Resources are found at the end of each chapter, giving you a handy guide to other valuable sources on the chapter topic.

The Appendix is chock full of additional resources such as a Who's Who on transportation professionals and groups, a what's what on road types, acronyms, websites, listservs and other goldmines of information you may want to refer to as you are reading the chapters.

GUTS is all about learning new lingo. Transportation is a very jargon-heavy field and you will be learning a lot of new terminology. You will also find that transportation professionals rely heavily on the use of acronyms. In fact, many acronyms are used so frequently they are considered words themselves and replace the words they represent. Here is a short list of the most frequently used acronyms:

FHWA	Federal Highway Administration
USFWS or FWS	United States Fish and Wildlife Service
SAFETEA-LU	Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users
MPO	Metropolitan Planning Organization
AASHTO	American Association of State Highway and Transportation Officials
TRB	Transportation Research Board
FLHP	Federal Lands Highway Program
LRTP	Long-range transportation plan
STIP	Statewide Transportation Improvement Plan
NEPA	National Environmental Policy Act
EIS	Environmental Impact Statement

GUTS is also available online at
http://www.gettinguptospeed.org

Law, Policy and Governance

IN THIS SECTION

Legislation and Regulation walks you through the history of transportation law and policy in the United States. Starting with the Federal-Aid Highway Act of 1944, through the Interstate Era and our present day TEA bills you can follow the progress from early roads to the juggernaut we know as our highway system. You will also get an overview of all transportation related laws and a quick primer on the Code of Federal Regulations, where these and all our laws are safely kept.

Transportation Funding answers the big questions: Where does the money come from? Where does the money go? You'll learn about gas tax and how the Highway Trust Fund pays for our highways.

Transportation Research describes the many and varied institutions of transportation research, including who does it, where you can find results and how conservationists can contribute.

Public Roads and Public Lands introduces you to the agencies and policies that control public roads and alternative transportation choices in our public lands.

LEGISLATION AND REGULATION

John Lennon said, "Reality leaves a lot to the imagination." When we look at our landscape today, do we see an accurate reflection of our values and the policies intended to implement them? It's obvious that we value convenience and unmitigated access, but it's getting harder and harder to see that we also value natural resources, wildlife, open space, clean water and air, healthy kids and a sense of community.

Demographic and socio-economic factors are always in play but public policies on transportation and land use have an important role in shaping development patterns. In a single century, our network of roads and highways went from largely unseen to the *largest human artifact on earth* (Forman, 2003). If you're still on the fence about whether this is an important issue for you, your organization or your community, consider this—between 1950 and 1990, urban land area increased more than twice as fast as population, and at our current pace, the amount of land developed in the next 25 years will equal the total amount developed since the country's founding (FHWA, 2001). How much of this was a result of policy and how much was a result of other forces remains the subject of heated debate.

This chapter offers a quick overview of transportation law and policy, with some insight into the forces that have shaped them. Conservationists would do well to become intimately familiar with both. You'll quickly find that we don't suffer from a lack of laws, but more likely from a lack of participation. Ready for the challenge?

HISTORY

Though difficult for us to imagine, highways as we know them are a relatively new phenomenon, and so are the laws and policy that govern them. Prior to the 20th century, most of our roads were built and maintained by local governments. In 1904, the first national survey of road conditions revealed that only 7 percent of the country's roads were surfaced. Even those were surfaced with gravel or low-quality macadam, suitable for horse and carriage, but unsuitable for faster, heavier automobiles. The federal government planned and sporadically built pieces of a "National Road" which was later abandoned and turned over to counties. By and large, Americans relied on railroads for long distance travel and used roads only as necessary for local trips (Gutfreund, 2004). Roads were built on an as-needed basis to accommodate industrialization until a burgeoning automobile industry recognized that poor road conditions would discourage auto travel, and consequently auto sales. Soon thereafter, auto makers began clamoring for high quality, publicly financed, long-distance highways (Holtz Kay, 1997).

The Great Depression and World War II would conspire to keep the nascent highway program from being realized until decades later. Near the end of the war, Congress accelerated the highway building process by passing the Federal-Aid Highway Act of 1944, which designated 40,000 miles to create a national system of interstate highways (Weingroff, 2006). When Dwight D. Eisenhower took office in 1953, he brought a vision of an integrated national highway system that would "protect the vital interest of every citizen."

Interstate System

Under Eisenhower's leadership, Congress passed the Federal-Aid Highway Act of 1956, providing $175 million to begin building our national highway network. Two years later, $25 billion was authorized for the next decade of highway building, to be built with uniform interstate design standards and controlled access. The Interstate System was to be a grand plan for a system of highways, developed through a cooperative alliance among state and federal transportation officials (Weingroff, 2005).[MAP]

Unfortunately, many proposed routes were drawn up without regard for impacts to local communities because construction of the highway system was considered a national issue, trumping local concerns. Low-income urban neighborhoods and rural areas were often targeted as prime areas for new highway corridors. In response, a series of "freeway revolts" broke out in cities from Boston to San Francisco throughout the 1960s. Resident activists and community leaders stood up and successfully stopped or modified many proposed routes. As a potent reminder of the power of people to affect political change, short stretches of unfinished highways and abruptly-terminating alignments can still be found in many U.S. cities (Burwell, 1977).

Did You Know? During the first decade of interstate construction, 335,000 homes were bulldozed to build highways; more homes than have been built by the National Public Housing Program (Benfield, 1999).

The freeway revolts demonstrated the need for collaborative transportation planning with local input and paved the way for public involvement in the road-building process. The Federal-Aid Highway Act of 1962 instituted a federal requirement for urban transportation planning. To receive federal funding, urbanized areas (with populations of 50,000 or more) were required to plan all transportation projects cooperatively with state and local governments. The Bureau of Public Roads (predecessor to the FHWA) soon thereafter required the creation of agencies we now know as Metropolitan Planning Organizations (MPOs) to carry out the planning process. Over the next 30 years, transportation policy and practice remained relatively unchanged within a country that was rapidly changing. The United States needed an infrastructure that would embrace local concerns, expand the focus beyond travel demand and incorporate a wide range of social, economic and environmental concerns. But it wasn't until the end of the 20th century that a new era of transportation legislation began.

Intermodal Surface Transportation Equity Act (1991)

Championed by Senator Patrick Moynihan (D-NY), the Intermodal Surface Transportation Equity Act (ISTEA) set forth groundbreaking reforms when it passed in 1991, representing a major shift in transportation policy. ISTEA set out to transform our 1950s era highway building program into "...a National Intermodal Transportation System that is economically efficient, environmentally sound, provides the foundation for the Nation to compete in the global economy and will move people and goods in an energy efficient manner."

ISTEA promoted an intermodal approach to highway and transit funding with flexible funding, collaborative planning requirements and devolution of power to municipalities. One of the most significant innovations was the creation of the Transportation Enhancements (TE) program that provided funds for community-based projects to enhance the travel experience, protect scenic vistas, create bike paths, develop walkable downtowns and protect the environment. Also for the first time, ISTEA directly addressed transportation's impact on air quality through the Congestion Mitigation Air Quality Improvement (CMAQ). ISTEA greatly increased available funding, authorizing $155 billion in spending for fiscal years 1992 to 1997.

Transportation Equity Act for the 21st Century (1998)

By the time ISTEA was up for reauthorization, its groundbreaking reforms were largely established, proven and effective. Passed in 1998, the Transportation Equity Act for the 21st Century (TEA-21) was in every sense a direct successor to ISTEA—continuing flexibility in the use of funds, emphasis on measures to improve the environment, and focus on a strong planning process as the foundation of good transportation decisions. New programs such as the Transportation and Community and System Preservation (TCSP) pilot and safety incentives aimed at seatbelt use and drunk driving targeted special areas of national interest.

Building on ISTEA's strengths, Congress attempted to correct some of its perceived weaknesses as well. Prior to TEA-21, transportation had to compete for appropriations with all other national priorities and Highway Trust Fund monies could be spent in other areas as necessary. TEA-21 instituted a "guarantee" that prevents making transportation funds available for other uses. Also, funding formulas that were seen as favoring some states over others were changed to increase equity and settle the debate between so-called "donor" and "donee" states. **For more information, see Funding.** The Minimum Guarantee would ensure that each state received at least 90.5 percent of gas tax revenues collected in that state. This was a significant change considering TEA-21 authorized $218 billion in funding for highways and transit—a 43 percent increase over ISTEA's funding levels.

TEA-21 also spawned what is known as "environmental streamlining." For years, the powerful road-building lobby claimed that the environmental review process was too burdensome and was delaying important highway building. Some members of Congress responded by proposing measures to "streamline" the environmental review process by limiting input from resource agencies, mandating concurrent analysis and limiting judicial review. After months of heated debate, TEA-21 ultimately did

HALLMARKS OF ISTEA/TEA-21

1. Half of all federal funding is flexible for highways, transit or other uses.
2. Decisions about how to use funds are made through inclusive and honest planning at the state and metropolitan levels.
3. Significant funding is reserved for maintenance of existing highway, bridge and transit systems.
4. A small but important sum is set aside to support alternatives to the highway system and reduce its negative effects on society.

TEA-21 User's Guide, STPP, 1998

not include the dramatic weakening of the environmental review process that some had hoped for, but codified the increasingly common practice of establishing agreements between agencies with collaboratively established timelines. **For more information, see Environmental Review.**

And notably for conservationists, TEA-21 contained two milestones for wildlife. First, an additional activity was added to the Transportation Enhancements program, making funds available to "reduce vehicle-caused wildlife mortality while maintaining habitat connectivity." Second, TEA-21 created the Refuge Roads program, authorizing the use of highway dollars for maintenance and improvement of public roads within the National Wildlife Refuge System.

Safe, Accountable, Flexible and Efficient Transportation Equity Act: A Legacy for Users (2005)

Much had changed in the United States between the time TEA-21 was signed and when it expired. While TEA-21 reflected the period of relative peace and prosperity in which it was created, its successor was also every bit a product of its time. After a change in administration, the devastation of the terrorist attacks on September 11, 2001, and the abrupt shift from a budget surplus to a deficit, more would be expected of the highway bill than ever before. Could this legislation make a shaken country feel safe again, address energy uncertainty and shoulder the burden of a lagging economy? These lofty expectations, new priorities and multiple, sometimes competing interests were reflected in the bill, right down to its name. After three years, two election cycles and 12 extensions, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) was signed into law in 2005, authorizing $286.5 billion to fund highways and transit through 2009.

SAFETEA-LU continued most ISTEA reforms, retaining TEA-21's budget firewall and revisiting the donor/donee debate once again, increasing the minimum guarantee to a 92 percent return. With an emphasis on transportation safety and security, safety funding was doubled and new programs were added for border security and safety planning. A bit schizophrenic, SAFETEA-LU contained both a new commission to examine future funding shortfalls and the highest dollar amount earmarked for pork projects.

Virtually everything that proponents of environmental streamlining did not get from TEA-21 was included in SAFETEA-LU. Congress customized an environmental review process specifically for transportation projects that limits judicial review to 180 days, imposes strict deadlines on participating agencies and institutes a "tattle tale" clause that discourages them from bringing forth any issue that would delay the project under review.

On the plus side, SAFETEA-LU included provisions that recognize and begin to address the conflicts between wildlife and transportation. Long-range transportation planning will now include consideration of conservation interests and Congress commissioned a comprehensive study on the causes and impacts of wildlife-vehicle collisions.

SAFETEA-LU expires in 2009, but discussions on Capitol Hill have already begun. Stay tuned for the sequel—TEA 4!

Rumor Has It...

The "LU" in SAFETEA-LU has a hidden, romantic meaning. Former House Transportation and Infrastructure Committee Chair Don Young (R-AK) pledged to name the highway bill after his wife, Lu, claiming the gesture was "cheaper than flowers."

APPROPRIATIONS

Congress utilizes authorization and appropriation measures. *Authorization* measures (ISTEA, TEA-21 and SAFETEA-LU) are under the jurisdiction of the legislative committees such as the House Transportation and Infrastructure Committee and Senate Environment and Public Works Committee. Once the authorization measure is signed into law, the House and Senate Committees on Appropriations must *appropriate* the funds that have been authorized. The president initiates the appropriations process by submitting his annual budget, usually on or before the first Monday in February. In the budget, the president recommends spending levels in the form of *budget authority,* representing the legal authority for federal agencies to make *obligations* requiring either immediate or future expenditures. These obligations (for example, entering into a contract to build a new highway) result in outlays, which are payments from the Treasury. Not all new budget authority provided for a fiscal year is expended that year. For instance, in the case of construction projects, the outlays may occur over several years as various stages of the project are completed.

Law, Policy and Governance

What's wrong with "Pork?"

Within any bill, legislators may designate a specified amount of money to a particular project in their home states or districts, also lovingly referred to as "pork" projects. Special projects or demonstration projects are often added during the conference phase, when the House and Senate meet to reconcile differences in their respective bills. Because pork is usually inserted into larger, must-pass bills which fund the federal government, members of Congress are reluctant to oppose them on principle. And through the age-old practice of "logrolling," members agree to support a bill containing a another member's pork with the expectation that he or she will return the favor on another bill.

Because the highway bills are always high dollar, they are a favorite place for lawmakers to "bring home the bacon," and seats on transportation committees are among the most highly sought after assignments in Congress. SAFETEA-LU did not disappoint, incorporating an unprecedented 6,373 pork projects worth a staggering $24 billion (Taxpayers for Common Sense, 2005). Chairman Don Young (R-AK) was publicly ridiculed for his now infamous $315 million "Bridge to Nowhere" that would connect Ketchikan (population: 8,000) to Gravina Island (population: 50). As a result of the negative media attention, Rep. Young agreed to release the obligation, allowing Alaska to spend the money on other projects.

Pork projects reduce the amount of money appropriated to transportation agencies where they can exercise discretion over where and how the funds are spent. Planners have likely spent years preparing plans and work programs that will all now have to be changed and reprioritized to make room for unexpected requirements. This is like getting a big paycheck, but your boss gets to tell you how to spend it. Pork projects take decision-making control away from local and state governments and force them to use these funds for a specified project, or not at all.

Indigo Snake

Can pork be used for good and not evil? The Nature Conservancy successfully lobbied for demonstration projects through SAFETEA-LU for their conservation programs. One project will restore 4,000 acres of longleaf pine and wiregrass forest in Georgia that is home to rare eastern indigo snake and gopher tortoise. Transportation agencies can also request pork money for wildlife crossings rather than new highways.

Pork projects now consume more than 12 cents of every new federal highway dollar to the states, up significantly from about 6 cents per dollar under TEA-21. As a result, the share of federal dollars dedicated to core highway program activities, such as maintenance of the interstates, bridge repair, clean air and other priorities declined by nearly the same amount (STPP, 2005).

REGULATION

We all remember learning "how a bill becomes a law" in civics class, but they never taught us what happens to the law after that. While Congress writes the bills that will become law, they often lack the time or technical expertise to define the specifics. Thus the federal agency responsible for implementing this law (FHWA, in this case) may also have to clarify it through a rulemaking process in order to fill out the details.

This new language is published in the Federal Register, our federal government's official daily newsletter of new rules, notices and executive orders. At this point the public is invited to submit comments within a set deadline (rarely more than 180 days). The agency is generally required to consider and publicly respond to all comments and to make changes. Then, finally, the language is entered into the Code of Federal Regulations.

Find out what your government is up to. Sign up for the Federal Register daily e-mail updates.

The Code of Federal Regulations (CFR) is the official compilation of federal regulations issued by federal departments and agencies. Published by the National Archives and Records Administration, the CFR is divided into 50 titles, each representing a broad area subject to federal regulation. Volumes of the code are issued on a quarterly basis, and each volume is updated once each year. Every time legislation is created or modified, portions are inserted into the most appropriate title, according to its subject matter. Conservationists should be familiar with the titles most relevant to transportation and wildlife:

Title 23: Highways

Title 23 pertains to all federal laws related to federal aid for highways. It defines the Federal Highway Administration's role as it interacts with the states, designates design standards and uniform safety codes, provides for pedestrian and bicycle routes, and mandates particular environmentally related procedures, among many other issues. Section 771, "Environmental impact and related procedures," and Section 777, "Mitigation of impacts to wetlands and natural habitat," are particularly relevant to the environmental considerations that go into highway design and construction.

Title 40: Protection of Environment

Title 40 contains regulations for environmental protection and pollution control, including the regulations of the EPA.

SAFETEA-LU shows up in Title 40 with the low-emission vehicle standards and the new provision permitting all state transportation agencies to determine if a project can be categorically excluded from environmental review.

Title 49: Transportation

Title 49 describes the organization of the Department of Transportation and explains its duties and powers, which include, generally, "leadership in formulating and executing well-balanced national and international transportation objectives, policies and programs." Title 49 also stipulates as policy that "The agency will strive to carry out the full intent and purpose of the National Environmental Policy Act of 1969 and related orders and statutes, and take positive steps to avoid any action which could adversely affect the quality of the human environment." In this title you can also find the language that mandates the submission of Environmental Impact Statements with new applications, if the project will have significant impacts on the environment.

SUMMARY OF TRANSPORTATION-RELATED LAWS

Transportation agencies are required to abide by certain laws in carrying out their mission. While it is not their stated mandate, as government agencies they are required to protect and restore the environment.

Rivers and Harbors Act | 1899
Placed federal improvements of rivers, harbors and other waterways under the jurisdiction of the Department of the Army, under the direction of the Secretary of the Army and under the supervision of the Chief of Engineers. It also required that all improvements include due regard for wildlife conservation.

Federal Aid Highway Act | 1956
More commonly known as the National Interstate and Defense Highways Act, marked the official beginning of the modern interstate system. Eisenhower signed this bill into law, allocating $25 billion over 10 years for the construction of 40,000 miles of interstate highway.

Wilderness Act | 1964
Established the National Wilderness Preservation System. The Secretary of the Interior was directed to review every roadless area of 5,000 acres or more and every roadless island within the national wildlife refuge and national park systems for possible inclusion in the wilderness system.It also included some national forest lands in the system and directed the Secretary of Agriculture to recommend others. More than 100 million acres have been included in the National Wilderness Preservation System so far.

Fish and Wildlife Coordination Act (as amended) | 1965
Required that any modification of a body of water by a federal department or agency must include consultation with the U.S. Fish and Wildlife Service and with the head of the state wildlife agency where construction will occur.Also provided that land, water and interests may be acquired by federal construction agencies for wildlife conservation and development. Also established that real property under jurisdiction or control of a federal agency and no longer required by that agency can be utilized for wildlife conservation by the state agency exercising administration over wildlife resources upon that property.

Land and Water Conservation Fund Act | 1965
Created admission and user fees at certain recreational areas and also established a fund to subsidize state and federal acquisition of lands and waters for recreational and conservation purposes.

Department of Transportation Act, Section 4(f) | 1966
Provided special protections for significant public parks, recreation areas, or wildlife and waterfowl refuges and historic sites.

National Historic Preservation Act, Section 106 | 1966
Required federal agencies to attempt to resolve "adverse effects" of their projects on historic sites listed on, or eligible for, the National Register of Historic Places.

National Trails System Act | 1968
Created a national system of trails for recreation and preservation of outdoor areas. The system now consists of national recreation trails, national scenic trails, national historic trails and connecting or side trails.

Wild and Scenic Rivers Act | 1968
Established a National Wild and Scenic Rivers System for the protection of rivers with important scenic, recreational, fish and wildlife, and other values. Called for classifying rivers as wild, scenic or recreational. Also designated specific rivers for inclusion in the system and prescribed the methods and standards by which additional rivers may be added.

National Environmental Policy Act | 1969
Set a national policy to encourage harmony between humans and the environment and to promote efforts to better understand and protect ecological systems and natural resources important to the nation. Required agencies to prepare a detailed environmental impact statement for any major federal action significantly affecting the environment. Also established the Council on Environmental Quality to review government policies and programs for conformity with NEPA.
NOTE: *Although NEPA requires agencies to take a hard look at the*

environmental consequences of their actions, it does not force them to take the most environmentally sound alternative.

Clean Air Act | 1970
Required the EPA to develop and enforce air quality standards, leading to regulations on controlling pollution from transportation sources.

Federal-aid Highways - General Provisions - Standards 23 U.S.C. 109(h) | 1970
Required the Department of Transportation to submit guidelines to Congress for avoiding adverse economic, social and environmental effects relating to any proposed project on any federal-aid system. Also stipulated that final decisions on projects would be made in the best overall public interest, taking into consideration the need for fast, safe and efficient transportation, public services, and the costs of eliminating or minimizing such adverse effects.

Water Bank Act | 1970
Promoted the preservation of wetlands by authorizing the Secretary of Agriculture to enter into land-restriction agreements with owners and operators in return for annual federal payments.

Clean Water Act (Federal Water Pollution Control Act, as amended) | 1972
Created a comprehensive statute aimed at restoring and maintaining the chemical, physical and biological integrity of the nation's waters, including highway stormwater runoff. Enacted originally in 1948, it was amended numerous times until it was reorganized and expanded in 1972. It continues to be amended almost every year.

Coastal Zone Management Act | 1972
Established an extensive federal grant program within the Department of Commerce to encourage coastal states to develop and implement coastal zone management programs, and ensure that activities that affect coastal zones are consistent with approved state programs. Also established a national estuarine reserve system.

Marine Protection Research and Sanctuaries Act | 1972
Authorized the Secretary of Commerce, with significant public input, to designate and manage national marine sanctuaries based on specific standards. Provided for supervision by the Secretary over any permitted private or federal action that is likely to destroy or injure a sanctuary resource, and required periodic evaluation of implementation of management plans and goals for each sanctuary. Also specified prohibited activities, penalties and enforcement.

Endangered Species Act | 1973
Provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the United States or elsewhere. Includes provisions for listing species, creating recovery plans and designating critical habitat for listed species. The act outlines procedures for federal agencies to follow when taking actions that may jeopardize listed species, and contains exceptions and exemptions. The Endangered Species Act is also the enabling legislation for the Convention on International Trade in Endangered Species of Wild Fauna and Flora, commonly known as CITES. Criminal and civil penalties are provided for violations of the act and the convention.

Surface Transportation Act | 1978
Authorized funds for highway safety programs, motor carrier safety programs, the hazardous materials transportation safety program, boating safety programs and other purposes. Represents the first time Congress integrated transit, highways and safety into one piece of legislation.

Coastal Barrier Resources Act | 1982
Protects undeveloped coastal barriers and related areas by prohibiting direct or indirect federal funding of projects that might support development in these areas. Limited exceptions, such as funding for fish and wildlife research, are allowed.

Emergency Wetlands Resources Act | 1986
Promotes wetlands conservation for the public benefit and helps fulfill international obligations in various migratory bird treaties and conventions. Also authorizes the purchase of wetlands with Land and Water Conservation Fund monies. Also requires the Secretary of the Interior to establish a National Wetlands Priority Conservation Plan; obligates the states to include wetlands in their Comprehensive Outdoor Recreation Plans; and transfers funds from import duties on arms and ammunition to the Migratory Bird Conservation Fund.

Clean Air Act Amendments | 1990
Sets stricter requirements on air quality, and can often effect transportation planning.

Intermodal Surface Transportation Efficiency Act (ISTEA) | 1991
Funded federal highways with $155 billion for fiscal years 1992-1997. It promoted increased local responsibility and flexibility, and for the first time directly addressed some environmental issues within transportation.

National Highway System Act | 1995
As mandated under ISTEA, designated 160,000 miles of roadway as vital to national needs.

Transportation Equity Act for the 21st Century (TEA-21) | 1998
Authorized $217 billion for highways, safety and transit for the six-year period 1998 to 2003. As successor to the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), continued the transformation of our 1950s-era highway building program into a flexible transportation program. Along with ISTEA, heralded a revolution in how America executes transportation policy—shifting primary responsibility from the federal government to state and local levels and placing more emphasis on building communities rather than roads.. Changed priorities to improved planning, environmental protection and spending flexibility for greater transportation choice.

Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) | 2005
Appropriated $286.4 billion for surface transportation from 2005 through 2009.

SUMMARY OF TRANSPORTATION-RELATED EXECUTIVE ORDERS

Floodplain Management Executive Order 11988 | 1977
Declared to help avoid the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Protection of Wetlands Executive Order 11990 | 1977
Declared to help avoid the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands.

Federal Emergency Management Executive Order 12148 | 1979
Established the Federal Emergency Management Agency (FEMA), combining several federal agencies tasked with emergency preparedness and civil defense spread across the executive departments into a unified entity.

Invasive Species Executive Order 13112 (64 FR 6183) | 1999
Declared to prevent the introduction of invasive species, to provide for their control and to minimize the economic, ecological and human health impacts that invasive species cause.

Environmental Stewardship and Transportation Infrastructure Project Reviews Executive Order 13274 | 2002
Called for the streamlining and timely completion of permits and environmental reviews to expedite the Secretary of Transportation's designated priority projects, among other provisions.

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LEGISLATION AND REGULATION RESOURCES

Highway History
http://www.fhwa.dot.gov/infrastructure/history.htm

ISTEA
USDOT's ISTEA Page
http://www.dot.gov/ost/govtaffairs/istea/

ISTEA Planners Workbook by Surface Transportation Policy Partnership
http://www.transact.org/report.asp?id=3

TEA-21
TEA-21 User's Guide by Surface Transportation Policy Partnership
http://www.transact.org/report.asp?id=74

FHWA Guide to TEA-21
http://www.fhwa.dot.gov/tea21/index.htm

National Transportation Enhancements Clearinghouse
http://www.enhancements.org/

SAFETEA-LU
From the Margins to the Mainstream: A Guide to Transportation Opportunities in Your Community, Surface Transportation Policy Partnership
http://www.transact.org/PDFs/margins2006/STPP_guidebook_margins.pdf

FHWA's SAFETEA-LU Page
http://www.fhwa.dot.gov/safetealu/index.htm

ENVIRONMENTAL STREAMLINING
What is Environmental Streamlining? Defenders of Wildlife
http://www.defenders.org/habitat/highways/new/streamlining.html

FHWA's Streamlining Page
http://environment.fhwa.dot.gov/strmlng/index.asp

Streamlining Environmental Reviews of Highway and Transit Projects
Congressional Research Service, The Library of Congress
http://www.ncseonline.org/NLE/CRSreports/04dec/RL32032.pdf
http://www.ncseonline.org/nle/crsreports/03Jun/RS20841.pdf

AASHTO's Center for Environmental Excellence Streamlining Page
http://environment.transportation.org/environmental_issues/proj_delivery_stream/

APPROPRIATIONS
Seate Subcommittee on Transportation, Housing and Urban Development, and Related Agencies
http://appropriations.senate.gov/transportation.cfm

House Subcommittee on Transportation, Housing and Urban Development, and Related Agencies
http://appropriations.house.gov/

Thomas: The Ultimate Guide to Congress
http://thomas.loc.gov/

Database of Earmarks in Conference Agreement to the Transportation Bill
Taxpayers for Common Sense
http://www.taxpayer.net/Transportation/safetealu/states.htm

REGULATION
Code of Federal Regulations
http://www.gpoaccess.gov/cfr/index.html.

