

## **Environmental Analysis for Transportation Projects**

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Environmental analysis as related to transportation in this country has been shaped primarily by the National Environmental Policy Act (NEPA) of 1969 and the implementation of regulations established by the President's Council on Environmental Quality. It could be argued that these directives have remained essentially unchanged since their inception. Other specific environmental regulations enacted since NEPA have had a profound effect on the level of effort of environmental analysis.

Since 1991, attempts to improve environmental management in the transportation development process through legislation include the enactment of the Intermodal Surface Transportation Efficiency Act (ISTEA) and, more recently, the Transportation Equity Act for the 21st Century (TEA-21). Through these acts, legislators have attempted to address issues such as integrated environmental planning and analysis, environmental streamlining, intermodalism, sustainability, enhanced public involvement procedures, and promotion of nontraditional transportation modes and programs.

### **CHALLENGES IN TRANSPORTATION PROJECT DEVELOPMENT**

The single biggest challenge to conducting effective and efficient environmental analysis during the transportation development process is related to the amount of time it takes to advance a project from the planning phase, through final design, to construction. A multitude of reasons exist as to why timing is an issue, and there is no easy solution.

The NEPA regulations of 1969 were enacted as a means of balancing the effects of a wide range of environmental issues. Single-focus regulations such as Section 106 of the National Historic Preservation Act, Section 404 of the Clean Water Act, Section 4(f) of the Clean Air Act, and the Endangered Species Act also must be addressed. The challenge of integrating the intent of the NEPA regulations with the single-resource regulations is reaching a consensus on the appropriate transportation solution.

The transportation community and segments of the public have expressed frustration with the inordinate length of time required for a transportation project to advance through the development process. It is not uncommon for major construction projects to take 10 years or more, and 20 years is not an uncommon time frame for complex, controversial projects. This frustration is partly a result of transportation problems not being addressed in a timely manner or of transportation needs going unmet. The public is left in limbo awaiting a transportation decision.

Several factors influence the time required to plan and evaluate a transportation project that complies with the regulations. These factors can be internal to the transportation agency responsible for project development, or external to its control.

Internal factors might include the following:

- Lack of adequate project leadership or available personnel, or both, to efficiently perform the necessary environmental and engineering studies,
- Staff turnover on long-term projects,
- Timing and availability of adequate funding,
- Timeliness of the agency's decision-making process, and
- Lines of communication.

The external factors might include

- Lack of cooperating and regulatory agency staffing resources;
- Sequential regulatory reviews;
- Amount of project detail required for regulatory review;
- Level of project controversy;
- Lack of comprehensive land-use planning;
- Organized opposition, including litigation; and
- Regulatory agency consent to the amount and methods of environmental mitigation.

The following sections provide a general framework that can be tailored at the state level to control the time required to complete the transportation project development process.

### **STREAMLINING THE PROCESS**

The issue of environmental streamlining received considerable national exposure in 1997 and 1998 during the congressional reauthorization of ISTEA. This debate resulted in the environmental streamlining provisions of TEA-21, Section 1309. In short, these provisions direct the Secretary of Transportation to develop a "coordinated environmental review process" whereby "all environmental reviews, analyses, opinions, and any permits, licenses, or approvals that must be issued or made by any federal agency ... shall be conducted concurrently and completed within a cooperatively determined time period." This coordinated environmental review process focuses almost entirely on determining time periods for environmental reviews.

The main elements of Section 1309 are summarized as follows:

- A Memorandum of Understanding between the U.S. Department of Transportation (DOT) and federal (and appropriate state) agencies establishes time periods for the coordinated review.
  - The Secretary of Transportation will identify all federal agencies involved in a project.
  - The Secretary of Transportation and the head of each federal agency involved in the project shall jointly develop time periods for environmental reviews.
  - The Secretary of Transportation and the head of each federal agency involved in the project will establish conditions for the time periods, including time extensions and the Council on Environmental Quality's compliance with the time periods for review.

- When the Secretary of Transportation determines that a federal agency has failed to complete its review, analysis, etc. on issuing any permit, license, or approval within the established time period, the secretary may close the record on the matter after consultation with that agency.
- A state, by operation of state law, may require that all state agencies with jurisdiction by state or federal law over environment-related issues possibly affected by the project be subject to the coordinated environmental review process. Such a process is intended to eliminate duplication, develop programmatic approaches, ensure timeliness, and ensure application of NEPA processes in a manner appropriate to the scope of the project.
- If less than the customary review time is provided, the state may request federal funding to provide necessary resources to other agencies to enable them to meet the established time limits for reviews.

