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Chapter 25: Socio-Economic Factors

FDM 25-1-1 General

February 15, 1988

The primary objective of this chapter is to provide a description of the socio-economic factors which can be affected by transportation improvements and the means by which to measure the resulting impacts. Under the Council on Environmental Quality (CEQ) regulations, Sec. 1508.14, "...economic or social effects are not intended by themselves to require preparation of an environmental impact statement." The regulations go on to state that social and economic impacts must be interrelated with the impacts of a project on the natural and physical environments. If a project results in purely social or economic effects, and they cause no impacts on the natural or physical environments, an Environmental Impact Statement (EIS) is not required. However, the larger the transportation proposal, the greater the likelihood that socio-economic impacts will be interrelated with impacts on the natural and physical environments.

The Wisconsin Environmental Policy Act (WEPA) requires that the economic advantages and disadvantages of a project be discussed. Similarly, the Wisconsin Department of Transportation (WisDOT) has adopted as Policy "L" of its 1980 State Transportation Policy Plan that all projects shall have a benefit/cost analysis performed prior to making a decision to proceed.

The techniques and areas of analysis described here are those most often encountered in reviewing socio-economic impacts in full-scale EIS's rather than in briefer environmental reports; however, preparers of Type II and III documents may well benefit from some of the information provided here. The areas to be reviewed in relation to these impacts are defined in the Federal Highway Administration's (FHWA) Technical Advisory T6640.8A of October 30, 1987 (see FDM 25-5-1). The Bureau of Environmental and Data Analysis (BEDA) can be of assistance in establishing appropriate study contents and in helping to define and guide research efforts.

Census materials are available from the Planning Analysis and Data Section of the Division of Planning and Budget located in Room 901, Hill Farms Transportation Building in Madison. Additional demographic information is available from the Demographic Services Center of the Wisconsin Department of Administration located in the GEF I State Office Building in Madison.

In addition, several printed resources exist which can be of help. These include the U.S. Department of Transportation's Environmental Assessment Notebook Series. Of special interest are Volumes No. 2, "Social Impacts", and No. 3 "Economic Impacts." With the issuance of Technical Advisory T6640.8A, the Notebook series is no longer organized identically to the FHWA's list of categories (FDM 25-5-1); however the information supplied is still useful and should be consulted. These publications have been distributed to the District offices.

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 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 20-45 4(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 16, 2021

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 displacees, either through conversations with the local planning staff or with the WisDOT Bureau of Technical Services (BTS) Statewide Relocation Program Coordinator.

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 20-45-35), 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 of revenue generated.

Transportation projects can remove property from the tax rolls, thereby reducing the local tax base. A highway

[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.

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:

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: 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 Property Tax Revenue
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 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 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 20-15-1. 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, provide places to discuss indirect effects.

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/environment/formsandtools.aspx

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 below 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

February 16, 2021

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 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 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. Acquisition 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 displacees 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 20-45-35), 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

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

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	Trends and Patterns of Existing Land Use and Development
Attachment 18.3	Extent of Land Use Planning and Regulation
Attachment 18.4	Assess potential Consequences to the Human Environment
Attachment 18.5	Tools to Manage Land Development
Attachment 18.6	Methodology Overview
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 nowhere 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 effect 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 16, 2021

For an in-depth discussion of the process for relocation of residents and businesses being displaced by a transportation project, please see Chapter 5 of the WisDOT Real Estate Program Manual (REPM). Following is a list of relocation-related topics and where they are discussed in the REPM:

5.0 Relocation Assistance

5.1 General Relocation Requirements

5.2 Relocation Planning

5.3 Relocation Advisory Services

5.4 Residential Move Payments, Incidental Expenses and Increased Interest Payments

5.5 Residential Relocations

5.6 Nonresidential Relocations – Business, Farm and Non-Profits

5.7 Business Replacement Payment

5.8 Business Move Expenses

5.9 Mobile Home Relocations

5.10 Relocation Records, Reports and Claims

For additional questions, please contact the Bureau of Technical Services Statewide Relocation Program Coordinator.

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:

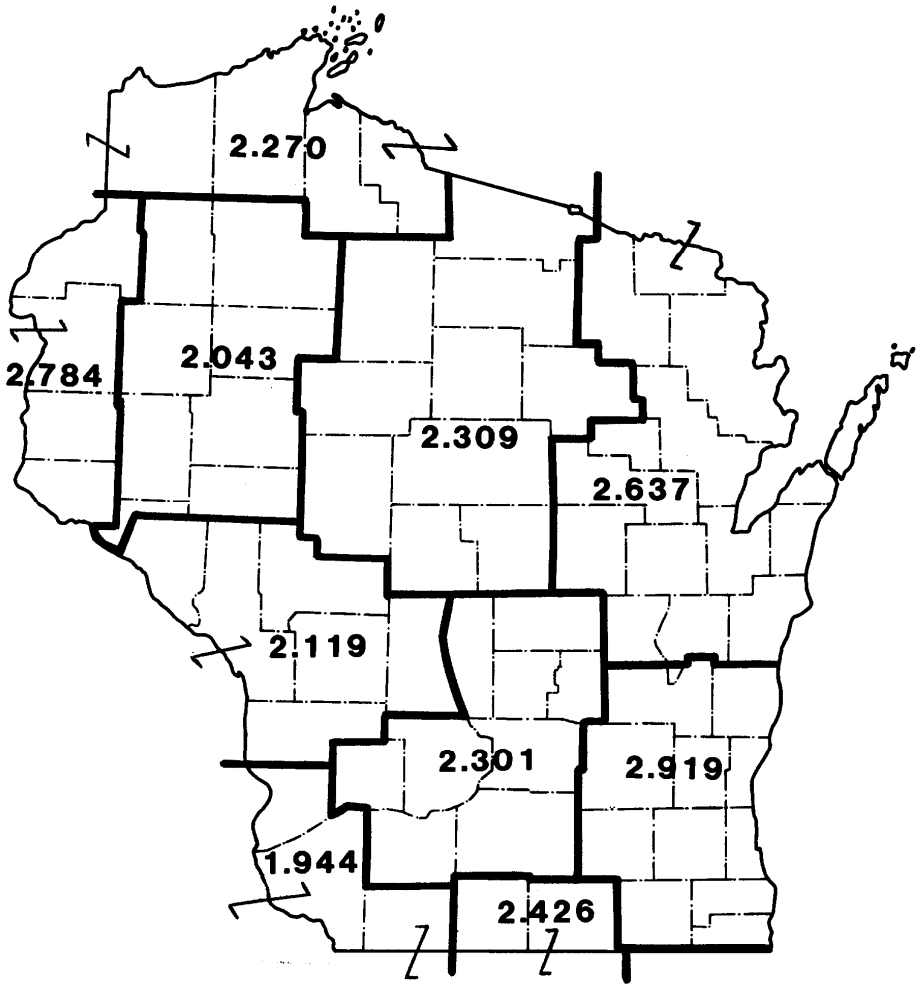
It is much simpler to define qualitatively the concept of direct and indirect energy consumption than to obtain reliable numerical data. Fuel consumption rates of vehicles, especially road vehicles, are constantly being measured by the Environmental Protection Agency (EPA) and other organizations. Thus, 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.

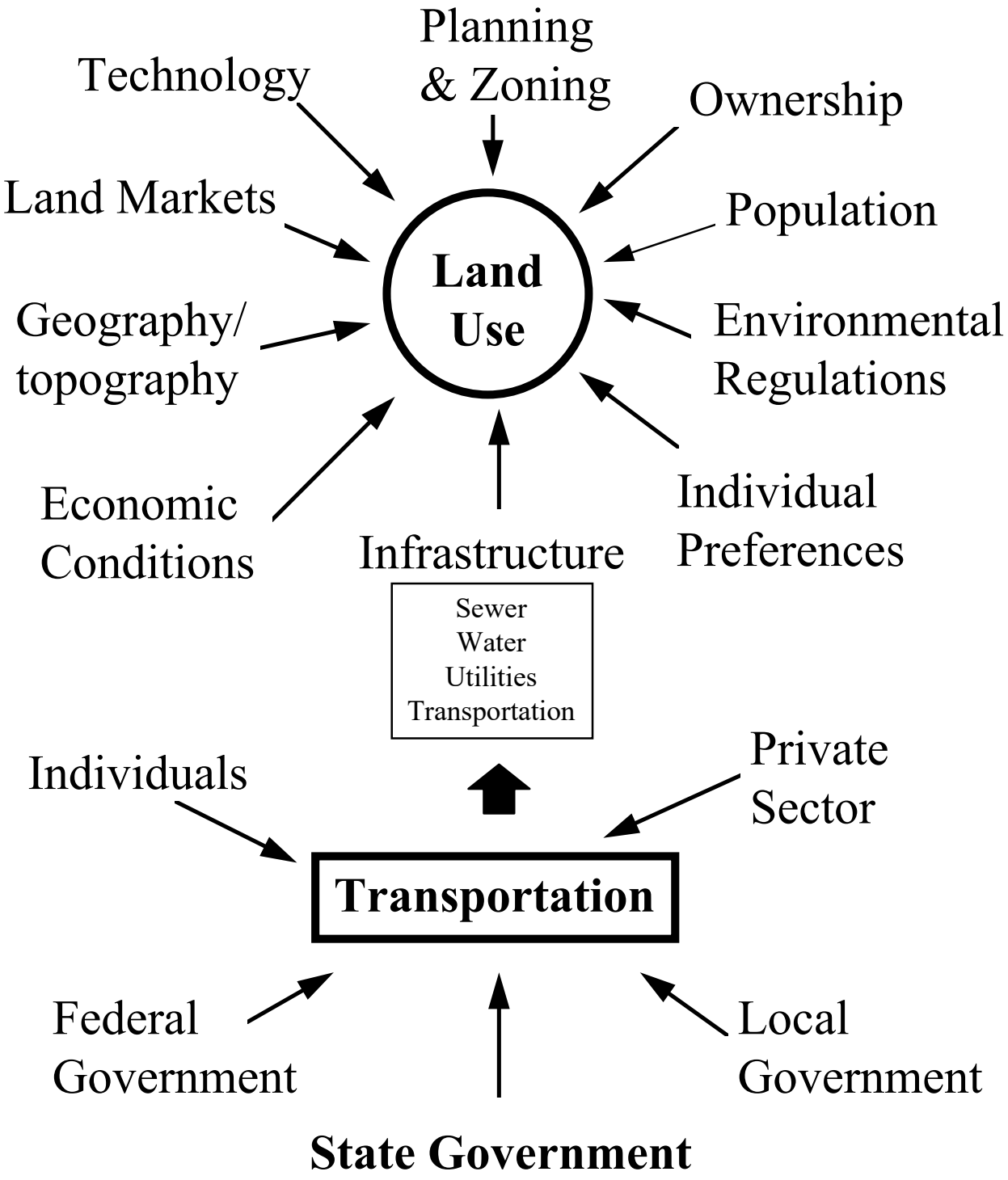
Direct and indirect energy must both be considered; otherwise erroneous comparisons may result. A car cannot operate without a road, nor an aircraft without an airport. Even within the same mode, two alternatives may vary substantially as to their direct and indirect energy. For example, a roadway tunnel 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.