Federal Register
http://www.gpoaccess.gov/fr/index.html

Summary of Environmental Legislation Affecting Transportation
http://www.fhwa.dot.gov/environment/env_sum.htm

TRANSPORTATION FUNDING

What would YOU do with $286 billion? That's how much Congress authorized for spending in the last highway bill. And yet, some believe it may not be enough. The cost of road building is continually rising, sometimes dramatically outpacing other sectors of construction and land development. Building and maintaining roads and transit facilities requires spending on land, labor, capital equipment and materials. Historically, our roads and highways have been funded by the government with user fees such as the gasoline tax. Experts are beginning to question how much longer this system of "drill and drive" will last.

We invest enormous sums in our transportation systems—significantly more than we spend on natural resource and land management. This chapter provides conservationists with the fundamentals: Where does the money come from and where does it go?

WHERE DOES THE MONEY COME FROM?

The lion's share of federal funding comes from the **Highway Trust Fund** (HTF, hereafter "the Fund") established in 1956. Prior to that time, highways were paid for out of the General Fund of the Treasury. Although gas taxes existed, they were not linked to funding for highways. The Federal-Aid Highway Act of 1956 established the Fund as a mechanism for financing the Interstate Highway System. At the time, Congress imposed a modest 3 cents per gallon tax on retail fuel sales that was set to expire in 1969 when our highway system was estimated to be completed. Since then, the gas tax has risen to 18.4 cents per gallon, and highway building continues. In 34 states, federal funding represents the primary source of financing for highways (Katz, 2005).

The Fund is considered a user-supported program. More than 90 percent of the money comes from driving-related taxes so the amount of money entering the system is tied to the use of roads by motor vehicles. People and businesses that use highways pay into the Fund through taxes on fuel, tires and other costs related to driving. That money, in turn, is used to build and maintain our highway system.

The Internal Revenue Service collects revenues from motor fuel taxes and other taxes on highway users. In 1982, Congress determined that some revenues from the fuel taxes should be used to fund transit needs and passed the Highway Revenue Act of 1982. Since then, the Fund has been split into two primary parts: the Highway Account and the Mass Transit Account. The gas tax is distributed to the accounts as follows:

15.44 cents – Highway Account
2.86 cents – Mass Transit Account
.10 cents – Leaking Underground Storage Tank Trust Fund

18.4 cents — Total

The following chart shows the various types and rates of gas taxes and the portion of each tax that goes to the highway and transit accounts.

Fuel Type	Tax Rate cents per gallon	Highway Account	Transit Account
Gasoline*	18.4	15.44	2.86
Diesel	24.4	21.44	2.86
Gasohol** (10% ethanol)	18.4	15.44	2.86
Special fuels:			
General rate	18.	15.44	2.86
Liquefied petroleum gas	18.3	16.17	2.13
Liquefied natural gas	24.3	22.444	1.86
M85 (from natural gas)	9.25	7.72	1.43
Compressed natural gas	48.54	38.83	9.71
	cents per thousand cubic feet		
***** Truck-Related Taxes (All Proceeds go to Highway Account)**			
Tire Tax 9.45 cents for each 10 pounds of the maximum rated load capacity thereof as exceeds 3,500 pounds			
Truck and trailer sales 12 percent of retailer's sales price for tractors and trucks over 33,000 pounds gross vehicle weight (GVW) and trailers over 26,000 GVW			
Heavy Vehicle Use Annual tax: Trucks 55,000 pounds and over pay $100 plus $22 for each 1,000 pounds in excess of 55,000 (maximum: $550)			
* 0.1 cent per gallon of fuel sales goes to the Leaking Underground Storage Tank Trust Fund			
** The General Fund of the U.S. Treasury receives 2.5 cents per gallon of the tax on gasohol.			
*** Because trucks are believed to inflict more damage on our highway system, trucking pays greater user fees through truck sales, truck tire sales and a considerably higher tax on diesel fuel.			

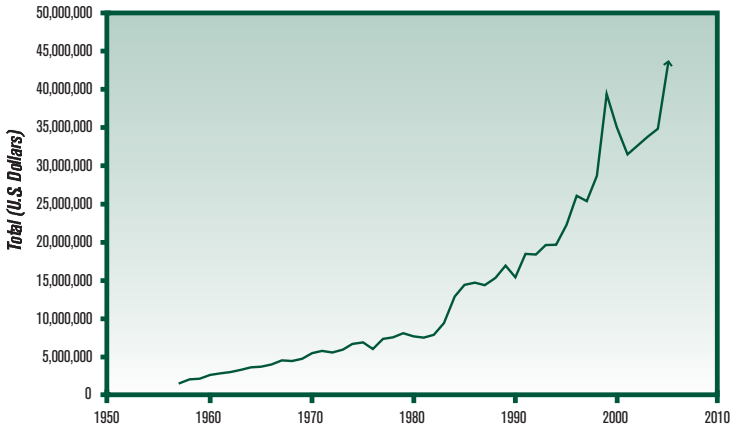
Gas tax is NOT collected at the pump. The Internal Revenue Service collects federal taxes on gas, tires and trucks at the first point of distribution, so most of the money actually comes from

a small number of companies found in a small number of states where gas, tires and trucks are made. Federal Highway Administration (FHWA) then makes estimates based on state fuel use to determine how much should be credited to each state.

This funding system is vastly different than that of our federal lands and natural resources. The Department of the Interior receives funding support from the General Fund of the Treasury, and requires annual appropriations from Congress and the White House to determine how much money they will receive. Depending on the political and economic climate, funding may fluctuate from year to year, making long-range planning and consistent conservation efforts increasingly difficult.

Did You Know? The portion of the gasoline and special fuel tax receipts used by motorboats and small engines such as lawnmowers and chain saws is transferred to the Sport Fish Restoration and Boating Trust Fund, formerly the Aquatic Resources Trust Fund. Of that amount, $1 million goes annually to the Land and Water Conservation Fund, which provides funds to federal agencies and to the 50 states and six territories. Federal allocations include national park, forest, wildlife refuge and Bureau of Land Management area fee and easement acquisitions. Money allocated to the states may be used for statewide planning and for acquiring and developing outdoor recreation areas and facilities, such as boat ramps and deer blinds. Though these measures aren't always directly related to conservation, using transportation dollars instead of resource agency dollars leaves more for conservation efforts.

The Rise of the Highway Trust Fund



THE FALL OF THE HIGHWAY TRUST FUND?

SAFETEA-LU guaranteed $286 billion for highway and transit from 2004 to 2009, but can she keep her promise? According to a 2005 report by the National Chamber Foundation, the Highway Trust Fund will actually only receive about $231 billion, resulting in bankruptcy by 2008. Because gas taxes are not indexed to inflation and have not been raised since 1993, gas tax dollars just don't go as far as they used to. Don't look to Congress to change that any time soon. The mere suggestion of raising this or any tax is political kryptonite. So how will we fill the Fund in the future?

Guest Column:
CASHING IN ON THE BP BELTWAY

Robert Puentes, Fellow, Brookings Institution

Back in the 1970s, *National Lampoon* wrote a commentary on corporate influence in America entitled: "We're Changing the Name of the Country to Exxon." Today, commercial interests are turning their eyes toward some of our nation's most prominent roadways. We need to slow down.

Earlier this year, Indiana Governor Mitch Daniels leased his state's toll road for 75 years to a private consortium for $4 billion that he then spent on other roadway projects around the state. In 2004, Mayor Richard Daley reprogrammed the $1.8 billion from his 99-year lease of the Chicago Skyway back into city coffers to be spent largely in unspecified ways. All that up-front cash looks sweet, but the long-term revenue stream is lost since all the toll receipts flow directly to the private operators. Far worse, policymakers lose the ability to connect transportation to other emerging metropolitan trends. Governments are taking steps to manage the demand for car trips due to concern over how traffic congestion effects climate change. These important policy objectives are in conflict with the commercial interests of private companies running toll roads. They want more traffic not less.

Selling off toll roads is not a silver bullet solving all transportation problems. We're letting politicians and policymakers off the hook. We should all roll up our sleeves, define, design and embrace a new, unified, competitive vision for transportation policy and not be seduced by the easy money.

OTHER SOURCES OF FUNDING

If we decide that selling all our highways and bridges to Pepsi and Microsoft is a bad idea, we'll have to continue funding their upkeep on our own. State governments supplement money from the Highway Trust Fund with revenue from several other sources, including:

- State gas tax
- Bonds
- Grant Anticipated Revenue Vehicle notes
- Tolls
- Local taxes
- Motor vehicle excise tax
- Vehicle registration fees
- License fees
- Rental car taxes

Oregon was the first state to enact a gas tax in 1919. Today, all 50 states have a state gas tax, but they vary widely in collection methods and amounts. On average, states collect 23 cents per gallon, but the highest state tax is 30 cents per gallon in Rhode Island while the lowest is 7.5 cents in Georgia. In 10 states, the gas tax makes up the largest source of funding for highways.

States also borrow heavily to pay for their transportation programs by issuing bonds or Grant Anticipated Revenue Vehicle (GARV) notes. Money is borrowed in anticipation of future federal appropriations, and backed by the state's general fund.

How much is your state gas tax? What does it pay for?

The 2005 Washington State Legislature voted to increase gas taxes and other fees to fund a 16-year plan designed to address some of the state's most critical transportation needs. More than 270 projects are to be funded by a tax package intended to make roads and bridges safer, and ease traffic congestion in the system. The package includes:

9.5 cent gas tax increase phased in over four years	$5.5 billion
Vehicle weight fee on passenger cars	$908 million
Increase in the light truck weight fee	$436 million
Annual motor home fee of $75	$130 million

WHERE DOES THE MONEY GO?

The financing cycle begins when Congress enacts authorizing legislation, referred to as "the Highway Bill," such as TEA-21 and SAFETEA-LU. **For a full discussion of the legislative process that makes the money possible, see Legislation and Regulation.**

Besides the obvious, the Fund supports initiatives such as highway safety, emergency relief, motor carrier safety, research, transportation statistics, use of safety belts and prevention of alcohol-impaired driving. The Fund has also recently begun to support automated toll collection, research into "smart" emergency vehicle access systems, transportation analysis and various vehicle warning systems. Federal transportation funding is restricted to capital expenditures, such as construction and reconstruction of roads. Regular maintenance on noninterstate roads, including pothole patching and snowplowing, must be funded through other sources.

FUNDING CATEGORIES

Title I	Federal Aid Highways	Highway Account
Title II	Highway Safety	Highway Account
Title III	Federal Transit Administration Programs	Mass Transit Account
Title IV	Motor Carrier Safety	Highway Account
Title V	Transportation Research	Highway Account
Title VII	Miscellaneous	General Fund

Deductions

Everyone wants their little piece of the pie. Before any of the Fund leaves Washington, D.C., 1.5 percent is deducted automatically for administration. Six branches within the Department of Transportation receive administrative money from the Fund:

1. Federal Highway Administration
2. Federal Transit Administration
3. Federal Motor Carrier Safety Administration
4. National Highway Transportation Safety Administration
5. Federal Rail Administration
6. Bureau of Transportation Statistics

President George W. Bush's 2007 budget delivered a record high funding level for the federal highway and transit programs. It included $39.1 billion for the federal highway program—a $3.4 billion increase—and $8.97 billion for the federal transit program—an increase of $474 million.

Apportionments and Allocations

Once the deductions are made, the rest of the money is distributed to the states based on a system of apportionments and allocations. Apportionments are based on formulas whereas allocations are funded on a competitive basis.

Formula programs—such as Interstate Maintenance and Surface Transportation—*apportion* funds to state transportation agencies based on formulas set forth in legislation. For example, interstate monies are distributed among the states based on a formula that weighs each state's volume of interstate highway miles, vehicle miles traveled on its interstates and annual contributions to the Fund attributable to commercial vehicles. So, if your state has 1,000 miles of interstate carrying a million cars per day, you will get more money than a state that has 100 miles of interstate carrying 1,000 cars per day. Congestion Mitigation and Air Quality (CMAQ) funds are distributed based on a formula that measures the number of people living in non-attainment areas (places in violation of federal air quality standards, such as Atlanta, Houston and Los Angeles) or in maintenance areas (places that violated air quality standards in the past, but have recently come into compliance).

Discretionary programs—such as Public Lands Highways and Scenic Byways—fall under the purview of FHWA and are meant to be *allocated,* or awarded through competition. FHWA solicits for candidates and selects projects for funding based on the applications received. Each program has its own eligibility and selection criteria established by law, by regulation or administratively. However, members of Congress earmark most discretionary program funding before it ever leaves Capitol Hill. These funds are "use it or lose it" and will be withdrawn and reallocated among the other states if they go unused within a given timeframe.

Here's where you come in. Although all these programs could stand to be greener, some programs have more immediate conservation potential. The Transportation Enhancements program provides funding for all kinds of amenities—including wildlife habitat connectivity—through a competitive grant program. The Public Lands Highway program provides funding for refuge roads and restoring fish passage on forest highways. More details on these and other opportunities are to come in other chapters—so hang in there!

The following chart shows how various programs are funded. **For a list of all the major programs, see the Appendix.** Note: Some programs fall under both categories because they are eligible for funding from either source.

APPORTIONMENTS	ALLOCATIONS
Surface Transportation Program	Bridge
• State	Corridor Planning and Development and Border Infrastructure (Corridors and Borders)
• Small Metro and Rural	Ferry Boats
• Metropolitan suballocated	Innovative Bridge Research and Construction
• Safety	Innovative Bridge Research and Deployment Program
• Enhancements	National Historic Covered Bridge Program
National Highway System	ITS Deployment Program
Interstate Maintenance	Interstate Maintenance Discretionary
Bridge	Public Lands Highways
Minimum Guarantee	Scenic Byways
Congestion Mitigation and Air Quality Improvement	Transportation and Community and System Preservation Program
High Priority Projects (Earmarks, pork)	Transportation Infrastructure Finance and Innovation Act
Other	Value Pricing Pilot Program
Metropolitan Planning	
Recreational Trails	
Safe Routes to School	
Appalachian Highways	

The Minimum Guarantee

Each state is guaranteed a certain share of the total program, but no one is guaranteed a 100 percent return. The minimum guarantee ensures that each state receives at least 90.5 percent of its contributions to the Highway Account of the Fund. For example, if Kansas contributes 2 percent of all the money in the Highway Account for 2007, it's only guaranteed to get 90.5 percent of that money back. If the share from the first part of the guarantee does not provide 90.5 percent return to a state, the share is increased until it reaches that percentage. The shares of all other states are reduced so that the total shares still add to 100 percent. Each state receives at least $1 million per year.

YOU MAKE THE CALL: DONOR vs. DONEE

If your state pays into the Fund, it will get the same amount out of the Fund, right? Not necessarily. Money in the Fund is distributed to the states according to complicated mathematical formulas that attempt to match need with revenue. As a result, some states get more than they put in and some states get far less. States that pay more into the Fund than they get in return are called "donor" states and states that receive more money from the Fund than they contribute are called "donee" states. Proponents of the system say that some highway needs such as roads on federal lands, borders, trade routes and interstates are national in scope. Some states, especially in the rural West, have a higher proportion of interstates and federal lands yet have small populations and smaller gas tax revenues. Opponents decry that large, fast-growing states are forced to subsidize motorists in slow-growing or rural states.

DONOR	DONEE
"Texas money should be spent on Texas mobility to create Texas jobs—it's only fair," says former Republican House Majority Leader Tom DeLay of Texas, whose state receives about 90 cents in highway funds for every $1 its motorists paid in gasoline taxes. "Texas and other donor states have been sending highway money to Washington for decades without seeing a fair return on that investment." Texas, with 302,000 miles of public roads, paid $288.5 million more in federal gas taxes than it got back for highway construction in 2003. Between 1956 and 2003, the Lone Star State received $5.6 billion less than it paid into the highway fund—a loss of 13.5 percent. "It's time for donor states to start keeping more of what they contribute—it's time for fundamental fairness and equity to carry the day," DeLay concludes. (From 2004 press release)	New York state had a $1.23 to every dollar rate of return, has invested billions in its mass transit system, and its drivers thus use less gas, says Rep. Jerrold Nadler (D-NY). Reducing New York's slice of the pie "would be the same as being punished for being energy efficient. It's completely perverse." Nadler suggests Congress consider the bigger picture. Beyond just the gas tax, New York contributes far more to the federal government than it gets in return. While New York received $193 million more in federal highway funds than it contributed to the Fund, the state overall sent $26 billion more to Washington D.C. than it received back in federal funding. "If everybody gets back what they put in," Nadler says, "what's the point of the federal government?" (From: *Battle brewing over who gets fair share of highway money,* The Associated Press, 2004.)

In 2003, 23 of the 50 states were so-called donor states, paying a greater share into the Fund than they received. Of the 23 donor states, 17 have been donors since the program's inception in 1956 (Utt, 2004). However, transportation is just one small part of the overall federal budget—just 2 percent of the $2 trillion that is spent every year. Most "donor" states—including 11 of the 14 states that lobbied Congress for a greater return on the gas tax—are net *recipients* of overall federal funding (Seaman, 2003).

How much federal highway money does your state receive? Are you a donor or donee state?

Setasides

Once your state transportation agency has the money, they can spend it any way they see fit, right? Not exactly. Federal highway law requires states to spend 2 percent off the top on state planning and research, one-fourth of which must go to research, development and technology transfer. One-tenth of the Surface Transportation Program is immediately reserved for safety and another 10 percent is reserved for the Transportation Enhancements program.

Flexible Funding

A one-size-fits-all approach to funding would never work for our vastly different states. A hallmark of the TEA bills is the permission for state transportation agencies to "flex" dollars from one pot to another, based on their own needs and priorities. Because

State Constitutions Ban Use of Gas Tax for Non-highway Investments

Unlike the federal Highway Trust Fund which shares some gas tax revenue with mass transit, many states choose to use all gas tax money on highways exclusively. In more than 30 states, the state constitution specifically prohibits the use of state gas tax revenue for anything other than highway construction and maintenance.

For instance, the 18th amendment to the constitution of the state of Washington declares:
Article 2 Section 40: HIGHWAY FUNDS. All fees collected by the State of Washington as license fees for motor vehicles and all excise taxes collected by the State of Washington on the sale, distribution or use of motor vehicle fuel and all other state revenue intended to be used for highway purposes, shall be paid into the state treasury and placed in a special fund to be used exclusively for highway purposes.

one state might prioritize public transportation more than another, roughly 75 cents of every federal highway dollar can be used for transit investments such as bus, rail or streetcar systems. Highway dollars can be flexed for fix-it-first or pedestrian and bicycle safety initiatives. Unfortunately, only a handful of states have taken advantage of the flexibility. According to the Surface Transportation Policy Partnership, 87 percent of flexible funds given to state transportation agencies in the 1990s went to highway and bridge projects. Most of that flexible spending (82 percent) happened in just five states (New York, California, Pennsylvania, Oregon and Virginia). But, in theory, the transportation bill allows state and local governments, transit operators and metropolitan planning organizations (MPOs) to build a multimodal transportation system to meet their unique needs.

Does your state take advantage of flexible funding? If not, remind your transportation agencies that highway dollars are flexible and suggest they might be better spent on more efficient, multi-modal solutions rather than more highways.

Obligation and Reimbursement

The Federal Aid Highway Program is not a "cash up-front" program. The federal government makes a promise called an "obligation" to pay state transportation agencies for the federal share of a project's eligible cost. Certain spending levels are "authorized," but state transportation agencies don't actually see any of that money until after they have spent it. State transportation agencies are simply notified that they have federal funds available for their use. Projects are approved, work is started. The federal government makes payments to the state transportation agency for costs as they are incurred on projects. The project does not need to be completed before the federal government reimburses the state. Depending on the type of project, the time elapsing between obligation and reimbursement can vary from a few days to several years.

Reimbursement – Sequence of Events

1. Work is done by a contractor.
2. Contractor sends a bill to the state transportation agency.
3. Vouchers for the bills are sent to FHWA.
4. FHWA certifies the claim.
5. Certified schedules are submitted to the Treasury.
6. Federal share is transferred to state transportation agency bank account.

NOTE: *Steps three through six can happen in as little as one day.*

Federal Share

Got a match? Most highway projects receive 80 percent federal funding and the state is required to come up with the remaining 20 percent. New transit projects, on the other hand, only receive 50 percent federal funding, leaving the state responsible for the other half of the funding. This discrepancy sets up a perverse incentive for states to continue to rely on additional highways rather than transit to meet transportation needs because they cost the state less out of pocket.

"In looking at projects occurring around the state, it is tough to see a true prioritization of our funding dollars in transportation. There is an increasing need to maintain existing roads and increase transit, but there is still a push for new roads and old solutions." Conservation advocate

Interstate maintenance receives 90 percent federal funding, while Federal Lands Highway projects and Emergency Relief receive a full 100 percent federal funding.

The required matching funds can come from the following sources:

- State or local government funds
- Private contributions
- Credit for donated property
- Other federal agencies (if specifically authorized in law)
- Federal Lands Highway Program (if the project provides access to or within federal or Indian lands).

What funding sources does your state use to pay the nonfederal match for transportation projects?

–Does your state constitution ban the use of gas tax for non-highway investments? If so, find out why the ban was first imposed. Have conditions in your state changed since then to justify changing the restriction?

Guest Column:

THE HIDDEN COSTS OF HIGHWAYS

By Jim Motavalli, Editor, E/The Environmental Magazine and author of Breaking Gridlock: Moving Toward Transportation That Works

How much does it cost to own and drive a car for a year? The Automobile Association of America (AAA) puts the average cost (including fuel, depreciation, insurance, registration and more) at $7,967 in 2006, based on a medium-sized sedan driving 15,000 miles. Per mile costs average 52.2 cents. That adds up to 15 to 20 percent of the average family budget in the United States. Straightforward enough, right?

But what about the so-called "external costs"? Despite the fact that the interstate highway system is completely built out, governments spend $200 million every day constructing, fixing and improving roads in this country. Traffic management and parking enforcement on those roads costs $48 billion annually, and $20 billion is spent on routine maintenance.

According to Terry Tamminen's book *Lives Per Gallon*, the external cost of air pollution from motor vehicles is $24.3 billion per year. Federal tax breaks for the oil industry cost as much as $113 billion. Add in health care costs of up to $672 billion, damage to crop yields of $3 to $6 billion and to forests of up to $2 billion.

Katie Alvord's *Divorce Your Car* ups the ante with congestion costs of $168 billion annually in the United States. She cites statistics averaging external costs as 79 cents to $1.20 per vehicle mile, or $9,927 to $15,053 per car per year. And so the total annual cost of owning AAA's average car—with the planet in mind—jumps as high as $23,020. That's one expensive sedan!

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TRANSPORTATION FUNDING RESOURCES

HIGHWAY TRUST FUND

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http://www.fhwa.dot.gov/policy/primer98.pdf

Highway Trust Fund: Financial Report for Fiscal Year 2004
http://www.fhwa.dot.gov/reports/htffy04/

Status of the Highway Trust Fund: 2007
http://www.cbo.gov/ftpdocs/79xx/doc7909/03-27-Highway_Testimony.pdf
http://www.cbo.gov/ftpdocs/71xx/doc7123/04-04-Highway%20Revenues.pdf

USGAO's Overview of Highway Trust Fund Financing
http://www.gao.gov/new.items/d02435t.pdf

Key Facts About America's Road and Bridge Conditions and Federal Funding
The Road Information Program
http://www.tripnet.org/NationalFactSheetMarch2006.pdf

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ARTBA's State Gas Tax Report
http://www.artba.org/economics_research/current_issues/ARTBA%20State%20Gas%20Tax%20Report%20July04.pdf#search='state%20gas%20tax'

ARTBA's Map of State Gas Tax
http://www.artba.org/economics_research/current_issues/Gas_Tax_Rates_dev_since_1997.pdf

DONOR / DONEE

Are you a donor or donee state?
Surface Transportation Policy Partnership
http://www.transact.org/2006workshops/statespending92-05.pdf

Dividing the Pie: Placing the Transportation Donor-Donee Debate in Perspective
Rudin Center for Transportation Policy and Management
http://www.nyu.edu/wagner/transportation/files/dividingpie.pdf#search='donor%20states%20and%20highway'

States' Highway Alliance for Real Equity (SHARE)
http://www.sharestates.org/index.htm

Fair Alliance for Intermodal Reinvestment (F.A.I.R. Alliance)
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FLEXIBLE FUNDING

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HIDDEN COSTS OF HIGHWAYS

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James J. MacKenzie, Roger C. Dower, Donald D.T. Chen, World Resources Institute 1992
http://www.wri.org/climate/pubs_description.cfm?PubID=2559

TRANSPORTATION RESEARCH

Have you ever wondered how much salt it takes to melt an inch of ice at 10 degrees below zero? Or have you pondered the decibel level of tire noise on pavement? Well, if it is transportation related, you can bet that someone, somewhere, is studying it in gruesome detail. In an effort to continually improve our transportation systems, the transportation sector invests billions in research, seeking innovations in procedures and practices that can be practically applied on our roads and highways. According to the Transportation Research Board, 16 government agencies spent $2.63 billion on transportation-related research in 2002.

Funded primarily by government agencies, transportation research is conducted by several different organizations, both government and private, analytical and experimental. Other bodies are responsible for stimulating research and distributing results. Over the past decade, an increasing amount of transportation research has focused on the impacts of roads on wildlife and developing mitigation measures. This chapter seeks to help conservationists become more active participants in, and recipients of, transportation research funding by introducing some of the major players and policies.

STATE PLANNING AND RESEARCH (SPR)

State transportation agencies are required to set aside 2 percent of funds from the Surface Transportation, National Highway System, Bridge Replacement and Rehabilitation, Interstate Maintenance, Congestion Mitigation and Air Quality, and Minimum Guarantee Funds programs for state planning and research activities, or "SPR." Of that 2 percent, they must then allocate at least 25 percent to research.

