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**SEIA in the Transportation Sector:  
The United States Experience**

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# **Strategic Environmental Impact Assessment in the Transportation Sector: The United States Experience**

## **Introduction**

Strategic environmental impact assessment in the United States transportation sector must be viewed with an appreciation of how transportation systems in the United States are financed and developed. The Federal government is quite involved in financing many transportation improvements, but owns few of the highways and virtually none of the urban mass transit systems or freight railroads. Highways in the U.S. are primarily owned by State or local governments. Urban mass transit systems are usually owned by local or metropolitan transit authorities. Freight railroads are owned by private companies. The national intercity railroad service is owned by a Federally assisted public corporation, AMTRAK.

The U.S. Congress has organized Federal assistance for surface transportation in a way that allows State and local governments to select how to spend the Federal funds. Highway and urban mass transit improvements are generally eligible for Federal financial assistance. Freight railroad improvements are generally not eligible for Federal assistance. Intercity passenger railroad improvements are financed through a special national budget for AMTRAK.

In deciding how to use Federal transportation funds, State and local governments must conduct systematic planning process. The planning process must consider environmental factors in general. The Federal government does not direct how environmental factors are to be considered. Some planning processes involve a thorough environmental impact assessment at a strategic level, while others are much less structured.

The one exception is consideration of air quality. In areas which do not meet national air quality standards, Federal legislation requires that the transportation plan demonstrate how air quality standards will be met in the future. This involves quantitative modeling of air emissions from transportation sources. If the transportation plan cannot show that it will contribute to air quality levels that satisfy the standards, then Federal funds cannot be used for the projects on the transportation plan.

Some States have environmental policy laws which require environmental impact assessment for plans. In those cases, State or local governments will conduct environmental impact studies before approving transportation plans or comprehensive plans. The amount of detail in the environmental impact studies varies a great deal from state to state.

### Three Examples of Strategic Environmental Impact Assessment

The remainder of this paper describes 3 examples of strategic environmental impact assessments. The first is about the long-range transportation plan for the Seattle, Washington metropolitan area. The second is about the statewide transportation plan for the state of Wisconsin. The third is about the I-69 international trade corridor from Mexico to Canada.

#### Seattle, Washington Long-Range Transportation Plan

The strategic environmental impact assessment in this case was conducted by a metropolitan level transportation planning organization to help decide the types of transportation improvements to make over the 25 year period from 1996 to 2020.

Seattle, Washington is a metropolitan region of 3.2 million population, in an area of approximately 110 kilometers by 50 kilometers, located in a water dominated area near the Pacific Ocean. Environmental issues of concern include air quality, water quality, fish, and quality of life in communities. The governments of the metropolitan Seattle region wished to select the best mix of transportation improvements from environmental and transportation viewpoints. The estimated 20 year budget for the transportation improvements was approximately \$60 billion (US).

In accordance with the Washington Environmental Policy Act (the law covering state and local actions in the state of Washington), the metropolitan planning organization prepared an environmental impact statement as part of its long-range transportation plan. The environmental impact statement evaluated a number of transportation system alternatives, including different combinations of general highway construction; preferential lanes for car pools and buses; heavy rail, light rail, and buses; bicycle and pedestrian facilities; and transportation demand measures, such as transportation pricing strategies and enhanced telecommunications. Four system level alternatives were evaluated in detail: (1) no action, (2) moderate capital investment, (3) balanced transportation investment, and (4) reduced automobile dependence. Each alternative had lists of projects to be implemented as part of that alternative.

Of the system level alternatives evaluated, the Reduced Automobile Dependence alternative is particularly interesting from an environmental viewpoint, because it involved considerable change from traditional transportation thinking in U.S. metropolitan areas. On the transportation side, this alternative emphasizes mass transit, bicycle, and pedestrian facilities. The highway network would not be expanded; instead, a number of existing highway lanes would be taken away from general purpose use and would be converted to use only by car pools and buses. Considerable funding would be used for environmental retrofit projects, such as noise barriers, fish passages, and stormwater treatment measures.