Gross Output Multipliers for General Building, Heavy Construction, and Special Trade Contractors (SIC Codes 15, 16 and 17) in BEA Economic Areas.

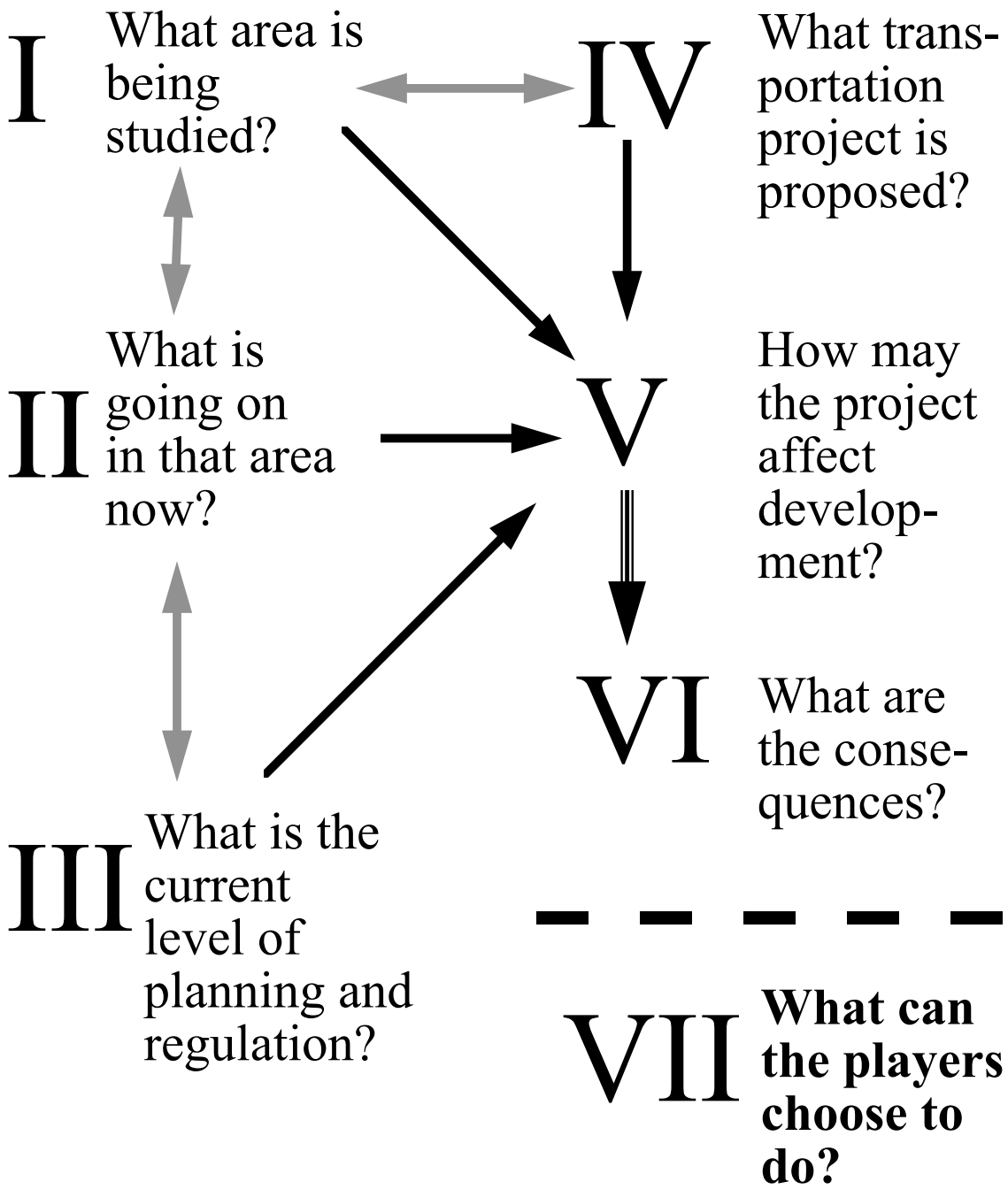


Source: Regional Economics Division
Bureau of Economic Analysis
U.S. Dept. of Commerce

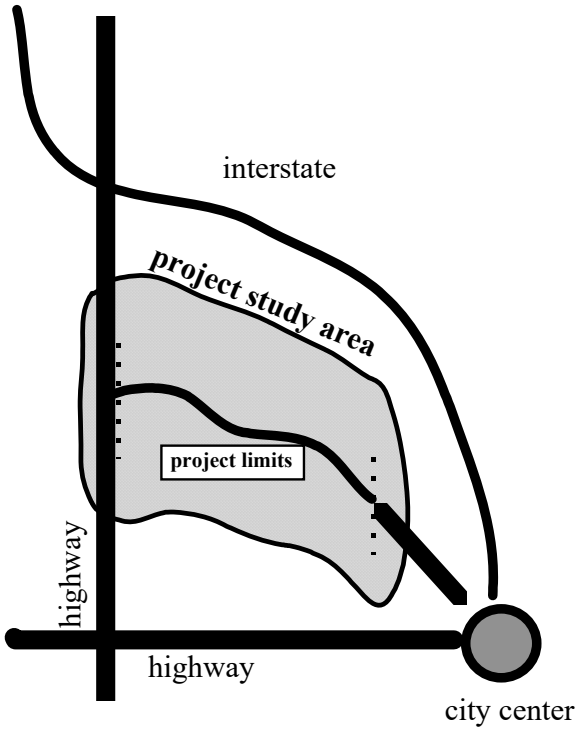
Transportation's Role in Land Use



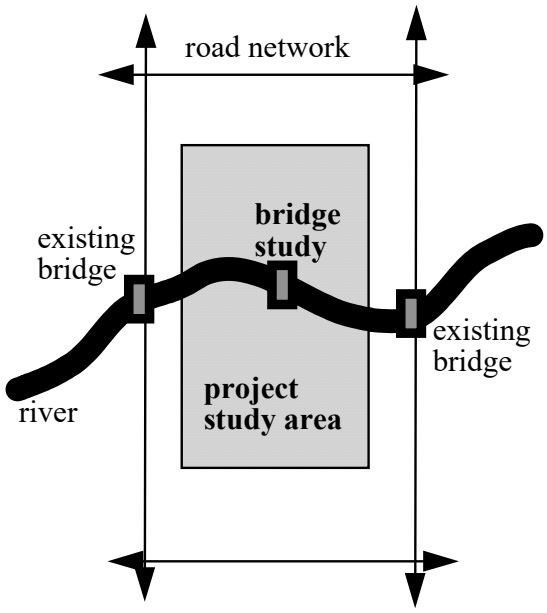
Secondary and Cumulative Effects Analysis for Project-Induced Development



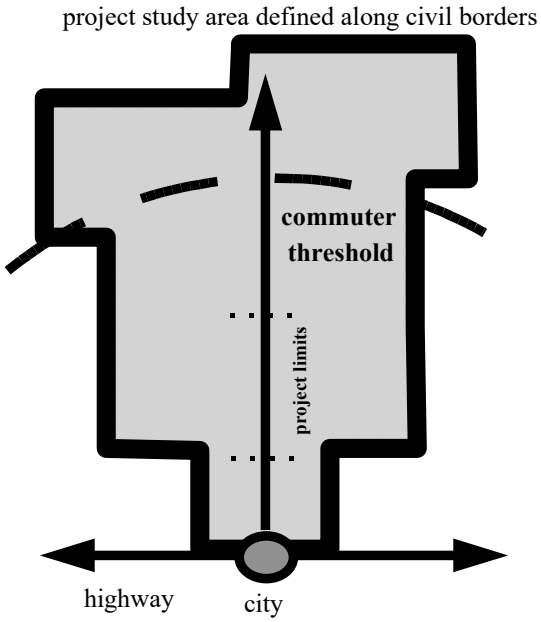
Option 1: Trafficshed, Example 1



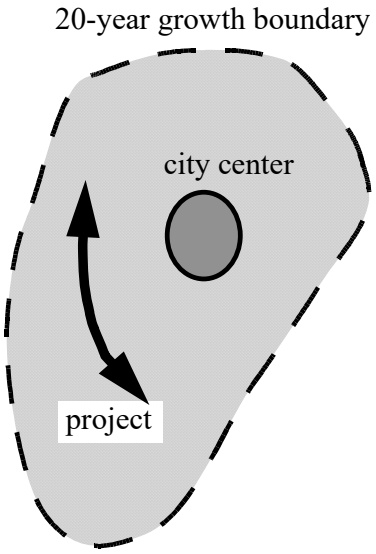
Option 1: Trafficshed, Example 2



Option 2: Commutershed



Option 3: Growth Boundary



Highway Design Issues That May Affect Land Use Decisions[1]

1. **Location**
    - Existing alignment
    - New alignment
    - Bypass alternatives
    - Interchange/intersection
2. **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
3. **Capacity**
    - Additional traffic lanes
    - HOV lanes
    - Additional modes:
    - Bicycle lanes
    - Bus lanes
    - Bicycle routes
    - Bus routes
    - Sidewalks
    - Pedestrian over/under pass
    - Rail
4. **Travel Patterns**
    - Changes in traffic volumes
    - Changes in traffic mix
5. **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

[1] These issues are also of interest to present land users.