State transportation agencies are encouraged to develop research programs that anticipate concerns before they become critical problems. Each state is permitted to tailor its program to meet local needs, but must be certified by the Federal Highway Administration (FHWA). Highest priority is given to applied research on state or regional problems, transfer of technology from researcher to user, and setting standards and specifications. Major research areas include infrastructure renewal, safety, operations, environment and policy analysis.

State transportation agencies cooperate with other states, FHWA, and other appropriate agencies to achieve objectives established at the national level and to develop a technology transfer program to promote and use those results. When the FHWA division office gives the go-ahead, state transportation agencies post their new research in the *Research in Progress* (RiP) database. To address progress in the program, the state must prepare an annual report of activities detailed in the work program.

Contact your state transportation agency's research division about research programs and projects. Get to know your state's AASHTO Research Advisory Council (RAC) member, typically the research program manager. Suggest a meeting with your organization to discuss research topics that will address the wildlife/transportation conflicts in your state or area of interest. Offer your involvement if your organization has the capacity to provide data, volunteers, monitoring or other support for ongoing or upcoming research.

TRANSPORTATION POOLED FUND (TPF)

Established by FHWA and AASHTO's Research Advisory Committee, the Transportation Pooled Fund (TPF) program maximizes the benefits of transportation research funding by encouraging consolidation of resources to address common transportation-related issues.

To qualify as a pooled fund study, more than one state transportation agency, federal agency or other body (such as a Metropolitan Planning Organization (MPO), university or a private company) must commit funds or other resources to conduct the research, planning or technology transfer activity. Anyone (yes, anyone!) can suggest ideas for TPF studies, but they must be sponsored by either a state transportation agency or FHWA and only specified individuals are authorized to post solicitations on the TPF Web site, typically the AASHTO Research Advisory Committee member in the state. Each TPF proposal must include background information on the subject, the intended process to conduct the research and estimated costs and time required to complete the research. Upon submitting the proposal and request to establish the study, the lead agency may post its pooled fund solicitation on the TPF Web site. Local and regional transportation agencies, private industry, foundations, universities and nonprofit organizations may partner with any or all of the sponsoring agencies to conduct pooled fund projects.

State-led TPF studies are generally conducted under contracts managed by the state or are administered by the Transportation Research Board (see below). FHWA-led studies must consider proposals through a competitive process. FHWA monitors the use of State Planning and Research funds by requiring project status and progress reports on a quarterly basis, online at the TPF Web site.

Suggest a TPF study! If you have a brilliant idea or can partner on an existing study, contact your AASHTO Research Advisory Committee member and ask how to get more involved.
–See "How to write a research problem statement" in the Appendix.

TRANSPORTATION RESEARCH BOARD (TRB)

One of six divisions within the National Research Council, the Transportation Research Board (TRB) draws on more than 5,000 scientists, engineers and other transportation professionals who volunteer their expertise through a complex system of committees, panels and task forces. The mission of TRB is to promote innovation and progress in transportation through research. Among its many, varied activities and responsibilities are:

- facilitating the sharing of information on transportation practice and policy
- disseminating publications, reports, and peer-reviewed technical papers on research findings
- stimulating research
- offering research management services that promote technical excellence
- providing expert advice on transportation policy and programs
- operating an on-line computerized file of transportation research
- conducting special studies on transportation policy issues at the request of the U.S. Congress and government agencies
- hosting an annual meeting in Washington, DC that draws nearly 10,000 transportation professionals from around the world.

TRB is financially supported by the U.S. Department of Transportation and other federal agencies, individual state departments of transportation, industry associations, non-governmental organizations and others who share an interest in transportation practice and policy.

Committees of Interest

TRB is organized under a committee structure, with standing committees, project-based committees and governing committees. Of primary importance to conservationists are the following technical committees that address issues crucial to wildlife conservation and transportation. Each committee below shows the committee name and designator, followed by the official description of the committee's scope.

Environmental Analysis in Transportation ADC10 (A1F02)
This committee is concerned with issues relating to the environmental impacts of transportation projects and systems. Emphasis is placed on planning, decision-making, mitigation strategies, policies and processes, as well as multidisciplinary impact considerations.

Ecology and Transportation ADC30T
This committee identifies and shares information on the science of ecology, best management practices and solutions related to transportation ecology issues at TRB meetings, the International Conference on Ecology and Transportation (ICOET), and other transportation and ecology related forums.

Safety Data, Analysis and Evaluation ANB20 (A3B05)
This committee is concerned with mitigation of the safety and ecological effects of roadways (railways and airports also given cursory attention) including:

- primarily – safety hazards caused by large animals on the roadway
- secondly – detrimental effects (roadkill mortality, lack of permeability, etc.) on healthy animal populations along roadsides.

Subcommittee on Animal Vehicle Crash Mitigation A3B05-2
This committee is concerned with the safety and ecological effects of roadways (railways and airports also given cursory attention) including:

- safety hazards caused by large animals on the roadway
- detrimental effects (roadkill mortality, lack of permeability, etc.) on healthy animal populations along roadsides.

Task Force on the Transportation Needs for National Parks and Public Lands ADA40T (A5T55)
The task force addresses the role of transportation in providing access to and mobility within national parks and other public lands. It also provides a forum for transportation and tourism planners and operators and public officials to share experiences regarding access, circulation and travelers in national parks and on public lands. The task force provides a forum for identification of research needs and requirements regarding recreation travel and tourism.

Statewide Multimodal Transportation Planning ADA10
The committee acts as an information exchange and promotes research in all the technical and institutional aspects of comprehensive multimodal statewide transportation planning. The committee is also concerned with the identification and clarification of the interrelationship of state resource development planning and programming.

Public Involvement in Transportation ADA60
This committee works to develop a conceptual framework for integrating public involvement into the transportation planning process, and to address specific planning and policy questions that have been encountered by transportation agencies while attempting to increase public involvement.

Volunteer as a "friend" of a TRB committee. Committee friends network with transportation and resource professionals from other geographic areas and disciplines while receiving valuable and timely information on research, technologies and current practices. Volunteers can participate in committee meetings, review research papers, work on committee projects, give presentations and preside at a session of TRB's annual meeting. To participate as a volunteer, contact the committee chair and express your interest.

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP)

Created in 1962, the National Cooperative Highway Research Program (NCHRP) conducts research in highway planning, design, construction, operation and maintenance. The program is sponsored by individual state transportation agencies and FHWA, yet administered by TRB. Each state contributes 5.5 percent of its State Planning and Research (SPR) funds which can only be spent on issues approved by at least two-thirds of sponsoring states.

Priorities are set annually by the AASHTO Standing Committee on Research (SCOR) based on input from state transportation agencies, FHWA, and AASHTO's Board of Directors and committee chairs. Submissions are evaluated and SCOR determines which completed or ongoing projects should receive NCHRP support and publishes the preliminary scopes of work each April.

TRB solicits research proposals from universities, nonprofit institutions, consulting firms and individual consultants that demonstrate capability and experience in each issue. TRB assigns expert panels to review the proposals, recommend contract awards, monitor research in progress, provide technical guidance, and review reports for acceptability. Research findings are published in the NCHRP series, designed as reader-friendly for both the administrator and engineer.

Stay tuned for these wildlife related NCHRP projects:

- *Evaluation of the Use and Effectiveness of Wildlife Crossings* (NCHRP 25-27)
  - Anticipated completion in 2007
  - *http://www.trb.org/trbnet/projectdisplay.asp?projectid=762*
- *Animal-Vehicle Collision Data Collection* (NCHRP 37-12)
  - Anticipated release in 2007
  - *http://www.trb.org/trbnet/projectdisplay.asp?projectid=104*

FHWA'S OFFICE OF RESEARCH, DEVELOPMENT AND TECHNOLOGY

FHWA's Office of Research, Development and Technology (RD&T) is located at the Turner-Fairbank Highway Research Center in McLean, Virginia, and performs three basic roles:

- Coordinator of the development of the national highway research and technology agenda, working with other offices in the Department of Transportation and FHWA and with partners in state and local governments, academia, industry and professional organizations
- Investigator of new and existing technologies to improve the safety, efficiency and operation of our highway system
- Disseminator of research results to the highway community where it may be placed into practice.

BUREAU OF TRANSPORTATION STATISTICS

ISTEA created the Bureau of Transportation Statistics (BTS) in 1991 to administer data collection, analysis and reporting to advance the *Department of Transportation's Strategic Plan*. Because it serves a broad audience (Congress, federal agencies, state and local governments, MPOs, universities and the private sector), BTS is meant to remain objective and policy-neutral, covering all modes of transportation with unique competencies in statistics, economics, information technology and geographic information systems. SAFETEA-LU authorized $27 million per year for BTS, which is administered within the Research and Development account under FHWA.

AASHTO'S STANDING COMMITTEE ON RESEARCH (SCOR)

Like TRB, AASHTO is also organized by committee structure. The Standing Committee on Research (SCOR) is supported by the AASHTO Research Advisory Committee (RAC) which is comprised of research managers from each state transportation agency. SCOR's responsibilities include:

- Encourage and assist other AASHTO committees and subcommittees to identify research needs, define research emphasis areas and utilize research findings
- Solicit research problem statements from state transportation agencies, AASHTO committees and FHWA; screen the submittals; prioritize them and recommend annual programs of NCHRP for consideration by AASHTO's Board of Directors
- Monitor TRB's performance as program manager for the NCHRP
- Monitor the NCHRP and make appropriate recommendations and reports to AASHTO
- Review, observe and encourage the effective use of research

funding, and recommend appropriate funding levels
- Serve as a forum, coordinating committee and advocate for highway and other transportation research on behalf of AASHTO and state transportation agencies
- Review, monitor and foster coordination of the various national programs of highway and other transportation research
- Study and foster the role of industry in highway and other transportation research.

RESEARCH AND INNOVATIVE TECHNOLOGY ADMINISTRATION (RITA)

Established in 2005, the Research and Innovative Technology Administration (RITA) is dedicated solely to technological innovation to improve mobility, promote economic growth and deliver a better integrated transportation system. RITA is composed of the Bureau of Transportation Statistics, the former Research Office of the Research and Special Programs Administration, Volpe National Transportation Systems Center, Transportation Safety Institute, and Office of Intermodalism. RITA is self-described as "part university research lab and part Silicon Valley entrepreneurial company."

UNIVERSITY TRANSPORTATION CENTERS

RITA now manages the University Transportation Centers (UTC) program. Since 1988, the Department of Transportation has awarded grants to universities to establish education centers devoted to transportation related issues. Centers are fully integrated within existing universities and each has a particular focus area—such as rural transportation or safety. SAFETEA-LU authorized $76 million per year to be distributed among the 60 UTCs for fiscal years 2005 through 2009.

The following UTCs are engaged in research of particular importance to conservationists:

Center for Transportation and the Environment

The Center for Transportation and the Environment (CTE) conducts research, education and technology transfer concerning the impacts of surface transportation on the environment. Located at North Carolina State University's Centennial Campus, CTE is funded jointly by the USDOT and NCDOT. CTE works on a variety of environmental subjects, from air quality and climate change to hazardous materials. Most notably for conservationists, CTE has a wildlife and terrestrial ecosystems initiative that examines the impacts of roads on wildlife and mitigation measures such as wildlife crossings. Conservationists can use CTE's research database and listserv to stay informed on the latest developments in road ecology. CTE is also responsible for managing the biennial International Conference on Ecology and Transportation (ICOET).

Sign up for the Wildlife, Fisheries and Transportation (WFT) listserv. *Go to: http://itre.ncsu.edu/CTE/gateway/WFTlistserv.asp*

Western Transportation Institute (WTI)

The Western Transportation Institute (WTI) was designated as a UTC in 1998 and focuses on rural transportation safety and operations, winter maintenance and effects, road ecology, infrastructure maintenance and materials, systems engineering development and integration, mobility and public transportation, logistics and freight management and transportation planning and economics. Located in the College of Engineering at Montana State University, WTI employs approximately 30 professional staff and faculty and 30 students. Its annual budget exceeds $5 million.

SAFETEA-LU contains a provision requiring the USDOT to commission a study of methods to reduce collisions between motor vehicles and wildlife. The study will include an assessment of causes, solutions and best practices for reducing wildlife-vehicle collisions. In carrying out the study, researchers must conduct a thorough literature review, survey current transportation agency practices and consult with appropriate experts in the field of wildlife-vehicle collisions. The contract for the collision study was awarded to WTI in June 2006, and final results are expected in fall, 2007. The results of the study will be used in formulating a best practices manual to serve as a guide for developing statewide action plans to reduce wildlife-vehicle collisions. The manual will become the basis for a training course for transportation professionals.

University of California at Davis, Road Ecology Center

The UC Davis Road Ecology Center brings together researchers and policy makers from ecology and transportation to design sustainable transportation systems based on an understanding of the impact of roads on natural landscapes and human communities.

Sign up for the UC Davis Road Ecology Center listserv. Go to: ttp://roadecology.ucdavis.edu/listserv.html

INTERNATIONAL CONFERENCE ON ECOLOGY AND TRANSPORTATION (ICOET)

Since 1996, the mission of the International Conference on Ecology and Transportation (ICOET) has been to identify and

share quality research applications and best management practices that address wildlife, habitat and ecosystem issues related to surface transportation systems. The conference is the primary gathering of experts in the field of transportation development, research and administration with the goal of enhancing both the project development process and the ecological sustainability of transportation systems.

ICOET is a multi-disciplinary event with a diverse and growing sponsorship including FHWA, state transportation agencies, the U.S. Fish and Wildlife Service, USDA Forest Service, Defenders of Wildlife and the Humane Society of the United States. Held every two years, ICOET draws approximately 500 participants from across the world for a week-long program that includes hundreds of papers and poster presentations, field trips, social networking events and a professional exhibitor area. All proceedings are accessible in electronic format on the official ICOET website.

Attend the International Conference on Ecology and Transportation (ICOET) and submit your own paper or poster if appropriate. This event not only showcases the latest and best research on wildlife and transportation, but also provides participants with an opportunity to spend quality time networking, building connections and advancing the dialogue among representatives of a variety of interests.

WHERE TO FIND RESEARCH RESULTS

Online databases and Web sites are excellent sources if you need to make a case for a conservation initiative or are just curious about current research on wildlife and transportation issues. A few of the most helpful are detailed below.

The *Wildlife, Fisheries and Transportation Research Database* contains bibliographic data on research from several published databases as well as from the proceedings of the International Conference on Ecology and Transportation.

The FHWA *Environmental Research Program (ERP) Projects Database* tracks and documents FHWA-funded research from 1990 to the present, both active and completed.

TRB's *Transportation Research Information Services (TRIS) Database* is the world's largest and most comprehensive bibliographic resource on transportation information. TRIS contains more than 600,000 records of published and ongoing research, covering all modes and disciplines of transportation. TRIS is sponsored by state transportation agencies, the U.S. Department of Transportation and other TRB sponsors.

TRB also maintains the *Research In Progress (RiP) Database* and a data-entry system to allow users in state transportation agencies to add, modify and delete information on their current research projects. The RiP database contains more than 7,800 transportation research projects by FHWA, state transportation agencies and UTCs.

Bookmark the major research Web sites and stay up to speed on the latest research results. This information may prove valuable in your involvement in other elements of transportation, such as planning and environmental review.

SAFETEA-LU established the Surface Transportation Environment and Planning Cooperative Research Program (STEP) as the sole source of federal transportation funds available to conduct all FHWA research on planning and environmental issues. SAFETEA-LU authorized $16.9 million per year for fiscal years 2006 through 2009 to implement the STEP research program.

The STEP program recognizes the dramatic differences in views and interests regarding transportation and environment research, and differentiates the views based on stakeholders' strong vested interest in receiving STEP funding to conduct research. STEP breaks the enormous and diverse number of stakeholders into three tiers:

Tier I – Federal Agencies and Tribes
Tier II – State and Local Government
Tier III – Nongovernmental Transportation and Environmental Stakeholders.

Conservation advocates can provide input and feedback on the implementation of STEP at several key points, including:

- Input and feedback on STEP programmatic structure, governance, implementation strategy, goals and emphasis areas
- Input from potential funding partners on collaborative research opportunities
- Input, advice and feedback on yearly-proposed research activities (both programmatically and by emphasis area)
- Input and advice during listening and outreach sessions at the TRB Annual Meeting, and other venues
- Input and feedback on the STEP Annual Report.

Requests for proposals, including broad agency announcements for grants and cooperative agreements to conduct research, will be developed to address emphasis areas. Unsolicited proposals are not likely to receive funding, but can be submitted via the existing formula.

Get involved in STEP. Provide input and feedback on the implementation of STEP and encourage continued research on reducing the impacts to wildlife and improving mitigation measures.

See "How to write a research problem statement" in the Appendix.

TRANSPORTATION RESEARCH RESOURCES

TRB: Environmental Research Needs in Transportation, 2002
See chapter, "Wetlands, Wildlife and Ecosystems"
http://onlinepubs.trb.org/onlinepubs/conf/reports/cp_28.pdf

STATE PLANNING AND RESEARCH (SPR)

http://www.tfhrc.gov/sprguide/index.htm

TRANSPORTATION POOLED FUND (TPF)

http://www.pooledfund.org/

Overview of TPF
http://www.tfhrc.gov/site/active.htm
http://www.tfhrc.gov/site/04105/index.htm

TRANSPORTATION RESEARCH BOARD (TRB)

http://www.trb.org

TR NEWS: Magazine of the Transportation Research Board
Available online at *http://www.trb.org/news/blurb_browse.asp?id=14*
Subscriptions available for $55 for 1 year at 202.334.3216

TRB Transportation Research E-Newsletter
http://trb.org/news/browse_newsletters.asp

An Invitation to Become Involved in TRB Committee Activities
http://onlinepubs.trb.org/onlinepubs/dva/GetInvolved.htm

NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM (NCHRP)

Guide to NCHRP
http://www.tfhrc.gov/sprguide/nchrp.htm

Overview of NCHRP
http://www4.trb.org/trb/crp.nsf/reference/appendices/NCHRP+Overview

NCHRP Projects (since 1989)
http://www.trb.org/crp/nchrp/nchrpprojects.asp

Information and Instructions for Preparing Proposals
http://www.trb.org/NotesDocs/ProposalPrepNCHRP.pdf

NCHRP Announce listserv notifies when new project statements are posted
http://www.trb.org/CRP/CRPEmailList.asp

AASHTO'S STANDING COMMITTEE ON RESEARCH (SCOR)

http://research.transportation.org/?siteid=55

UNIVERSITY TRANSPORTATION CENTERS (UTC)
http://utc.dot.gov/

Center for Transportation and the Environment
http://itre.ncsu.edu/CTE/index.asp
Western Transportation Institute
http://www.coe.montana.edu/wti/
UC Davis Road Ecology Center
http://roadecology.ucdavis.edu/

International Conference on Ecology and Transportation (ICOET)
http://www.icoet.net

TRANSPORTATION RESEARCH DATABASES
Wildlife, Fisheries and Transportation (WFT) Research Database
http://itre.ncsu.edu/CTE/gateway/wildlife.htm
http://itre.ncsu.edu/CTE/gateway/index.asp

Environmental Research Program (ERP) Projects Database
http://itre.ncsu.edu/CTE/FHWA-ERP/fhwa-erpsearch.htm

Transportation Research Information Services (TRIS) Database
http://ntlsearch.bts.gov/tris/index.do

Research In Progress (RiP) Database
http://rip.trb.org/

TRANSPORTATION RESEARCH LISTSERVS
The Wildlife, Fisheries, and Transportation (WFT) Listserv
http://itre.ncsu.edu/CTE/gateway/WFTlistserv.asp

UC Davis Road Ecology listserv
http://roadecology.ucdavis.edu/listserv.html

SURFACE TRANSPORTATION ENVIRONMENT AND PLANNING COOPERATIVE RESEARCH PROGRAM (STEP)
http://www.fhwa.dot.gov/hep/step/index.htm

PUBLIC ROADS AND PUBLIC LANDS

We love our public lands, but are we loving them to death? Federal lands (national parks, forests, wildlife refuges and monuments) encompass more than one-quarter of the United States and provide habitat for nearly two-thirds of all species that are listed as threatened or endangered. Of these species, twelve percent are restricted largely to federal public lands, making them invaluable to biodiversity conservation (Stein, 2000).

Public lands also provide the human population with valuable recreation opportunities, making them critical for local and regional economies. National parks alone generated $10 billion in visitor spending and supported more than 211,000 jobs in 2005. More than 273 million people visited national parks in 2005 and 40 million visitors come to national wildlife refuges each year. Many of these areas are accessible only by personal vehicle, driving up traffic congestion and air pollution on public lands. Increased vehicle traffic also increases the number of animals killed by vehicles. The National Park Service recorded 12,577 wildlife-vehicle collisions between 1989 and 2006 (Evans, 2007). If these impacts go unchecked, public lands will cease being suitable habitat for some of the more sensitive wildlife species. Without wildlife and the high quality habitat they need, public lands will also cease being suitable vacation destinations for tourists.

This chapter introduces conservationists to the agencies and policies that control roads and alternative transportation choices in our public lands. Recent advances in federal transportation policy have created unprecedented opportunities for conservationists to partner with land managers and engineers to reverse the negative trends that threaten our public lands and the wildlife that depend on them.

ROADS VS. ROADLESS

From one-lane, dirt logging roads to two-lane rural streets to major interstate highways, there are many different types of roads. While the impacts to wildlife may be similar, the development, ownership and management of various types of roads are very different. Therefore, the options for addressing the impacts are also very different. For instance, if an advocate wishes to decommission a logging road, she or he would petition the Forest Service. If that same

advocate wants to improve a culvert under a highway in that same forest, she or he would work with FHWA.

Getting Up to Speed is focused specifically on the impacts of public highways, built and maintained by county, state and federal agencies and used by the general driving public—not the roadless issue. Several conservation organizations are focused on reducing the impacts of logging roads, off-road trails, illegal roads or roads built to facilitate oil and gas exploration within our public lands, including Wildlands CPR and The Wilderness Society.

FEDERAL LANDS HIGHWAY PROGRAM

National parks and forests, wildlife refuges and other federally owned or managed lands comprise about 28 percent of the land in the United States. The Federal Lands Highway Program (FLHP), an adjunct to the Federal-Aid Highway Program, was created in 1982 to fund a coordinated roads program for transportation needs of federal and Indian lands that are not the responsibility of a state or local government. Federal lands highways (160,000 miles of public roads) connect with the National Highway System to provide seamless routes for travel to and within federal and Indian lands. Often referred to as "the DOT for federal lands," FLHP's purpose is threefold:

1. To ensure effective and efficient funding and administration for a coordinated program of public roads and bridges serving federal and Indian lands.
2. To provide needed transportation access for Native Americans.
3. To protect and enhance our nation's resources.

The Office of Federal Lands Highway is part of FHWA and located in Washington, DC. FLHP field organization consists of three field division offices:

Western Federal Lands Highway Division
Vancouver, Washington

Central Federal Lands Highway Division
Lakewood, Colorado

Eastern Federal Lands Highway Division
Sterling, Virginia

Find out which FLHP division office covers your state or area of interest. Bookmark their Web site. Look through their list of projects. Ask to be added to their mailing list.

Through cooperative agreements with federal land managing agencies—including the National Park Service, Forest Service, Military Surface Deployment and Distribution Command, Fish and Wildlife Service, and the Bureau of Indian Affairs—the FLHP provides engineering services for the planning, design, construction and rehabilitation of the highways and bridges that access federally owned lands. FLHP roads are intended to serve recreational travel and tourism, protect and enhance natural resources, provide sustained economic development in rural areas and provide transportation access for Native Americans. FLHP funds can be used for transportation planning, research, engineering and construction of highways, roads, parkways and transit facilities, but the land management agency has to pay for maintenance and operations.

FLHP covers five categories:

1. Public Lands Highways
2. Forest Highways
3. Indian Reservation Roads
4. Park Road and Parkways
5. Refuge Roads

FLHP funds are distributed to each category, where project selection is delegated to users (federal land management agencies, Indian tribes and states) based on three-year transportation improvement plans (TIP). Roads owned by the Bureau of Land Management, Bureau of Reclamation, U.S. Army Corps of Engineers and other Department of Defense agencies do not receive dedicated funding and have to compete for funds under the discretionary category.

Request a copy of the FLHP TIP in your area of interest. Are the projects in the best interest of the wildlife that depend on our public lands? Where appropriate, suggest wildlife conservation measures be included in upcoming projects.

SAFETEA-LU extended funding for all the programs within the FLHP through 2009 for a total of $4.5 billion. Provided this funding is not used to build new roads, and is instead applied to improve the environmental performance of existing roads, the increase is a success for public lands. Every dollar spent out of transportation funding means a potential dollar saved out of public lands' operations and maintenance. While it is not specifically stipulated in the language, this funding should be used for wildlife-friendly maintenance practices that are appropriate for the landscape and surrounding natural resources.

	2005	2006	2007	2008	2009
Indian Reservation Roads	$300M	$330M	$370M	$410M	$450M
Park Roads & Parkways	$180M	$195M	$210M	$225M	$240M
Refuge Roads	$29M	$29M	$29M	$29M	$29M
Public Lands (Discretionary and Forest Highways)	$260M	$280M	$280M	$290M	$300M
Total	**$769M**	**$834M**	**$889M**	**$954M**	**$1,019M**

Inventory and make a list of all the public lands in your state or area of interest. Contact your public lands manager and ask how they are using the FLHP.

Public Lands Highways Discretionary

Congress established the Public Lands Highways program (PLH) in 1930 to improve access to and within federally owned lands. Currently, 34 percent of the total PLH funds are earmarked for discretionary or special projects (PLH-D). Each year, FHWA issues a call for PLH-D projects, and selects them based on need. Preference is given to states that contain at least 3 percent of the total public lands in the nation and those projects that FHWA believes are significantly impacted by federal land and resource management activities. Nevada has received the largest amount of PLH-D funding: $96 million out of $1.1 billion allocated though 2002.

PLH-D projects range from New Mexico Route 537 through the Jicarilla Indian Reservation to roadway reconstruction and rehabilitation projects to improve access in and around the National Mall in Washington, DC.

Forest Highway Program

The National Forest System (NFS) consists of 155 forests across 42 states, and 192 million acres—from the Gila National Forest in New Mexico to the Monongahela in West Virginia. Every year, our national forests receive 205 million visits, most of which arrive via the 29,000 miles of state and local roads that are designated as Forest Highways (FH).

The Forest Highway Program (FHP) is part of the Public Lands Highway program, and receives 66 percent of the total PLH funds. According to FHWA, "the objective of the FHP is to construct or improve roads which connect our national forests to the main state transportation network."

