. Projects can result in the relocation of families and individuals, the removal or alteration of important services, facilities, or activity centers, and otherwise affect the lives of individuals and groups. In reviewing a proposed transportation project, it is important to consider its potential effects on various population groups. Some impacts will have an equal affect all parts of the population at large while some will affect distinct groups within the society more than others. It is these latter groups which are considered in this section. The Federal Highway Administration (FHWA) has identified the following groups as having special needs in FHWA Technical Advisory T6640.8A of October 30, 1987:

1. Elderly
2. Handicapped
3. Non-Drivers
4. Transit Dependent
5. Minorities

Implicit in this listing is also the inclusion of low income residents.

25.1 Indicators of Impacts on Social Groups

A transportation project can affect different segments of society in different ways. Among the most severe impacts would be the loss of homes resulting from the need to acquire land for the project. These losses, never easy, could be especially severe in the cases of the elderly, handicapped, or low income individuals or families.

While the loss of a home is an obvious negative impact, there are also several others which may occur as the result of a transportation project. For example, a project may require the demolition or relocation of a factory, business, or service employing low and moderate income or handicapped individuals. If the company goes out of business, jobs are lost permanently. If it relocates, it might not be in an area served by transit, thereby making continued employment impossible for any workers who might have been transit dependent or non-drivers.

Changes in access or transit routing could have negative impacts on transit dependent residents and non-drivers including elderly, handicapped and low income residents, and children able to ride buses but too young to drive. Changes in access can also result in other impacts. For example, an expanded-arterial or restricted access highway through a community could isolate portions of neighborhoods or school districts making it difficult or dangerous for children to get to their schools or the homes of friends. Access to community facilities could also be restricted or made more difficult for the elderly, handicapped, transit dependent or non-drivers.

The potential also exists for positive impacts such as improved access to community facilities; improved housing opportunities for the elderly, handicapped or low income families; improved safety for children, the elderly and the handicapped; etc. These issues should also be discussed in an environmental analysis.

25.2 Evaluation Factors

To evaluate the impacts of a proposed project on various social groups, it is first necessary to understand the composition of the area population. To prepare a demographic profile of a community or portion of a community, a number of resources are available and should be consulted.

The most useful source of information, especially in urban areas, is the U.S. Census of Population. The census is conducted every decade by the U.S. Department of Commerce, Bureau of the Census. Results are generally available within two to three years of the actual polling. The census has complete information on the demographic aspects of the population as well as a great deal of employment, housing, and economic data. The material is aggregated and data is made available at the census tract, community, county, state and, in some cases, Metropolitan Statistical Area (MSA's) levels. In addition, selected urban areas may have census data available at the sub-tract block level. Some of the data is published and available from the Bureau of the Census. All of the data is computerized and can be obtained for a fee even if not published. Often, larger cities, counties, or regional planning commissions will purchase the census material for their computers and may be able to provide it to those conducting the environmental analysis.

In addition to U.S. Census material, some larger Wisconsin communities have had special censuses taken in other years to dispute population projections governing state and federal aid formulae. Some municipalities and counties keep additional information on their population characteristics or can provide helpful information specific to a project area. It is recommended that both the census and local sources of information be consulted.

If a statistical analysis is to be performed, the analyst may wish to use only census materials in order to avoid problems with incompatible data formats. In that case, any local information obtained can be used to corroborate or enhance the statistical analysis.

Once a profile of community and/or project area demographics has been established, affected population groups and potential impacts on them can be identified.

There are three basic ways in which to present demographic data gathered during the course of a project. The first is to describe it verbally in the text, although this may be cumbersome to understand or use elsewhere. The second is to present raw quantitative data in the report and let the reader draw his or her own conclusions. The third is to employ various summary statistics to help describe the quantitative effect of a proposed project. This third course is the one generally used in an analysis of socio-economic impacts.