Source: "Indirect Effects, Agency Approach **Highway Induced land Development** *Experience and Procedures;* Sarah Jo Peterson, Wisconsin Department of Transportation
Presented to Environmental Analysis of Highway Projects, Department of Engineering Professional Development; College of Engineering, University of Wisconsin – Madison/ Extension
Madison, Wisconsin: March 18-20, 1996

6. Other

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

Trends and Patterns of Existing Land Use and Development

PATTERNS

At a minimum, most projects will need to distinguish between developed areas and agricultural rural areas and to identify areas of natural resource interest.

Types of Land Uses and Questions for More Detailed Analysis

1. **Industrial:** Where are any established industrial parks in the project study area? How much of the industrial park is occupied? What types of transportation serve the industrial park?
2. **Residential:** What types of residential land uses are found in the project study area? Where are they located?
3. **Commercial / Retail:** What types of commercial and retail land uses are found in the project study area? Where are they located? What types of transportation serve them? Is there room for expansion and/or unused space?
4. **Highway Service Facilities:** Are any highway service facilities located along the transportation corridor under study?
5. **Central Business District:** Where is the CBD? Is congestion an issue in the CBD? Is parking an issue in the CBD? Is the health of commercial and retail establishments an issue in the CBD?
6. **Institutional:** Are there any institutional uses adjacent to any of the transportation alternatives?
7. **Sewer Service Areas and Other Utilities:** Where is the boundary for sewer and/or water service?
8. **Transportation Infrastructure:** What role does the transportation corridor under study play in relation to the rest of the transportation system? Are there harbors, rail yards, or airports in the project study area?
9. **Parks and Open Space:** Are any parks adjacent any of the transportation alternatives? Are there any parks that serve users outside local communities in the project study area? Is the continued existence of privately owned open space an issue?
10. **Agricultural:** What types of agricultural uses exist in the project study area? How large are contiguous blocks of agricultural land? Are large areas of agricultural land under corporate ownership? Are the large land holders in agribusiness?
11. **Areas of Natural Resource Interest:** Where are areas of natural resource interest located? Are these areas directly or indirectly affected by the transportation alternatives?
12. **Areas of Cultural Resource Interest:** Are there any identified historic or archeological resources in the project study area? Is anything on or eligible for the National Register of Historic Places? Are identified resources directly or indirectly affected by the transportation alternatives?

TRENDS

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

Examples of More Detailed Analysis

A. Employment trends and projections by sector (to indicate what types of commercial, industrial or institutional land uses may be expanding or contracting).
B. Residential housing permits issued and housing prices over the last five to ten years (to indicate possible changes in residential land uses). Past trends and future projections of population densities in units of persons per acre, households per acre, persons per acre of commercial use etc. (to indicate changes in land consumption rates).
C. Conversion of agricultural land to non-agricultural uses and land prices for sales of land continuing in agricultural use and for land converted to nonagricultural uses (to indicate stability of agricultural land uses).
D. Participation in any farmland preservation programs (to indicate stability of agricultural land uses).
E. Sanitary septic system permits (to indicate how much development is happening in unsewered areas, which indicates limited urban services). Commuting patterns (to indicate the relationship between employment and residential land uses).

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Source: “Indirect Effects, Agency Approach **Highway Induced land Development** *Experience and Procedures;* Sarah Jo Peterson, Wisconsin Department of Transportation
Presented to Environmental Analysis of Highway Projects, Department of Engineering Professional Development; College of Engineering, University of Wisconsin – Madison/ Extension
Madison, Wisconsin: March 18-20, 1996

Extent of Land Use Planning and Regulation

What are the decision-makers' future visions for their area's land use and development?

PLANS

Types of land use plans

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

Inventory all 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 also include new or ongoing planning efforts.

For each area/governmental unit record the following:

- Does the area have a plan?
- Date adopted or last updated.
- Statements about the proposed transportation project.
- Statements about future land development.

Examples of More Detailed Plan Analysis of Key Issues

Impacts on an Area of Natural Resource Interest?	How do the plans address the area of natural resource interest?
Impacts on Central Business Districts?	What do the plans say about commercial development on the periphery and/or maintaining the vitality of downtown?
Concerns about "Strip" Commercial Development?	What type of development do the plans call for along the proposed transportation improvement alternatives?
Impacts on Agricultural Land?	Do the plans have measures to preserve agricultural land?
Multiple Plans Creating Difficulties?	Produce a conglomerate map of all land use plans in the project study area.
Difficulties Communicating the Future Implications of the Plans on Land Use Patterns?	Describe plan implementation in a future year; i.e., if the plans were implemented, what would an area look like in 20##?

REGULATIONS

Types of Regulations

Land Use Management	Infrastructure Management	Natural Resource Management
Zoning Ordinances Subdivision/Plat Review Official Mapping	Sewer/water service Septic systems Access 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?

More Detailed Regulation Analysis of Key Issues

For example, if the land immediately adjacent to project alternatives has been identified as a key issue:

- How is the land zoned?

- Have the local governments officially mapped anything?
- What level of subdivision activity has there been?
- Are there highway access controls on any of the intersecting highways?
- Are there any conservation easements?

IMPLEMENTATION OF PLANS

- Is the project study area consistently covered by up-to-date land use plans?
- Are there conflicts between/among the plans?
- Do the plans have regulations implementing them?
- Are there conflicts between plans and regulations?

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"Indirect Effects, Agency Approach **Highway Induced land Development** *Experience and Procedures;* Sarah Jo Peterson, Wisconsin Department of Transportation
Presented to Environmental Analysis of Highway Projects, Department of Engineering Professional Development; College of Engineering, University of Wisconsin – Madison/ Extension
Madison, Wisconsin: March 18-20, 1996

ASSESS POTENTIAL CONSEQUENCES TO THE HUMAN ENVIRONMENT

A. Location and Type of Development Are Known

If any parcels of land are identified as having a high probability of development related to any of the transportation alternatives, then the potential environmental consequences of the development, at those specific locations, would be analyzed. It may be difficult to produce more than just a general description of potential environmental consequences unless the type and intensity of the development is also known.

The environmental consequences of the project-induced development could include both direct and indirect effects. Estimates of hectares of wetland loss, hectares of agricultural impact, historic and cultural resource impacts, noise and air impacts, and any other applicable impacts need to be made. FHWA Technical Advisory T6640.8A (1) can be referenced for a list of topics to be covered.

B. Location of Development Is Unknown

It is far more likely that the preceding analysis will not identify any locations of project-induced development. Therefore, the written analysis of the potential consequences to the human environment of project-induced land development would contain ***short, general descriptions*** of the types of environmental consequences often associated with the previously identified trends or patterns.

The most important environmental consequence a transportation improvement can have on land development trends and patterns is to change them from lower intensity land uses to higher intensity ones. Rural, agricultural, or open space land uses being converted to residential, commercial, or industrial land uses are examples of this change. The environmental consequences therefore can be generally conceptualized as the environmental consequences of "urbanization." It may be helpful to consider urbanization to take place in two forms.

The first form of urbanization involves drastically changing the existing landscape, such as when a city expands into adjacent open space. Such changes can have the following impacts.

Beneficial	**Adverse**
Employment opportunities	Increased noise
More housing types	Increased traffic in some areas
Greater variety of goods and services	Runoff from paved areas
Reduced congestion in some areas	Lost wildlife habitat
Lower accident rates	Air/water pollution
	Lost agricultural land
	Increased demand for municipal services
	Decline in existing businesses as a result of more competition

The literature on the environmental impacts of urbanization and suburbanization may be of further assistance.

The second form of urbanization tries to fit higher intensity land uses into the existing natural or rural landscape. This is seen when rural residential, recreational, or tourism oriented development is built to capture the aesthetic amenities of a natural or rural setting. This type of development often happens at much lower densities than city expansion. The same types of environmental consequences seen under the first form of urbanization may apply, although they may be more incremental and/or subtle. One important difference between the two forms is that the latter form tends to use private septic systems and individual wells instead of public water and sewer service. The literature on the environmental impacts of rural residential development (exurbanization) and rural recreational development would provide more detailed information.

"**Land Use in Environmental Documents"** Indirect ands Cumulative Effects Analysis for Project-Induced Land Development; ***Technical Reference Document***
Sarah Jo Peterson and Susan Fox, Wisconsin Department of Transportation
Pages VI-1 and VI-2

TOOLS TO MANAGE LAND DEVELOPMENT

The final analysis section in an environmental document is a list of "tools" that may be used to manage the identified project-induced land development. The environmental document provides an opportunity to identify land management techniques that may 1) Address concerns about the effects of project-induced development, 2) Improve the general management of land use in the project study area, and 3) Lead to benefits to the transportation system, including the proposed project. Including a tools section also meets the need to address mitigation, as required under CEQ regulations.