Forest Highways are public roads that provide access to, through or within a forest unit and should not be confused with logging roads. Forest Highways are primarily owned and maintained by state and local governments. Funds are allocated by administrative formula and may be used to fund transportation planning, research, engineering and construction/reconstruction of roadways, bridges, transit, pedestrian and bicycle facilities. The program is administered through tri-agency agreements (FHWA/state/Forest Service) and annual program meetings in each state.

SAFETEA-LU included funding to replace inadequate culverts on Forest Highways and improve fish passage. The Forest Service will receive $10 million per year to "pay the costs of facilitating the passage of aquatic species beneath roads in the National Forest System, including the costs of constructing, maintaining, replacing or removing culverts and bridges, as appropriate." **For more information on culverts and fish passage, see Aquatic Resources.**

Critics of the Forest Highways Program question the ecological implications of turning a forest road (dirt, gravel, narrow, winding) into a Forest Highway (paved, widened, straightened and realigned to American Association of State Highway and Transportation Officials (AASHTO) standards). While paving a dirt or gravel road does result in a decrease in sediment yield and airborne dust, there are also many negative ecological consequences to improving a road to Forest Highway specifications.

Forest Planning

The National Forest Management Act of 1976 (NFMA) required the Forest Service to develop management plans for all forests and grasslands in the National Forest System. Management plans set the rules for managing resources and determine appropriate uses, allowable projects, and how wildlife will be managed, among many other things. All actions on these lands must be consistent with the governing management plan, including road projects. Many key decisions regarding the management of national forests and grasslands are made in the management plan and subsequent revisions and amendments. Extensive public involvement is required in the writing of forest management plans, and includes formal public comment and objection periods, workshops, round table discussions, working groups, focus groups, field trips, web sites, newsletter mailings and public notifications.

Get involved in the forest planning processes. Call your forest managers, ask to be added to their mailing list and request copies of planning documents. Attend planning events and take advantage of all public participation and comment opportunities. Discourage the expansion of roads and highways in forests and suggest that FLHP funding be used to correct past mistakes and restore habitat connectivity.

Indian Reservation Roads

Indian reservation roads are public roads that provide access to and within Native American reservations, land communities or Alaska native villages, while contributing to economic development, self-determination and employment of Indians and Alaska Natives. Approximately 50 percent of reservation roads are state and locally owned and the other half are owned by the Bureau of Indian Affairs (BIA) and jointly administered with FHWA in accordance with an interagency agreement.

The Indian Reservation Roads (IRR) program funds transportation planning, research, engineering and construction or reconstruction of any type of transportation project, including roadways, bridges, transit, and pedestrian and bicycle facilities. The BIA and tribal governments conduct most of the design and construction of reservation road projects. The program also includes the Tribal Transportation Allocation Methodology that allocates funds based on the relative needs of tribes and reservation or tribal communities for transportation assistance.

Refuge Roads

Our National Wildlife Refuge System contains more than 560 refuges and wetland management districts across all 50 states and U.S. territories. This network of public lands was the first and remains the most extensive in the world. Our refuges are crucial to many rare and imperiled species, including the whooping crane, ivory-billed woodpecker and Sonoran pronghorn.

Almost 40 million visitors access refuges every year via private vehicle, bus, watercraft, bicycle, on foot or horseback. The Refuge Road category of the FLHP provides funding for the maintenance and improvement of public roads that provide access to or within a unit of the refuge system.

The Refuge Roads program is jointly administered by FHWA and the U.S. Fish and Wildlife Service (FWS) and covers approximately 4,800 miles of public use roads. Funding is allocated to FWS regions based on relative need, established from refuge road mileage, area of parking facilities, road and bridge conditions, visitation and traffic safety. In order to establish priorities, FHWA and FWS develop safety, bridge, pavement and congestion management systems as appropriate. Design and construction of all refuge road projects must meet standards of the latest edition of the *Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects* or approved state or local highway agency specifications.

In 1999, FWS and FHWA entered into a cooperative agreement for the management and improvement of public use roads within the refuge system.

According to the agreement, FWS is responsible for:

- Carrying out a transportation planning process adequate to support the construction and improvement program
- Developing a five year program plan, and submitting annual priorities to FLHP for approval and allocation of the sums authorized

Comprehensive Conservation Plans

With the enactment of the National Wildlife Refuge System Improvement Act of 1997, refuges, for the first time, were given a solid, system-wide set of guidelines and standards for an ecosystem-based approach to refuge management and conservation. The act also requires each of the 547 refuges to develop a 15-year management plan. This plan, called a Comprehensive Conservation Plan (CCP), is necessary to ensure that the biological integrity, diversity and environmental health is maintained or restored on every refuge, as well as within the refuge system as a whole. Once completed, every CCP must be revised every 15 years. Transportation decisions on the refuge will be made both in the CCP and step-down transportation plans, and in the five-year program plan developed by the refuge system for FHWA.

"This is really where the meat of the issues are. CCP is much more than a planning program. For transportation issues, folks really need to know what public use projects are going to be funded over the coming five years. The opportunity to leverage funds with state transportation programs exists every year and you need to know what's happening so you can see how you can take advantage of potential opportunities."
Sean Furniss, FWS National Transportation Coordinator

Get involved in your CCP process. Interagency program and policy review meetings are conducted on a regular basis. FWS regional staff meet with FLHP staff every year for a nationwide meeting to cover a broad range of topics from process, management and future direction. Participate in developing the CCP and step-down management plans. Encourage the use of transportation funding to restore habitat connectivity and provide alternatives to driving.

In 2005, FWS released their revised Refuge Roads Guidance to help identify projects and project enhancements that may be funded under the Refuge Roads program. According to the guidance, *construction of new roads is not authorized*. Basic eligibility for funds is limited to:

1. Maintenance and improvements of refuge roads.
2. Maintenance and improvement of eligible enhancement projects noted below that are located in or adjacent to wildlife refuges:
   a. Parking areas
   b. Interpretive signage
   c. Provisions for pedestrians and bicycles
   d. Roadside rest areas including sanitary and water facilities.
3. Administrative costs associated with such maintenance and improvements.

Park Roads and Parkways Program

Perhaps more so than on other public lands, providing access to visitors is integral to our national parks. The National Park Service (NPS) owns and operates 5,500 miles of paved roads, 4,500 miles of unpaved roads and 1,803 structures. These structures include 22 railroad bridges, 71 tunnels, 143 trail bridges and 1,608 roadway bridges. Whether by train, bus, auto, horse carriage, bicycle, boat or on foot, our 390 national parks welcome more than 273 million visitors every year. Most parks are accessible primarily by automobile, pushing the limitations of park roadways and parking lots, and threatening the very resources parks were created to protect. The NPS struggles with deteriorating roads and bridges, potholes, and an aging transit system while seeking more creative solutions that are more appropriate to the resource.

The Park Roads and Parkways (PRP) program covers public roads that provide access within a national park. The program is jointly administered by NPS and FHWA and funds are distributed on a regional basis. NPS is responsible for planning, environment and resource protection while identifying project priorities. FHWA provides planning, engineering and technical support and is the formal voice to Congress.

PRP projects are grouped into two categories:
Category I – includes road, bridge and safety projects to ensure that major roads and bridges throughout the national parks are in "acceptable" condition; to improve safety by using current design standards; and to apply sound asset management strategies to protect and reduce lifecycle costs.
Category II – includes completion of congressionally mandated projects such as the Foothills Parkway's "missing link" in Tennessee and multi-use trails along the Natchez Trace Parkway in the southeastern United States.

Alternative Transportation in Parks and Public Lands

As outdoor recreation grows in popularity, traffic congestion and pollution are increasing on our public lands. Sitting in traffic jams detracts from the visitors' experience and impacts the natural resources they came to see. Recognizing that more roads and parking lots are not the solution, NPS began introducing visitor transit systems to alleviate traffic problems and increase park accessibility. Within the park system, alternative transportation systems integrate all modes of travel—transit, automobile, bicycle and pedestrian—and include a whole range of technologies, facilities and transportation management strategies. The first Alternative Transportation Program was launched in 1998 to "preserve and protect resources while providing safe and enjoyable access to and within the national parks by using sustainable, appropriate and integrated transportation solutions." The program coordinates policies, projects and activities related to planning, partnering and implementation of alternative transportation systems, and develops strategies and recommendations for application across all national parks.

SAFETEA-LU expanded the 1998 alternative transportation initiative to include all public lands, including parks, refuges, forests and recreational areas managed by the Bureau of Land Management and the Bureau of Reclamation. The Alternative Transportation in Parks and Public Lands (ATPPL) is managed by the Federal Transit Administration. According to the provision, "The term 'alternative transportation' means transportation by bus, rail, or any other publicly or privately owned conveyance that provides to the public general or special service on a regular basis, including sightseeing service. Such term also includes a nonmotorized transportation system (including the provision of facilities for pedestrians, bicycles, and non-motorized watercraft)."

ATPPL funds may be used for either planning or capital projects, and must be in or near an eligible area. Projects can include research, development and deployment of new technologies that will conserve resources, prevent or mitigate adverse environmental impacts, improve visitor mobility, accessibility and enjoyment and reduce air, noise and visual pollution on public lands. To qualify, projects must involve one or more of the following:

- Clean fuel technology
- Replacement of buses with vehicles that introduce innovative technologies
- Coordination with other public transportation systems
- Providing a non-motorized transportation system

- Providing waterborne access
- Providing an alternative transportation project that enhances the environment
- Preventing or mitigating an adverse impact on a natural resource
- Improving federal land management agency resource management
- Improving visitor mobility and accessibility and the visitor experience
- Reducing congestion and pollution
- Conserving a natural, historical or cultural resource

Where appropriate, suggest alternative transportation projects. Look at the list of eligible projects and determine if any of them would be appropriate and beneficial for the public lands in your state or area of interest.

National Park Service Planning

Because transportation defines many important aspects of the park visitor's experience—from what to see to where to stay—the NPS plans and designs its transportation systems through each of its four NPS Planning Elements.

NPS Planning Element	Planning horizon	Public involvement
1 General Management Plan • the broadest level of NPS planning • establishes core park values • defines transportation-related challenges	20 years	Required
2 Strategic Plan • designed to integrate programs and set priorities • transportation considerations include current condition of facilities, access, operations and development outside park boundaries	3-5 years	
3 Implementation Plan • developed when action is imminent and funding is committed • focuses on using transportation projects to achieve long-term goals • projects included will likely require formal environmental analysis	2-5 years	Public is involved to ensure location and design of new roadways will be accepted
4 Annual Performance Plan • sets work goals and objectives for the coming year • identifies funding sources and staff requirements • transportation issues are limited to activities for that year	1 year	

Guest Column:

PARKS NEED YOUR INPUT ON ROADS

Laura Loomis, Senior Director of Government Affairs
National Parks Conservation Association

The National Parks Conservation Association (NPCA) believes the transportation system that serves our national parks should enhance a visitor's experience and protect the resources. Some of the most spectacular roadways in this country are also some of the most dangerous. Decades of chronic underfunding have resulted in a $4.5 billion maintenance backlog for the more than 8,000 miles of roads in the national parks. Roads in good condition are the optimal means to provide safe and enjoyable services, protect wildlife and other resources, and ensure the best return on taxpayers' dollars.

Conservation advocates should get involved in the General Management and Implementation Plans. When it comes to park roads, the best time to get involved is during the scoping process that takes place prior to developing the draft plan. The public has the greatest influence during Implementation Plans because they include much more detail than the General Management Plans. Contact your park managers, ask to be added to their mailing list and request copies of planning documents. Attend informational sessions held by park staff and take advantage of all public participation and comment opportunities.

SECTION 4(f)

Certain public lands enjoy an extra layer of protection from a small, but powerful provision in the Department of Transportation Act of 1966. Known as "Section 4(f)," the provision was intended to protect public places such as parks and refuges from being used for highway building. Section 4(f) declares that the United States Government will make a special effort "to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." FHWA cannot approve a project requiring the use of publicly owned land (public park, recreation area, wildlife/waterfowl refuge, or historic site) unless adequate planning was done to minimize harm and there is no prudent and feasible alternative.

Know your 4(f) properties. Make a list and map of all the parks and refuges in your state or area of interest that qualify for 4(f) protection. For more information on 4(f), see Environmental Review.

SAFETEA-LU Section 4(f) is remarkably simple, yet has been criticized by a small number of vocal state transportation agencies who find it overly restrictive and prohibitive. Following attempts by opponents to remove or weaken 4(f), the amended language in SAFETEA-LU's section 6009 retains the restrictions on impacting public resources, but provides flexibility for projects that have "de minimis" impacts. To reach a de minimis finding, the transportation agency must provide an opportunity for public comment and review, determine that the project will not adversely affect the resource and receive concurrence from the resource manager. Once de minimis is determined, analysis of avoidance alternatives are not required and the project may proceed.

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http://www.fhwa.dot.gov/flh/

Statement on the Federal Lands Highway Program, Mary Peters, FHWA Administrator
United States Senate Committee on Environment and Public Works, August 8, 2002
http://epw.senate.gov/107th/Peters_080802.htm

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PUBLIC LANDS HIGHWAY (PLH / D)
http://www.fhwa.dot.gov/flh/publands.htm
http://www.fhwa.dot.gov/discretionary/plhcurrsol.htm

WSDOT'S Public Lands Highways Discretionary Program Information
http://www.wsdot.wa.gov/TA/ProgMgt/GRANTS/PLHProgramInfo.pdf

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National Forest System Facts
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From Gravel to Pavement — The Impacts of Upgrading
Marnie Criley, Wildlands CPR
http://www.wildlandscpr.org/databases/biblionotes/biblio5.4.html

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REFUGE ROADS (RR)
http://www.fws.gov/refuges/roads/

Interagency Agreement between the U.S. Fish and Wildlife Service and the Federal Highway Administration Relating to Public Roads on the National Wildlife Refuge System

http://www.fhwa.dot.gov/agreements/documents/hfle1agr.htm

America's National Wildlife Refuges (factsheet)
http://www.fws.gov/refuges/generalInterest/factSheets/FactSheetAmNationalWild.pdf

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SAFETEA-LU AND PUBLIC LANDS

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http://www.fhwa.dot.gov/environment/4f.htm

Anatomy of a Highway

IN THIS SECTION

Transportation Planning is perhaps the most important chapter in this book. You'll learn about the planners, process and products and how to take advantage of public participation opportunities to be a voice for wildlife. And don't forget the exciting new developments in integrating conservation in transportation planning.

Environmental Review walks you through the major environmental protections—NEPA, ESA, Clean Water Act and 4(f)—and how they apply to transportation projects.

Design and Construction will teach you a thing or two about how highways are designed, right of way purchasing and the basics of the construction process.

Maintenance and Operations rounds out the section with an overview of responsibilities of your maintenance division and some of the best management practices they can use for wildlife conservation.

NOTE: *When working on wildlife and transportation conflicts at all of these stages, conservationists will be interacting with transportation agencies. However, you should be aware that the lion's share of work is actually done by consulting firms, not by the agency itself. Be sure to ask which firms have been contracted to do the job.*

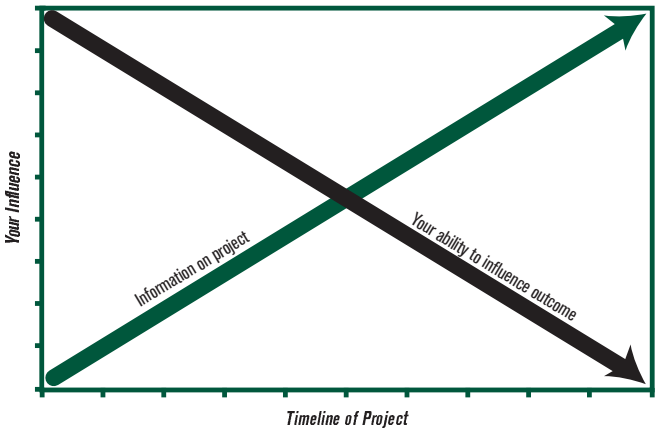
TRANSPORTATION PLANNING

If you learn only one thing from *Getting Up To Speed*, make it this: You hold in your hands the power to change the future.

Transportation planning guides decisions about where we will build or expand our infrastructure. The decisions we make today will influence the location, direction and shape of the development that happens tomorrow, and hence the location, types and quality of habitat that we are able to protect. If conservationists don't bring our voices and expertise to this process, we can no longer be surprised when the results don't reflect our priorities.

The bad news is, the transportation planning process is complicated, obtuse and a bit overwhelming. In addition to reading this chapter, you will need to turn over a lot of rocks, do your homework, make a lot of calls and diligently track several simultaneous processes, plans and products. Because planning is comprehensive and continuing, you can bet there is always some*thing* going on some*where* with some*one*.

The good news is, there is already a role for you and other conservation advocates in the process. It's our job to get involved because transportation planning—for all its faults—is where it's at. During planning, advocates have the opportunity to voice concerns early enough to actually *avoid* many impacts. By the time a bad plan gets to the project stage, usually all we can do is minimize and mitigate the harm.



As a highway project progresses, the amount of information increases, but your ability to influence the outcome diminishes with each phase.

And there's more good news. Two new serendipitous developments from Capitol Hill have converged to set the stage for our increased involvement. State wildlife agencies have recently completed the much-anticipated State Wildlife Action Plans, giving us a blueprint for proactive, coordinated conservation. And now SAFETEA-LU requires transportation planners to incorporate conservation into long-range transportation plans, virtually hardwiring conservation into the transportation planning process. There has never been a better time for conservationists to take that seat at the table and help shape the future for America's wildlife.

"We can engage earlier in the process than the comment period. We make ourselves a player at the table when we bring alternatives and solutions rather than simply opposition." **Conservation advocate**

HISTORY

We have had highways for a century now but *transportation planning* did not begin in earnest until the 1960s. Prior to that, billions of dollars were spent to repair old and obsolete highways and to build the shiny new interstates, but neither were done with local input or consideration of long-term impacts. The Federal-Aid Highway Act of 1962 created the first federal requirement for urban transportation planning, whereby urbanized areas (with 50,000 or more residents) were required to plan all transportation projects cooperatively with state and local governments in order to receive federal road dollars. Since then, Congress has incrementally strengthened the planning process by further engaging local elected officials and incorporating a wide range of social, economic and environmental concerns. In 1991, Congress proclaimed a new era in transportation policy with the Intermodal Surface Transportation Equity Act (ISTEA). In theory, the old top-down decision making would be replaced with inclusive and honest planning at the state and metropolitan levels. Congress set forth a list of planning factors meant to guide the transportation planning process, written into law as follows:

- Support the economic vitality of the United States, the states and metropolitan areas, especially by enabling global competitiveness, productivity and efficiency.
- Increase the safety and security of the transportation system for motorized and nonmotorized users.
- Increase the accessibility and mobility options available to people and for freight.
- Protect and enhance the environment, promote energy conservation, improve quality of life, and promote consistency between transportation improvements and state and local planned growth and economic development patterns.

- Enhance the integration and connectivity of the transportation system, across and between modes throughout the state, for people and freight.
- Promote efficient system management and operation.
- Emphasize the preservation of the existing transportation system.

CAUTION: With a list like this, how can we go wrong? As good as the planning factors are, they are merely guidance and not regulatory in nature. Failure to consider any factor is not reviewable in court and could be disregarded by any Metropolitan Planning Organization (MPO) or state transportation planning office. Also, terms such as "environment" and "quality of life" are exceptionally (and intentionally) vague. As a result, MPOs and state transportation agencies are free to interpret these terms in their own way.

THE THREE CS

The Federal-Aid Highway Act of 1962 mandated urban transportation planning and gave rise to the "three Cs," which continue to be a good idea for planning. The act read:
"After July 1, 1965, the Secretary shall not approve under section 105 of this title any programs for projects in any urban area of more than fifty thousand population unless he finds that such projects are based on a **continuing, comprehensive** transportation planning process carried out **cooperatively** by states and local communities in conformance with the objectives stated in this section."

TRANSPORTATION PLANNING: THE FUNDAMENTALS

Transportation planning should be easy, right? All you have to do is figure out how to move people and goods, safely and efficiently in the least expensive, fastest, most aesthetically pleasing manner, while balancing land use, economic development, security, and cultural preservation *and* meeting the impossible demands of local businessmen and a politician up for reelection. Oh, and please do so in the most environmentally sensitive fashion, with full participation and input from the public. And whatever you do, don't put it in my back yard.

To help you begin to understand this complicated process, let's break it down into these essential elements:
Planners – Who does transportation planning?
Process – What is the process whereby roads are planned?
Products – What are the finished plans, what do they look like and where can I find them?
Funding – Who pays for transportation funding?

"Conservationists need to recognize that transportation agencies are public agencies trying to meet a long list of public needs, including environmental needs as well as safety, mobility, infrastructure preservation and livable communities." **State transportation agency staff**

"Until I trade in my car for a horse, I am part of the problem too."
Conservation advocate

Planners

Planners are the folks who examine current transportation operations (including traffic, congestion, accident rates and road conditions) and try to anticipate future transportation needs. They are hard at work everywhere—from small towns to massive cities—and are employed at various levels of government, including:
At the local level, many **small communities and counties** have their own transportation planners, often working in concert with land use planning.

Rural areas may have **regional planning organizations** made up primarily of local elected officials. These organizations plan for specific geographic areas within the state that have populations below 50,000, and are therefore not covered by metropolitan area plans.

Some areas also have **regional development organizations,** regional councils, planning commissions or councils of government that work closely with local communities, governments and businesses on everything from economic development and emergency services to housing and transportation planning. Regional development organizations typically administer, and/or serve as, the regional planning organization. More than 25 state transportation agencies contract with these regional development organizations to provide rural transportation planning services.

Many states also utilize **transportation advisory committees** (TAC). Members of these committees are appointed by their respective municipality or transportation agency. The TAC makes recommendations to regional development organizations and state transportation agencies regarding the development of plans, activities and projects, and influences transportation policy at the regional and state levels.

For cities with more than 50,000 people, a **metropolitan planning organization** (MPO) is designated by agreement between the governor and representatives of the metropolitan area. Almost three-quarters of U.S. citizens live and work in areas served by MPOs. These organizations have responsibility for planning, programming and coordination of federal highway and transit

investments within their jurisdiction. Most MPOs are "free standing" or housed within city or county organizations. Less than half of them are housed within regional development organizations. **MPOs are responsible for long-range transportation plans, short-range work programs and a plan of studies to determine transportation needs.**

Very large metropolitan areas with populations that exceed 200,000 are known as **transportation management areas**, but are still considered MPOs. Transportation management areas have some additional planning requirements—including congestion management systems to identify actions and strategies to reduce congestion and increase mobility.

Every **state transportation agency** has a planning division that works with metropolitan and regional planning organizations and others to initiate studies and conduct transportation planning for the entire state. State transportation agencies are responsible for producing long-range transportation plans, short-term work programs and air quality implementation plans.

Attend meetings of local transportation boards and transportation advisory committees. Express concerns you may have about the existing, ongoing and potential impacts of the transportation system on wildlife. Provide information and offer to make a presentation at the next meeting on the impacts and solutions.
-Volunteer to serve on a citizen focus group or advisory committee. If no such committee exists, suggest it.

How many transportation planners does it take to...?

Transportation plans pass through many, many hands before going to design, review and construction. At every step in the process, someone is "planning" the next step, and is thus a part of the long continuum of planners. In the course of your work with transportation agencies and professionals, you may be confused when you encounter many people with the word "planner" in their title. Indeed, they *are* all planners, but only some of them are involved with planning at the system level—which is what we are covering in this chapter. Some are involved at the individual project level—these are "project planners." Some state transportation agencies have "environmental planners" who plan how to guide a project through environmental review. The plethora of "planners" can be confusing, so make sure you know who you are talking to. As a conservationist, they will often assume you want to talk to the environment shop, and this is not always the case.

Invite a transportation planner to meet with your organization and discuss the transportation planning process, the plans themselves and how you can more effectively be involved.

"We get along really well with our environmental office but we still need to break the barrier with the planning department and develop relationships at the highest levels." **Conservation advocate**

Planning Process

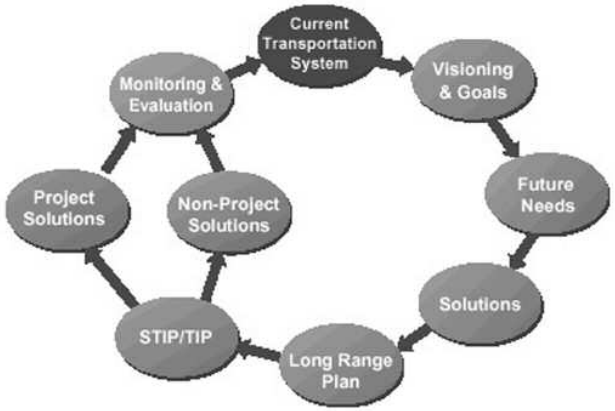
Don't be confused when you discover that your town or state does things its own way—they all do. Federal transportation law lays out some guidelines and standards, but for the most part, the process differs from state to state and continues to evolve with every new highway bill. Each town and state has established its own schedule, its own set of actors, and its own standards and processes. The planning process is continuous and comprehensive, so there's always planning going on somewhere, and often, there's no clear beginning point or finish line. Several steps can take place at once and planners may repeat some steps several times.

The basic steps in the transportation planning process are:

1. Define the problem, scope, area, issues
2. Set goals, objectives and criteria
3. Collect data
4. Develop alternatives and scenarios
5. Model—forecast future travel behavior
6. Evaluate alternatives
7. Select a preferred plan
8. Implement the plan through projects

At the state level, the state transportation agency is responsible for conducting transportation planning for its non-metropolitan areas. State transportation agencies are also required to consult with non-metropolitan local officials in statewide transportation planning and programming. The statewide transportation planning process requires coordination of:

- transportation plans and programs developed for metropolitan planning areas
- participating organizations
- statewide trade and economic development planning activities
- related multi-state planning efforts.



"While we look at the transportation planning process comprehensively, the agency deals with different parts of the process separately. The long-term planning group has a statewide focus, the short-range planners work regionally and project planners are engineers working on specific projects." **Conservation advocate**

CAUTION: The best laid plans…

Not to burst your bubble at this point, but the planning process is not the decision making process. If done well, it can provide a framework for informed decision-making, but ultimately those elected or appointed to make decisions will make the call. Every transportation planner has a story about good plans being scuttled by some ill-advised, hair-brained proposal that slipped into the process by means of an earmark or other political maneuvering.