Statistics summarize raw data and provide a more useful or understandable description of the effect of an event or changes over time. The most basic summary statistic is the sum or total. The total cost or amount provides the reader with the size of an alternative and allows comparisons to be made between alternatives as to which is more or less expensive, or employs more or less people, or uses more or less resources. A second common statistic is the percent which provides a standardized base for evaluating changes among variables. The table in Attachment 25.1 provides an example of a common demographic analysis.

As can be seen in Attachment 25.1, a comparison was made between 1970 and 1980 population characteristics within a defined project area and the sample city as a whole. The specific project area was created by combining several census tracts and combining the census data for each. The 1970 and 1980 columns are not totaled vertically in this table because they represent separate and distinct aspects of the project area.

Percentages provide comparative information in a straightforward and simple format. In the example in Attachment 25.1, each selected group in the population is presented as a percentage of the total population of the study area and the city as a whole. The percent of change in each group between the 1970 and 1980 census is also presented. The same analysis is repeated for the citywide population. The use of percentages rather than raw population figures provides a comparison that is more meaningful to most readers.

In many projects, the use of totals and comparative percentages will be the only statistic required for adequate socio-economic analysis. However, there may be occasions when any one of several other descriptive statistics will be useful. Four of the most commonly used, mean, median, mode, and range are defined below. Examples are included below showing how each of these tools might be used in an environmental assessment. These are intended only as examples and not necessarily recommended for each Environmental Assessment (EA) or Environmental Impact Statement (EIS). Descriptive statistics are simply ways in which to present data more efficiently and in an easily understood way. They should be used in the environmental document whenever it seems reasonable to do so.

The mean is better described as the numerical average. It is determined by summing all the items being analyzed and dividing by the number of cases.

The median is that point which divides the distribution being studied into two groups of equal numbers. For example, five alternatives are under consideration for a proposed project. Their estimated costs are shown here.

Alternative 1	$900,000
Alternative 2	$1,150,000
Alternative 3	$1,250,000
Alternative 4	$3,000,000
Alternative 5	$3,125,000

The median is represented by Alternative 3 as the case which equally divides the alternatives above and below it into equal groups. If an even number of cases was being examined such as Alternatives 1 through 4 above, the median case would be located half-way between Alternatives 2 and 3 or at $1,200,000 even though that figure does not represent a specific alternative.

The mode is that value which occurs most frequently. If, for example, the following series of accident statistics was being analyzed to determine the degree of safety found at a particular intersection, the mode would be 7, the number of accidents found in four of the 12 months.

January 7	July 11
February 8	August 10
March 6	September 7
April 10	October 7

May 7	November 8
June 8	December 19

Using this same set of data, the mean would be 8 and the median would also be 8.

The range represents the limits of a series of cases. In the example above, the range would be from 6 to 11 accidents in any given month.

These few statistical techniques are probably all that will be required for most socio-economic impact analyses. It is understood that very large, complex projects may require more sophisticated analysis techniques than those described here; however, those instances will be the exceptions rather than the rule. The principal goal is to make the analysis understandable to the reviewing public. It can be done more easily with these simple summary statistics than with very complex socio-economic statistical analyses.

LIST OF ATTACHMENTS

Attachment 25.1 General Population Characteristics Study Area (1970-1980)

FDM 25-5-30 Relocation Impacts

February 15, 1988

The relocation of homes, businesses, and industries can be among the most emotionally charged issues of any transportation project, regardless of scale. The assessment of relocation impacts created by a transportation project is mandated by federal and state statutes.

30.1 Conceptual Stage Relocation

The displacement of people and businesses is governed by the federal "Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970," which was adopted for the state in Section 32 of the Wisconsin Statutes, as amended. The object of this statute is to provide a standard to which the various governments must adhere when exercising their powers of eminent domain. The purpose, as stated in Section 32.19 of the Statutes, is as follows:

> *"The Legislature declares that it is in the public interest that persons displaced by any public project be fairly compensated by payment for the property required and other losses hereinafter described and suffered as the result of programs designed for the benefit of the public as a whole;*
>
> *And the Legislature further finds and declares that . . . payment of such relocation assistance in the acquisition of [comparable] replacement housing are proper costs of the construction of public improvements."*

Section 32.05(8) of the Statutes, amended in 1983, extends this protection to commercial property as well.