NEPA requires that, for projects with a significant impact, the environmental document identify all relevant, reasonable mitigation measures that could improve the project. The mitigation measures are to cover the range of the proposal's effects, including measures for effects that by themselves would not be considered "significant." The document is also to include, whenever relevant, mitigation measures that are outside the jurisdiction of the lead agency or the cooperating agencies.

The CEQ defines “mitigation of effects” as avoiding, minimizing, rectifying, reducing and/or compensating with a substitute. For indirect effects, conceptual plans and/or methods for mitigation are to be discussed. Adopted, detailed mitigation plans are not warranted. The mitigation discussion should also include an analysis of the probability that identified mitigation measures will be implemented.

Although the environmental document is required to identify mitigation measures for all indirect effects, WisDOT is not required to mitigate indirect effects that are outside of its control. Project-induced land development is almost always under the control of local governments and the private sector, not WisDOT.

When addressing project-induced land development, the designer should use the term “tools” instead of “mitigation.” The federal definition of “mitigation” suggests actions addressing negative or adverse impacts. Interest groups, however, will likely disagree about whether project-induced land development is a positive or negative impact. Furthermore, the identified measures will probably have benefits in addition to addressing the projects effects.

ANALYSIS PROCESS

1. Identify a list of potential land use management tools.

Tools fall roughly into four categories:

- 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 federal, state or local governments and landowners, incorporating design features to serve or better accommodate existing and/or planned land uses, and providing access management.

2. Match the tools with key issues and potential consequences.

The discussion of potential consequences, developed under the guidance in FDM 25-5 Attachment 18.4, will provide a framework for matching tools to key issues and indirect effects. A discussion of tools to address indirect effects that themselves are only identifiable at a very indefinite or imprecise level will most likely also be at a limited, general level. If specific information can be established about a particular concern or impact (where, when, how much, what exactly), then it may be possible to discuss in a more detailed manner the application of a land use management tool. Assistance from a land use professional may be required to recommend appropriate tools for a specific set of circumstances.

3. 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

4. Analyze the likelihood that the tools will be implemented.

Questions that may help assess the likelihood of tool implementation include:

- Is the tool currently enabled for use under a local ordinance and/or state or federal statute?
- Is there local opposition to a tool?
- Is there a history of non-enforcement of the tool?
- Will it take a long period of time to implement the tool?

"**Land Use in Environmental Documents"** Indirect ands Cumulative Effects Analysis for Project-Induced Land Development; ***Technical Reference Document***
Sarah Jo Peterson and Susan Fox, Wisconsin Department of Transportation
Pages VII-1 and VII-2

METHODOLOGY OVERVIEW

SHP Bypass Policy Evaluation Study

BACKGROUND

The Wisconsin Department of Transportation (WisDOT) and HNTB conducted extensive research on bypass selection policies across the country. This research is reported in a separate document. The following methodology has been developed based on the research findings and WisDOT State Highway Plan (SHP) needs. Accordingly, the bypass evaluation methodology is divided into three "Phases", with each phase involving an evaluation of different factors important in bypass decision making. The three phases can be summarized as follows:

- Phase I - Benefit/Cost Analysis (quantitative);
- Phase II - Community Impact Assessment (qualitative); and,
- Phase III - Environmental Screening Assessment (qualitative).

Phase I - Benefit/Cost Analysis: Quantifiable factors analyzed in Phase I focus primarily on benefits realized by "through" travelers. These benefit factors include travel time savings, fuel savings, and the potential reduction in vehicle crashes (accident cost savings). Cost factors include the cost to construct and maintain a bypass facility, as well as costs to maintain the existing facility. Based on the results of the benefit/cost analysis, each bypass was given a score ranging from 0.5-5.0. The B/C analysis was given a weight of 20, resulting in the maximum score assigned to Phase I of 100 points.

Phase II - Community Impact Assessment: Phase II considers assessment of seven qualitative factors identified through research as important considerations in the bypass decision making process. These factors focus primarily on those factors important to a bypassed community. "Phase II" factors include projected traffic congestion levels on the existing facility, reduction in trucks and bypassable auto traffic on the existing facility, community population, percent of county-wide retail trade within the specific community, population growth trends (percent growth compared to the average statewide growth), and the existence of the potential bypass facility along WisDOT's Corridors 2020 Multilane Connector system. Values are assigned to each of the qualitative factors based on their potential benefit to the bypassed community. Values for each of the 7 factors range 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.

Phase III - Environmental Screening Assessment: Phase III involves an environmental screening assessment, that considers specific environmental impacts (both natural and human environment) associated with two roadway improvement scenarios: (1) construction of a bypass facility; and, (2) improvement of the existing facility, with no bypass construction. The qualitative impacts are rated as "no impact", "minimal/minor impact" or "significant/major impact" (requiring extensive mitigation efforts, avoidance, and/or agency coordination). Phase III required WisDOT District input on potential impacts to wetlands or other natural habitats: secondary land use impacts; impacts to cultural features or Section 4f/6f properties; relocation of businesses, residences, utilities or other infrastructure; hazardous site impacts; impacts on noise sensitive sites; and, impacts to agricultural lands. The Phase III analysis has a maximum score of 100 points, (*5 points* possible for each factor under each of the "scenarios" with weighting factors for each category ranging from 2 to 5).

Total cumulative point scores possible in the methodology, when considering all three Phases is 300 points (Phase I - 100, Phase II - 100, Phase III - 100).

LOCAL AND POLITICAL LEADER SUPPORT FOR BYPASSES

It is important to note that bypass policy research conducted by HNTB and WisDOT (at both the state and national level) has shown that one of the most important considerations in the bypass decision making process is the existence (or level) of local community or other political leader support. In fact, past experience in many bypass cases has shown that this is often the overriding factor in the bypass decision making process; not only whether or not to build, but also the bypass alignment and configuration, location of access points (such as interchanges or at-grade intersections), posted speed along the bypass route, as well as other important considerations.

However, for many of the communities evaluated in this study, the level of local or other political leader support is not yet known. This is primarily because traffic and/or other conditions may not yet have warranted the "engagement" of community or other political leaders in the bypass issue, as design and construction of a potential bypass is likely several years away.

While recognizing the importance of local and other political leader support, this bypass policy evaluation study is designed to evaluate all communities using the same quantifiable and qualitative decision factors on a level

playing field, outside of local/political influences. This has been done to ensure an objective, deliberate, and consistent evaluation.

WisDOT's integration of the results from this study into the State Highway Plan will ultimately need to consider whether or not each local community or other political leadership supports a particular bypass. Further, community support will become increasingly important, especially as a potential bypass proceeds toward project development.

PHASE I SCREENING: BENEFIT/COST ANALYSIS

Phase I of the WisDOT State Highway Plan (SHP) Bypass Policy Evaluation Study, analyzes quantifiable benefits and costs of constructing a bypass facility within communities on the Corridors 2020 Connector system. The result of the analysis in Phase I is a selected benefit/cost ratio for each potential bypass.

The benefit/cost ratio from Phase I for each of the 31 candidate bypassable communities measures the potential incremental benefits of constructing a bypass facility versus continued travel on the existing roadway section.

The objective of Phase I is to develop a comprehensive, quantifiable analysis of the expected benefits provided to both users of the bypass and non-users (i.e., those remaining on the facility through the community). Research was conducted into policies, procedures, and considerations utilized by other state DOT's, WisDOT District offices, and other agencies to identify which items are considered critical criteria in the evaluation process. Those indicators which could be quantified were ultimately analyzed in terms of a single benefit to cost ratio.

WisDOT staff, both at the Central Office and at all District offices, were instrumental in providing the data needed as input to the bypass screening matrix. Existing conditions such as, current and projected average daily traffic (ADT's), roadway segment length, facility type, number of lanes, posted speeds, presence of traffic signals, percent trucks, and crashes were obtained from the WisDOT State Highway Deficiency File. Information regarding the candidate bypasses provided by the respective WisDOT District staff included; the preferred bypass alignment and length, facility type, number of lanes, number of interchanges, and expected speed limit. Where available, the anticipated bypassable traffic volumes and truck percentages were obtained from recent origin/destination travel studies. Where this data was not available, the State Highway Plan forecasting model was used to estimate bypassable traffic volumes.

BYPASS FACILITY BENEFITS

Research has shown primary considerations for construction of a bypass include: traffic congestion relief by reducing the volume of vehicles and trucks passing through a community, improved traffic and pedestrian safety within a community; improved attractiveness of downtown; improved access to backbone facilities, and potential for local economic development (through the provision of a more desirable central community business atmosphere and by potentially providing more direct access to business/industrial parks). The potential quantifiable benefits of constructing a bypass around a proposed community can be measured in three ways:

1. **The travel time savings** as a result of traveling on an improved (usually) higher speed bypass facility;
2. **The potential fuel savings** gained by avoiding starts-and-stops on the existing congested roadway segments; and,
3. The **potential crash reduction** as a result of vehicles traveling on a bypass facility with a lower crash rate.

A standardized set of analysis worksheets was developed for the Phase I assessment. These worksheets are termed bypass benefit/cost "Master Sheets," (an example Master Sheet is included with the Phase III Environmental Screening worksheet). The Master Sheets summarize quantifiable data that was input for each candidate bypass community (existing facility and the potential bypass facility). The data include: facility length, average speed limits, travel time, and percent bypassable autos and trucks. Benefits, in terms of dollar savings, are measured by comparing the value of time, fuel consumed and crash costs.

Costs of travel are calculated for the existing route assuming ADT's at the 1995 level and 2020 level. Cost of travel on the existing route after removing the bypassable traffic, plus the costs associated with travel on the bypass are then calculated. The difference in these costs are the incremental benefit of the bypass.