Travel Modeling

Transportation planners rely on complex mathematical models of the "real world" that can be used to show the impact of changes within the transportation system—such as adding a new road or transit line, or increases in population or employment. Current planning regulations require that MPOs have an analytical process in place for evaluating projects, but state transportation plans do not have the same requirement. While all planning departments may use their own variation, most use some form of the basic four-step approach in modeling transportation demand.

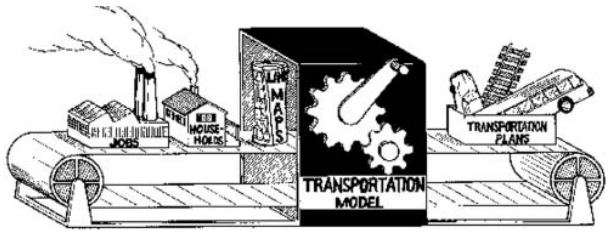
1. **Trip generation**: Estimate the number of trips generated in each zone, destined for locations in other zones. Trip estimates are based on assumed relationships among socio-economic factors, land use patterns and the existing number of trips.
2. **Trip distribution**: Develop a trip table showing the number of trips originated in each zone and destinations in each zone.
3. **Mode split**: For the number of predicted trips between each origin zone and destination zone, estimate the number of trips made via each mode available for that trip. Modes include driving alone, carpooling, using transit, etc.
4. **Network assignment**: Estimate the number of trips per mode for each possible path throughout the road and transit network. Assign all trips to a network. Compare the capacity of each road or transit segment to the projected demand to forecast the level of congestion to be expected at that location.

Four-step models are used to predict transportation demand, but planners and engineers also use other models to predict performance and resulting impacts. Impact models determine the likely effects that new roads will have on the surrounding environment and community, such as air quality, noise and community impact. Cost models estimate the likely costs of transportation projects, calculating, for example, dollars per linear foot of rail line. Some of the newer cost models incorporate "life-cycle" costing to estimate expected costs, both capital and operating, for a possible project over the expected life of that project.

What's wrong with models?

Models can never provide a definitive picture of the future; they are only intended to provide estimates or "guesstimates." Traffic forecasts can be affected by demographic changes and trends in economic growth and development, which can never be predicted with certainty. Moreover, transportation planners have been using the same models for the past 40 years. In theory, by projecting the future performance of roads, transportation planners can accurately determine how and where to expand the network. In fact, much of the methodology we use for transportation planning was developed to build highways in urbanized areas such as Chicago, Detroit and New York in the 1950s. But we've changed more than hairstyles since the 1950s. Issues such as air quality, sprawl, energy crises and global warming were not on the radar screen back then. Therefore, models based on that time period may be inappropriate today.

Both ISTEA and the Clean Air Act Amendments of 1990 brought about improvements to modeling by requiring consideration of land use, air quality and multi-modal options. However, all models are limited by the very assumptions, factors and alternatives that are explicitly included in the equations used by those models.



Even today's models can be insensitive to non-automobile modes of travel, resulting in overestimating the demand for new highways and underestimating the effectiveness of alternative, less car-focused scenarios. If we keep asking the same questions of the models, we will continue getting the same answers. And more of the same adds up to less habitat for wildlife.

Ask your transportation planners which models they use, and if those models adequately include alternative and multi-modal solutions.

Planning Studies

In addition to models, transportation planners rely on planning studies to develop concepts early in the planning process. A planning study is a defined set of activities performed to identify transportation problems and solutions. Studies can be conducted at the statewide, regional, sub-area, corridor or route levels.

Some studies are the direct result of a state or regional plan that highlights a particular problem. Each planning study results in a concept that will require further scoping and design to develop into a construction project ready for delivery.

Planning studies vary significantly in content and coverage. Corridor studies focus on an existing facility such as a highway or a broad geographic area that connects major destinations, such as two cities. The corridor width extends well beyond the facility right of way and may extend miles on either side. Responding to a specific problem (such as a high accident rate, congestion or land-use changes), corridor studies identify deficiencies and evaluate alternative solutions using a long-range outlook of 20 or more years. The finished study usually includes a description of the proposed facility and potential environmental impacts.

Other study types include corridor management plans, transportation systems analyses, route development plans, alternate route analyses and spot/locations studies. Also, some environmental review documents are considered planning studies.

Check with your transportation planning divisions and ask about ongoing and upcoming planning studies in your state or area of interest. Ask about public participation opportunities.

Planning Products

Transportation planners are nothing if not prolific. In maintaining that "continuous" and "comprehensive" mantra, they have a product output that would put Stephen King to shame. And good news—even though the planning process is different in each state, the products of planning remain consistent across the board.

At the metropolitan level, MPOs are required to develop the following:

Long-Range Transportation Plan (LTRP) – A long-term vision for the area, covering a planning horizon of at least 20 years.

Transportation Improvement Program (TIP) – A short-term program (about five years) based on the long-range transportation plan and designed to serve the area's goals, using spending, regulating, operating, management, and financial tools.

Congestion Management System – Areas with populations over 200,000 are called transportation management areas (TMA) and are required to develop strategies to reduce congestion and increase mobility. In air-quality non-attainment areas, projects that increase capacity for single occupancy vehicles (by adding new roads or widening existing ones) must conform with the area's Congestion Management System.

Unified Planning Work Program (UPWP) – TMAs are required to cooperate with the state and the local transit operator to develop a unified planning work program that discusses and documents planning activities.

At the state level, state transportation agency planning offices produce the following:

- **Long-Range Transportation Plan (LRTP)** – A long-term vision for the state, covering a planning horizon of at least 20 years.*
- **Statewide Transportation Improvement Program (STIP)** – A short-term program for the state that incorporates and integrates the MPO plans. Developed on at least a two-year cycle, these programs contain individual transportation improvements and projects. All federally funded projects must be part of an improvement program to be implemented, and STIPs often have project cost estimates.
- **State Implementation Plan (SIP)** – As required by the Clean Air Act, this plan outlines measures the state will take to meet the National Ambient Air Quality Standards including measures to reduce automobile emissions that contribute to smog.
- **Strategic Highway Safety Plan:** A statewide-coordinated safety plan that provides a comprehensive framework, and specific goals and objectives, for reducing highway fatalities and serious injuries on all public roads. This statewide document includes input from public and private safety stakeholders. The safety plan is a data-driven, four to five year comprehensive plan that integrates the four E's—engineering, education, enforcement and emergency medical services. The plan establishes statewide goals, objectives and key emphasis areas developed in consultation with federal, state, local and private sector safety stakeholders.

** Unlike metropolitan transportation improvement programs and long-range plans, statewide long-range transportation plans do not have a requirement to be financially constrained; that is, to demonstrate the likelihood that funds will be available to cover all proposed projects.*

Download or request copies of your state and local LRTP, STIP, TIP and corridor studies. Now bite the bullet and read them. Note where and how any upcoming transportation projects or activities will impact your area of interest. Attend all public meetings and submit comments when appropriate. Volunteer for the citizen advisory committee if they have one and suggest one if they don't.

HOW TO READ A STIP

It's big. It's ugly. It's your Statewide Transportation Improvement Program (STIP)—the official source on federally funded transportation projects that may or may not get built in the coming years. Every STIP looks different, but here are some general guidelines:

- If you can't find your STIP on your state transportation agency's website, call and request a copy. While you're at it, get a copy of your long-range transportation plan too and ask to be added to the agency's mailing list so you can get updates.
- Look for a handy key or guide at the front of the STIP to help you navigate.
- STIPs are generally divided into sections by county or transportation district, and are listed in alphabetical order. Locate your area of interest; scan down the project/program code column and red-flag those projects that will potentially have major impacts.
- Compare your STIP to existing conservation, land-use and habitat connectivity plans. Look for overlaps, potential conflicts and projects that could include wildlife habitat restoration.
- Large construction projects may also be described in greater detail on your state transportation agency's website in the projects section.
- Remember that just because a project is listed in your STIP does not mean it is guaranteed to actually get approved and be built!
- Also remember that the STIP may only include the federally funded projects. Your state or local area may have several other projects that don't show up in the STIP.

Types of Long-range Transportation Plans

Congress mandated the long-range transportation plan, but left plenty of wiggle room for states and MPOs to approach the process in their own ways. Some plans are presented in a big picture, vision-based fashion but fall short of explaining how to get there. Other plans are more needs-based, grounded in reality with policies, strategies and investments to meet those needs. The Volpe National Transportation Systems Center evaluated all the statewide long-range transportation plans in 2002 and found "a great diversity in approach, content and emphasis. Some plans are updated frequently, while others remain in effect from the early years of ISTEA…There is a great potential for these plans to continue to evolve into increasingly valuable components of the statewide planning process, and to become vital sources of information for decision-making."

HALL OF FAME: NEW HAMPSHIRE GETS IT AND GETS IT RIGHT

In 2006, the New Hampshire Department of Transportation (NHDOT) released a long range transportation plan, but they didn't write it. NHDOT Commissioner Carol Murray appointed a 24-member Community Advisory Committee (CAC) for the task. State and local officials, business leaders, housing advocates, environmental groups and community organizations met over an 18-month period and hosted several community meetings. Marking a shift in transportation planning, the committee recommended strengthening partnerships and focusing on people and communities rather than roads and cars. "Business as usual will not meet New Hampshire's future transportation needs," said Lewis Feldstein, Chairman of the CAC and President of the New Hampshire Charitable Foundation. "As Commissioner Murray said to us at our first meeting, 'if you don't link land use and transportation, both will fail.'"

"If you don't link land use and transportation, both will fail."

NHDOT Commissioner Carol Murray

CAUTION: What does planning have to do with project selection? That's the $64 question. Without a doubt, the long range and short range plans are wildly different with vastly different processes and purposes. They both may have opportunities for public input, but what happens in between remains a mystery to many. In theory, the TIP/STIP is supposed to reflect the LRTP, but somewhere between the lofty, larger than life LRTP and the detailed, bottom line TIP/STIP, we can lose our place. That's why it is important for you to track all the planning activities in your state or area of interest. Below are two examples of the project selection or programming process at the state level.

Texas Department of Transportation (TxDOT) describes its project selection process in five steps: identify needs, build a proposal

(funding), begin planning, project development and construction. Public involvement doesn't kick in until project development, long after project selection, which rests with the commission and local officials.

Arizona Department of Transportation (ADOT) district engineers meet with MPOs once a year to develop a list of candidate projects for submission to a selection committee. Projects go through scoping (not NEPA scoping) to flesh out the project details such as traffic, safety considerations and cost. Using a set annual budget, projects are selected up to that budget amount. The State Transportation Board conducts three public hearings on the draft five-year construction program. The STIP is culled from that five-year program, including the federally funded projects, local TIPs, FLHP and Bureau of Indian Affairs projects.

Take the initiative to map out the planning-to-project process in your own state and share it with other citizens and advocates.

Planning and Air Quality

When do transportation planners consider impacts to the environment? Until recently, the only environmental consideration required during transportation planning was air quality. Our car-loving culture is a great contributor to air pollution, pumping four of the six most reviled pollutants into the air—ozone, carbon monoxide, particulate matter and nitrogen dioxide. Locations that fail to meet air quality standards as defined by the Clean Air Act are called non-attainment areas and are tasked with developing a State Implementation Plan (SIP). SIPs contain emission budgets and establish measures to reduce emissions from stationary, area and mobile sources in order to attain or maintain air quality standards. Transportation plans must demonstrate that projected motor vehicle emissions from planned transportation projects will not exceed the budget established in the SIP. If the air quality in a particular location does not meet goals set out in the air quality plan (SIP), the state transportation agency will not receive federal transportation funding, except for essential safety projects and those projects with prior commitments. In fact, these sanctions may be imposed even if the lapse of conformity is not transportation related.

Planning Funding

For a task as big and important as transportation planning, one would think we invest vast amounts of time and resources to make sure it is done carefully and correctly. In fact, planning funds comprise a small fraction of the money given to state transportation agencies to distribute among their MPOs. Funds for metropolitan planning are called Planning Funds and amount to *just 1.25 percent* of highway and transit program funding. Funds for state planning are called State Planning and Research Funds and amount to *only 2 percent* of highway and transit program funding. States are required to set aside at least 25 percent of these funds for research and the remainder is used for state transportation planning.

In 2003, Defenders of Wildlife developed this guide to transportation planning in Florida. Get inspired and write a similar guide for your state!

Historically, transportation planning has existed on a starvation diet while highway building has been the hog at the trough. But cutting corners on planning rarely saves time or money in the long run. Poor planning may lead to costly mistakes, public controversy, longer environmental review, more mitigation and possibly litigation. By the time you get to court, you will have spent far more than it would have taken to plan well in the first place. We have to fully fund planning if we want a transportation system that meets our needs and respects all of our values.

Lobby for increased funding and authority for planning. Better planning is an investment that we can't afford to pass up.

"It's all about relationships and politics. Getting engaged at the local transportation planning region stage is really key. The sooner you do it, the better." **Conservation advocate**

PUBLIC PARTICIPATION

This means you! Our transportation planning process isn't perfect, but hundreds of public advocates have spent decades fighting to make it open, transparent and accessible to the public. You wouldn't pass up a chance to vote in an important election, would you? Well every day, in every state, some very important decisions are being made without you. Maybe you are skeptical about your ability to influence the outcome of transportation plans or projects. Perhaps you find transportation plans too abstract and the planning process simply incomprehensible. Whatever the reason, remember that without adequate public participation, these plans are made, and ultimately highways are built, with very little input from citizens like you and me. The process becomes weighted toward business and development interests while regular folks—and wildlife—are left to confront the impacts.

Contact your state and local/regional transportation planning division and ask them to put your name on their mailing list to receive newsletters, updates and other information. Ask them for specific public involvement opportunities in your area.
–Attend public participation meetings or hearings regarding draft or finished plans. Express concerns you may have about the

existing, ongoing and potential impacts of the transportation system on wildlife.

–Send written comments during public comment periods for plans and recommend solutions. Encourage partner groups and coalition members to comment as well.

During the planning process, there are numerous instances in which information must be made available to the public for comment.

PUBLIC PARTICIPATION: WHEN TO GET INVOLVED

WHAT	WHEN
Planning or corridor studies (state transportation agency, MPO)	Scheduled meetings
Long-range transportation plan (state transportation agency, MPO)	Draft and final plans are open for public comment, possible hearings
Transportation improvement program (MPO only)	Draft and final plans are open for public comment, possible hearings
Annual listing of obligated projects (MPO only)	List made available on web
Public participation plans (state transportation agency, MPO)	Open for public comment
Strategic highway safety plan (state transportation agency only)	Open for public comment

SAFETEA-LU required each MPO to develop public participation plans and detail all the opportunities for public input and comment during the development of long-range transportation plans. The public is also allowed to help shape the public participation plan itself, so the MPO will understand what information the public wants and how the public would like it communicated. This means you!

SCENARIO PLANNING

Video games aren't just for kids. Transportation planners can take advantage of visualization software to test various future alternatives without laying one bucket of pavement. Scenario planning tools and techniques can visually manipulate trends in traffic congestion, land use, demographics, economic development and the environment to develop alternative future scenarios, each reflecting different assumptions and tradeoffs. For instance, a planner might model how a road laid in a particular place would affect sensitive species in southern Florida. Using scenario planning tools, they can not only predict the impacts on communities, they can see them. Planners often engage the public in scenario planning exercises either to facilitate consensus building or to justify a given decision or project.

SAFETEA-LU – validated the importance of visualization techniques by requiring state transportation agencies and MPOs to use them to help the public understand complex information and concepts. Plans and project lists must also be made publicly available electronically.

YOU MAKE THE CALL: LAND USE AND TRANSPORTATION

This is the classic "chicken or the egg" dilemma: Which comes first—land use or transportation? Does the way we use land dictate where we build roads or are we building roads to influence the way we use land? The connection between the two is clear, but transportation agencies are reluctant to accept any responsibility. Land use has implications for transportation and every transportation action affects land use. New and improved roads shape future land use by providing the access and mobility for more intensive land use. Development then brings more people, more cars, more traffic and more traffic generates the need for yet more new roads.

Gary Naeyaert, Michigan DOT's chief spokesman, said his agency is aware of growing public concern about sprawl and the need for transportation alternatives. He added, though, that neither the governor's office nor MDOT see it as state government's responsibility to get involved in land planning. "We are not a social engineering agency," said Naeyaert. "Our role is to solve transportation problems, not land-use fights."

David Bulkowsk, of the Center for Independent Living in Grand Rapids said, "The transportation department's role in building roads that weaken city centers, produce congestion in the suburbs, make it impractical to get around except by automobile and result in growing pollution and social inequality is unmistakable. This agency is pursuing a policy of social engineering that is powerful, pervasive, and needs to change."

From *Roads to Ruin*, By Keith Schneider

"We need to make sure that transportation planning is done in coordination with the ecological and land use planning also occurring in the state." **Conservation advocate**

"As can be seen, new commercial development generally follows major transportation corridors like interstates and major state highways." **Atlanta Regional Commission, 2007**

CONSERVATION PLANNING

As a conservationist, you know that conservation doesn't just happen. Like transportation, conservation takes an orchestrated effort including science, technology, research, policy, money, management and a healthy dose of public participation. But unlike transportation, conservation doesn't have a huge cadre of conservation planners required to maintain a rigorous "continuing, comprehensive and cooperative" planning process with an ever-expanding network of conservation lands. But we can dream.

Within the past few decades, there have been some notable efforts to address conservation needs for certain habitat types such as wetlands and old growth forests, but generally only in response to federal mandates such as the Clean Water Act and Endangered Species Act. To capitalize on these efforts and new technology, the U.S. Fish and Wildlife Service launched the Gap Analysis program in the late 1980s. Congress funded the cooperative fish and wildlife research units and other university scientists to map the vegetation, land cover, species distributions, land ownership, and land management of each state in order to identify "gaps" in the conservation network. The U.S. Geological Survey now manages the program and most states have completed at least one coarse-scale biodiversity assessment. The development and refinement of geographic information systems and gap methodology stimulated interest in statewide wildlife conservation planning.

HALL OF FAME: MAINE IS BEGINNING WITH HABITAT

Maine's Beginning with Habitat (BwH) is a public-private partnership that combats sprawl by providing communities with practical tools to incorporate natural resource conservation into local land use planning. BwH brings together crucial wildlife and habitat data into customized GIS maps and makes the information accessible to local decision-makers, including planning boards, regional planning commissions, community conservation commissions and land trusts. BwH resource materials, including a road ecology primer, *Conserving Wildlife On and Around Maine's Roads,* are distributed via public presentations and technical assistance. Collaborating with state transportation officials and educating local communities is critical to advancing good road ecology.

Founded in 2001, BwH is guided by a seven-member steering committee that consists of: Maine Audubon, Maine Natural Areas Program, Maine Department of Inland Fisheries and Wildlife, Maine State Planning Office, Maine Coast Heritage Trust, the Maine Chapter of The Nature Conservancy, and the U.S. Fish and Wildlife Service. BwH received an Environmental Merit Award from EPA and has been recommended by the Association of Fish and Wildlife Agencies (AFWA) for use in all 50 states.

STATE WILDLIFE ACTION PLANS

If it takes a village to raise a child, what does it take to manage and conserve America's wildlife? Primary responsibility for wildlife management has always rested with the states. Traditionally, state fish and wildlife agencies have focused on game management and responding to their constituents within the sport hunting, fishing and recreation communities. The federal resource and land management agencies primarily manage wildlife occurring on public lands and endangered species. Essentially, our conservation framework disregards all non-game, non-listed species and nearly all private lands. Without protection, these species are vulnerable to continued habitat loss, degradation and eventual listing. Without incentives, private landowners may develop rather than conserve vital habitat.

Acknowledging that conservation is much more cost-effective than endangered species recovery, Congress established a program to assist state fish and wildlife agencies in conserving non-game and non-listed wildlife species through "wildlife diversity programs." The 2002 Department of Interior Appropriations bill included language creating the State and Tribal Wildlife Grants Program which provides new, dedicated funding for cost-effective, proactive conservation efforts intended to prevent wildlife from declining to the point of becoming endangered. State fish and wildlife agencies receive federal appropriations according to a formula based upon the state's size and population. Projects include the restoration of degraded habitat, removal of invasive vegetation, reintroduction of native species, partnerships with private landowners, research and monitoring.

Much like the earliest transportation planning, conservation planning began as a condition of receiving continued federal funding. Congress charged state fish and wildlife agencies with completing a State Wildlife Action Plan by October 1, 2005. The U.S. Fish and Wildlife Service reviewed each action plan and state wildlife agencies are required to revisit and update them at least every 10 years to ensure conservation success over the long term. The action plans not only address "species of greatest conservation need," but also, the "full array of wildlife and wildlife issues," and

they establish a plan of action for conservation priorities with limited funding. To "keep common species common," all plans are based on targeting resources to prevent wildlife from declining to the point of endangerment. Ideally, each action plan will *create a strategic vision for conserving the state's wildlife, not just a plan for the fish and wildlife agency*.

Congress identified eight essential elements the action plans must contain in order to ensure nationwide consistency:

1. Information on the distribution and abundance of species of wildlife (including low and declining populations) that are indicative of the diversity and health of the state's wildlife
2. Descriptions—including locations and relative conditions—of key habitats and community types essential to conservation of species identified in (1)
3. Descriptions of problems which may adversely affect species identified in (1) or their habitats, and priority research and survey efforts relevant to restoration and conservation of these species and habitats
4. Descriptions of needed conservation actions and priorities
5. Proposed plans for monitoring species and their habitats, for monitoring the effectiveness of conservation actions and for adapting these conservation actions to respond appropriately to new information or changing conditions
6. Descriptions of procedures to review the action plan at intervals not to exceed 10 years
7. Plans for coordinating, to the extent feasible, the development, implementation, review and revision of the action plan with federal, state, and local agencies and Indian tribes that manage or affect significant land and water areas within the state
8. Broad public participation is an essential element.

The practical effect of this new planning requirement was to take advantage of the many disparate, ad hoc and unrelated conservation planning initiatives, combining them under one all-inclusive, sanctioned and funded program. The scale is ambitious, yet manageable and fits easily into an existing administrative framework. Strategies are intended to remain dynamic, serving as the home base for prioritizing conservation efforts in each state and coordinating the roles and contributions of all agencies and conservation partners. Implementation of strategy goals and objectives is aided through continued federal funding, matched by additional sources. In theory, the strategies represent the future of wildlife conservation. Collectively, they will create—for the first time—a nationwide approach to wildlife conservation.

If each action plan is indeed a strategic vision for conserving the state's wildlife, implementation will require more than the state fish and wildlife agency. For the conservation strategies to be successful, all sectors must embrace the goals, engage in the process and accept responsibility for their own roles and contributions—*including transportation agencies*.

Get involved with your State Wildlife Action Plan. Get a copy of your state's action plan and actually read it. Invite the implementation coordinator to meet with your organization to discuss the plan and how you can be more effectively involved.

"Conservation advocates should support planning efforts of state wildlife agencies such as the State Wildlife Action Plans. Make an effort to stay involved and hold the agency to a higher standard."
State wildlife agency biologist

INTEGRATING CONSERVATION AND TRANSPORTATION PLANNING

Over the last decade, transportation officials have struggled to find ways to reduce costs and accelerate project delivery, but unfortunately they have set their sights on streamlining the environmental review process rather than investing more time and money refining the planning process. Several legislative, policy and procedural fixes have been attempted with mixed success. Streamlining proponents succeeded in including several damaging provisions in SAFETEA-LU, effectively steamrolling the review process and weakening environmental protection. (**For more information, see Environmental Review.**) But conservationists didn't leave empty handed. Look closely and you'll find a small, unassuming but very powerful provision that could ultimately protect millions of acres of habitat by changing the way we do long-range transportation planning. For the first time, wildlife conservation will be among the very first things we consider, rather than the last.

SAFETEA-LU requires each metropolitan planning organization (MPO) and state transportation agency to consult with federal, state, tribal and local land use management, natural resources, wildlife, environmental protection, conservation and historic protection agencies while developing long-range transportation plans. Each consultation will include a comparison of the transportation plan with conservation maps or inventories of natural and historic resources such as the State Wildlife Action Plans. Each plan will also include a discussion of potential environmental mitigation activities—and potential areas to carry out these activities—that may have the greatest potential to restore and maintain the environmental functions affected by the plan.

In light of this new requirement, the State Wildlife Action Plans and other conservation planning are now hard-wired into trans-

portation planning and can demonstrate their full value and utility. Beyond their conservation value, the Action Plans have great potential to aid state transportation agencies in streamlining project delivery. Use of habitat mapping data in the action plans can provide an effective early warning system to red-flag transportation projects that will have a major impact on wildlife. Early detection of such problems can help avoid costly delays later in the life of projects. Early planning for conservation can also provide a good opportunity to explore mitigation options and identify the best remaining sites for acquisition and restoration. Often, by the time a road project develops through the planning, review and design process, many of the opportunities for high-quality and affordable mitigation have been lost. As an added bonus, the transportation agency can adopt a proactive approach to conservation and become a full partner in implementing the action plan for the entire state.

Get involved in the Section 6001 consultation! Ask someone from both your state planning division and your MPO (if applicable) how they conduct Section 6001 consultations, who is involved and what conservation plans/maps they use. Contact your state wildlife agency and make sure they are aware and involved. Contact representatives from federal resource and land management agencies (U.S. Fish and Wildlife Service, Forest Service, EPA, Tribes) and make sure they are aware and involved. SAFETEA-LU does not require public participation in Section 6001 consultations, but if your group has information, input, data or resources to contribute, you can at least request a place at the table.

–Be a real catalyst for change. Suggest your transportation and wildlife agencies formalize their commitment to better integrating conservation into transportation planning through a Memorandum of Agreement (MOA), a non-regulatory agreement between two or more agencies. **See Advocacy for a template MOA that can be tailored for their needs.**

–If your transportation agencies make progress in integrating conservation and transportation planning, recognize their efforts publicly. Nominate them for one of the many transportation award programs. **For a list of transportation-related award programs, see the Appendix.** Environmental awards are typically given to agencies for their project level activities, but should be used more for achievements in planning. Efforts to avoid impacts are more deserving of praise than efforts to simply minimize, mask or mitigate them.

In 2006, Defenders of Wildlife teamed up with FHWA and NatureServe to organize "Linking Conservation and Transportation Planning" workshops in Arkansas, Arizona and Colorado. Workshops provided a venue for transportation planners and resource professionals to share existing and emerging data, expertise and technologies while gaining a fresh understanding of each other's capacities and limitations. Participants were able to identify phases of the transportation planning process where conservation considerations would be most appropriate and effective.