Impacts evaluated in the environmental impact statement for each system level alternative included both transportation performance measures and environmental quality indicators. The transportation performance measures included measures of delay and traffic congestion and the predicted modal split for each system alternative. The environmental quality indicators included air quality, noise, fish passage and fish population, and water quality.

Based on the information presented in the environmental impact statement and considerable public comment on this information, the Washington State government and the local governments of the Seattle metropolitan region agreed to adopt a transportation plan which represented a variety of different types of improvements. It was neither a continuation of the trend of highway improvements nor was it the radical shift represented by the Reduced Automobile Dependence Alternative. The participants in the planning process believed that their selection represented the best balance between environmental and transportation benefits.

### State of Wisconsin Transportation Plan

This strategic environmental impact assessment was conducted by the State of Wisconsin Department of Transportation to assist in developing a multi-modal statewide transportation plan covering the period from 1995 to 2020. The plan included investment strategies for intermodal transportation improvements in urban and rural transportation of passengers and freight. The plan guides the investment of approximately \$40 billion (US) over a 25 year period.

Wisconsin is a state of 5.2 million people covering 168,000 square kilometers of area. It is primarily a rural state, famous for its dairy products. It has one large metropolitan area, Milwaukee, with a metropolitan population of 1.6 million. Environmental issues of concern include protection of sensitive ecosystems, urban growth that is converting farmland into suburban development, air quality, and maintaining the quality of life in Wisconsin's communities.

The Wisconsin Department of Transportation conducted this strategic environmental impact assessment in accordance with the requirements of the Wisconsin Environmental Policy Act. The environmental impact assessment was presented as one chapter of the statewide multi-modal transportation plan document. Other chapters described the plan development process, the selected plan, and the next steps required to develop more specific plans for highways, airports, intercity passenger railroads, intercity bus, freight railroads bicycles, urban mass transit, and waterborne freight.

The statewide multi-modal transportation plan evaluated 5 system alternatives. These alternatives included different levels of funding for the various modes of intercity passenger transportation (highway, bus, rail, air, and intermodal stations); intercity freight transportation (highway, rail, air, harbors, and intermodal facilities); and urban transportation (highways, transit, bicycle/pedestrian, and transportation demand management). For example, 3 alternatives included development of high speed passenger rail at varying funding levels, while one alternative had no high speed rail. In general the alternatives did not consist of lists of specific projects. Total investment levels varied by alternative from \$30 billion (US) to \$40 billion (US).

The environmental evaluation addressed the following impact areas: traffic congestion, energy consumption, air quality, land use, community impacts, water resources, and land resources. The evaluation was almost exclusively qualitative. This is largely because system alternatives were generally not specified in sufficient detail to allow mathematical analysis. Differences in environmental impact between alternatives were generally minor. One notable difference was the reduced fragmentation of ecosystems with the alternative which minimized new highway

construction and did not include high speed rail. Another notable difference was in varying levels of community disruption in the Milwaukee metropolitan region depending on whether or not high speed rail and freeway system modernization was included in the particular system alternative.

Public involvement played an important role in the development of the Wisconsin multi-modal transportation plan. Over 10,000 citizens participated in the 3 stage public involvement process. Citizens had the opportunity to understand and comment on the entire plan, including the system wide environmental evaluation. This public involvement clearly influenced the selection of the preferred alternative.

Based on the analysis and public involvement, the state of Wisconsin selected one of the more expensive plan alternatives, an alternative that included substantial investments in all modes of transportation, including high speed rail development and transportation elements that traditionally were not well funded like bicycle/pedestrian facilities and transportation demand measures. It is difficult to determine what role the environmental assessment played in the selection of a plan alternative. Nevertheless, both citizens and government officials had the benefit of a systematic strategic evaluation of various types of environmental impacts.

### I-69 International Trade Corridor

This example of strategic environmental impact assessment involves a partnership between the Federal government and states to determine the appropriate combination highway, rail, and intermodal improvements needed to serve a growing international corridor from Mexico to Canada. Other decisions that need to be addressed on a strategic basis are the acceptability of the overall environmental impacts, the general location of the corridor, and the method for breaking the overall corridor into shorter sections for more detailed assessment. Unlike the other two examples, the environmental impact assessment has not yet been completed in this case.