The candidate bypass route includes the potential bypass, plus the appropriate roadway termini at both ends of the bypass (along the existing route). This identification of start and end points is necessary to compare the potential bypass facility with the existing route segments, as taken from WisDOT's State Highway Plan Deficiency File.

Roadway lengths and speeds were added by segment (according to the Deficiency File segment breakdown) for the existing route. Each segment was categorized as either urban or rural, which was necessary for the

assignment of traffic capacities for each segment. WisDOT provided a potential alignment, from which the length of the potential bypass could be quantified.

The average daily traffic volume for the existing route was taken from the State Highway Plan Deficiency File. The file included 1990 volumes by segment, along with traffic forecasts in ten year increments. Traffic volumes for 1995 (the midpoint between 1990 and 2000) and 2020 were included on the worksheet. ADT's were multiplied by segment length to obtain Vehicle Miles of Travel for the existing route and the proposed bypass route. Because the traffic volumes in the deficiency files represent average annual daily traffic, a multiplier of 365 was used to convert segment volumes to annual traffic levels.

Roadways that were subject to high level of off-peak travel, such as recreational trips made during summer weekends, were identified. The following twelve communities were identified by WisDOT as being affected by these traffic patterns: Baraboo, Lake Geneva, Lena, Pound/Coleman, Wautoma, Eagle River, Antigo, Turtle Lake, Clayton, Clear Lake, Hayward, and Superior. Of the twelve, six have permanent count stations. The average variation between Friday traffic volumes and ADTs was found to be approximately 1.24 and the variation between the average ADT and the summer variations was 1.32. Therefore, a recreational factor of 1.64 was applied to represent rescheduled traffic impact conditions (1.24 x 1.32 = 1.64). Benefit/Cost calculations were made for average conditions and for peak recreational conditions. The "final" adjusted Benefit/Cost number assumed average ADT conditions to occur 70% of the time, and recreational conditions to occur 30% of the time.

Whenever possible, the volume of bypassable traffic was identified from local Origin-Destination (O-D) studies. For those cases where no O-D information was available for the a candidate bypass, WisDOT's State Highway Plan travel forecasting model was used to estimate through traffic and the number of trucks on the route. Occasionally, there was a difference in traffic volumes for "through" traffic on the corridor termini. In those cases, the station with the higher volume was used to calculate percent bypassable traffic.

The percent truck volume was applied to the ADT forecasts to determine the number of trucks using the bypass in the year 2020. The traffic assigned to the bypass was separated into truck and auto traffic and removed from the existing route traffic volumes.

Volume-to-Capacity (V/C) Ratios: Volume-to-capacity ratios for 1995 and 2020 were calculated. The capacities shown on Table 1 represent the maximum number of vehicles that can be accommodated on a specific roadway type, and are generally a function of the number of lanes and facility type. Depending on the v/c ratio, a traffic signal delay penalty of 5 to 60 seconds was added to each existing route segment through the urban area. The signal delay penalties represent an increase in travel time on the existing facility and are shown on Table 2.

TABLE 1

Roadway Type	Capacity (vpd)
Rural 2 Lane Principal Arterial	14,000
Rural 4 Lane Principal Arterial	28,000
Rural 4 Lane Expressway	55,000
Rural 4 Lane Freeway	64,500
Rural 3 Lane Principal Arterial	20,000
Urban 2 Lane Principal Arterial	17,000
Urban 4 Lane Principal Arterial	35,000

TABLE 2

Signal Penalty	
V/C Ratio	**Delay (Seconds)**
<.61	5
.61-.70	10
.71-.80	20
.81-.90	30
.91-1.	50

>1.0	60

Travel Time: Total travel time was estimated for those vehicles on the existing facility without construction of a bypass and compared to the total travel time considering construction of the candidate bypass facility in 1995 and 2020 (travel speeds were estimated using a combination of ADT, v/c ratio, number of traffic signals, and posted speed limit). After the total travel time was determined, a dollar value was associated with time. This factor was provided by the WisDOT Bureau of State Highway Programs, for automobiles and trucks as shown in Table 3.

TABLE 3

Time Values	
Vehicle Type	**Value (Dollars)**
Autos	$9.21
Trucks	$19.66

Crash Cost: Crash costs were calculated based on the number of crashes per 100 million miles of travel for each facility type. The existing route crash rates were based on the average of the 3-year period (1993-1995), taken from the Deficiency Files. Estimated crash rates applied to the candidate bypass facilities by facility type (and crash type) were provided by WisDOT. The crash rate on the existing facility was assumed to remain constant after the bypassable traffic was removed. Although the number of crashes are expected to be reduced on the existing facility after bypass construction, due to reduced traffic volumes, current research is inconclusive as to whether or not the crash *rate* is reduced (as shown by research conducted by WisDOT Bureau of Highway Operations, and reported in Transportation Research Board Report 1112).

All crash costs reflect 1996 dollars. The crash rates used in the matrix for the bypass facilities are shown in Table 4. Dollar values for injury and property damage were taken from WisDOT's major project development manual, and are shown in Table 5. For the purposes of this study, the cost associated with a fatal crash was considered that of an injury crash. This level of analysis did not allow for detailed research into crash causes and exact locations. In addition, this study's crash analysis is limited to a 3-year period. As a result, fatal crashes have been grouped with injury crashes, so as not to inordinately skew the results by including the high costs associated with a fatal crash. (Generally, crash analyses including traffic fatalities utilize detailed crash histories of a 10-year period, or longer.)

TABLE 4

Statewide Average Crash Rates	
Facility Type	**Crashes/100M Miles**
Interstate Highway	73
4 Lane Rural Freeway	85-89
4 Lane Expressway	126
2 Lane Rural Highway	186-210

TABLE 5

Crash Costs	
Crash Type	**Cost**
Property Damage	$7,108
Injury/Fatality	$48,247

Fuel Cost: Fuel cost savings were quantified by multiplying the total vehicle miles of travel for the existing route and the bypass route by the appropriate fuel consumption rates, depending on facility type and speed. As with the crash analysis and travel time analysis, fuel savings were calculated for both 1995 and 2020. The fuel

consumption rates were taken from transportation demand travel forecasting models used by WisDOT to evaluate and compare alternative traffic networks. The fuel consumption rates are shown on Table 6. Fuel costs were set at $1.25 per gallon to reflect a reasonable average cost for 1996.

TABLE 6

Fuel Consumption Rates (Gallons per Mile)			
MPH	**Freeway**	**Express**	**Prin. Art.**
20	0.06899	0.09244	0.09244
25	0.06899	0.09102	0.09102
30	0.06899	0.09428	0.09428
35	0.06830	0.09497	0.09497
40	0.06690	0.09312	0.09312
45	0.07070	0.09326	0.09326
50	0.07164	0.09326	0.09326
55	0.07427	0.09326	0.09326
60	0.08006	0.09326	0.09326
65	0.08638	0.09326	0.09326
70	0.09269	0.09326	0.09326

After the benefit values for 1995 and 2020 were calculated, annual average benefits in 1996 dollars were calculated assuming a consistent growth in ADT's over the 25 year period. The total benefits gained over the 25 year period were annualized to arrive at an equivalent annual benefit among each bypass facility.

BYPASS FACILITY COSTS

The cost associated with each proposed bypass is based on the actual costs of ten bypass projects constructed by WisDOT since 1980. These bypasses include the communities of Dodgeville, Fort Atkinson, Neillsville, New London, Plymouth, Rhinelander, River Falls, Tomahawk, Verona, and West Bend. The projects were sorted according to the type of bypass constructed; either a four lane expressway or freeway, a 2 lane convertible highway, or a two lane principal arterial.

Added to the construction costs were associated costs for design, right-of-way acquisition, utility work, and the cost of upgrading the existing route prior to the jurisdictional transfer of a facility. A 10% cost adjustment factor was also added for contingency costs. All costs were converted to 1996 dollars using WisDOT's Moving Index for Highway Construction Costs. Because there was some variance in construction costs between projects within each category, median values for construction were selected for use in development of a construction cost per mile factor. Table 7 shows the complete annualized cost per mile factors for each facility type. *Note: The annualized costs in the table below reflect all costs anticipated to be incurred during the entire life expectancy period of the facility.*

TABLE 7

Total Equivalent Annual Costs	
Facility Type	**Cost/Mile**
4 Lane Freeway	$333,000
4 Lane Convertible	$317,000
4 Lane Non Convertible	$278,000
2 Lane Convertible	$223,000
2 Lane Non Convertible	$131,000

Costs for conversion from an expressway to a freeway or from a two lane to four lane facility was assumed to occur after 10 years when traffic volumes warranted. Maintenance and the cost for scheduled rehabilitation of existing pavements were also annualized and are included in the cost per mile factors shown on Table 7. All future year costs such as periodic pavement rehabilitation were adjusted to reflect present value dollars (1996) using an adjustment factor equivalent to the recent rate of inflation.

Each bypass facility was assumed to have a 50 year useful life with the necessary pavement rehabilitation costs included over that time period. The cost assumptions for a proposed bypass facility and existing route are documented in detail in each project's bypass screening matrix.

Costs for pavement rehabilitation and maintenance on the existing route were quantified by assuming each route was milled and overlaid every 10 years after the jurisdictional transfer was completed. To determine how much additional public costs would be incurred by constructing a bypass, the costs for future rehabbing of the existing route were subtracted from the costs to build and maintain the bypass, leaving only the incremental cost of the bypass.

The annual equivalent cost for each bypass was calculated based on total project costs. The estimated project cost was amortized over a 50 year period using a discount rate of 5% to arrive at an equivalent annual cost factor for each bypass facility.