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http://tmip.fhwa.dot.gov/clearinghouse/docs/utp/ch2.stm

About MPOs: A Brief History
http://www.njtpa.org/public_affairs/mpo_history/hist_mpo1.htm

The Metropolitan Transportation Planning Process: Key Issues
http://www.planning.dot.gov/documents/BriefingBook/BBook.htm

A Citizen's Guide to Transportation Decisionmaking
http://www.fhwa.dot.gov/planning/citizen/citizen4.htm

From the Margins to the Mainstream: A Guide to Transportation Opportunities in Your Community, Surface Transportation Policy Partnership
http://www.transact.org/PDFs/margins2006/STPP_guidebook_margins.pdf

Evaluation of Statewide Long-Range Transportation Plans
Volpe National Transportation Systems Center
http://www.fhwa.dot.gov/hep10/state/evalplans.htm

Urban Transportation Planning: A Decision-Oriented Approach
Meyer, M. and E. Miller, McGraw Hill 2001.

MODELING

Guidebook on Statewide Travel Forecasting
http://www.fhwa.dot.gov/hep10/state/swtravel.pdf

AIR QUALITY

Air Quality Planning for Transportation Officials
http://www.fhwa.dot.gov/environment/aqplan/index.htm

EPA's Transportation and Air Quality Program
http://www.epa.gov/otaq/

PUBLIC PARTICIPATION

FHWA's Public Participation and Interested Parties
http://www.fhwa.dot.gov/environment/pubinv2.htm
http://www.planning.dot.gov/Pitool/toc-foreword.asp
http://www.fhwa.dot.gov/environment/interparties.htm

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An Overview: Land Use and Economic Development in Statewide Transportation Planning
Edward Beimborn, Center for Urban Transportation Studies
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http://www.fhwa.dot.gov/planning/ppasg.htm

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INTEGRATING CONSERVATION AND TRANSPORTATION PLANNING

Linking Conservation and Transportation Planning Workshops (2006)
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Maine's Beginning with Habitat (BwH)
www.beginningwithhabitat.org

ENVIRONMENTAL REVIEW

Ah yes. Environmental review. The National Environmental Policy Act (NEPA) is the Magna Carta of environmental laws and familiar territory for conservationists. NEPA is this nation's basic charter for protection of the environment. It is also the nation's foremost government accountability law, requiring federal agencies to disclose and seek public input on the environmental impacts of all major actions that may significantly affect the quality of the human environment. It is a law that empowers people—businessmen, ranchers, state and local governments, conservationists and ordinary citizens—and gives them a voice in federal decisions that affect their lives and communities. Many of us have spent untold hours, months and even entire careers seeking that elusive "No Build Alternative" with mixed success. We diligently read every document, pour over every detail, memorize every flaw and compose a brilliant 63-page comment letter in hopes that it will be read, incorporated and make a difference.

The glory days of environmentalism gave us a family of environmental protection laws including NEPA, the Endangered Species Act and the Clean Water Act. The jury is still out on how effective they have been in protecting *all* aspects of our natural environment. To date, the only habitat protected by federal law are wetlands, designated critical habitat for endangered species and some public lands. All other habitat types—and the species that depend upon them—are vulnerable to highway building and associated development.

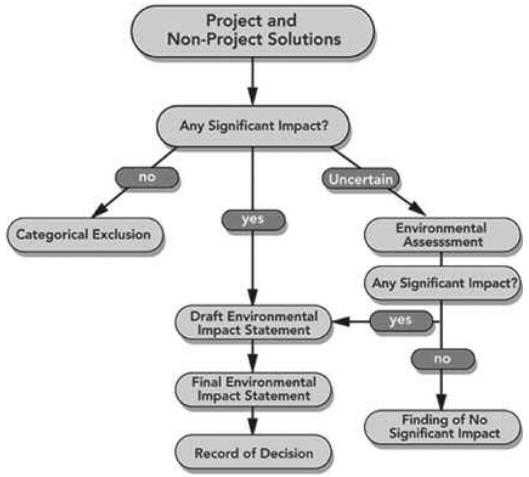
Unfortunately, environmental review does not apply to highway planning and doesn't kick in until the project level—after many crucial decisions have been made. Despite our strict laws and cumbersome reviews, you can still damage the environment, but it's going to cost you. A major industry in environmental documentation preparation supplies transportation agencies with expertise in compliance, but not conservation. Agencies spend millions on paperwork instead of protection.

True environmental stewardship is unlikely to happen unless conservationists start getting involved long before the environmental review process even begins.

Nevertheless, conservationists will always be involved in environmental review. Highway projects are subject to environmental review under many different federal statutes, as well as additional requirements from individual states. Volumes of information have been produced regarding the interpretation and compliance of these laws. Countless people have dedicated their entire lives to enforcing or complying with these statutes. The author is not one of them and doesn't expect you will be one of them as a result of reading this chapter. You will, however, get an overview of the major protections as they apply to transportation and some suggestions for more effective advocacy. **For a list of federal environmental statutes, see Legislation and Regulation.**

NATIONAL ENVIRONMENTAL POLICY ACT

The granddaddy of all environmental protections, the National Environmental Policy Act (NEPA) requires federal agencies to consider the environmental impacts of their proposed actions and reasonable alternatives to those actions. State transportation agencies are subject to NEPA because they use federal funding. As soon as the state transportation agency determines that a proposed project may or will affect the environment, the environmental review process begins. This section will walk you through the basic steps of the NEPA process.



Lead and cooperation agencies The lead agency carries responsibility for the federal action and therefore supervises the preparation of the environmental documentation. For highway projects, the lead agency will always be the FHWA. Cooperating agencies are those with special expertise or jurisdiction like the U.S. Fish and Wildlife Service and are specifically requested by the lead agency to assist during the environmental process.

Categorical exclusion If the state transportation agency can demonstrate that a category of projects will have minimal environmental impacts, (both individually and cumulatively) the project may qualify for "categorical exclusion" from intensive federal environmental review. These projects should be small, routine

and should not add new lane miles to the road system. Projects like road resurfacing or bridge repair might qualify for categorical exclusion. According to FHWA, approximately 91 percent of about 31,000 federally funded highway projects received categorical exclusions in 2001. This represents about 76 percent of the $17.6 billion in federal funding distributed to states for highway projects in fiscal year 2001. A specific list of categorical exclusions normally not requiring NEPA documentation is set forth in the Code of Federal Regulations, at 23 CFR 771.117(c).

Environmental assessment If the significance of the impact is still uncertain, FHWA requires the state transportation agency to prepare an Environmental Assessment, a short report that gives a project description, need, alternatives considered, impacts and coordination. Following FHWA approval, the assessment is made available for a 30-day public comment period. Public hearings may or may not be required.

Finding of no significant impact If the Environmental Assessment determines that there are no significant impacts associated with the project, a Finding of No Significant Impact is prepared by modifying the assessment to reflect all applicable comments and responses. No formal circulation is required, but FHWA recommends the public be notified, after which the project can proceed.

Environmental impact statement If the agency determines the proposed action will have a significant impact on the environment, FHWA requires that an Environmental Impact Statement (EIS) be prepared. An EIS is a public document that details the purpose of and need for the project, alternatives to the project, the affected environment, the impacts of the alternatives to the affected environment, and public and agency comments received. Typically, state departments of transportation are responsible for coordinating the activities of environmental review involving environmental impact statements.

According to FHWA, only 3 percent of approximately 31,000 federally funded highway projects (representing just 9 percent of the $17.6 billion in federal funding distributed to states for highway projects in fiscal year 2001) required an environmental impact statement in 2001 (U.S. General Accounting Office, 2003).

Once the decision to move forward with an EIS is reached, FHWA should prepare a Notice of Intent, which is a brief announcement that FHWA will be preparing an EIS to be published in the Federal Register. As early as possible, a formal scoping process begins to identify the significant issues related to the proposed action. Scoping can be done by letter, phone and formal meeting but should involve all affected agencies and should be well documented for future phases of NEPA and the EIS.

Sign up for the Federal Register daily notices to receive information about environmental reviews for highway projects in your state or area of interest.

Once set in motion, the EIS contains these basic elements:

Purpose and Need Considered by many to be the most important part of an EIS, the purpose and need statement establishes a justification for spending large sums of tax dollars on a project that has significant environmental impacts. As a practical and political matter, expenditure of funds must be shown to be necessary and the impacts must appear acceptable relative to the project's importance. Ideally, the purpose and need is derived from the formal transportation planning process. Common "needs" cited in EISs include transportation demand, safety, legislative direction, urban transportation plan consistency, modal interrelationships, system linkage, and the condition of the existing facility.

Alternatives Regulations require the EIS "rigorously explore and objectively evaluate all reasonable alternatives" including the "no-action" or "no-build" alternative. Each alternative must connect "logical termini," or distinct beginning and end points, and must have "independent utility" which means the project is necessary in and of itself. Graphic representations should be used to show the locations of the alternatives in relation to each other and the project area. No alternative can be considered that would restrict consideration of future alternatives. In the draft EIS, all reasonable alternatives should be discussed at a comparable level of detail. The "preferred" alternative need not be identified at this stage, but if one has been chosen, it should be so stated in the document.

Affected Environment The affected environment section includes information on the existing social, economic and environmental setting, including environmentally sensitive features.

Environmental Consequences In order to form a basis for the comparison, the environmental consequences section describes the impacts of the alternatives to the affected environment and documents the methodologies used in the evaluation. Impacts should be quantified and potential mitigation discussed, regardless of significance. Secondary and cumulative impacts, though difficult to anticipate or quantify, are also required to be considered and discussed in the EIS.

Mitigation All measures proposed to mitigate the adverse impacts need to be described in the EIS as part of the overall project. Mitigation commitments should be documented in a "Summary of Mitigation Monitoring Commitments" appendix.

Comments and coordination This section includes the results of the early scoping process, including results of meetings and comments during preliminary coordination.

List of preparers The list of preparers includes those primarily responsible for preparing the EIS and background documentation, including the state transportation agency, consultants and FHWA division personnel.

If you are tracking a particular highway project under environmental review:
–Use the handy "Watchdog Worksheet" found in the Advocacy section.
–Contact the project manager as early as possible and ask to be put on the project mailing list.
–Sign up for the project newsletter, if available.
–Bookmark the project website, if available.
–Attend all public involvement workshops and hearings related to the project.
–Request a project representative attend your organization's meeting to discuss the project in question.
–Read all relevant documents and submit comments.
–Spread the word and establish partnerships with others who share your views.

Draft EIS When completed, the draft EIS is filed with the Environmental Protection Agency (EPA) and made public via a Notice of Availability in the Federal Register, which establishes a comment period of not less than 45 days and indicates where comments are to be sent. Supporting documentation generally is not circulated with the draft EIS, but all special studies and information referenced in the draft must be available for inspection by the public.

Public Hearings For all projects with anticipated significant environmental, social or economic impacts, FHWA requires that public hearings be held. Note that hearings need not be held *after* the issuance of the draft EIS, but if they are, the public is to be given 15 days to review the draft before the hearing takes place, and copies must be available at the hearing.

Comment Period The Federal Register notice establishes a comment period and provides instructions for submitting comments. The public and affected agencies will have a minimum of 45 days to read, review and comment on a draft EIS. The state transportation agency and FHWA division office reads all comments, including those from the public hearing and prepares responses to all substantive comments. Depending on the project size, scope and level of controversy, the lead agency can receive anywhere from zero to thousands of comments.

Final EIS Once all comments have been received and considered, the final EIS is prepared and released. The final EIS contains all the information in the draft EIS, with changes based on comments received. The final EIS identifies and describes the preferred alternative and the basis for the decision, and it demonstrates compliance with environmental laws including any mitigation measures that are to be incorporated into the proposed action. The final EIS should include all substantive comments, provide the lead agency's responses and discuss any opposing views, showing consideration given to issues raised and providing sufficient information to support the position taken. If a large number of comments were received, the lead agency may choose to summarize comments.

Common responses to comments include modifying alternatives or analyses, making factual corrections and evaluating new alternatives. If the lead agency determines a new alternative should be considered, they must prepare a supplement unless it was adequately covered in the draft EIS. If the lead agency determines a comment does not warrant a response, they must explain and cite sources, authorities or reasons that support its position.

Each final EIS is reviewed for technical accuracy, completeness, accordance with state and federal laws and editorial consistency. A Notice of Availability must be published in a local newspaper and the full document must be accessible at a state transportation agency office, local government office or library. The final EIS must be available to the public for 30 days prior to the transportation agency taking any action on the project, and another public comment period begins.

Dispute Resolution If disagreements arise regarding a proposed action, every reasonable effort is supposed to be made to resolve the dispute before issuance of a final EIS. If substantial issues remain unresolved, the lead agency must identify the disputed issues and document all efforts that were made to resolve them in the final EIS.

Record of Decision The Record of Decision (ROD) is the last step in the EIS process and may not be issued sooner than 30 days after the approved final EIS is distributed or 90 days after the draft EIS is circulated. The ROD must be made publicly

available, but is not required to be published in the Federal Register. Like the final EIS, the ROD identifies the selected alternative and presents the basis for the decision. If the selected alternative is not the "environmentally preferable alternative," the ROD must justify the decision and explain why some values were considered more important than others. The ROD should summarize mitigation measures with information on the means to avoid, minimize and mitigate for impacts. As with the draft EIS, all substantive comments received regarding the final EIS must be identified and given appropriate response in the ROD. However, the ROD represents the transportation agency's final decision regarding the proposed action and is a judicially enforceable document. While the ROD is the green light to proceed with the project, it may still be delayed by other matters such as funding or changes to the project.

IT CAN HAPPEN: A NO-BUILD RECORD OF DECISION!

On March 7, 2007, FHWA issued a revised ROD for a highway project in Lane County, Oregon. The original ROD was issued in 1990, but was met with substantial public resistance. In issuing the new decision, FHWA said "In large part, FHWA selects the no-build alternative in the revised ROD based on: public and resource agency input, including the Oregon DOT; a Lane Council of Governments resolution; and, a conflict assessment report prepared by FHWA and the City of Eugene. While the no-build does not satisfy an existing transportation need in the area, selecting the no-build alternative is in the best overall public interest at this time."

Supplemental EIS If new information or circumstances regarding a proposed project arise, FHWA and the state transportation agency may determine that new environmental studies are needed to assess the impacts of the changes. If FHWA determines that the changes would result in significant environmental impacts not evaluated in the EIS, a supplemental EIS will be prepared.

A supplemental EIS must be developed using the same process and format as an original EIS, except that scoping is not required. Contents of the supplemental are also similar—including a description of the proposed action and the changes that precipitated the need for a supplemental analysis—but are limited to the new information or changes in the project. New environmental requirements and the results of any re-evaluations should be summarized, reflecting the current consideration of the entire proposed action and the expected effects on the environment.

Only if the supplemental EIS involves a significant portion of the overall project will FHWA suspend activities until it is finished. If FHWA deems the scope of the supplemental is limited, the transportation agency may proceed with granting new approvals and other project activities before the supplemental EIS is completed.

MITIGATION

Mitigation is legalese for "oops." For significant impacts that are not avoided through project planning and redesign, the transportation agency can compensate by replacing the lost area or ecological value. All measures taken to compensate for unavoidable impacts are identified in the EIS, and commitments should also be documented in the "Summary of Mitigation Monitoring Commitments" appendix. Mitigation commitments include information regarding responsible agencies, monitoring, performance standards and schedules for implementation.

Mitigation is an art, not a science. Many potential impacts can be reduced by modifying the project design or location. A mitigation action should result in a physical change to a proposed project that will actually reduce or eliminate impacts. Consultation, preparation of studies, plans and analyses, and monitoring environmental conditions are not measures that result in a physical change and should not be considered adequate or effective mitigation measures.

In order to receive federal funding, mitigation measures must meet the following criteria:

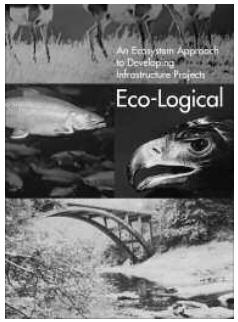
- The impact for which the mitigation is proposed actually resulted from the project
- The proposed mitigation represents a reasonable public expenditure considering the extent to which the mitigation results in compliance with a federal statute or other regulation or policy

FHWA's Environmental Policy Statement (EPS) calls for an expanded interpretation of NEPA requirements, beyond avoid, minimize and mitigate. The EPS calls upon transportation agencies to *"Seek opportunities to go beyond traditional project mitigation efforts and implement innovative enhancement measures to help the project fit harmoniously within the community and natural environs."* The only restrictions on funding additional environmental augmentations are that such activities be in the public interest, that they constitute a practical public expenditure and additional costs are reasonable related to the highway project.

CAUTION: While NEPA requires that an EIS discuss mitigation measures that could be implemented, the statute does not require federal agencies to develop such measures or actually carry them out. (Robertson v. Methow Valley Citizens Council, 490 U.S. 332 (1989)). Only if the final EIS contains mitigation measures presented as commitments do FHWA regulations require that they be incorporated into the project and carried out.

"SMART" MITIGATION IS ECO-LOGICAL

Traditionally, compensatory mitigation has been conducted on-site and on a project-by-project basis. Sometimes this is the best option, but often it results in several small, isolated patches of habitat scattered around the landscape. Because the objective is *compliance* instead of *conservation*, these small patches rarely add up to the sum of their parts. To add insult to injury, even the least and most ineffective mitigation is expensive for the transportation agency. So, when it's all said and done, we have lost valuable habitat and the transportation agency has spent oodles of our money on something that has little or no ecological value. Isn't there a better way?



Recognizing the shortfalls of our current approaches to mitigation, FHWA teamed up with representatives from seven other agencies including the U.S. Fish and Wildlife Service, U.S. Forest Service, National Park Service and the Army Corps of Engineers to develop *Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects*. Traditional mitigation measures don't always achieve the greatest environmental benefit or address habitat connectivity and conservation. Eco-Logical highlights the flexibility in regulatory processes to go beyond just compliance in mitigation.

"The role of the environmental professional has too long been associated with compliance instead of quality assurance. Precedence has been that those with the slide rules work in a vacuum and those with work boots provide information but are not as valued in transportation." **Former state transportation agency staff**

ENDANGERED SPECIES ACT

The Endangered Species Act (ESA) provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the United States or elsewhere. The act outlines procedures for federal agencies to follow when taking actions that may adversely affect listed species, and contains exceptions and exemptions.

Section 7(a)(1) directs all federal agencies to utilize their authorities in furtherance of the purposes of the act by carrying out programs for the conservation of listed species, making it clear that all federal agencies should participate in the conservation and recovery of listed threatened and endangered species.

Florida Panther

Section 7(a)(2) states that federal agencies shall ensure that their actions are not likely to jeopardize the existence of a listed species or result in the destruction or adverse modification of designated critical habitat. To fulfill that duty, federal agencies must engage in consultation with the U.S. Fish and Wildlife Service or National Marine Fisheries Service (hereafter the Services) regarding the effects of their actions on listed species and their habitat.

Determination If FHWA and the state transportation agency (the "action agency") have no reason to believe that a listed species or designated critical habitat exists in the project area or will be affected by the project, they may determine that no consultation is required. If there is any question or if they determine the project may affect listed species or critical habitat, coordination and/or informal consultation with the Services should be initiated.

Section 7 Consultations In order to determine whether or not a particular highway project is likely to jeopardize a listed species, the transportation agency enters into what is commonly known as "Section 7 consultation" with the Services.

Informal consultation is an optional process to determine whether the proposed project may adversely affect listed species or critical habitat. An informal consultation usually includes correspondence and meetings and results in either a "not likely to adversely affect" or "likely to adversely affect" finding. If the proposed project may adversely affect a listed species or designated critical habitat, formal consultation is required, initiated by a written request from FHWA.

Every Section 7 consultation contains the same basic elements:

Biological assessments (**BA**) are prepared by the state transportation agency, under the direction of FHWA, to determine whether a proposed action is likely to adversely affect listed species or designated critical habitat. Each BA contains six types of information:

1. Description of the action to be considered.
2. Description of the specific area that may be affected by the action.
3. Description of any listed species or critical habitat that may be affected by the action.

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4. Description of the manner in which the action may affect any listed species or critical habitat and an analysis of any cumulative effects.
5. Relevant reports, including any EIS, environmental assessment (EA), or BA prepared.
6. Any other relevant available information on the action, the affected listed species, or critical habitat.

Biological opinions (**BO**) are prepared by the Services, detailing their opinion as to whether or not the proposed action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of designated critical habitat. Each BO should include a description of the proposed action, status of the species, critical habitat, the environmental baseline, effects of the action, cumulative effects, the Services' conclusion regarding jeopardy and reasonable and prudent alternatives.

If the proposed action is expected to incidentally "take" endangered species, but not jeopardize the species overall or harm critical habitat, the BO will include an "incidental take statement." The incidental take statement describes the anticipated incidental take and provides reasonable and prudent measures to minimize such take. If the action agency complies with the recommended reasonable and prudent measures, they will be exempt from legal liability for the otherwise illegal take.

If the Services conclude the proposed project will result in "no jeopardy" and no adverse modification of critical habitat, the consultation is complete and the action agency may proceed. In the event the Services determine the proposed action is likely to jeopardize the species or adversely modify critical habitat, they will issue a "jeopardy" opinion.
The Services must suggest "reasonable and prudent alternatives" (RPAs) if any exist, that will allow the agency to fulfill the purpose of its proposed action without jeopardizing the species or destroying critical habitat. Such "RPAs" may include alternative designs or routes that minimize impacts on the species. If the Services cannot identify RPAs, they may issue a jeopardy opinion, but these are extremely rare.

CAUTION: Despite the gravity of a jeopardy ruling, the action agency may still proceed with the proposed project. In a 2005 memorandum on ESA consultation, FHWA says "…the Services have no veto power over a project." The Services can only offer a BO, but they have no regulatory authority. However, if the project results in take, they can prosecute for violation of the ESA. Defying a jeopardy opinion leaves an action agency extremely vulnerable to litigation, so this is also rare.

Did You Know? In 1992, the General Accountability Office found that almost 90 percent of all consultations between the Services and other federal agencies over proposed federal actions in fiscal years 1987 through 1991 were resolved informally. More than 90 percent of the formal consultations concluded that these actions would not harm listed species. Of the less than 10 percent of the formal consultations that concluded that a proposed action would likely jeopardize a species, almost 90 percent provided reasonable but prudent alternatives that would allow the project to proceed.

Best Scientific and Commercial Data Available

The ESA requires the action agency to use the "best scientific and commercial data available" throughout the formal consultation and in all measures to insure the proposed action will not jeopardize the species in question. Potential sources of information include listing packages, recovery plans, active recovery teams, species experts, prior consultations on the species, state/tribal wildlife and plant experts, universities, peer-reviewed journals and state heritage programs.

If significant data gaps exist, the Services can suggest deferment on the biological opinion due date, until sufficient information is developed. If the action agency insists consultation proceed with insufficient information, the biological opinion will be developed with the available information, but will give the benefit of the doubt to the species. When and if additional data becomes available, reinitiation of consultation may be required.

CAUTION: The action agency can only be held to the information that is available. New research or analyses does not have to be created by the action agency, even if it is necessary to determine the impact on the species or habitat in question.

The Services have jointly published a policy on Information Standards Under the Endangered Species Act. This policy calls for review of all scientific and other information used to prepare biological opinions, incidental take statements and biological assessments, to ensure that any information used to implement the act is reliable, credible and represents the best scientific and commercial data available.

Indirect Effects

In National Wildlife Federation v. Coleman, 529 F.2d 359 (5th Cir.), cert. denied, 429 U.S. 979 (1976), the court ruled that indirect effects of private development resulting from proposed construction of highway interchanges had to be considered as impacts of a proposed federal highway project, even though the private development had not been planned at the time the highway project was proposed.

CLEAN WATER ACT

The Federal Water Pollution Control Act, better known as the Clean Water Act (CWA), is the primary federal law governing water pollution. The stated aim of the act is to eliminate discharge of pollutants into navigable waters and achieve water quality for fish, wildlife and recreation in and on water. Most pertinent to this guide is Section 404 of the CWA, "Wetland Protection/Dredge and Fill Permits." The U.S. Army Corps of Engineers administers the Section 404 program, which requires anyone who proposes to physically alter any aquatic site (including wetlands, rivers and streams) to apply for a permit. Since many highways are built through wetlands and streams, transportation agencies frequently seek 404 permits.

The permit review process is based on a sequence of "avoid, minimize and mitigate." Prior to receiving a 404 permit, the applicant (the state transportation agency) must demonstrate that it has avoided and minimized wetlands impacts as much as practicable. If the proposed project does not absolutely need to be executed in or near the affected waters, the Corps is to assume that practicable alternatives do exist and can deny the permit. Under guidelines issued by the EPA, the Corps may not issue the permit if there is a practicable alternative that would have less significant adverse environmental consequences. According to the Corps, under this regulation, it can only authorize the least environmentally damaging, practicable alternative.

The Corps shares the duties of enforcing Section 404 with the EPA, which is responsible for interpreting environmental criteria used in evaluating permit applications, overseeing state actions and reviewing individual permit applications. The EPA can also override a Corps decision if they find an "unacceptable adverse effect" on the aquatic environment. Since 1979, the EPA has issued only 11 vetoes out of an estimated 150,000 permit applications received.

If threatened or endangered species may be affected by the proposed activity, the Corps will consult with the appropriate federal agency (for example, the U.S. Fish and Wildlife Service) to obtain a biological opinion on the effects on the species. If the proposed activity will have significant impacts on the human environment, the Corps will require an EIS. If cultural resources are within the permit area and will be impacted by the proposed activity, the Corps must comply with section 106 of the National Historic Preservation Act and the applicant may be required to obtain cultural resource surveys.

Did You Know? In 2003, the Corps evaluated 86,177 permits and denied only 299.

MITIGATION

For any remaining unavoidable impacts, the applicant must provide compensation through activities to restore or create wetlands. Under Section 404, mitigation can include:

- wetland restoration (restoring a former wetland to its natural condition).
- wetland creation (making a new wetland where historically no wetland had existed).
- wetland enhancement (improving an existing wetland).
- preservation (purchasing or otherwise protecting an existing, high-quality wetland).

For conservation value, wetland restoration is generally the preferred form of mitigation because it results in a net gain of wetland acreage. Creating new wetlands is less desirable because created wetlands rarely replace the same values that are being lost. Preservation of existing wetlands is essential to any landscape level or watershed plan, but should not be allowed as mitigation for destruction of wetlands because it results in a net loss in total acreage of wetlands in the watershed.