The U.S. Congress designated a corridor from Mexico to Canada as the I-69 corridor based on a feasibility study that concluded that building a limited access highway in the corridor would have net economic benefits and would not involve any unusually difficult environmental challenges. The I-69 designation and the history of studies show that the Congress is thinking primarily of transportation improvements that would be part of the U.S. interstate highway system. If a new interstate highway were built in this 3000 kilometer corridor, it would be the largest addition to the interstate highway system since the system was originally planned in the late 1950s. The estimated cost for a new interstate highway in this corridor is approximately \$ 7 billion (US).

In accordance with the U.S. National Environmental Policy Act, the U.S. Department of Transportation must prepare an environmental impact statement before approving any project with significant environmental impacts. The I-69 corridor involves many possible projects requiring an environmental impact statement (perhaps as many as 50 such projects). Each environmental impact study requires an analysis of alternative locations and designs based on a detailed evaluation of the environmental impacts of each alternative. These project level environmental impact statements would not, however, provide a good mechanism for making strategic decisions relating to the entire corridor.

To address the strategic decisions, the U.S. Department of Transportation and the involved state departments of transportation are working together on special environmental studies. These studies will identify the purpose and need for the transportation improvements, will evaluate corridor level alternatives (highway, railroad and intermodal facilities), and will provide estimates of environmental impacts associated with implementing the entire corridor. The special environmental studies will also provide a basis for separating the entire corridor into smaller sections for detailed evaluation in project level environmental impact statements. Each of the smaller sections will be shown to have logical termini and to be useful transportation improvements even if other sections are not built.

The special environmental studies for the I-69 international trade corridor are currently underway, but are the early stages. Impacts to be evaluated include a number of transportation performance measures and such environmental impacts as air quality, noise, farmland, historical sites, wetlands, wildlife habitat, parkland, and communities. This evaluation will also include economic benefits to communities.

As part of this process, extensive public involvement activities is planned to ensure that all affected citizens are given the opportunity to express their views. This will be especially challenging because the affected citizens live in very different parts of the country. The special environmental studies also involve coordination with environmental agencies at the Federal and State levels. The U.S. Department of Transportation and State departments of transportation are eager to obtain information from the environmental agencies regarding important resources and will consider the views of the environmental agencies concerning appropriate analysis methods and the importance of the predicted impacts to the environmental resource in making strategic decisions. The goal of the transportation departments is to avoid opposition from the environmental agencies, especially opposition on strategic issues that would be expressed late in the process (on project level environmental impact statements). In other words, if there is controversy or disagreement on strategies, the transportation agencies want the controversy to be resolved during the special environmental studies, and not to wait until project studies are underway.

## Conclusion

Strategic environmental impact assessments in the transportation sector in the United States are most often done in accordance with State environmental policy acts, such as the Washington and Wisconsin examples given here. This is because the Federal government is typically not involved in making the strategic decisions concerning long range investment choices. These decisions are reserved under Federal law for the State and local governments. In those examples where strategic environmental impact assessment is done, the analysis is usually more qualitative than quantitative. Nevertheless, there is evidence that even the qualitative assessment is helpful to public officials in selecting among strategic alternatives, and that it influences the nature of comments from citizens.

In unusual cases, the Federal government will conduct strategic environmental impact studies, when needed to guide a series of related Federal decisions. The I-69 trade corridor is one such example. In this case, the U.S. Department of Transportation found it useful to provide a strategic framework for tying together the many project level environmental impact statements that will be needed to implement transportation improvements throughout the corridor.

In all of the cases described, conducting strategic level environmental impact assessment does not substitute for detailed environmental impact assessment at the project level. Instead, it provides a basis for arriving at better informed decisions on broader strategic decisions, such as long range planning. By doing the strategic environmental impact assessments, the long range plans consider environmental impacts in addition to the more cost and transportation performance factors.

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