Summary: The final benefit/cost ratios for all candidate bypass projects were calculated with this methodology. Each potential bypass project was ranked, in order, based on the benefit/cost analysis in Phase I. The benefit/cost ratio was assigned a factor, shown in Table 8 below.

Recognizing the importance of the benefit/cost ratio, the benefit/cost factor was then given a weight of 20 for a maximum score of 100 points. It is recognized that other factors other than benefit/cost ratio impact the bypass decision making process. Consideration of these factors are included in Phase II and Phase III of this Bypass Policy Evaluation Study, which are described in the following sections of this report.

TABLE 8

B/C Ratio	Factor
<0.0	0.50
0.01-0.50	1.00
0.51-0.70	2.00
0.71-1.00	3.00
1.01-1.20	4.00
>1.20	5.00

or impact each item has on the bypassed community.

PHASE II SCREENING: QUALITATIVE COMMUNITY IMPACT ASSESSMENT

The Phase I analysis, as noted, focused on quantifiable travel benefits to motorists currently utilizing the existing or proposed bypass facility (specifically, the reduction in travel time, crashes, and fuel consumption) and facility construction/maintenance costs. The Phase II analysis provides additional recognition of the benefits of bypasses to the communities that are bypassed, since the community as a whole generally benefits from the reduced traffic and additional capacity provided by a bypass.

The maximum total score assigned to the Phase II analysis is 100. Seven categories were identified as having a potential benefit to a community. Each of the categories in Phase II were assigned a factor. The factors associated with each category of Phase II are identified in Table 9 below. Each category was weighted differently to emphasize its relative importance to each of the categories based on research conducted by WisDOT and HNTB. The following narrative briefly describes the weighting (points) assigned to each Phase II category, and the rationale behind the factors and the weighting within each category.

1. **Projected 2020 V/C Ratio on Existing Facility (3 Points):** The projected Volume-to-Capacity (v/c) ratio factor is assessed assuming a no-build bypass condition. The v/c provides an indication of the level of congestion expected in the community if nothing is done to alleviate traffic growth on the existing facility. Communities that score better under this factor are expected to receive greater congestion relief (with a bypass) than communities that do not score as well. This factor also indicates where congestion problems are most severe, and thus indicates a need to consider a solution to relieve congestion such as constructing a bypass.
2. **Reduction in the Volume of Through Truck Traffic (4 Points):** Research has shown that one of the most important factors in determining the need for a bypass is the expected reduction of truck traffic in the potential bypass community. Communities typically experience less noise and pollutant emissions as the result of truck traffic reductions and less wear and tear on the roadway facility and downtown surroundings. Many WisDOT District staff indicated that this is a major concern expressed by community leaders when the need to construct a bypass is discussed. As such, this factor was given a relatively high weighting in the Phase II analysis. The reduction of through truck traffic is defined as the number of trucks removed from the original facility (i.e., diverted to the bypass). The number of trucks removed from the existing facility is used because communities will experience a benefit from having a large amount of truck traffic removed from their community.
3. **Reduction in the Volume of Bypassable Traffic (4 Points):** The amount of total bypassable traffic removed from a community is another very important consideration in the bypass decision making process. Reduced vehicular traffic within a community provides a more appealing environment for those patronizing local business establishments along the original route (i.e. - a safer pedestrian environment, and improved vehicular circulation for those patronizing local business). This is especially true in communities with existing facilities serving as a route for tourist destinations or other recreational areas.

TABLE 9: SHP CANDIDATE BYPASS PHASE II SCREENING
PHASE II CATEGORY FACTORS

CONGESTION REDUCTION FACTORS

V/C RATIO'S		THROUGH TRUCKS		BYPASSABLE TRAFFIC	
V/C Ratio '20 Existing Fac.	Factor	Reduction of Thru Trucks	Factor	Volume of Bypass-able Traffic	Factor
≤ 0.5	0.50	≤ 0 -100	0.50	≤ 1,000	0.50
0.51-0.65	1.00	101 - 200	1.00	1,001 - 2,500	1.00
0.66-0.75	2.00	201 - 350	2.00	2,501 - 4,000	2.00
0.76-0.85	3.00	351 - 500	3.00	4,001 - 6,500	3.00
0.86-0.95	4.00	501 - 700	4.00	6,501 - 9,000	4.00
0.96+	5.00	> 700	5.00	> 9,000	5.00

CORRIDORS 2020 Multilane Connector System	
On System	Factor
No	0.50
Yes	5.00

ECONOMIC FACTORS

POPULATION		RETAIL TRADE		GROWTH TRENDS	
2015 Population	Factor	% of County-Wide Trade	Factor	% of Statewide 1990-2020	Factor
≤ 2,500	0.50	Not Listed	0.50	≤ 0.0%	0.50
2,501 - 5,000	1.00	0% - 30%	1.00	0.1 - 50%	1.00
5,001 - 10,000	2.00	31% - 50%	2.00	51% - 75%	2.00
10,001 - 15,000	3.00	51% - 65%	3.00	76% - 100%	3.00
15,001 - 20,000	4.00	66% - 80%	4.00	101% - 125%	4.00
≥ 20,001	5.00	81% - 100%	5.00	> 125%	5.00

In addition to the benefits realized by the existing corridor traveler (considered explicitly in Phase I), this factor gives consideration to the benefits that traffic reduction provides within the community. The reduction of bypassable traffic is considered in terms of the total number of vehicles diverted to a bypass.

4. **Corridors 2020 Multilane Connector System (5 Points):** One of the goals of the Corridors 2020 Backbone system is to maintain “freeway speeds” on the entire system. The Corridors 2020 Multilane Connector system is also a “high priority” highway system, intended to link significant economic and tourism centers to the Corridors 2020 Backbone system. As such, if a potential bypass facility is located along the

Corridors 2020 Multilane Connector system, the Phase II analysis provides for strong recognition of these "high priority" highway corridors.

5. **Bypass Community Population (2 Points):** Research indicated that studies have shown larger and growing cities experience fewer negative economic impacts as a result of bypass construction than communities with smaller populations. *Although it is important to note that research indicates that these negative impacts can be overcome with time.* The projected 2015 population was used as an indicator of how many people within a community might benefit in the future from the construction of a bypass. The rationale is that the larger the community, the greater the number of people that will likely benefit from the reduced local congestion provided by a bypass around the community.

6. **Percent of County-Wide Retail Trade in Bypass Community (1 Point):** This factor provides some consideration of how a bypass might affect merchants located within the community. Generally, the larger the community's economic base, the lower the potential for a negative impact on the businesses located within the community, although individual business may be impacted differently. Communities that are trip attractors will not be impacted as much by the loss of pass-by traffic after a bypass is constructed. Retail trade is calculated as a percentage of the community's sales compared to that of the county. This accounts for a community that has a smaller amount of total retail trade sales but has a relatively high importance within its county (such as the county seat in a rural area)

7. **Community Growth Trends, as a Percent of Statewide Growth (1 Point):** This factor provides some weight to recent growth trends within a potential bypass community. This reflects the importance of a bypass to growing communities in the sense of the need for an accelerated timeframe for bypass construction given higher growth rates relative to the state as a whole. Since the size of the bypass community is already accounted for in another evaluation factor, this factor was weighted relatively low.

Summary. The seven criteria identified to have a high impact on the bypass decision making process are :

1. Projected 2020 V/C Ratio on Existing Facility 3 Points
2. Reduction in the Volume of Through Truck Traffic 4 Points
3. Reduction in the Volume of Bypassable Traffic 4 Points
4. Corridors 2020 Multilane Connector System 5 Points
5. Bypass Community - 2015 Population 2 Points
6. Percent of County-Wide Retail Trade in Bypass Community 1 Point
7. Community Growth Trends, as a Percent of Statewide Growth 1 Point

The seven categories of the Phase II analysis are reflective of the research conducted, and the importance or impact each item has on the bypassed community.

General Population Characteristics
Study Area *
1970-1980

	AREA							CITY				
Population Category	1970	% of Total Area Population	% of City Total in Category	1980	% Change 1970-1980	% of Total Area Population	% of City Total in Category	1970	% of City Total Population	1980	% Change 1970-1980	% of City Total Population
Black	9,167	35.1	8.7	6,351	-30.7	32.3	4.3	105,088	14.6	146,940	+39.8	23.1
Spanish	999	3.8	6.4	1,378	+37.9	7.0	5.3	15,589	2.2	26,111	+67.5	4.1
Persons under 18	7,731	29.6	3.3	4,321	-44.1	22.0	2.5	234,917	32.7	171,866	-26.8	27.0
Persons 65 & Older	3,516	13.4	4.4	2,985	-15.1	-15.8	3.8	79,211	11.0	79,320	+0.1	12.5
Person in Group Quarters	1,228	4.7	7.5	1,186	-3.4	6.0	6.6	16,276	2.3	17,923	+10.1	2.8
Total	26,154	100.0	3.6	19,648	-24.9	100.0	3.1	717,372	100.0	636,297	-11.3	100.0

* Census Tracts 104 through 108, 110 through 115, 142.

SOURCE: 1970 Census of Population, U.S. Bureau of the Census, Milwaukee Department of City Development.

FDM 25-10-1 Resource Identification *February 15, 1988*

1.1 Introduction

Environmental impact analysis can require the collection and analysis of a significant amount of demographic and economic data. Therefore, it is appropriate that those conducting the research should have some guidance as to the types of data available and their likely sources. Most impact analysis is an assessment of a future condition and, in order to evaluate the potential impacts of that condition, a good understanding of the existing, or base, condition must be provided. The information presented in this section will help in the preparation of that base.

1.2 Objectives

The principal objective of this section is to acquaint users of this manual with the types of resources available to assist them in socio-economic impact analysis. It is not intended to provide an exhaustive list of published or unpublished resources, but rather to provide information on several basic resources and where others might be found. A secondary objective is to give the user an understanding of the difference between primary and secondary resources.