Wetland mitigation is generally carried out in one of three ways:

1. On-site, in-kind mitigation means the transportation agency will set aside some land on the project site that is just like the kind they destroyed.
2. Off-site, mitigation banks are large contiguous wetlands or other habitat types that have been created, preserved or restored to earn advance mitigation "credits" for impacts elsewhere.
3. In-lieu fee is the "pay to play" option. In some places, transportation agencies and developers can simply pay a penalty for their impacts. The fees collected are then used toward larger conservation efforts elsewhere.

THE SWANCC DECISION

In 2001, the United States Supreme Court issued a ruling regarding "isolated" wetlands in Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers. The court concluded that the Corps did not have Clean Water Act jurisdiction over "isolated" wetlands such as prairie potholes and pocosins. These wetlands may be defined as isolated if they lack a direct surface connection to other bodies of water. The problem

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is, they are often connected by groundwater or overflow and provide significant landscape functions such as flood control, water quality maintenance and habitat to wildlife populations.

HALL OF FAME: EUROPEAN UNION TELLS POLAND, "NO HIGHWAY THROUGH WETLAND"

The European Commission gave Poland a week to halt work on a planned highway through a protected environmental area that is home to rare flora and wildlife, or face a court action. The European Union's executive, speeding up legal measures it can take when a member state violates EU law, sent a final warning to Warsaw and set a tight deadline for a response in an effort to avoid "irreversible damage" to forests and animals. Poland wants to build a section of a highway linking Warsaw to Helsinki via the Baltic states through the northeastern Rospuda Valley, one of Europe's unique peat lands, which is home to rare plants and wildlife. EU Environment Commissioner Stavros Dimas said Brussels supported building road infrastructure in Poland, but not at the cost of the environment. "What the Commission does not accept is the irreversible damage that will be caused by the bypasses in the Rospuda Valley. It is neither necessary nor justified," he said. *Reuters, 2007*

HALL OF SHAME: ENGINEERS SENTENCED FOR FILLING WETLANDS

Two state highway engineers will spend a year on unsupervised federal probation for illegally placing dirt into wetlands during a road construction project near Plentywood, Montana. U.S. Magistrate Richard Anderson sentenced Ronald T. Arthur, 60, of Culbertson, and Lesley G. Peterson, 58, of Forsyth. The men pleaded guilty to a misdemeanor count of violating the Clean Water Act. They faced a possible penalty of one year in prison and a $2,500 fine per day of violation. The prosecutor said the offense occurred in 2001 during construction of almost 11 miles of state Highway 5 west of Plentywood. The project crossed wetland areas by Big Muddy Creek. The state transportation agency got a permit in 2000 from the U.S. Army Corps of Engineers to place fill in 2.52 acres of wetlands for the project. The men acted negligently when they allowed more wetlands to be filled than was permitted, the government said. *Billings Gazette, 2006*

SECTION 4(f)

Though the ESA and CWA are the most well known of our environmental laws, other provisions can be useful in protecting wildlife and natural places. The Department of Transportation Act of 1966 contains a tiny but powerful provision that was intended to protect public places such as parks and refuges from highway builders. Section 4(f) declares that the federal government will make a special effort "to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." FHWA cannot approve a project requiring the use of publicly owned land (including public parks, recreation areas, wildlife/waterfowl refuges and historic sites) unless adequate planning was done to minimize harm, and there is no prudent and feasible alternative. Section 4(f) is often considered in combination with Section 106 of the National Historic Preservation Act that requires only that effects on historic properties be considered.

The Department of Interior has declared the following listed lands as eligible for 4(f) protection:

- Lands of the National Park System, National Wildlife Refuge System, National Fish Hatchery System.
- Lands under the jurisdiction of the Bureau of Reclamation and Bureau of Land Management and Indian lands held in trust by the Department of Interior that are administered as parks, recreation areas, wildlife refuges or historic sites.
- State lands acquired, developed or improved with federal grants for fish and wildlife conservation, restoration or management.
- Local and state lands acquired or developed with monies from the Land and Water Conservation Fund.
- Lands acquired as mitigation under the Fish and Wildlife Coordination Act.
- Properties listed on, or eligible for, inclusion in the National Register of Historic Places.
- Federal surplus real property.
- Abandoned railroad rights of way.
- Areas publicly owned that receive de facto use as park, recreation or refuge lands.

CAUTION: Be aware that 4(f) can pit one protected resource against another, and 4(f) trumps them all. For example, if the choice is between impacting a wetland or an historic barn, the wetland will lose. But don't allow such false dichotomies to rule the day. If you're being asked to choose between the Mona Lisa and the Sistine Chapel, step back and rephrase the question. Which alternative can protect both precious and irreplaceable resources and address the transportation need?

Section 4(f) was tested shortly after it passed when transportation officials proposed to build Interstate 40 through Overton Park in Memphis, Tennessee. The case went all the way to the Supreme Court where Justice Thurgood Marshall stated that Section 4(f) "is a plain and explicit bar to the use of federal funds for con-

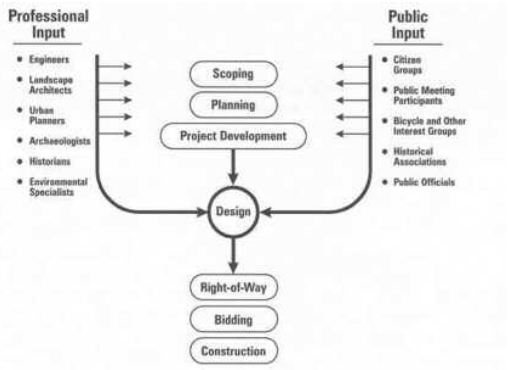
struction of highways through parks—only the most unusual situations are exempted." (Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402 (1971)) **For more information on 4(f), see Public Roads and Public Lands**

SAFETEA-LU: Section 4(f) is remarkably simple, yet has been criticized by a small number of vocal state transportation agencies that found it overly restrictive and prohibitive. Following attempts by opponents to remove or weaken 4(f), the amended language in SAFETEA-LU's section 6009 retains the restrictions on impacting public resources, but provides flexibility for projects that have "de minimis" impacts. What is de minimis, you ask? SAFETEA-LU says the transportation agency must convince the public and the resource manager that the project will not adversely affect the resource, and if they can, the project may proceed without further analysis.

PUBLIC PARTICIPATION

Have you ever sat through endless public hearings or spent your weekend reading an EIS that makes the yellow pages seem like a pamphlet? Then you know that public participation is a cornerstone of the NEPA process. The Council on Environmental Quality regulations on implementing NEPA require that agencies make a diligent effort to involve the public in preparing and implementing their NEPA procedures. They also require that agencies provide public notice of NEPA-related hearings, public meetings, and the availability of environmental documents so as to inform those persons and agencies who may be interested or affected.

FHWA defines the "public" broadly as including all individuals or groups who are potentially affected by transportation decisions. This includes anyone who resides in, has interest in, or does business in a given area that may be affected by transportation decisions. The "public" includes both individuals and organized groups.



FHWA also requires that each state develop procedures to carry out a public involvement program. State public involvement and public hearing procedures must provide for:

- Coordination of public involvement activities and public hearings with the entire NEPA process.
- Early and continuing opportunities during project development for the public to be involved in the identification of social, economic and environmental impacts, as well as impacts associated with relocation of individuals, groups or institutions.
- One or more public hearings to be held at a convenient time and place for any federal-aid project which has a significant social, economic, environmental or other effect, or for which the FHWA determines that a public hearing is in the public interest.
- Reasonable notice to the public of either a public hearing or the opportunity for a public hearing. The notice shall also provide information required to comply with public involvement requirements of other laws, executive orders and regulations.

Contact your transportation agency and ask for details about its public participation process.

Opportunities for public participation

Phase Scoping	Participation
Environmental assessment	Means of soliciting public input are determined on a case specific basis, taking into consideration the results of public participation efforts at the planning and programming stages, and the degree of public interest or controversy
Draft EIS	Maximum 60 days (SAFETEA-LU)
Final EIS	Once published, 30 days to review before Record of Decision is approved
Supplemental EIS	Should be same as draft EIS
Record of Decision	Cannot be issued sooner than 30 days after final EIS is distributed or 90 days after the draft EIS is circulated
ESA	Consultation is typically private until the BO is issued
Clean Water Act	Pubic comments due within 30 days of the issuance of a notice
4(f)	Public participation for de minimis determination

ENVIRONMENTAL STREAMLINING

For the past decade, the highway building industry and interests pressured Congress to include language that would "streamline" the environmental review procedures as they are applied to transportation construction projects. Many projects, they contend, are needlessly delayed by strict environmental regulations, increasing costs and denying American drivers the efficient transportation system they deserve. "Over the years, the well-intentioned NEPA process has become enmeshed in a web of duplicative bureaucratic reviews," according to the American Highway Users Alliance.

Really? According to a 2000 AASHTO study, 91 percent of all environmental documents produced by state transportation agencies are Categorical Exclusions. Less than 2 percent require EISs. Contrary to the horror stories generated by highway building advocates, processing times for environmental reviews average between eight months and 3.5 years, depending on the level of complexity associated with the analysis. (TransTech Management, Inc., 2000).

"Some people are so busy learning the tricks of the trade that they never learn the trade."

Vernon Law, Pittsburgh Pirates pitcher

Streamlining becomes steamrolling when opportunities for public participation are limited and contributing agencies are pressured into silence about potential environmental problems or bullied with unreasonable deadlines and demands.

TEA-21 contained a provision known as section 1309, which mandated the Secretary of Transportation to "develop and implement a coordinated environmental review process for highway construction and mass transit projects..." The purpose of the environmental streamlining provisions were to coordinate federal agency involvement in major highway projects under the NEPA process to address concerns relating to delays in implementing projects, unnecessary duplication of effort, and added costs for reviewing and approving surface transportation projects. The streamlined process was intended to:

- Establish an integrated review and permitting process that identifies key decision points and potential conflicts as early as possible.
- Integrate the NEPA process and other environmental reviews and approvals as early as possible in transportation planning.
- Encourage full and early participation by all federal, state and local agencies that must review a transportation project or issue a permit, license, approval or opinion relating to the project.
- Establish a dispute resolution mechanism to address unresolved issues.

Streamlining did bring one silver lining: section 1309 permitted state transportation agencies to provide highway funding to resource agencies to help expedite the review process while ensuring that environmental concerns are fully considered. The increase in highway projects has increased the burden on resource and regulatory agencies to participate in environmental reviews, yet the resource agencies have not received any additional funding to meet this new demand. To date, a handful of states have taken advantage of the provision and now enjoy the benefits of having early and substantive involvement from resource agencies.

Does your state transportation agency support a liaison or coordinator in your state resource or wildlife agencies? If so, schedule a meeting with them. Introduce yourself, your organization and your concerns about the wildlife and transportation conflict in your state or area of interest. If your state transportation agency does not support liaison staff, suggest that they do.

Directed by TEA-21, FHWA put forth a new, streamlined environmental review process in 2000 with concurrent reviews, cooperative time periods and assistance to affected agencies, but proponents of streamlining were not satisfied. During the next reauthorization, the streamliners pushed Congress for even more drastic measures in SAFETEA-LU.

SAFETEA-LU Responding to road industry complaints that the environmental review process is too burdensome, time-consuming and expensive, Congress included a revised NEPA process specifically for transportation projects. In the process of trying to streamline environmental review, Congress developed a process that at once, significantly weakens NEPA and unnecessarily complicates the process for participating agencies.

SAFETEA-LU Section 6002 includes the following: **Concurrent reviews** To the extent possible, all reviews (NEPA, ESA, CWA, 4(f)) should be carried out concurrently, rather than sequentially.

Preferred alternative The preferred alternative may be developed to a higher level of detail than all other alternatives, in effect defeating the purpose of considering more than one alternative.

Comment deadlines The public and participating agencies will have no more than 60 days to comment on a draft EIS and no more than 30 days for all other comment periods. Overburdened agencies and understaffed advocacy groups often need more time to read and respond to an EIS, which can be thousands of pages in length and sometimes not available in a timely manner.

Issue identification This "tattle-tale" clause requires all participating agencies to immediately identify any issues that could delay the review or be cause for denial of permits. If said issues are not

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resolved in less than 30 days, the lead agency must notify the heads of all relevant agencies, Congress and the governor. The problem is, members of Congress and the governor are not transportation experts, nor are they trained in dispute resolution. This provision was clearly intended to intimidate resource agencies and discourage them from bringing forth potential conflicts that would delay completion of the environmental review process or result in denial of a permit approval.

Assistance to affected agencies Carrying on the practice from TEA-21, Section 6002 further sanctions the practice of reimbursing state and federal agencies participating in the environmental review process for transportation projects. Funds can be used for planning, training, information gathering, mapping and dedicated staff. Unfortunately, the provision limits the available funds to those needed to meet unrealistic new deadlines.

Limitation on claims The public is also limited to just 180 days to file a claim following a record of decision on a road project. Prior to this drastic change, the public had as much as six years to file a claim.

SAFETEA-LU's streamlining measures continue with a series of provisions designed to devolve NEPA responsibilities to the states. Section 6003 establishes a pilot program to give handpicked state transportation agencies the sole responsibility for environmental review for all transportation projects. Section 6004 allows all state transportation agencies to determine if a project can be categorically excluded from environmental review. Section 6005 establishes a pilot program in which five states are given full responsibility for NEPA on one or more highway projects. Ironically, the pilot states appear to have been selected based NOT upon a measurable criteria or capacity to accept these critical responsibilities, but instead upon political favoritism. There is a correlation between pilot states and congressional representation in leadership positions within the reauthorization conference committee. Coincidence?

STATE-BASED ENVIRONMENTAL LAWS

State agencies are often responsible for enforcing federal environmental statutes. Failure of state governments to properly implement federal environmental laws may result in sanctions, such as withdrawal of federal highway funding. In addition to federal environmental protections, many states have enacted their own statues. Several states have their own "mini-NEPA" and many also have a state ESA. Generally, Congress has allowed states to establish more stringent requirements under state environmental laws. For example, California's state ESA is stricter than the federal ESA. In New Jersey, the state wetland protections are stronger than those set forth by the federal Clean Water Act.

Virginia's Department of Transportation (VDOT) uses the State Environmental Review Process (SERP) for all state-funded road and highway projects. SERP allows state environmental agencies the opportunity to comment on VDOT projects at the earliest possible stage. Environment and resource agencies supply information to assist VDOT in determining if the proposed project has significant environmental impact early enough to allow the project manager and designer time to avoid or minimize impacts.

To find the environmental laws in your state, check the following resources:

- State departments of environmental protection, natural resources or wildlife often have descriptions of the applicable laws and regulations on their websites.
- Law libraries or their online equivalent.
- Many states have access to state statutes on state legislature or governor websites.
- Try Findlaw.com.
- Professional, for-profit services such as Lexis-Nexis or Westlaw.
- State bar associations may have an environmental law section on their Web sites with compendia and summary materials.

LINKING PLANNING AND NEPA

In addition to complaints that environmental review takes too long, many transportation officials have complained that the process is redundant with the planning process. Studies related to transportation alternatives and impacts undertaken during transportation planning, they contend, are needlessly disregarded during NEPA reviews. Transportation officials maintain that decisions made during the planning process should not have to be revisited during the environmental review process.

Environmental and public advocacy groups disagree, concerned that the existing planning process does not provide an adequate legal framework or appropriate public participation for agenda-setting determinations on specific projects, alignments and modal choices. The transportation sector has fought to keep its planning process from receiving NEPA-level scrutiny. Federal law specifically dictates that planning is not subject to NEPA and courts have repeatedly upheld that standard. If planning is not subject to NEPA, advocates ask, then how can the products of the planning process be used to satisfy NEPA requirements?

YOU MAKE THE CALL: IS LINKING PLANNING AND NEPA A GOOD IDEA?

In 2005, FHWA released guidance on linking planning and NEPA, to be implemented on a voluntary basis at the state level. The guidance does not "NEPA-ize" the planning process, but shows "how information, analysis, and products from transportation planning can be incorporated into and relied upon in NEPA documents under existing laws."

YES

Cindy Burbank, former FHWA Assistant Administrator for Planning, Environment and Realty

The disconnect between planning and NEPA has often resulted in duplication of work and delays in implementation of transportation improvement projects.

FHWA has reviewed its legal authority and found substantial opportunity to reinforce planning as a foundation for NEPA. But, FHWA guidance does not NEPA-ize planning and planning is still not subject to NEPA requirements.

Federal agencies will still have to affirm that the planning process meets legal requirements, that the data and analysis were credible and that the planning approach and assumptions were rational or at least not irrational.

From Transportation/Environment Alert, Volume 7, Issue 22. February 4, 2005

NO

Janine Bauer, transportation attorney representing environmental and public advocacy groups on NEPA issues

Some metropolitan planning organizations are not capable of a NEPA level of analysis and often don't do planning in the context of valid and reliable data about employment, housing, jobs, growth, environmental and conservation restrictions and land use plans.

For FHWA's approach to work, the transportation plan would have to be conducted as a NEPA process itself, with all the legal requirements of NEPA. If you don't "NEPA-ize" planning, then to rely on planning products in the NEPA process short circuits the NEPA process by allowing some of those very important decisions to be made outside of NEPA.

Environmentalists are in favor of an efficient planning and environmental review process, but we're against treading on existing public comment and environmental review safeguards to do it.

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TransTech Management, Inc. Environmental Streamlining: *A Report on the Delays Associated with the Categorical Exclusion & Environmental Assessment Processes.* 2000.

U.S. General Accounting Office. *Stakeholders' Views on Time to Conduct Environmental Reviews of Highway Projects.* 2003. Retrieved from *http://www.gao.gov/new.items/d03534.pdf*

ENVIRONMENTAL REVIEW RESOURCES

NATIONAL ENVIRONMENTAL POLICY ACT

NEPA (full text) *http://ceq.eh.doe.gov/nepa/regs/nepa/nepaeqia.htm*

FHWA Environmental Review Toolkit
http://www.environment.fhwa.dot.gov/

CEQ Task Force, NEPAnet
http://www.nepa.gov/nepa/nepanet.htm

EPA'S NEPA Homepage
http://www.epa.gov/compliance/nepa/index.html

FHWA's Environmental Policy Statement (EPS)
http://www.fhwa.dot.gov/environment/epsfinal.htm

Eco-Logical: An Ecosystem Approach to Developing Infrastructure Projects
http://www.environment.fhwa.dot.gov/ecological/eco_index.asp

NEPA Under Seige: The Political Assault on the National Environmental Policy Act
Robert G. Dreher, Georgetown University Law Center. 2005
http://www.law.georgetown.edu/gelpi/current_research/documents/NEPAUnderSiegeFinal.pdf

ENDANGERED SPECIES ACT

Full text of the ESA *http://www.fws.gov/endangered/esa.html*

Final ESA Section 7 Consultation Handbook
http://www.nmfs.noaa.gov/pr/pdfs/laws/esa_section7_handbook.pdf

FHWA's Management of the ESA Environmental Analysis and Consultation Process
http://www.fhwa.dot.gov/environment/esaguide.htm

FHWA's Legal and Program Guidance on ESA Consultation Under Section 7 (2005)
http://nepa.fhwa.dot.gov/ReNepa/ReNepa.nsf/aa5aec9f63be385c852568cc0055ea16/79681451970f2a5a85256fb1004f9c17?OpenDocument

USFWS Information Standards Under the Endangered Species Act
http://www.fws.gov/endangered/policy/pol004.html
USFWS Mitigation Guidance on Conservation Banking
http://endangered.fws.gov/policies/conservation-banking.pdf

CLEAN WATER ACT

River Network: CWA Information
http://www.cleanwateract.org/cwa_search.asp

Army Corps of Engineers: Clean Water Act and Mitigation Banking
http://www.usace.army.mil/cw/cecwo/reg/sec404.htm
www.usace.army.mil/civilworks/cecwp/branches/guidance_dev/pgls/pdf/pgl46b.pdf

USEPA: Clean Water Act
http://www.epa.gov/region5/water/cwa.htm

U.S. Fish and Wildlife Service's Clean Water Act information
http://www.fws.gov/habitatconservation/cwa.htm

USGAO Report on the SWANCC Decision
http://www.gao.gov/new.items/d05870.pdf
FHWA Regulation on Mitigation Banking (23 CFR 777)
www.fhwa.dot.gov/hep/23cfr777.htm

4(f)

FHWA 4(f) Information
http://www.fhwa.dot.gov/environment/4f.htm
http://www.environment.fhwa.dot.gov/projdev/impTA6640.asp

Department of Interior's Handbook on Section 4(f) Evaluations
http://www.doi.gov/oepc/handbook.html

PUBLIC PARTICIPATION

FHWA's Public Participation information
http://www.fhwa.dot.gov/environment/pubinv2.htm

ENVIRONMENTAL STREAMLINING

USGAO: *FHWA Has Acted to Disclose the Limitations of Its Environmental Review Analysis*
http://www.gao.gov/new.items/d03338r.pdf
USGAO: *Stakeholders' Views on Time to Conduct Environmental Reviews of Highway Projects*
http://www.gao.gov/new.items/d03534.pdf

AASHTO's Report on DOT-Funded Positions at Resource and Regulatory Agencies
http://environment.transportation.org/center/products_programs/dot_funded.aspx

LINKING PLANNING AND NEPA

FHWA Guidance on Linking the Transportation Planning and NEPA
http://environment.fhwa.dot.gov/strmlng/linkingtrans.asp

AASHTO's report on linking planning and NEPA
http://www.transportation.org/sites/planning/docs/NCHRP%208-36%2848%29%20Final%20Report.pdf

STATE ENVIRONMENTAL LAWS

State Environmental Laws and Regulations on the Internet
http://meso.spawar.navy.mil/law2.html

DESIGN AND CONSTRUCTION

Still with me? Congratulations! If you've made it this far, you are a true conservationist. At this point in the process, you can sit back and relax. When the project reaches the final design phase, there is little if any opportunity for public participation. After the transportation agency finishes environmental review, the only thing that can stop or significantly improve the project is litigation. In the interest of being comprehensive, however, this chapter walks you through the basics of highway design and construction, with some familiar caveats. First, while the standards are relatively constant, each state will have its own design and construction process and every project is unique. Second, while construction has a relatively distinct beginning and end, design is an ongoing process that begins in the planning phase, continues throughout project development and can continue into construction if conditions change.

TYPES OF HIGHWAY CONSTRUCTION

Everything from potholes to the Big Dig fit into these four basic types of highway construction projects:

1. **New construction** involves the construction of a new highway where none currently exists.

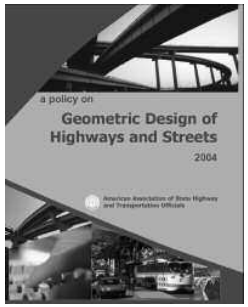
2. **Reconstruction** typically involves a major change to an existing highway within the same right of way corridor. Two lane, "farm-to-market" roads have been systematically reconstructed over the past few decades into multi-lane, divided arterials to accommodate or generate development and economic growth. Reconstruction may also involve modifications to horizontal and vertical alignment to address safety concerns. In many cases, realignments can involve substantial amounts of construction in previously undisturbed areas but they aren't classified as new construction because it's considered the same highway.

3. **Resurfacing, Restoration and Rehabilitation (3R)** projects focus primarily on extending the service-life of existing facilities and safety enhancements such as pavement repair, lane and shoulder widening, alterations to vertical grades (flattening) and horizontal curves (straightening), bridge repair and removal of roadside obstacles.

4. **Maintenance** activities are those necessary to keep existing facilities in good, safe operating condition, including repainting stripes, cleaning or repairing drainage features, mowing and removing snow.

THE "GREEN BOOK"

Before you get too excited, the Green Book is so named because the cover is green, not because it is environmentally friendly. The official title is "A Policy on the Geometric Design of Highways and Streets," and it is considered the definitive reference for highway design. American Association of State Highway and Transportation Officials (AASHTO) began publishing design standards in the 1930s and has been updating them since then. Depending on whom you ask, the Green Book serves as either *the* national policy by which we build highways in this country or merely as a handy series of guidelines that designers can use at their discretion. Federal Highway Administration (FHWA) has formally adopted parts of the Green Book as the national standard for roads in the National Highway System, which includes the interstates and some primary routes.



Critics of the Green Book say that, in our pursuit of standard design, we ignore other aspects of design that respect and reflect other cultural, aesthetic and environmental values. The "wider, flatter, straighter" formula doesn't always sit well with the locals. Different roads serve different purposes and different publics and Green Book standards are inappropriate for small facilities such as the hilly, tree-lined rural roads of New England or roads on public lands. We risk losing regional character and diversity by unnecessarily forcing modern, high-speed design standards on older, low-speed roads.

FINAL DESIGN

After environmental review is completed, the preferred alternative is agreed upon and the Record of Decision has been approved, the project enters the final design stage. Depending on the size, scale and complexity of the project, final design can take several months to several years. The process results in what is known as the "plans, specifications and estimates" (PS&Es) of required quantities of materials ready for the solicitation of construction bids and subsequent construction.

"The AASHTO standards assume that everyone on the road is a drunk speeding along without a seatbelt."

—James Lighthizer, a former Maryland transportation director and current co-chair of the Task Force on Traffic Capacity Across the Chesapeake Bay

ELEMENTS OF HIGHWAY DESIGN

Highway design is like plumbing—you don't think about it until something goes wrong. Many factors are considered and countless details are meticulously calculated before the first shovel of dirt is moved. Below is a partial list—for a complete list, you'll have to go to engineering school.

Design speed is the maximum speed that can be maintained on the highway under favorable conditions. Considered the core critical design element from which other criteria are developed, design speed determines everything else about the roadway. Based on the type and purpose of highway, the design speed considers topography, adjacent land use and potential future improvements. The design speed is not the same thing as the speed limit. Highways can be built with design speeds much higher than legal speed limits.

Level of service is the letter grade given a highway based on how well it moves traffic. Just like in school, highways are graded from A (best) to F (worst). When the level of service drops, the pressure to build more lanes increases.

Control of access is the regulated limitation of access to and from properties abutting highway facilities. In other words, how many cross streets, side roads, intersections and driveways are on the road? The more access allowed, the more slowing and stopping for drivers and the more associated development next to the highway. Toll roads, turnpikes and interstates often have low access with very high speeds.

Lane width is self-explanatory, but engineers call it "the portion of the traveled way used for a single line of vehicles."

Shoulder width is also self-explanatory, but no simple matter. Shoulders must be designed to allow for evasive maneuvers, emergencies, stopped vehicles, stormwater management, traffic protection, maintenance, oversized vehicles, bicycles and pedestrians.