Examples of streamlining efforts include the delegation of Environmental Impact Statement (EIS) and Record of Decision review and approval authority to each state's U.S. Federal Highway Administration Division Office. Additionally, several states had integrated the NEPA and Section 404 processes even before TEA-21, to ensure compliance with multiple regulations within a single process.

Other actions to increase the efficiency of transportation project development should address the internal and external factors identified earlier.

### **COMPREHENSIVE INCLUSION**

For federally assisted or funded actions, a lead federal agency is designated to monitor NEPA compliance at the project level. The federal agency that has the primary responsibility for preparing an EIS for a project is the lead agency during implementation of the NEPA process (40 CFR 1508.16, 1508.17).

Often, many parties are asked to participate in the process. These parties include, but are not limited to, federal and state regulatory agencies; local, county, and regional planning organizations; local, county, and state elected officials; neighborhood and civic associations; business associations; and the general public. Over the past several decades, we have learned that, whereas the responsibility for project development lies with the sponsor, the exclusion of the other participants is problematic. Failing to involve all parties early and often throughout the process usually leads to misunderstandings and delays later.

Participation and acceptance by these parties in a variety of aspects of project development is seen as critical to project success. Specifically, their understanding of and consensus on a project's purpose and need, their help in developing goals and objectives for the project, and their input throughout the process are essential. Likewise, open participation in developing the transportation and land use linkages, taking fully into account environmental justice issues, can lead to a more comprehensive project analysis. Finally, for projects in which indirect and cumulative impacts are predicted, the project sponsor can work with the affected communities and other involved agencies to develop appropriate land management strategies and techniques. The involvement of the participants from the outset often facilitates a pragmatic approach to environmental mitigation.

Practitioners in the development process almost always have fared better with projects that embraced the inclusionary approach. Project sponsors should pursue this course in the future and realize that the approach needs to be tailored to each project.

### PROGRAMMATIC ENVIRONMENTAL ENHANCEMENT

Mitigation of project impacts is a key element of the NEPA process. Replacing parkland, installing noise barriers, recovering archaeological data, and creating wetlands are some of the many actions taken in response to individual projects to balance the negative impacts. A project-specific, on-site approach often is time-consuming, and history shows that it does not always produce efficient or effective results. Some DOTs are moving toward a more proactive mitigation approach, such as advanced compensation and community-related projects not associated with the transportation project, which promotes trust and goodwill.

As opposed to project-specific or on-site mitigation concepts, several promising programs are possible. One solution is wetland mitigation banking. This concept is founded on the premise that it is inefficient, hence environmentally undesirable, to compensate for many small wetland impacts at several different sites. Instead, combining them into a large composite site can have both environmental and economic benefits.

TEA-21's recognition that the transportation infrastructure needs to be managed and funded as a system should accelerate the generation of more programmatic mitigation models. Such models may include the following:

- *Archeology.* Instead of using funds to mitigate small impacts at several sites, funds could be aggregated into a large pool to focus on finding answers to high-priority research questions beyond the limits of the project. Such a program would focus on answering the key questions of the state archeology plan instead of having research opportunities follow the priorities of individual transportation projects.
- *Historic bridges.* The creation of a state historic bridge preservation program would emphasize the development of future bridge management plans and provide DOTs the opportunity to incorporate preservation goals into their programs.
- *Watershed management.* Opportunities to pool funds, merge plans, and solve regional watershed problems need to be identified and explored fully.

Theoretically, such programs could solve potential problems before they arise, that is, before the project has any negative impact on the area. These approaches could save time from the widely used project-by-project method and provide an environmentally, socially, and ecologically beneficial mitigation plan.

### TECHNOLOGY

The development of new technologies has had a profound effect in the area of environmental analysis. Much of this technology is an outgrowth of U.S. Department of Defense and National Aeronautic and Space Administration programs.

A complete list of the tools currently in use is beyond the scope of this paper. However, some of the tools include

- Global positioning systems and infrared photography for mapping;
- Geographic information systems for data presentation and impact analysis;

- Software for wetland functional assessment, habitat impact assessment, and noise and air quality analysis;
- Compact discs for data storage and manipulation;
- The Internet for research and communication; and
- Noninvasive subsurface investigative tools such as ground-penetrating radar and geoprobes.

It is apparent from these examples that the focus of developing technologies is to perform a task faster and, thus, more efficiently. In addition, these technologies allow us to work with very high degrees of accuracy.

To speculate on what technologies will be available in the future would be futile, especially when we consider the technological advancements of the past several decades. We can expect rapid advancement of current technologies and look to apply technologies developed for other purposes in the environmental analysis arena.

As a profession, we have seen an evolution of environmental analysis in the transportation development process over the past 30 years. Challenges to the process will always arise, but by working together to solve the ever-increasing demands of public transportation, the future holds the hope of our ability to find a way to address these matters.