1.3 Data sources

1.3.1 Primary Data Sources

Primary data is gathered directly from the public, either in the form of public records or through the use of surveys or polls. Primary data is usually the most timely and reflective of demographic conditions and public attitudes or opinions. However, in the case of public attitudes or opinions, the methods of gathering primary data are also the most expensive to implement and interpret. Because of this, opinion survey techniques should be used with discretion where the need can be justified. Its potential value should be considered when the transportation improvement is of significant size or generates sufficient controversy to warrant the expenditure of time and money required for administering and analyzing an impartial opinion survey.

1.3.2 Secondary Data Sources

Secondary data sources are a compilation of primary data sources. For example, raw census data would be considered primary material while a census report which compiled and summarized that data would be considered secondary. Most printed resources are considered secondary and these will probably make up the great bulk of materials used in any analysis. Examples of these types of materials include printed reports and studies, histories of communities, periodicals, etc.

One example of a secondary source available in all WisDOT Region offices, and most other agencies or consulting firms is, the biennial Wisconsin Blue Book. The Blue Book is a good source of general information including demographic, political, and legislative information. Most large libraries should contain a fairly complete collection.

1.3.3 Demographic Data Sources

Sources for any demographic data required for an environmental report include the Planning Analysis and Data Section of the Division of Planning and Budget located in Room 901 of the Hill Farms Transportation Building and the Demographic Services Center of the Wisconsin Department of Administration located in the GEF-I State Office Building in Madison.

These sources also have specific reports generated by the Census Bureau which may provide additional information for socio-economic impact analysis. These include "General Social and Economic Characteristics," "General Population Characteristics" and "Detailed Housing Characteristics." All three reports cover the entire state and can supply an excellent demographic base from which to work.

Those areas of the state that are designated Standard Metropolitan Statistical Areas (SMSA) have separate census documents prepared for them. As of the 1980 census, the SMSA's in Wisconsin are Appleton-Oshkosh, Duluth-Superior, Eau Claire, Green Bay, Janesville-Beloit, Kenosha, La Crosse, Madison, Milwaukee, Racine, Sheboygan, and Wausau.

As the census is conducted only every ten years, its information becomes progressively outdated until the population is once again recounted. Fortunately, other governmental agencies also need more timely

information and have developed techniques to estimate populations for the intermediate years.

Annually, on October 10, the Bureau of Program Management of Wisconsin's Department of Administration publishes its "Final Population Estimates." This document is statutorily required (ss. 16.96, Wisconsin Statutes) and is ". . . deemed to be the official State population estimate(s) . . ." The Statutes also say that this document ". . . shall be used for all official estimate purposes . . ." This document is used in computing the various "shared taxes formulae" and primarily indicates estimated changes in the population between census years for the state, its counties and municipalities. It does not offer other demographic information. However, it does indicate where population changes are taking place and to what degree. If population changes are not significant, it can be assumed that most of the other demographic characteristics have not changed to any significant degree.

Another useful source of information is maintained by the Department of Rural Sociology of the University of Wisconsin-Madison and the UW-Extension. The Applied Population Laboratory maintains basic population and housing data from the 1980 census, including economic data on income, poverty, and the labor force. Also included in this data base are tables on personal income by source, employment and unemployment, population projections from 1980 to 2010, and data on births and deaths. Other types of primary socio-economic data are also available. The Applied Population Laboratory data base can be tailored to any study area made up of counties, cities, villages, and towns for any combination of data tables (some are limited to county coverage) for a fee.

In addition to federal or state census figures and estimates, some local communities, counties, and regional planning agencies develop additional demographic materials to meet their particular localized needs. These agencies should be contacted, as appropriate, to determine what materials exist and how they can contribute to the analysis being conducted.

1.3.4 Economic Data Sources

A number of sources of economic information exist. Those that reflect the community being profiled should be used. While much can be obtained from census documents, other sources should be used as well. For example, in rural or rural oriented 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 these statistics upon request and many are contained in the WisDOT Division of Planning and Budget Library located in the Central Office in Madison.

The U.S. Bureau of the Census conducts several special censuses designed to provide economic information. These include the Census of Retail Trade, Census of Agriculture, and County Business Patterns, among others.

The Wisconsin Job Service maintains unemployment information by state, county, and, in the case of communities with more than 50,000 in population, city. This information can be of great use in determining the employment effects of a proposed project on an area as described in greater detail earlier in this chapter.

Another useful source of economic data available from some communities is the Overall Economic Development Plan. This document is mandated by the U.S. Department of Housing and Urban Development for 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 city, county, or regional planning agency may have developed its own set of economic data which can be used as part of the environmental analysis. In addition, local real estate brokers or developers, or financial institutions, may have information of use.

1.3.5 Other Data Sources

In addition to economic information, other sources can also provide pertinent information for developing a background profile. The number of children attending a school system, as well as information about that system, can be obtained from the local superintendent. Information about a particular school in a district can be obtained from the officials in that school. The school's transportation director can advise as to transportation issues or concerns.

Local planning reports can supply a great deal of pertinent information about a community, how it has approached problems in the past, and how it will approach them in the future. It is important to learn how the community has responded to the plan and how much of the plan has been implemented. For example, while plans illustrating the future sewer needs of a municipality indicate which area(s) are expected to experience growth over the life of the plan, it is also important to learn what, if any, sewer extensions have actually been made.

The mass media in and around a community should be monitored for indications of current local issues, values

and attitudes. Newspapers, television or radio news programs, or editorials can provide insights to local attitudes toward a proposed project and related issues. Newspaper articles can be clipped and filed, as can the transcripts or tapes from television or radio programs. Other information sources such as bulletin boards, kiosks, bumper stickers, and newsletters can contribute to an understanding of current values and attitudes in the community.

1.4 Estimates and Projections

Up to this point, the information needed for the community profile has been concerned, for the most part, with the community's past and existing conditions. By developing an historical perspective, and through the use of current information, a good level of understanding of the community can be achieved. However, the past and present are only portions of a community's profile. The future must be anticipated to predict how a proposal might affect subsequent populations and conditions or create other long-term effects.

Population projections based on known data or observations are valid extrapolations of existing conditions and are required by law under the same statute mandating population estimates (ss. 16.96, Wisconsin Statutes). The Wisconsin Population Projections are periodically prepared by and for state government with the stated purpose being ". . . to present a set of 'general utility' projections of the population of Wisconsin arranged and aggregated to service the planning and decision-making need of the state and local government agencies, the legislature, the executive office, and other users, public as well as private."

Wisconsin Population Projections presents projections for the state, various state districts (not necessarily the same as the WisDOT Regions), and the counties. Figures are not given for cities, villages, and towns. This information can be obtained from the Demographic Services Center of the Department of Administration, 101 S. Webster Street in Madison.

Other sources of population projections may exist in a community. These projections are usually prepared for local or regional planning purposes. It should be remembered that population projections merely indicate what a future population may be, given a set of criteria and assumptions. In the concluding remarks to Wisconsin Population Projections, the following statement clarifies the status of all population projections: "The reader should bear in mind that these are projections which show what would happen if certain combinations of fertility, mortality, and net migration rates were to materialize. They reflect in general what the current trends portend for the future. The task of predicting the actual course of social, economic, and demographic trends is an extremely difficult one."

FDM 25-10-5 Development of a Community Profile

February 15, 1988

5.1 Introduction

Because transportation projects can affect the socio-economic environment of a community in a variety of ways, it is necessary to understand a community's past, present, and near-term future and to develop a base line of data against which to measure the socio-economic impacts of a project. After this base line, or profile, of the community has been developed and digested, predictions can be made as to the probable impacts of a proposed action on the near and longer term future socio-economic conditions of the community or project area.

5.2 Objectives

The objective of a community profile is to obtain qualitative and, where possible, quantitative descriptions of the socio-economic environment of a project area. A project area can be made up of a part of a municipality i.e., a neighborhood or commercial district), an entire municipality or group of municipalities, or a rural area. The profile provides basic information about a community's size, demographic characteristics, economy, and projected trends.

A community profile is developed with information acquired throughout the facilities development process and compiled with a view to the indicators described in each of the impact categories. This information should be noted, used, and filed in a manner so that it can be used with its corresponding impact category. A discussion on the use of the community profile is found in FDM 25-15-1.

5.3 Levels of Detail

The information needed for a community profile can be gathered at three levels of detail:

5.3.1 Level I -Minimal Detail

This approach is characterized by heavy use of census data at the tract scale or larger. It relies on prior reports or studies to determine community boundaries and other major characteristics. Direct data collection includes some citizen participation procedures (e.g. meetings, workshops) plus field reconnaissance and mapping of land uses and facility locations and types.

5.3.2 Level II -Moderate Detail

This approach uses all of the above information but also adds, as appropriate, primary data including, for example, block level statistics; building permits or utility company data that go beyond census levels of detail, but could stop short of public opinion surveys. The approach is usually characterized by the use of relatively active citizen participation procedures in order to supplement statistical data with local attitudes, values, and preferences.

5.3.3 Level III -Maximum Detail

This approach would supplement the above procedures with direct surveys and interview techniques in order to collect primary data involving attitudes, values, needs, and preferences of community residents. Alternatively, similar analysis could be accomplished through use of participant observer techniques.

These levels of detail can be combined in any fashion, depending upon the needs of an individual project.

5.4 Contents

Development of a community profile begins with a description of the project area to be studied. Depending on the location, size, and complexity of the proposal, the second step is the expansion of this immediate area of reference to consider other political subdivisions and/or interest groups that may experience or perceive impacts as a result of the proposal. (Note that the larger the area of reference, the more secondary data, e.g., census, historical, political, etc., available. This is important because primary data is more difficult and expensive to gather and interpret than secondary data.)