The Department of Industry, Labor and Human Relations is responsible for relocation activities in the State of Wisconsin.

30.2 Relocation Indicators

There may be indications at the outset of a project of what the level of property acquisition will be. In some projects, it will be immediately apparent that no relocation will be required. In those cases, the analysis presented in this section will not need to be completed. However, a statement to the effect that relocation will not be a part of the project should be included in the environmental analysis.

For those projects that will require relocation, a formal Conceptual Stage Relocation Plan will be prepared. This is usually a separate submittal, but it should also be included as part of the environmental document.

In projects involving minimal or moderate relocation efforts, the preliminary information may be collected and presented in the environmental document. In either of the last two cases, the WisDOT Region Real Estate staff and the state's relocation manual should be consulted for information and direction.

30.3 Evaluation Methods

The first step in evaluating relocation impacts is to determine the number of homes and businesses, which will be acquired for a transportation project. This can often be done by reviewing the alternatives under study and identifying the specific parcels required along with those not necessarily required, but affected by the project to the extent that acquisition may be appropriate. If it is not possible to determine the number of properties to be acquired by visual assessment, an initial estimate of properties to be relocated must be made using the best available information and judgment.

In addition to determining the number of potential displaces, it is important to understand their socio-economic

characteristics. This includes such factors as age, income, race, ethnic background, and education levels. It also includes the age and condition of the housing to be displaced, whether the properties are principally owner occupied or rental, whether the rental properties are largely owned by absentee landlords, the range of property values, median rents, tenure of residents, and whether the units experience a large degree of overcrowding.

Neighborhood factors can also be useful in evaluating relocation impacts. Indicators include an analysis of the character and composition of the neighborhood, the condition and age of housing in the vicinity of the project itself, vacancy rates in the area, crime and vandalism rates, and the previous history of the area with regard to other displacements.

This data can be gathered from a number of sources. Depending on the size and location of the project, U.S. census materials can be used. A statistical analysis of these various demographic factors can be made by assuming that the same basic demographic mix exists in that area as in the census tract or tracts which include the project area. Therefore, if 70 percent of the residents in the census tract(s) are minorities, an assumption can be made that 70 percent of the affected residents of the project area are minorities as well.

The statistical validity of this method improves as the size of the project area approaches the size of the census tract or other area of analysis being used. However, this statistical transference from a larger to a smaller area has some obvious drawbacks. For example, a project may affect a pocket of rental housing in a predominantly owner occupied area. The transference method would give a false indication of the type of housing in the project area. Therefore, it is important to corroborate the statistical findings with local planning data (if available) and field observation. If the nature of a project makes direct contact with residents or business owners undesirable (such as a very tentative or unlikely alternative which would unduly alarm property owners), this method can be used to develop an approximate profile of the demographic characteristics of the affected population.

The most effective method of determining demographic characteristics is a survey, either conducted through in-person interviews or by telephone. In some very large, controversial projects, contact may be made with potential relocatees as part of a Region's relocation efforts. Direct contact with relocatees should be carefully considered by the Region and a decision based upon the individual project.

Once a socio-economic and housing condition profile has been completed for the project area, it is possible to evaluate the impact the proposed project would have on various sectors of the local population. Determinations can be made of the number of residents or businesses which would require relocation, as well as the composition, and special needs of the families and businesses affected.

The final issue to be reviewed is the availability of relocation housing. Under the Uniform Relocation Act of 1970, each relocated individual or family is entitled to "decent, safe and sanitary housing." This includes units that fit the relocatees' needs for owner occupied or rental housing, cost within ability to pay, and an adequate number of rooms. Units must also be structurally sound and provide adequate utility services. Housing should also be evaluated in light of the ability of the receiving community or neighborhood to absorb the relocatees and whether or not it can supply the other services and needs of the displaced people such as green areas, recreational areas, educational facilities, day care, medical care, religious needs, and other services. Businesses should be evaluated in terms of the adequacy of the replacement facility to meet the physical needs of the business and the effect of its location on its clients or customers.