Bridge roadway width is the clear distance between inside faces of bridge railings or curbs, including travel lanes, turn lanes, shoulders and parking or bike lanes.

Medians are those portions of divided highways separating the traffic traveling in opposing directions, and median width is the distance between them. Median width is a critical design element for interstates, freeways and other high-speed highways because medians provide a buffer between traffic and help reduce oncoming collisions.

Grade is the change in vertical alignment of a highway; in other words, how flat or hilly it is.

Horizontal curvature is the change in horizontal alignment of a highway; in other words, how curvy or straight it is.

Superelevation is the way the surface of the road tilts into a curve so your car doesn't fly off into the abyss. The cross slope of the

pavement is tilted to partially offset the centrifugal force on a vehicle going around a curve. For freeways and rural facilities, an 8 percent rate is often used to provide the maximum safety benefit while minimizing low-speed operational problems.

Stopping sight distance is the time and space it takes you to slam on the brakes before you hit the car (or moose) in front of you. The minimum sight distance available on a roadway should be long enough to allow vehicles traveling at design speed to stop before reaching a stationary object in the roadway.

Horizontal clearance is the part of the road next to the lane, called an "operational offset" or "clear zone."

Vertical clearance refers to the minimum vertical distance to an obstruction over any part of the road, or how tall your camper can be and still get through that tunnel.

Travel lane cross slope is the way the road crowns in the middle and slopes down on each side to promote faster drainage and keep water from pooling on the road.

Rollover is the difference in cross slope between two adjacent highway lanes or a lane and its shoulder.

Structural capacity is the ability of a bridge to carry its own weight and the traffic moving across it.

Pedestrian accommodation is the provision of sidewalks, ramps, pedestrian crossings and other design facilities that allow for safe pedestrian movement within and through a project area.

RIGHT-OF-WAY PURCHASING AND PREPARATION

Every transportation agency has a real estate division responsible for securing, preparing and managing right of way properties. These divisions have a variety of responsibilities, including surveying and appraising land, property management, right-of-way certification, utility relocation, licensing airspace and telecommunication facilities, and selling excess property.

Unless you inherit property from wealthy relatives, there are only two ways to get your hands on it: you either buy it (acquisition) or you take it (condemnation) and then pay for it. If a transportation agency determines it needs a particular property, the agency will notify the landowner and offer fair market value and relocation assistance. The Fifth Amendment to the U.S. Constitution dictates that no person shall "be deprived of life, liberty, or property, without due process of law; nor shall private property be taken for public use, without just compensation." If a landowner declines an offer to sell, the state may simply exercise eminent domain and proceed with condemnation, which is legalese for the process by which the state can take ownership of private property for public use. Although the U.S. Constitution requires only that condemnation serve a public purpose and be accompanied by just compensation, state constitutions or laws may add additional requirements.

CONTRACT BIDDING

Every state transportation agency also has its own construction division, but they don't actually do the construction. Once the final plans, specifications and estimates (PS&E) is prepared and all right-of-way property is secured, the state transportation agency will "let for bid" or advertise for private contractors to bid on the project. The construction division oversees the letting, management and administration of highway construction contracts. Bidders of prospective highway projects generally must be prequalified by the construction division to ensure they are competent and responsible to perform the work. After reading the PS&E and inspecting the project site, bidders prepare and submit an estimated price and time frame they will need to complete the project. At the end of the open submission period, all bids are made public and the contract is awarded. The transportation agency may choose the lowest bid, but it has the option of choosing a higher bid for quality reasons.

CONSTRUCTION

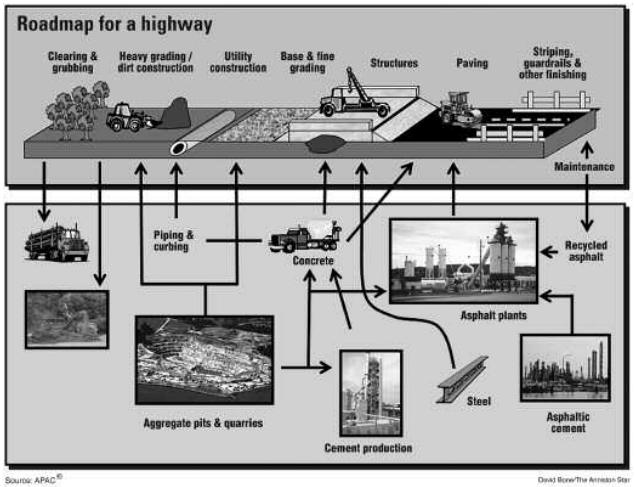
If the project has made it this far, construction itself is a simple matter. Construction staging plans are prepared to show the sequence of operation, work to be performed, materials to be used, and the routes to be utilized by traffic during each construction phase. Traffic handling plans show long-term closures of lanes and ramps, how the traffic is to be routed and maintained, and the number of traffic lanes available for public traffic.

The sequence of events follows these basic steps:

Clearing and grubbing prepares the work site by removing all trees, vegetation and obstructions of any kind—natural or artificial. During grubbing, trees are pulled completely from the ground to remove all roots and other materials below the surface. Desirable vegetation can be designated and either salvaged or left undisturbed.

Heavy grading and dirt construction removes all sod and grass to a particular depth as directed by the project specifications. Topsoil is excavated and stockpiled for reuse if appropriate.

Utility construction includes the location and placement of drainage piping. Other municipal utilities such as sewer, water, power and communications may also need to be accommodated within the project site.



Base and fine grading configures and contours the cleared ground area to remove abrupt slope changes, making the ground as flat and hard as possible in preparation for paving.

Structures provide the "concrete and steel" such as bridges, box culverts, overpasses and noise walls.

Paving is the step most of us are familiar with, when the asphalt is laid and smoothed.

Finishing measures put the final touches on the project, including striping, lighting, signing and guardrails.

During the above-outlined process, materials are purchased and transported from many sources to one location where they are mixed and prepared for construction. Choice of materials depends on geology, soils, weather variability, estimated amount of traffic and myriad other factors. Basic materials are stone, sand and petroleum byproducts that make up most of the road surface and base layers. A highway project could use as many as 200 different products in the course of construction. Large construction projects can also use tremendous amounts of water—up to a million gallons per day (Brennan, 2002).

Generally the road will be built in layers, starting with the subbase of local soils, then a gravel base of crushed rock, followed by the pavement, which is made of concrete or asphalt. It is then topped off by an asphalt surface. If a road is resurfaced later on, it will likely be with asphalt.

COSTS

Several factors come into play when estimating the costs of a given highway project. As with any real estate, it's all about location, location, location. Building highways in mountainous areas costs a lot more than building on flat ground. Urban projects are more expensive than rural projects. And more complicated projects, with bridges, several interchanges or engineering challenges will obviously up the ante.

So how much *does* it cost to build a mile of highway? The Washington State Department of Transportation (WSDOT) posed that very question to fellow state transportation agencies, based on the specs of an actual interchange project design that WSDOT believed was universal to all states. Based strictly on contract bid items—not including right of way or environmental compliance costs—the estimates ranged from $4 million to $26.7 million. With 25 states reporting, the cost to construct a single-lane mile of the selected project ranged from $1 million to $8.5 million with an average cost of $2.3 million (WSDOT, 2002).

In 2005, the Alabama Department of Transportation widened four miles of Interstate 20 for the bargain price of just $25.6 million. Not including the cost of the land or labor, here is how some of the numbers broke down:

Asphalt and base	$7,400,777
Mobilization (getting equipment to site)	$2,377,787
Concrete median barriers	$1,530,051
Drainage (installation and cleaning of pipes)	$1,268,210
Striping (painting and removal)	$521,659
Safety barriers and cones	$286,164
Rubblizing (breaking up existing pavement)	$243,326
Signs	$224,307
Clearing vegetation	$198,000

FHWA likes to keep track of construction costs, so for each contract exceeding $500,000, they ask that each state provide bid price data on the quantity of materials used and the installed price of the materials from contracts on the National Highway System. States provide FHWA with data for seven materials (common and unclassified roadway excavation, structural reinforcement and structural steels, bituminous and portland cement concrete surfaces, and structural concrete), as well as total contract costs for road and bridge aspects of the contract, and the location of the project. FHWA makes summaries of its bid price data, including a national composite index of all materials on which data are collected, available to the public in its quarterly *Price Trends for Federal-Aid Highway Construction* and in its annual *Highway Statistics*.

According to the American Road & Transportation Builders Association (ARTBA), 2006 was a record year for transportation construction. The value of construction work put in place on transportation projects totaled $105 billion, an almost unprecedented increase of 13.8 percent over $92.2 billion in 2005. The growth was powered by highway and bridge construction, which rose 15.4 percent to a record $75.5 billion from $65.4 billion in 2005.

Highest Value of Highway and Bridge Contract Awards for 2006

Texas	$5,314,500,000
California	$4,597,100,000
Florida	$3,227,800,000
Georgia	$2,631,100,000
Illinois	$2,393,100,000

(ARTBA, 2007)

CONTEXT SENSITIVE DESIGN

One of the most popular buzz phrases in transportation is "context sensitive design" (CSD), which means designing in a way that considers the total context of a transportation project. Don't be confused if you hear "context sensitive solutions"—it's the same thing. The gold standard of CSD is a collaborative, interdisciplinary approach to design that involves all stakeholders working together to achieve a transportation facility that fits naturally into its physical setting, preserves scenic, aesthetic and environmental resources, and maintains safety and mobility. Typical projects include sidewalks, bicycle facilities, landscaping and traffic calming roundabouts.

Is CSD just lipstick on the corpse? Everyone agrees that CSD has been a refreshing development in the world of transportation and continues to bring untold benefits to pedestrians, bicyclists and communities seeking safe, multi-modal and attractive facilities. Conservationists support any and all efforts to enhance human habitat because it reduces the pressure to build more of it in wildlife habitat. But, while CSD is a laudable concept, it has its limitations. Improvements to design will benefit the human environment more than the natural environment.

If CSD begins after the location has been chosen and the scope of the project has been determined, the benefits are largely restricted to aesthetics, functional fixes and minor mitigation. The problem is, it's not *how* you build it; it's *where* you build it. A project built in previously undisturbed wildlife habitat is the antithesis of **design** that is **sensitive** to the **context** in which it is built. Even the smartest design can't prevent major impacts at that point. If you build a highway in lizard habitat, the lizard cares little whether you paint murals of him on the overpass that destroyed his home.

It's not how you build it, it's where you build it.

SAFETEA-LU gave the official, yet noncommittal nod to the FHWA report, Flexibility in Highway Design, and the national context sensitive solutions workshop document, Eight Characteristics of Process to Yield Excellence and the Seven Qualities of Excellence in Transportation Design. The provision recommended use of these CSD manuals in establishing standards to be used on the National Highway System, but stopped short of a requirement.

CONSTRUCTION BMPs FOR WILDLIFE CONSERVATION

Regardless of the overall impacts of the project itself, there are several things construction crews can do to lessen the blow. Specific measures for wildlife should be determined in consultation with state and federal wildlife agencies. Erosion and sedimentation control and water quality protection are commonplace but there are many more ambitious measures that are starting to catch on:

- Prior to pre-construction clearing, limited numbers of target species (vegetation, fish, herpetofauna) can be salvaged for either relocation out of harm's way or restoration after project completion.
- Minimize tree removal.
- Minimize staging areas for construction equipment and locate them in previously disturbed sites.
- Schedule construction time frames around important breeding, spawning or nesting seasons.
- Avoid disturbing migratory bird nests.
- Wash equipment to avoid spreading invasive species.
- Provide training for construction workers on the special needs of wildlife in or near the project area.
- Use closed containers for trash and dispose of all refuse at an approved landfill.
- Upon completion, the project area should be revegetated with native species.

Ask your construction division if they require the contractors use wildlife best management practices during construction. Offer to help with periodic trainings on wildlife BMPs for construction professionals.

HALL OF FAME: EVERY LITTLE BIT HELPS IN ALASKA

In the process of replacing an off-ramp, the Alaska Department of Transportation and Public Facilities preserved and enhanced an isolated wetland that could have legally been filled or developed. Without adding much to the construction budget, crews transplanted wetland plants salvaged from another construction site and directed highway runoff to the half-acre wetland, providing a resting place for wild ducks and Canada geese.

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Washington State Department of Transportation. 2002. *Transportation Construction Cost Comparison: WSDOT Nationwide Survey*. Retrieved from: *http://www.wsdot.wa.gov/biz/construction/pdf/I-C_Const_Cost.pdf*

DESIGN AND CONSTRUCTION RESOURCES

DESIGN

FHWA's *Flexibility in Highway Design*
http://www.fhwa.dot.gov/environment/flex/index.htm

AASHTO Green Book: A Policy on Geometric Design of Highways and Streets
https://bookstore.transportation.org/item_details.aspx?ID=110

CalTrans' Highway Design Manual
http://www.dot.ca.gov/hq/oppd/hdm/hdmtoc.htm#hdm

NYSDOT's Highway Design Manual
http://www.dot.state.ny.us/cmb/consult/hdmfiles/chapt_12.pdf

Design Guidelines to Enhance Community Appearance and Protect Natural Resources
Joan Chadde. Michigan Technological University
http://www.deq.state.mi.us/documents/deq-exe-outreach-designguideline.doc

Designing Urban Corridors
Kirk Bishop, American Planning Association
http://www.planning.org/APAStore/Search/Default.aspx?p=2349

CONSTRUCTION

Price Trends for Federal-Aid Highway Construction
http://www.fhwa.dot.gov/programadmin/pricetrends.htm

CONTEXT SENSITIVE DESIGN

http://www.contextsensitivesolutions.org/

FHWA's CSD page
http://www.fhwa.dot.gov/csd/index.cfm

BEST MANAGEMENT PRACTICES FOR WILDLIFE

Environmental Stewardship Practices, Procedures and Policies for Highway Construction and Maintenance, NCHRP 25-25 04
Chapter 4, Construction Practices for Environmental Stewardship
http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/4_1.aspx

FHWA's Keeping it Simple
http://www.fhwa.dot.gov/environment/wildlifeprotection/

MAINTENANCE AND OPERATIONS

The minute construction of a highway is complete, the maintenance begins. Road maintenance divisions provide the necessary services to ensure that our infrastructure is in good working order and conditions are safe for the motoring public. While we may not always recognize the connection, maintenance professionals can be a conservationist's greatest allies. By prolonging the life of our existing infrastructure, they reduce the need to continuously build more and more new highways that may ultimately end up consuming and fragmenting remaining natural areas and essential wildlife habitat.

Maintenance measures are also essential for protecting the significant public investment that is our surface transportation system. Preventive maintenance such as pavement overlays and rehabilitation is crucial for extending the life of roads and controlling long-term costs. When essential maintenance is put off, roads deteriorate faster and require more expensive rehabilitation and even complete reconstruction at many times the cost.

Maintenance and operations can also be a treasure trove of opportunities to not only reduce the impacts of highways on wildlife, but also to improve habitat quality through voluntary stewardship actions. Sometimes small changes in maintenance practices can make a big difference. Conservationists would be wise to get to know their transportation maintenance and operations divisions and discover new partners in wildlife conservation.

DIVISION OF LABOR

Road maintenance and operations duties are shared among many different agencies and departments, from state to local and even private landowners. Local road maintenance divisions are often housed within the public works department, which also maintains parks, wastewater treatment and refuse collection facilities.

State transportation agencies maintain state highways and highways in the National Highway System (all roads that have route numbers, for example, M90 or US93) and interstate highways within state borders.

County highway maintenance divisions maintain main roads, neighborhood streets and rural/country roads.

Municipalities maintain roads within municipality borders.

Private homeowner associations maintain roads within gated, town home or condominium community boundaries.

RESPONSIBILITIES

And you thought taking care of your house was a big job! Highway maintenance and operations crews are responsible for keeping thousands of miles of highway and thousands of acres of right of way in tip-top shape—all while cars and trucks are zooming by in their workplace.

Road and shoulder maintenance—managing and preserving pavement, pothole repair, patching, crack filling, chip sealing, base stabilization, rocking shoulders, grading gravel roads, dust abatement and cleaning.

Bridge maintenance—inspecting, repairing, painting, flushing, cleaning and controlling scour.

Roadside maintenance—maintaining and repairing guardrails, signage, fencing, noise walls, medians, litter, beautification, outdoor advertising and removing roadkill.

Roadside vegetation management—caring for and controlling roadside vegetation, landscaping, mowing, herbicide spraying, brush and tree trimming, planting native vegetation, removing invasive species and improving soils. **For a complete description of roadside vegetation management, see Roadside Vegetation.**

Water management—maintaining and repairing catch basins, recharge basins, ditches, culverts, manholes, drywells, installation of storm systems, erosion and sedimentation controls. **For a complete description of water management and aquatics, see Aquatic Resources.**

Fleet and equipment—providing and administering a wide variety of vehicles, roadway maintenance equipment, vehicle fuel stations and support equipment.

Traffic control and operations—maintaining and repairing traffic lights, traffic calming, pavement markings, striping, sign installation, high occupancy vehicle lanes, incidence response, work zone safety and railroad crossings.

Enforcement—issuing permits for commercial vehicles, weigh stations, speed enforcement equipment and access to highways by homeowners, businesses and developers.

Intelligent transportation systems—monitoring traffic through transportation management centers, synchronizes signal systems, provides traveler information, incident response and transit and emergency management.

Road closures (emergency, seasonal)—snow plowing, applying de-icing chemicals, severe weather and avalanche/rockslide response.

Invite a representative from your maintenance and operations division to visit your organization and discuss possible best practices for wildlife conservation.

FUNDING

Many of the roads and highways you use may have been paid for with federal funding, but once built, they become the responsibility of state and local governments. Federal maintenance funding is authorized through the highway bill, but is only available for maintaining highways within the interstate system. Federal Interstate Maintenance funds are distributed to states by formula, based on lane-miles of interstate, vehicle-miles traveled and contributions to the Highway Trust Fund.

SAFETEA-LU authorized $25.2 billion for the Interstate Maintenance program through 2009, to be distributed by a formula based on lane-miles of interstate, vehicle-miles traveled and contributions to the Highway Trust Fund.

That is a lot of money, but it doesn't go far and it rarely applies to non-interstate highways. Federal transportation funds are reserved for capital improvements or major rehabilitation, and cannot be used for general road maintenance. To pay for the upkeep, local towns have to fund road maintenance with gas, property and sales taxes, parking fees and general funds. Other sources of local funding, such as developer fees, assessments and bonds are generally not used for regular road maintenance.

Lobby your state legislature and Congress for increased funding for maintenance.

"The reason construction gets all the money is because you can't hold a ribbon-cutting ceremony at a pothole filling."
Conservation advocate

Guest Column:

MAINTENANCE PROFESSIONALS WANT TO HEAR FROM YOU!

Gary R. McVoy, Ph.D.
Director, Office of Operations Management
New York State Department of Transportation

Highways and wildlife have to co-exist and we should all do our best to make sure both come out winners. The people who maintain your highways are public servants with a natural sense of stewardship. They live in your local communities. They work outdoors by choice. They want to do the right thing and have a tremendous, largely untapped capacity for improving the environment as part of their daily work.

Conservation advocates can help highway maintenance professionals do more to protect wildlife, enhance habitat and improve our common environment by:

- Asking them to help do what they can.
- Making them aware of how they can help by showing them the available compendium on best maintenance practices (see below).
- Providing clear, constructive information on wildlife on or near the right-of-way.
- Offering to help through volunteer programs such as Adopt-a-Highway, invasive species control and habitat enhancements.
- Participating in transportation decision-making at all stages of project planning, design, construction and operations.
- Showing your support for transportation agency efforts to strengthen environmental stewardship.

FIX IT FIRST

Common sense dictates that, it's probably best to fix the leak in your roof *before* you build a new addition. Sadly, common sense often eludes us when setting transportation priorities. In 2004, FHWA rated the condition of only 43.2 percent of our roads "good." In 2005, the American Society of Civil Engineers gave our nation's roads a report-card grade of D. Yet even as our existing infrastructure falls into disrepair, we keep spending billions on building new highways.

"Fix it First" is a radical, old-fashioned idea that has been catching on in some states like Michigan and Wisconsin and in large cities like Sacramento, California. Simply put, Fix it First means protecting what we have and looking to expensive, major new construction

projects only after our current roads have been taken care of properly. The longer we wait to fix our roads, the more expensive the fix. Bridges and highways in good condition are cheaper to maintain than those in bad condition. When we defer maintenance, the cycle for rehabilitation is shorter, pavement fails sooner and requires complete reconstruction at a much higher cost (SACOG, 2004). Rough roads are a pain in the wallet for drivers too. Poor road conditions cost U.S. motorists $54 billion per year in repairs and operating costs—that's $275 per motorist. According to FHWA, outdated and substandard road and bridge design, pavement conditions and safety features are factors in 30 percent of all fatal highway accidents.

Do you live in a "Fix it First" state? If not, maybe you or your organization could spearhead the effort.

"Our state has adopted a policy of no new highways. Basically, we will improve what we have, but we aren't going to be building anything new. There are exceptions to this, but in essence this is because we cannot afford to adequately maintain what we have now."
State transportation agency staff

BEST MAINTENANCE PRACTICES FOR WILDLIFE CONSERVATION

The best thing maintenance divisions can do for wildlife is take good care of the roads we have to reduce the pressure to build more. But maintenance professionals can also be tremendous stewards of the natural environment and many transportation agencies have accepted the challenge. Maintenance measures for wildlife range from small and simple to large and complex, and here are just a few examples:

Roadside vegetation management—inventory rights-of-way for sensitive species, alter mowing regimes to reduce disturbance and destruction of habitat for ground-nesting species, remove invasive vegetation and plant native species, herbicide use education, plant living snow fences to reduce need for road salt, designate special management areas, provide training.

Water management—clean and rehabilitate culverts to improve fish passage, reduce use of road salt and de-icing chemicals, install water quality improvement devices.

Bridge maintenance—promote migratory bird protection on bridges, install bat-friendly devices, schedule bridge maintenance for times when fish aren't spawning or migrating.

Habitat connectivity—provide gaps in median walls to allow wildlife to move across roads without being trapped between barriers, install elevated walkways in wet culverts to allow small terrestrial species to pass, install exclusionary fencing to direct herpetofauna to culverts.

Dynamic signage—install "smart" wildlife warning signs to alert drivers of the presence of wildlife in the right of way, install electronic signs that reduce the speed limit during peak wildlife movement times.

Volunteer your organization's assistance in implementing best maintenance practices for wildlife conservation, such as roadside vegetation surveys, invasives removal, planting native species and monitoring.

FHWA recognized the need for sharing information on best maintenance practices for wildlife conservation, and developed the "Keeping it Simple" website dedicated to going beyond compliance to identify simple techniques to help wildlife through road maintenance.

Through the National Cooperative Highway Research Program, transportation officials developed a comprehensive compendium of practices for integrating environmental stewardship into construction, operations and maintenance activities: *Environmental Stewardship Practices, Procedures and Policies for Highway Construction and Maintenance*.

Keep a copy of the National Cooperative Highway Research Program compendium, *Environmental Stewardship Practices, Procedures and Policies for Highway Construction and Maintenance* on your desk and refer to it often. Make extra copies for your maintenance division if they aren't already using it.

HALL OF FAME: WASHDOT REGIONAL ROAD MAINTENANCE ENDANGERED SPECIES ACT PROGRAM

The Washington State Department of Transportation collaborated with the National Marine Fisheries Service, local government agencies and other partners to develop a set of road maintenance policies and practices that contribute to the conservation of endangered aquatic species through 10 program elements including maintenance best management practices and a workforce training program.

If your maintenance and operations division is doing a good job, recognize their efforts. Consider nominating them for one of the many awards offered for transportation agencies and projects. For a list of transportation awards, see the Appendix.

REFERENCES

Sacramento Council of Governments. *Road Maintenance*. 2003
http://www.sacog.org/mtp/pdf/MTP2030/Issue%20Briefs/Road%20Maintenance.pdf

Federal Highway Administration. *Status of the Nation's Highways, Bridges, and Transit: 2004 Conditions and Performance*. 2004
http://www.fhwa.dot.gov/policy/2004cpr/index.htm

MAINTENANCE AND OPERATIONS RESOURCES

MAINTENANCE DIVISIONS

Clark County, Washington
http://www.clark.wa.gov/public-works/operations/index.html

Montgomery County, Maryland
http://www.montgomerycountymd.gov/hwytmpl.asp?url=/content/dpwt/operations/highway/Hwy_MainLinkPg/CountyRoadMain.asp

North Carolina Department of Transportation
http://www.ncdot.org/doh/

ROAD CONDITIONS

The State of Our Nation's Roads
Surface Transportation Policy Partnership
http://www.transact.org/library/roadconditiondecoder.asp

Infrastructure Report Card, 2005
American Society of Civil Engineers
http://www.asce.org/reportcard/2005/index.cfm

FHWA Pavement Preservation
http://www.fhwa.dot.gov/preservation/index.cfm

FIX IT FIRST

Sierra Club
http://www.sierraclub.org/sprawl/fixitfirst/

1000 Friends of Wisconsin
http://www.1kfriends.org/Transportation/Transportation_Policy/Fix-it-First/Fix-it-First.htm

National Governors Association, State Overview of Fix it First Approaches
http://www.nga.org/cda/files/0408FIXFIRSTCHART.pdf

BEST MAINTENANCE PRACTICES

FHWA's Keeping it Simple
http://www.fhwa.dot.gov/environment/wildlifeprotection/

Environmental Stewardship Practices, Procedures and Policies for Highway Construction and Maintenance, NCHRP 25-25 04
http://environment.transportation.org/environmental_issues/construct_maint_prac/compendium/manual/

Environmental Stewardship in NYSDOT Highway Maintenance
Kyle Williams, New York State Department of Transportation
http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1015&context=jmie/terc

Natural Environment

IN THIS SECTION

Impacts of Roads provides an overview of the impacts of roads on the natural environment, based on the sentinel article, *Review of Ecological Effects of Roads on Terrestrial and Aquatic Communities* by Stephen Trombulak and Christopher Frissell first published in The Journal of Conservation Biology in April, 2000.

Wildlife introduces you to a variety of mitigation techniques from habitat connectivity linkage analysis to wildlife crossings. Of course, this chapter wouldn't be complete without an overview of potential funding sources for wildlife mitigation measures.

Roadside Vegetation takes you on a tour of our rights of way. You will learn how roadside landscapes are designed and maintained, and what transportation agencies can do to get the most ecological bang for the buck.

Aquatic Resources tells the epic battle between water and roads. Follow the water through bridges, culverts, riprap, fish passage stormwater and road salt.