The basic data which should be part of a community profile includes the following:

1. Population totals and demographic characteristics for the project area and general area (if the project area is only part of a municipality). Included are age, sex, race, and ethnic group characteristics.
2. Economic characteristics, such as income levels, employment levels and types, property tax levels, development trends and probabilities, retail sales and the community economic base (i.e., predominantly a manufacturing community or a service center, etc.).
3. Housing characteristics, such as number, age and condition of dwellings, degree of owner occupancy, density, vacancy rates, equalized values, and degree of absentee ownership.
4. Community facilities, such as schools, churches, hospitals, police and fire service, and other public educational and recreational facilities.

The manner in which this data is incorporated in the environmental review process is discussed in FDM 25-15-1.

FDM 25-15-1 Use of the Community Profile

February 15, 1988

1.1 Objectives

The evaluation of socio-economic factors is primarily a subjective process which uses data and observations about an area to develop a base against which to measure changes brought about by a transportation project.

The evaluation of socio-economic impacts resulting from a transportation project is primarily a comparison between existing or projected conditions without the project and anticipated conditions if the project proceeds. The means used to understand past, present and currently projected future conditions is the community profile. The means used to anticipate impacts is the imposition of the project alternatives upon the base conditions and the observation of the probable changes in those base conditions. Impacts vary by alternative as to number, magnitude, exposure to populations, degree of irreversibility, potential policy conflicts, and level of public controversy.

1.2 Application of the Community Profile to the EIS Process

The community profile is recommended here as an organizational tool which will facilitate an orderly and efficient review of the probable impacts of a proposed project. The profile should, in general, include those subjects discussed in greater detail in FDM 25-5-1 through FDM 25-5-30. Issues emphasized during the scoping process or in the course of developing the material for the draft Environmental Impact Statement (EIS) may dictate the relative weight, or importance, assigned to the various subjects. In any case, each subject should be developed only to that degree necessary to accurately assess the probable impacts.

In the case of an EIS, it is recommended that the community profile be developed in a format which enables it to be used in the chapter describing the existing environment. This is described in greater detail in FDM 20-30. This provides for the greatest efficiency during the data collection phase. The impacts measured against the community profile of existing conditions can then be presented in a parallel format in the chapter of the EIS dedicated to impact assessment.

The format of the EIS as outlined in FDM 20-30 is the most conducive to the direct use of materials developed for the community profile. In the case of any other environmental analyses, the Screening Worksheets described are used and editing in the material contained in the community profile will be required. A discussion of the use of the Screening Worksheets follows in Section 15, Subject 5 of this chapter.

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/environment/formsandtools.aspx

FDM 25-15-5 Adaptation of the Community Profile to Screening Worksheets

February 15, 1988

5.1 Introduction

Although some transportation projects will require a full Environmental Impact Statement (EIS), many others will only need an Environmental Assessment (EA) or lesser report. In most cases, these environmental reviews are conducted using the environmental Screening Worksheets.

https://wisconsindot.gov/Pages/doing-bus/eng-consultants/cnslt-rsrces/environment/formsandtools.aspx

Whereas, an EIS provides a ready format for the use of the community profile in a relatively intact form, the Screening Worksheets, which are arranged topically, do not. This procedure is designed to assist in the transference of information from this chapter, which is organized to facilitate EIS formats to the worksheet format. The procedure should be used as an index, directing those undertaking Type II and III environmental studies to those sections of this chapter, which might provide assistance on a given project. Most aspects of this chapter will most probably not apply in all cases.

In most cases, socio-economic information will have to be culled from several areas and, in some cases, the existing and impact information will be presented together rather than separately. In some lesser types of environmental review, or for those projects with minimal impacts, a community profile may not be necessary at all. A review should be conducted early on this point to avoid unnecessary efforts.

5.2 Basic Sheets

With two exceptions, socio-economic information is not generally required in the four basic sheets.

The two exceptions are on Basic Sheet 4, Items 4 and 6. Item 4 asks for a general description of surrounding land uses which should include information on community, recreational, industrial, commercial, and residential facilities from the base data collected for the community profile.

Item 6 asks, among other things, for a description of the results of the public information program and is an opportunity to discuss issues of concern which may have arisen during any of the public information activities conducted during the project.

5.3 Factor Sheet “A” -General Economics

Factor Sheet "A" is directly related to the information collected in the community profile. All of the information required here should be available from that source.

For Item 1, information should be prepared as described in FDM 25-5-5 through FDM 25-5-20 for those sections which apply to economic issues. These include the following topics with procedure references:

- Development Issues (FDM 25-5-5)
- Property Taxes (FDM 25-5-10)
- Employment (FDM 25-5-10)
- Tax Revenues (FDM 25-5-10)
- Retail Sales (FDM 25-5-10)

Item 2 and 3 will use the results of the analysis performed on development issues and specific business districts in the project area. The response should be directed toward the potential for economic development.

5.4 Factor Sheet “B” -Community or Residential Areas

Factor Sheet "B" will use information developed under FDM 25-5-5, FDM 25-5-25 and FDM 25-5-30; Community and Neighborhood Cohesion, Affected Social Groups, and Relocation, respectively.

The first Item asks for a description of the community and includes land uses, demographic characteristics, and community facilities. Most of the rest of Factor Sheet "B" discusses changes in those conditions. The descriptions of existing conditions should relate to the impact categories and should be prepared only to the depth required to adequately complete the impact analysis.

Item 3 discusses changes in land use based upon the description presented in Item 1. items 4, 5, 6, 7 and 8 ask for descriptions of impacts for the categories summarized in the statement of existing conditions. Items 9, 10, 11 and 12... refer to the relocation information with some assistance from the discussion of affected social groups. Item 11 also provides an opportunity to expand upon any issues regarded as controversial or significant by residents.

5.5 Factor Sheet “C” -Commercial and Industrial Impacts

Factor Sheet "C" involves impacts on commercial and industrial areas affected by a proposed transportation project. Several areas of study prepared for the community profile can be used here. These include the following sections with procedure references:

- New Development (FDM 25-5-5)
- Retail Sales (FDM 25-5-10)
- Public and Private Development Plans (FDM 25-5-15)
- Existing Business Districts (FDM 25-5-20)

Item 1 calls for the description of the existing environment and Item 2 for the statement of impacts. As before, the description of the existing environment and the discussion of impacts should be no more than that required to adequately address the issues requested.

FDM 25-20-1 Mitigation Measures

February 16, 2021

When an adverse impact on the socio-economic environment is identified and evaluated, some form of mitigation is often desirable to reduce or eliminate the impact. Mitigation normally involves one or a combination of factors such as Planning Measures, Design Measures, Access Control Measures, and Financial Measures. Other mitigative measures can also be promoted, even though they are generally outside the powers of the WisDOT to implement.

1.1 Planning Measures

When it is apparent that proposed transportation improvements would impact the socio-economic environment of a community it should be determined whether or not there are alternatives that would reduce or eliminate adverse effects. This may involve actions such as a change in the proposed alignment away from the most severely impacted areas. No clear set of criteria exists to provide a standard that would automatically trigger realignment considerations. Nevertheless, the possibility of realignment for socio-economic reasons should be considered when the anticipated impacts warrant such a decision or whenever significant controversy regarding a proposal has developed.

Land use control through zoning is a potential mitigative measure that is often overlooked. Though WisDOT has no authority to control land use outside of its right-of-way, it can recommend to the local unit of government zoning changes that would promote compatible land uses and help reduce or avoid undesirable socio-economic impacts. Another planning measure that can reduce socio-economic impacts is to acquire, as part of the project right-of-way, sufficient land to provide for the inclusion of a buffer zone designed as an integral part of the highway improvement.

1.2 Design Measures

The joint development of a right-of-way with two or more modes of transportation or utilities can result in the reduction of right-of-way acquisition and, consequently, the socio-economic impacts on a community. For example, the use of excess right-of-way for the joint development of adjacent park or recreation facilities can result in positive impacts. However, a number of steps involving coordination with a variety of governmental agencies and the private sector must be conducted prior to any decision to attempt joint development of right-of-way.

Roadway design elements that reduce right-of-way requirements can reduce the project's impact on a community's housing stock abutting the transportation improvement.

1.3 Access Control Measures

Control of access to a transportation facility is a measure that can be used to lessen the need for future improvements. Sections 84.29, 84.295, f 84.25, 86.07 (and Chapter Hwy 31, Wisconsin Administrative Code), and Section 236.13 (and Chapter 33, Wisconsin Administrative Code) all refer to access control measures that can be used to designate, maintain, or reduce the type and number of access points to highways of different functional classifications.

1.4 Financial Measures

This mitigation measure is most often associated with relocation assistance. Specifically, relocation assistance requirements specify:

". . . that persons displaced by any public project be fairly compensated by payment for the property acquired and other losses hereinafter described and suffered as a result of programs designed for the benefit of the public as a whole;… payment of such relocation assistance and assistance in the acquisition of replacement housing [and business sites] are proper costs of the construction of public improvements." [Excerpted from Section 32.19(1), Wisconsin Statutes.]

Persons displaced by a transportation improvement are entitled to reasonable moving expenses and replacement facility payments in relation to whether or not they own or rent the building they are in. For more information, see Chapter 5 of the Real Estate Program Manual (REPM). The environmental document does not discuss individual acquisition situations but should state that the required federal/state acquisition and relocation procedures will be followed.

In any case involving acquisition of homes or businesses, coordination with the Region and BTS Statewide Relocation Program Coordinator is necessary as part of the project development process. Impact mitigation measures must be considered in all cases where an impact is expected to occur. Those shown above are the most common, but do not constitute all that can be done. It should be remembered that as each transportation improvement is unique, so are its impacts and potential mitigative measures.