The results of this analysis will permit the evaluation of the potential relocation impacts of a proposed project. As stated above, this analysis may be included in the environmental document itself or, if desired, as part of a conceptual stage relocation plan which is summarized in the environmental document. The WisDOT Region Real Estate staff should be involved in this phase of the analysis, particularly for projects involving large numbers of acquisitions and subsequent relocations.

FDM 25-5-35 Energy Consumption

February 15, 1988

Energy consumption as related to transportation projects should be addressed in the project environmental document when the potential exists for significant energy impacts. A discussion of energy concerns as they relate to the use of materials and fuel in the construction, operation, and maintenance of highway facilities should be included because the future cost and availability of materials and fuel, particularly those using petroleum, will likely be affected by what is designed and constructed today.

In the case of draft and final Environmental Impact Statements (EIS's), the energy requirements and conservation potential of the various alternatives under consideration should be discussed in general terms. This general discussion might recognize that the energy requirements of various construction alternatives are similar and are generally greater than the energy requirements of the no build alternative. Additionally, the discussion could point out that the post-construction, operational energy requirements of the facility should be less for the build alternative than for the no build alternative. In such a situation, one might then conclude that

the savings in operational energy requirements would more than offset construction energy requirements and thus, in the long-term, result in a net savings in energy usage. For most projects, a detailed energy analysis including computations of BTU requirements, etc., is not needed, but the discussion should be reasonable and supportable.

For major projects with potentially significant energy impacts (for example, a new, high volume, multi-lane roadway) the environmental document should discuss any significant direct and/or indirect energy impacts of the proposed action. The action's relationship and consistency with any state and/or regional energy plan should also be indicated.

The final EIS should identify any energy conservation measures that will be implemented as a part of the recommended alternative. Measures to conserve energy include the use of high occupancy vehicle incentives, measures to improve traffic flow, and the provision of pedestrian and bicycle facilities.

35.1 Direct and Indirect Energy Consumption

Transportation related energy is usually separated into two main categories:

1. "Direct," defined as the energy consumed in the actual propulsive effort of a vehicle, such as the thermal value of the fuel, or quantity of electricity used by its motor.
2. "Indirect," defined, in the broadest terms, as all the remaining energy consumed to develop and maintain a transportation system.

Although the definition of direct energy is relatively simple, both in concept and in measurement, the concept of indirect energy requires some in-depth discussion:

It is much simpler to define qualitatively the concept of direct and indirect energy consumption than to obtain reliable numerical data. Fuel consumption rates of vehicles, especially road vehicles, are constantly being measured by the Environmental Protection Agency (EPA) and other organizations. Thus, measurement of direct energy is relatively well documented. However, measurement of indirect energy consumption is very complex, especially the subject of peripheral energy change. The current state of the art requires that almost all data presented be labeled as "approximate" or "estimates."

35.2 Considerations in an Analysis

The purpose of an energy analysis is to provide meaningful comparisons between alternatives, including the no build alternative. This requires consideration of the factors involved in analyzing the energy impacts of each alternative. The relative lack of specific data tends to promote simplification of portions of the analysis and this may be proper provided due attention has been paid to certain considerations, as discussed in the following.

Direct and indirect energy must both be considered, otherwise erroneous comparisons may result. A car cannot operate without a road, nor an aircraft without an airport. Even within the same mode, two alternatives may vary substantially as to their direct and indirect energy. For example, a roadway tunnel may cut the distance and grade traveled by vehicles, thus reducing direct energy consumption, but will probably require more indirect energy to construct than a more circuitous route. This fact must be brought out by the analysis and discussion.